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******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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                          Analysis prepared by:

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                           Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP                                *
* REGIONAL WATERSHED S19- FREE DRAINING - PHASE CONDITION NO PA5       *
* 2-YR RM EV APRIL 2019 FKAZI                                          *
 ***********************************************************************

  FILE NAME: RI02EV19.DAT
  TIME/DATE OF STUDY: 12:02 04/03/2019
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.878
   2)   10.00;  1.253
   3)   15.00;  0.953
   4)   20.00;  0.778
   5)   25.00;  0.670
   6)   30.00;  0.594
   7)   40.00;  0.512
   8)   50.00;  0.455
   9)   60.00;  0.400
  10)   90.00;  0.346
  11)  120.00;  0.290
  12)  180.00;  0.236
  13)  360.00;  0.180
  14) 1200.00;  0.084
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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)
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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.603
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"          -        1.62      0.60     0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      1.46

******************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.35      0.60     0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   4.07
  Tc(MIN.) =   11.27
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =    4.76
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.55
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0         PEAK FLOW RATE(CFS) =       5.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.79   FLOW VELOCITY(FEET/SEC.) =   2.99
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

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  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.60     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.11
  AVERAGE FLOW DEPTH(FEET) =   1.11   TRAVEL TIME(MIN.) =   4.98
  Tc(MIN.) =   16.25
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   11.39
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.54
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      14.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.22   FLOW VELOCITY(FEET/SEC.) =   3.29
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.716
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.60     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.26
  AVERAGE FLOW DEPTH(FEET) =   1.54   TRAVEL TIME(MIN.) =   6.61
  Tc(MIN.) =   22.86
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =    3.01
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =      14.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   2.21
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  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.571
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.60     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.24
  AVERAGE FLOW DEPTH(FEET) =   1.25   TRAVEL TIME(MIN.) =   9.90
  Tc(MIN.) =   32.77
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =    1.37
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.57
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.94
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =      14.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.520
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.13
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  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   6.26
  Tc(MIN.) =   39.03
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.58
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.96
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =      14.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   5.13
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.484
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.08
  AVERAGE FLOW DEPTH(FEET) =   0.83   TRAVEL TIME(MIN.) =   5.88
  Tc(MIN.) =   44.91
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.58
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =      14.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.83   FLOW VELOCITY(FEET/SEC.) =   7.08
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
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  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.421
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.97
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =  11.30
  Tc(MIN.) =   56.21
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =      14.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   4.97
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 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.) =   56.21
  RAINFALL INTENSITY(INCH/HR) =   0.42
  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      14.59

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.122
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
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  "CHAPARRAL,BROADLEAF"      -        3.46      0.60     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.63
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      1.63

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.012
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.79      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.63
  AVERAGE FLOW DEPTH(FEET) =   0.50   TRAVEL TIME(MIN.) =   1.82
  Tc(MIN.) =   14.01
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =    2.15
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =       3.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   3.86
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.702
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       54.30      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.32
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   9.50
  Tc(MIN.) =   23.51
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =    5.00
```



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  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =       5.85

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOW VELOCITY(FEET/SEC.) =   3.20
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.595
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       65.14      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.07
  AVERAGE FLOW DEPTH(FEET) =   0.63   TRAVEL TIME(MIN.) =   6.43
  Tc(MIN.) =   29.94
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =       5.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.62   FLOW VELOCITY(FEET/SEC.) =   5.06
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.545
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.52      0.60     1.000     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.68
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   6.01
  Tc(MIN.) =   35.95
  SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =       5.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   4.68
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.484
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       70.48      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.52
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   9.05
  Tc(MIN.) =   44.99
  SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =       5.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   3.52
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  51
----------------------------------------------------------------------------
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```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.444
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      232.20      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.60
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   7.05
  Tc(MIN.) =   52.04
  SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =       5.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   4.60
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.392
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      110.82      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.52
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =  12.15
  Tc(MIN.) =   64.19
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
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  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      620.7         PEAK FLOW RATE(CFS) =       5.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   3.52
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 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.) =   64.19
  RAINFALL INTENSITY(INCH/HR) =   0.39
  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.85

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       14.59   56.21    0.421  0.60( 0.59) 0.98     484.1   11900.00
      2        5.85   64.19    0.392  0.60( 0.60) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       20.08   56.21    0.421  0.60( 0.60) 0.99    1027.6   11900.00
      2       19.46   64.19    0.392  0.60( 0.60) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.08    Tc(MIN.) =    56.21
  EFFECTIVE AREA(ACRES) =    1027.65   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
```



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  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.394
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.41
  AVERAGE FLOW DEPTH(FEET) =   1.40   TRAVEL TIME(MIN.) =   6.93
  Tc(MIN.) =   63.14
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1135.12     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1212.3         PEAK FLOW RATE(CFS) =      20.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.40   FLOW VELOCITY(FEET/SEC.) =   3.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.379
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.66
  AVERAGE FLOW DEPTH(FEET) =   1.35   TRAVEL TIME(MIN.) =   8.60
  Tc(MIN.) =   71.74
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1479.39     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =      20.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.35   FLOW VELOCITY(FEET/SEC.) =   3.66
```

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 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.355
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      165.18      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.65
 AVERAGE FLOW DEPTH(FEET) =   1.36   TRAVEL TIME(MIN.) =  13.08
 Tc(MIN.) =   84.82
 SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   1644.57     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =      20.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =   3.65
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.339
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      433.73      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.45
```



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 AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   8.91
 Tc(MIN.) =   93.73
 SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   2078.30     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =      20.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.39   FLOW VELOCITY(FEET/SEC.) =   3.45
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.313
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      265.42      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.35
 AVERAGE FLOW DEPTH(FEET) =   1.41   TRAVEL TIME(MIN.) =  13.73
 Tc(MIN.) =  107.46
 SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   2343.72     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =      20.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   3.35
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```

```
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.292
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       97.46      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.75
 AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =  11.64
 Tc(MIN.) =  119.10
 SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   2441.18     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =      20.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   2.75
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2710.13   CHANNEL SLOPE =  0.0219
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.277
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.83      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.94
 AVERAGE FLOW DEPTH(FEET) =   1.51   TRAVEL TIME(MIN.) =  15.34
 Tc(MIN.) =  134.44
 SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   2495.01     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =      20.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
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```
 DEPTH(FEET) =  1.51   FLOW VELOCITY(FEET/SEC.) =   2.94
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P401XX02.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1       26.02   43.27  0.60( 0.60) 1.00     607.9   40130.00
     2       25.27   47.99  0.60( 0.60) 1.00     654.2   40100.00
   TOTAL AREA(ACRES) =      654.2

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1       20.08  134.44    0.277  0.60( 0.60) 1.00    2495.0   11900.00
     2       19.46  143.09    0.269  0.60( 0.60) 1.00    2572.1   11910.00
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1       26.02   43.27    0.493  0.60( 0.60) 1.00     607.9   40130.00
     2       25.27   47.99    0.466  0.60( 0.60) 1.00     654.2   40100.00
 LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1       37.54   43.27    0.493  0.60( 0.60) 1.00    1411.0   40130.00
     2       37.34   47.99    0.466  0.60( 0.60) 1.00    1544.9   40100.00
     3       35.09  134.44    0.277  0.60( 0.60) 1.00    3149.2   11900.00
     4       34.04  143.09    0.269  0.60( 0.60) 1.00    3226.4   11910.00
   TOTAL AREA(ACRES) =      3226.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       37.54  Tc(MIN.) =   43.272
 EFFECTIVE AREA(ACRES) =   1410.97  AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3226.4
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      37.54
  FLOW VELOCITY(FEET/SEC.) =   2.98   FLOW DEPTH(FEET) =   2.05
  TRAVEL TIME(MIN.) =   5.51   Tc(MIN.) =   48.78
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   29253.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.78
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.40      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     1.000     -
  USER-DEFINED               -        1.50      0.60     1.000     -
  USER-DEFINED               -        1.30      0.60     1.000     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1419.37   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.78
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1419.87   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.78
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.60     1.000     -
  USER-DEFINED               -        0.70      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     0.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    0.08
  EFFECTIVE AREA(ACRES) =   1421.87   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.448
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.01      0.60     0.984     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.25
  AVERAGE FLOW DEPTH(FEET) =   1.72   TRAVEL TIME(MIN.) =   2.54
  Tc(MIN.) =   51.32
  SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =    0.50
  EFFECTIVE AREA(ACRES) =   1499.88     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.72   FLOW VELOCITY(FEET/SEC.) =   4.23
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29900.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   51.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.448
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1501.58   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.405
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  USER-DEFINED               -        8.18      0.60     0.890     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.84
  AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   7.76
  Tc(MIN.) =   59.07
  SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    0.33
  EFFECTIVE AREA(ACRES) =   1509.76     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.10   FLOW VELOCITY(FEET/SEC.) =   2.83
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   31223.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   59.07
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.405
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.90      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1512.26   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =      37.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S18X02.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 368.65 | 67.72 | 0.60( 0.60) | 0.99 | 5288.9 | 11831.00 |
| 2 | 465.61 | 93.02 | 0.60( 0.60) | 0.99 | 7637.9 | 11530.00 |
| 3 | 535.78 | 108.89 | 0.60( 0.60) | 0.99 | 9918.6 | 11701.00 |
| 4 | 556.64 | 113.96 | 0.60( 0.60) | 0.99 | 10678.6 | 11000.00 |
| 5 | 648.54 | 131.44 | 0.60( 0.60) | 1.00 | 14702.7 | 11350.00 |
| 6 | 669.95 | 137.84 | 0.60( 0.60) | 1.00 | 16212.5 | 10850.00 |
| 7 | 634.45 | 145.72 | 0.60( 0.60) | 1.00 | 17563.5 | 10800.00 |
| 8 | 586.10 | 152.52 | 0.60( 0.60) | 1.00 | 18539.6 | 11220.00 |
| 9 | 519.45 | 163.12 | 0.60( 0.60) | 1.00 | 19646.2 | 10910.00 |
| 10 | 469.53 | 171.24 | 0.60( 0.60) | 1.00 | 20293.7 | 10630.00 |
| 11 | 347.01 | 209.19 | 0.60( 0.60) | 1.00 | 24538.0 | 10600.00 |
| 12 | 331.29 | 220.41 | 0.60( 0.60) | 1.00 | 26174.2 | 11600.00 |
| 13 | 322.91 | 238.24 | 0.60( 0.60) | 1.00 | 28033.8 | 10710.00 |
| 14 | 317.31 | 246.05 | 0.60( 0.60) | 1.00 | 28544.1 | 10410.00 |
| 15 | 303.17 | 267.47 | 0.60( 0.60) | 1.00 | 29747.0 | 10700.00 |
| 16 | 301.61 | 284.97 | 0.60( 0.60) | 1.00 | 30768.1 | 10200.00 |
| 17 | 295.49 | 303.27 | 0.60( 0.60) | 1.00 | 31516.6 | 10320.00 |
| 18 | 293.33 | 307.96 | 0.60( 0.60) | 1.00 | 31656.1 | 10300.00 |
| 19 | 283.27 | 326.33 | 0.60( 0.60) | 1.00 | 31924.4 | 10210.00 |
| 20 | 238.59 | 442.68 | 0.60( 0.60) | 1.00 | 32916.6 | 10100.00 |

TOTAL AREA(ACRES) = 32916.6

**********

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: S25X02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 125.40 | 141.27 | 0.60( 0.59) | 0.99 | 4854.0 | 12500.00 |
| 2 | 161.45 | 169.35 | 0.60( 0.59) | 0.99 | 6554.4 | 12300.00 |
| 3 | 161.10 | 174.44 | 0.60( 0.59) | 0.99 | 6936.3 | 12330.00 |
| 4 | 157.88 | 201.19 | 0.60( 0.59) | 0.98 | 8762.3 | 12410.00 |
| 5 | 155.88 | 214.55 | 0.60( 0.59) | 0.98 | 9659.4 | 12400.00 |
| 6 | 155.08 | 218.12 | 0.60( 0.59) | 0.98 | 9844.2 | 12211.00 |
| 7 | 166.76 | 226.18 | 0.60( 0.59) | 0.98 | 10504.5 | 12201.00 |
| 8 | 174.86 | 233.49 | 0.60( 0.58) | 0.97 | 10953.4 | 12261.00 |
| 9 | 174.65 | 235.08 | 0.60( 0.58) | 0.98 | 11005.7 | 12111.00 |
| 10 | 174.14 | 239.69 | 0.60( 0.59) | 0.98 | 11204.7 | 12231.00 |
| 11 | 171.80 | 258.00 | 0.60( 0.59) | 0.98 | 11864.4 | 12101.10 |
| 12 | 151.73 | 298.09 | 0.60( 0.59) | 0.98 | 13091.3 | 12010.00 |
| 13 | 99.71 | 374.11 | 0.60( 0.59) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

**********

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 125.40 | 141.27 | 0.60( 0.59) | 0.99 | 4854.0 | 12500.00 |



| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 161.45 | 169.35 | 0.60( 0.59) | 0.99 | 6554.4 | 12300.00 |
| 3 | 161.10 | 174.44 | 0.60( 0.59) | 0.99 | 6936.3 | 12330.00 |
| 4 | 157.88 | 201.19 | 0.60( 0.59) | 0.98 | 8762.3 | 12410.00 |
| 5 | 155.88 | 214.55 | 0.60( 0.59) | 0.98 | 9659.4 | 12400.00 |
| 6 | 155.08 | 218.12 | 0.60( 0.59) | 0.98 | 9844.2 | 12211.00 |
| 7 | 166.76 | 226.18 | 0.60( 0.59) | 0.98 | 10504.5 | 12201.00 |
| 8 | 174.86 | 233.49 | 0.60( 0.58) | 0.97 | 10953.4 | 12261.00 |
| 9 | 174.65 | 235.08 | 0.60( 0.58) | 0.98 | 11005.7 | 12111.00 |
| 10 | 174.14 | 239.69 | 0.60( 0.59) | 0.98 | 11204.7 | 12231.00 |
| 11 | 171.80 | 258.00 | 0.60( 0.59) | 0.98 | 11864.4 | 12101.10 |
| 12 | 151.73 | 298.09 | 0.60( 0.59) | 0.98 | 13091.3 | 12010.00 |
| 13 | 99.71 | 374.11 | 0.60( 0.59) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

**********

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 125.40 | 141.27 | 0.271 | 0.60( 0.59) | 0.99 | 4854.0 | 12500.00 |
| 2 | 161.45 | 169.35 | 0.246 | 0.60( 0.59) | 0.99 | 6554.4 | 12300.00 |
| 3 | 161.10 | 174.44 | 0.241 | 0.60( 0.59) | 0.99 | 6936.3 | 12330.00 |
| 4 | 157.88 | 201.19 | 0.229 | 0.60( 0.59) | 0.98 | 8762.3 | 12410.00 |
| 5 | 155.88 | 214.55 | 0.225 | 0.60( 0.59) | 0.98 | 9659.4 | 12400.00 |
| 6 | 155.08 | 218.12 | 0.224 | 0.60( 0.59) | 0.98 | 9844.2 | 12211.00 |
| 7 | 166.76 | 226.18 | 0.222 | 0.60( 0.59) | 0.98 | 10504.5 | 12201.00 |
| 8 | 174.86 | 233.49 | 0.219 | 0.60( 0.58) | 0.97 | 10953.4 | 12261.00 |
| 9 | 174.65 | 235.08 | 0.219 | 0.60( 0.58) | 0.98 | 11005.7 | 12111.00 |
| 10 | 174.14 | 239.69 | 0.217 | 0.60( 0.59) | 0.98 | 11204.7 | 12231.00 |
| 11 | 171.80 | 258.00 | 0.212 | 0.60( 0.59) | 0.98 | 11864.4 | 12101.10 |
| 12 | 151.73 | 298.09 | 0.199 | 0.60( 0.59) | 0.98 | 13091.3 | 12010.00 |
| 13 | 99.71 | 374.11 | 0.178 | 0.60( 0.59) | 0.98 | 13237.1 | 12000.00 |

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 368.65 | 67.72 | 0.386 | 0.60( 0.60) | 0.99 | 5288.9 | 11831.00 |
| 2 | 465.61 | 93.02 | 0.340 | 0.60( 0.60) | 0.99 | 7637.9 | 11530.00 |
| 3 | 535.78 | 108.89 | 0.311 | 0.60( 0.60) | 0.99 | 9918.6 | 11701.00 |
| 4 | 556.64 | 113.96 | 0.301 | 0.60( 0.60) | 0.99 | 10678.6 | 11000.00 |
| 5 | 648.54 | 131.44 | 0.280 | 0.60( 0.60) | 1.00 | 14702.7 | 11350.00 |
| 6 | 669.95 | 137.84 | 0.274 | 0.60( 0.60) | 1.00 | 16212.5 | 10850.00 |
| 7 | 634.45 | 145.72 | 0.267 | 0.60( 0.60) | 1.00 | 17563.5 | 10800.00 |
| 8 | 586.10 | 152.52 | 0.261 | 0.60( 0.60) | 1.00 | 18539.6 | 11220.00 |
| 9 | 519.45 | 163.12 | 0.251 | 0.60( 0.60) | 1.00 | 19646.2 | 10910.00 |
| 10 | 469.53 | 171.24 | 0.244 | 0.60( 0.60) | 1.00 | 20293.7 | 10630.00 |
| 11 | 347.01 | 209.19 | 0.227 | 0.60( 0.60) | 1.00 | 24538.0 | 10600.00 |
| 12 | 331.29 | 220.41 | 0.223 | 0.60( 0.60) | 1.00 | 26174.2 | 11600.00 |
| 13 | 322.91 | 238.24 | 0.218 | 0.60( 0.60) | 1.00 | 28033.8 | 10710.00 |
| 14 | 317.31 | 246.05 | 0.215 | 0.60( 0.60) | 1.00 | 28544.1 | 10410.00 |
| 15 | 303.17 | 267.47 | 0.209 | 0.60( 0.60) | 1.00 | 29747.0 | 10700.00 |
| 16 | 301.61 | 284.97 | 0.203 | 0.60( 0.60) | 1.00 | 30768.1 | 10200.00 |
| 17 | 295.49 | 303.27 | 0.198 | 0.60( 0.60) | 1.00 | 31516.6 | 10320.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18 | 293.33 | 307.96 | 0.196 | 0.60( 0.60) | 1.00 | 31656.1 | 10300.00 |
| 19 | 283.27 | 326.33 | 0.190 | 0.60( 0.60) | 1.00 | 31924.4 | 10210.00 |
| 20 | 238.59 | 442.68 | 0.171 | 0.60( 0.60) | 1.00 | 32916.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 454.34 | 67.72 | 0.386 | 0.60( 0.60) | 0.99 | 7615.8 | 11831.00 |
| 2 | 569.38 | 93.02 | 0.340 | 0.60( 0.60) | 0.99 | 10834.1 | 11530.00 |
| 3 | 646.68 | 108.89 | 0.311 | 0.60( 0.60) | 0.99 | 13660.2 | 11701.00 |
| 4 | 669.16 | 113.96 | 0.301 | 0.60( 0.60) | 0.99 | 14594.1 | 11000.00 |
| 5 | 769.03 | 131.44 | 0.280 | 0.60( 0.60) | 0.99 | 19219.0 | 11350.00 |
| 6 | 793.71 | 137.84 | 0.274 | 0.60( 0.60) | 0.99 | 20948.8 | 10850.00 |
| 7 | 779.92 | 141.27 | 0.271 | 0.60( 0.60) | 0.99 | 21653.9 | 12500.00 |
| 8 | 765.57 | 145.72 | 0.267 | 0.60( 0.60) | 0.99 | 22687.0 | 10800.00 |
| 9 | 725.95 | 152.52 | 0.261 | 0.60( 0.60) | 0.99 | 24074.8 | 11220.00 |
| 10 | 672.92 | 163.12 | 0.251 | 0.60( 0.60) | 0.99 | 25823.7 | 10910.00 |
| 11 | 642.64 | 169.35 | 0.246 | 0.60( 0.60) | 0.99 | 26696.9 | 12300.00 |
| 12 | 630.86 | 171.24 | 0.244 | 0.60( 0.60) | 0.99 | 26990.1 | 10630.00 |
| 13 | 620.31 | 174.44 | 0.241 | 0.60( 0.60) | 0.99 | 27587.8 | 12330.00 |
| 14 | 530.72 | 201.19 | 0.229 | 0.60( 0.60) | 0.99 | 32405.3 | 12410.00 |
| 15 | 503.69 | 209.19 | 0.227 | 0.60( 0.60) | 0.99 | 33837.6 | 10600.00 |
| 16 | 495.39 | 214.55 | 0.225 | 0.60( 0.60) | 0.99 | 34978.5 | 12400.00 |
| 17 | 489.58 | 218.12 | 0.224 | 0.60( 0.59) | 0.99 | 35684.0 | 12211.00 |
| 18 | 489.69 | 220.41 | 0.223 | 0.60( 0.59) | 0.99 | 36206.2 | 11600.00 |
| 19 | 495.34 | 226.18 | 0.222 | 0.60( 0.59) | 0.99 | 37280.7 | 12201.00 |
| 20 | 500.01 | 233.49 | 0.219 | 0.60( 0.59) | 0.99 | 38491.2 | 12261.00 |
| 21 | 499.05 | 235.08 | 0.219 | 0.60( 0.59) | 0.99 | 38709.5 | 12111.00 |
| 22 | 497.21 | 238.24 | 0.218 | 0.60( 0.59) | 0.99 | 39176.2 | 10710.00 |
| 23 | 496.02 | 239.69 | 0.217 | 0.60( 0.59) | 0.99 | 39332.8 | 12231.00 |
| 24 | 490.64 | 246.05 | 0.215 | 0.60( 0.59) | 0.99 | 39977.8 | 10410.00 |
| 25 | 481.22 | 258.00 | 0.212 | 0.60( 0.59) | 0.99 | 41079.8 | 12101.10 |
| 26 | 470.23 | 267.47 | 0.209 | 0.60( 0.59) | 0.99 | 41901.2 | 10700.00 |
| 27 | 459.92 | 284.97 | 0.203 | 0.60( 0.59) | 0.99 | 43457.9 | 10200.00 |
| 28 | 448.96 | 298.09 | 0.199 | 0.60( 0.59) | 0.99 | 44396.1 | 12010.00 |
| 29 | 443.68 | 303.27 | 0.198 | 0.60( 0.59) | 0.99 | 44617.8 | 10320.00 |
| 30 | 438.31 | 307.96 | 0.196 | 0.60( 0.59) | 0.99 | 44766.3 | 10300.00 |
| 31 | 415.69 | 326.33 | 0.190 | 0.60( 0.60) | 0.99 | 45069.8 | 10210.00 |
| 32 | 364.64 | 374.11 | 0.178 | 0.60( 0.60) | 0.99 | 45568.9 | 12000.00 |
| 33 | 333.92 | 442.68 | 0.171 | 0.60( 0.60) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 793.71 Tc(MIN.) = 137.844
EFFECTIVE AREA(ACRES) = 20948.83 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110



CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.273
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.60 | 0.987 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 793.73
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.69
AVERAGE FLOW DEPTH(FEET) = 5.86 TRAVEL TIME(MIN.) = 1.15
Tc(MIN.) = 139.00
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 0.05
EFFECTIVE AREA(ACRES) = 20963.20 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 793.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 5.86 FLOW VELOCITY(FEET/SEC.) = 7.69
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

**********
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 454.34 | 69.05 | 0.384 | 0.60( 0.60) | 0.99 | 7630.2 | 11831.00 |
| 2 | 569.38 | 94.27 | 0.338 | 0.60( 0.60) | 0.99 | 10848.4 | 11530.00 |
| 3 | 646.68 | 110.11 | 0.308 | 0.60( 0.60) | 0.99 | 13674.5 | 11701.00 |
| 4 | 669.16 | 115.16 | 0.299 | 0.60( 0.60) | 0.99 | 14608.5 | 11000.00 |
| 5 | 769.03 | 132.60 | 0.279 | 0.60( 0.60) | 0.99 | 19233.4 | 11350.00 |
| 6 | 793.71 | 139.00 | 0.273 | 0.60( 0.60) | 0.99 | 20963.2 | 10850.00 |
| 7 | 779.92 | 142.43 | 0.270 | 0.60( 0.60) | 0.99 | 21668.2 | 12500.00 |
| 8 | 765.57 | 146.88 | 0.266 | 0.60( 0.60) | 0.99 | 22701.4 | 10800.00 |
| 9 | 725.95 | 153.70 | 0.260 | 0.60( 0.60) | 0.99 | 24089.2 | 11220.00 |
| 10 | 672.92 | 164.33 | 0.250 | 0.60( 0.60) | 0.99 | 25838.1 | 10910.00 |
| 11 | 642.64 | 170.56 | 0.244 | 0.60( 0.60) | 0.99 | 26711.3 | 12300.00 |
| 12 | 630.86 | 172.47 | 0.243 | 0.60( 0.60) | 0.99 | 27004.5 | 10630.00 |
| 13 | 620.31 | 175.67 | 0.240 | 0.60( 0.60) | 0.99 | 27602.2 | 12330.00 |
| 14 | 530.72 | 202.46 | 0.229 | 0.60( 0.60) | 0.99 | 32419.7 | 12410.00 |
| 15 | 503.69 | 210.48 | 0.227 | 0.60( 0.60) | 0.99 | 33852.0 | 10600.00 |
| 16 | 495.39 | 215.85 | 0.225 | 0.60( 0.60) | 0.99 | 34992.9 | 12400.00 |
| 17 | 489.58 | 219.42 | 0.224 | 0.60( 0.59) | 0.99 | 35698.4 | 12211.00 |
| 18 | 489.69 | 221.71 | 0.223 | 0.60( 0.59) | 0.99 | 36220.6 | 11600.00 |
| 19 | 495.34 | 227.48 | 0.221 | 0.60( 0.59) | 0.99 | 37295.0 | 12201.00 |
| 20 | 500.01 | 234.78 | 0.219 | 0.60( 0.59) | 0.99 | 38505.6 | 12261.00 |
| 21 | 499.05 | 236.37 | 0.218 | 0.60( 0.59) | 0.99 | 38723.9 | 12111.00 |
| 22 | 497.21 | 239.54 | 0.217 | 0.60( 0.59) | 0.99 | 39190.6 | 10710.00 |

```
   23      496.02  240.98    0.217  0.60( 0.59) 0.99   39347.2   12231.00
   24      490.64  247.35    0.215  0.60( 0.59) 0.99   39992.2   10410.00
   25      481.22  259.31    0.211  0.60( 0.59) 0.99   41094.2   12101.10
   26      470.23  268.79    0.208  0.60( 0.59) 0.99   41915.6   10700.00
   27      459.92  286.29    0.203  0.60( 0.59) 0.99   43472.2   10200.00
   28      448.96  299.42    0.199  0.60( 0.59) 0.99   44410.5   12010.00
   29      443.68  304.60    0.197  0.60( 0.59) 0.99   44632.2   10320.00
   30      438.31  309.30    0.196  0.60( 0.59) 0.99   44780.7   10300.00
   31      415.69  327.68    0.190  0.60( 0.60) 0.99   45084.2   10210.00
   32      364.64  375.51    0.178  0.60( 0.60) 0.99   45583.3   12000.00
   33      333.92  444.11    0.170  0.60( 0.60) 0.99   46168.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  11929.00 =   98400.52 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       37.54   59.07    0.405  0.60( 0.60) 1.00    1512.3   40130.00
    2       37.34   63.82    0.393  0.60( 0.60) 1.00    1646.2   40100.00
    3       35.09  150.49    0.263  0.60( 0.60) 1.00    3250.5   11900.00
    4       34.04  159.28    0.255  0.60( 0.60) 1.00    3327.6   11910.00
LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   31223.27 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      447.92   59.07    0.405  0.60( 0.60) 0.99    8040.4   40130.00
    2      467.58   63.82    0.393  0.60( 0.60) 0.99    8698.7   40100.00
    3      491.55   69.05    0.384  0.60( 0.60) 0.99    9373.2   11831.00
    4      605.93   94.27    0.338  0.60( 0.60) 0.99   13058.3   11530.00
    5      682.82  110.11    0.308  0.60( 0.60) 0.99   16177.5   11701.00
    6      705.17  115.16    0.299  0.60( 0.60) 0.99   17205.0   11000.00
    7      804.59  132.60    0.279  0.60( 0.60) 0.99   22152.7   11350.00
    8      829.10  139.00    0.273  0.60( 0.60) 0.99   24000.9   10850.00
    9      815.22  142.43    0.270  0.60( 0.60) 0.99   24769.4   12500.00
   10      800.75  146.88    0.266  0.60( 0.60) 0.99   25885.1   10800.00
   11      779.66  150.49    0.263  0.60( 0.60) 0.99   26687.4   11900.00
   12      760.65  153.70    0.260  0.60( 0.60) 0.99   27367.8   11220.00
   13      732.14  159.28    0.255  0.60( 0.60) 0.99   28335.4   11910.00
   14      706.35  164.33    0.250  0.60( 0.60) 0.99   29165.7   10910.00
   15      675.33  170.56    0.244  0.60( 0.60) 0.99   30038.9   12300.00
   16      663.31  172.47    0.243  0.60( 0.60) 0.99   30332.2   10630.00
   17      652.38  175.67    0.240  0.60( 0.60) 0.99   30929.8   12330.00
   18      561.34  202.46    0.229  0.60( 0.60) 0.99   35747.4   12410.00
   19      533.97  210.48    0.227  0.60( 0.60) 0.99   37179.6   10600.00
   20      525.44  215.85    0.225  0.60( 0.60) 0.99   38320.6   12400.00
   21      519.49  219.42    0.224  0.60( 0.60) 0.99   39026.0   12211.00
   22      519.50  221.71    0.223  0.60( 0.60) 0.99   39548.2   11600.00
   23      524.91  227.48    0.221  0.60( 0.59) 0.99   40622.7   12201.00
   24      529.28  234.78    0.219  0.60( 0.59) 0.99   41833.3   12261.00
   25      528.26  236.37    0.218  0.60( 0.59) 0.99   42051.5   12111.00
   26      526.28  239.54    0.217  0.60( 0.59) 0.99   42518.2   10710.00
   27      525.03  240.98    0.217  0.60( 0.59) 0.99   42674.8   12231.00
   28      519.39  247.35    0.215  0.60( 0.59) 0.99   43319.9   10410.00
   29      509.47  259.31    0.211  0.60( 0.59) 0.99   44421.8   12101.10
   30      498.09  268.79    0.208  0.60( 0.59) 0.99   45243.2   10700.00
   31      487.05  286.29    0.203  0.60( 0.60) 0.99   46799.9   10200.00
   32      475.54  299.42    0.199  0.60( 0.60) 0.99   47738.1   12010.00
   33      470.05  304.60    0.197  0.60( 0.60) 0.99   47959.9   10320.00
```



```
   34      464.49  309.30    0.196  0.60( 0.60) 0.99   48108.4   10300.00
   35      441.09  327.68    0.190  0.60( 0.60) 0.99   48411.9   10210.00
   36      388.46  375.51    0.178  0.60( 0.60) 0.99   48910.9   12000.00
   37      356.70  444.11    0.170  0.60( 0.60) 0.99   49495.7   10100.00
  TOTAL AREA(ACRES) =     49495.7

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      829.10  Tc(MIN.) =  138.997
 EFFECTIVE AREA(ACRES) =  24000.90  AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    49495.7
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  11929.00 =   98400.52 FEET.
================================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =    49495.7  TC(MIN.) =    139.00
 EFFECTIVE AREA(ACRES) =  24000.90  AREA-AVERAGED Fm(INCH/HR)=  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap = 0.995
 PEAK FLOW RATE(CFS)   =     829.10

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      447.92   59.07    0.405  0.60( 0.60) 0.99    8040.4   40130.00
     2      467.58   63.82    0.393  0.60( 0.60) 0.99    8698.7   40100.00
     3      491.55   69.05    0.384  0.60( 0.60) 0.99    9373.2   11831.00
     4      605.93   94.27    0.338  0.60( 0.60) 0.99   13058.3   11530.00
     5      682.82  110.11    0.308  0.60( 0.60) 0.99   16177.5   11701.00
     6      705.17  115.16    0.299  0.60( 0.60) 0.99   17205.0   11000.00
     7      804.59  132.60    0.279  0.60( 0.60) 0.99   22152.7   11350.00
     8      829.10  139.00    0.273  0.60( 0.60) 0.99   24000.9   10850.00
     9      815.22  142.43    0.270  0.60( 0.60) 0.99   24769.4   12500.00
    10      800.75  146.88    0.266  0.60( 0.60) 0.99   25885.1   10800.00
    11      779.66  150.49    0.263  0.60( 0.60) 0.99   26687.4   11900.00
    12      760.65  153.70    0.260  0.60( 0.60) 0.99   27367.8   11220.00
    13      732.14  159.28    0.255  0.60( 0.60) 0.99   28335.4   11910.00
    14      706.35  164.33    0.250  0.60( 0.60) 0.99   29165.7   10910.00
    15      675.33  170.56    0.244  0.60( 0.60) 0.99   30038.9   12300.00
    16      663.31  172.47    0.243  0.60( 0.60) 0.99   30332.2   10630.00
    17      652.38  175.67    0.240  0.60( 0.60) 0.99   30929.8   12330.00
    18      561.34  202.46    0.229  0.60( 0.60) 0.99   35747.4   12410.00
    19      533.97  210.48    0.227  0.60( 0.60) 0.99   37179.6   10600.00
    20      525.44  215.85    0.225  0.60( 0.60) 0.99   38320.6   12400.00
    21      519.49  219.42    0.224  0.60( 0.60) 0.99   39026.0   12211.00
    22      519.50  221.71    0.223  0.60( 0.60) 0.99   39548.2   11600.00
    23      524.91  227.48    0.221  0.60( 0.59) 0.99   40622.7   12201.00
    24      529.28  234.78    0.219  0.60( 0.59) 0.99   41833.3   12261.00
    25      528.26  236.37    0.218  0.60( 0.59) 0.99   42051.5   12111.00
    26      526.28  239.54    0.217  0.60( 0.59) 0.99   42518.2   10710.00
    27      525.03  240.98    0.217  0.60( 0.59) 0.99   42674.8   12231.00
    28      519.39  247.35    0.215  0.60( 0.59) 0.99   43319.9   10410.00
    29      509.47  259.31    0.211  0.60( 0.59) 0.99   44421.8   12101.10
    30      498.09  268.79    0.208  0.60( 0.59) 0.99   45243.2   10700.00
    31      487.05  286.29    0.203  0.60( 0.60) 0.99   46799.9   10200.00
    32      475.54  299.42    0.199  0.60( 0.60) 0.99   47738.1   12010.00
    33      470.05  304.60    0.197  0.60( 0.60) 0.99   47959.9   10320.00
    34      464.49  309.30    0.196  0.60( 0.60) 0.99   48108.4   10300.00
    35      441.09  327.68    0.190  0.60( 0.60) 0.99   48411.9   10210.00
    36      388.46  375.51    0.178  0.60( 0.60) 0.99   48910.9   12000.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 37 | 356.70 | 444.11 | 0.170 | 0.60 | ( 0.60) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
 ***************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                             *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                  *
* 2-YR EV FEB 2023 ROKAMOTO                                              *
 ***************************************************************************

  FILE NAME: RI02EV26.DAT
  TIME/DATE OF STUDY: 11:44 02/15/2023
===========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
===========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.873
   2)   10.00;  1.249
   3)   15.00;  0.951
   4)   20.00;  0.777
   5)   25.00;  0.669
   6)   30.00;  0.593
   7)   40.00;  0.511
   8)   50.00;  0.454
   9)   60.00;  0.400
  10)   90.00;  0.346
  11)  120.00;  0.290
  12)  180.00;  0.236
  13)  360.00;  0.180
  14) 1200.00;  0.084
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

 ***************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
---------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
===========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU02EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      491.55   69.05  0.60( 0.60) 0.99    9373.2   11831.00
      2      605.93   94.27  0.60( 0.60) 0.99   13058.3   11530.00
      3      705.17  115.16  0.60( 0.60) 0.99   17205.0   11000.00
      4      804.59  132.60  0.60( 0.60) 0.99   22152.7   11350.00
      5      829.10  139.00  0.60( 0.60) 0.99   24000.9   10850.00
      6      800.75  146.88  0.60( 0.60) 0.99   25885.1   10800.00
      7      732.14  159.28  0.60( 0.60) 0.99   28335.4   11910.00
      8      675.33  170.56  0.60( 0.60) 0.99   30038.9   12300.00
      9      561.34  202.46  0.60( 0.60) 0.99   35747.4   12410.00
     10      533.97  210.48  0.60( 0.60) 0.99   37179.6   10600.00
     11      524.91  227.48  0.60( 0.59) 0.99   40622.7   12201.00
     12      529.28  234.78  0.60( 0.59) 0.99   41833.3   12261.00
     13      519.39  247.35  0.60( 0.59) 0.99   43319.9   10410.00
     14      509.47  259.31  0.60( 0.59) 0.99   44421.8   12101.10
     15      498.09  268.79  0.60( 0.59) 0.99   45243.2   10700.00
     16      487.05  286.29  0.60( 0.60) 0.99   46799.9   10200.00
     17      475.54  299.42  0.60( 0.60) 0.99   47738.1   12010.00
     18      441.09  327.68  0.60( 0.60) 0.99   48411.9   10210.00
     19      388.46  375.51  0.60( 0.60) 0.99   48910.9   12000.00
     20      356.70  444.11  0.60( 0.60) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =    49495.7

 ***************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
---------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
===========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      491.55   69.05  0.60( 0.60) 0.99    9373.2   11831.00
      2      605.93   94.27  0.60( 0.60) 0.99   13058.3   11530.00
      3      705.17  115.16  0.60( 0.60) 0.99   17205.0   11000.00
      4      804.59  132.60  0.60( 0.60) 0.99   22152.7   11350.00
      5      829.10  139.00  0.60( 0.60) 0.99   24000.9   10850.00
      6      800.75  146.88  0.60( 0.60) 0.99   25885.1   10800.00
      7      732.14  159.28  0.60( 0.60) 0.99   28335.4   11910.00
      8      675.33  170.56  0.60( 0.60) 0.99   30038.9   12300.00
      9      561.34  202.46  0.60( 0.60) 0.99   35747.4   12410.00
     10      533.97  210.48  0.60( 0.60) 0.99   37179.6   10600.00
     11      524.91  227.48  0.60( 0.59) 0.99   40622.7   12201.00
     12      529.28  234.78  0.60( 0.59) 0.99   41833.3   12261.00
     13      519.39  247.35  0.60( 0.59) 0.99   43319.9   10410.00
```

```
    14      509.47  259.31  0.60( 0.59) 0.99   44421.8   12101.10
    15      498.09  268.79  0.60( 0.59) 0.99   45243.2   10700.00
    16      487.05  286.29  0.60( 0.60) 0.99   46799.9   10200.00
    17      475.54  299.42  0.60( 0.60) 0.99   47738.1   12010.00
    18      441.09  327.68  0.60( 0.60) 0.99   48411.9   10210.00
    19      388.46  375.51  0.60( 0.60) 0.99   48910.9   12000.00
    20      356.70  444.11  0.60( 0.60) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.271
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.40      0.60     1.000     -
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -       11.50      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     829.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.76
  AVERAGE FLOW DEPTH(FEET) =   5.32   TRAVEL TIME(MIN.) =   2.51
  Tc(MIN.) =  141.50
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =  24015.00     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =     829.10
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.32   FLOW VELOCITY(FEET/SEC.) =   9.76
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O02EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
```



```
      1        8.27   20.70  0.60( 0.59) 0.98      51.1     600.00
   TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      491.55   71.90    0.379  0.60( 0.60) 0.99    9387.3   11831.00
      2      605.93   96.98    0.333  0.60( 0.60) 0.99   13072.4   11530.00
      3      705.17  117.77    0.294  0.60( 0.60) 0.99   17219.1   11000.00
      4      804.59  135.13    0.276  0.60( 0.60) 0.99   22166.8   11350.00
      5      829.10  141.50    0.271  0.60( 0.60) 0.99   24015.0   10850.00
      6      800.75  149.41    0.264  0.60( 0.60) 0.99   25899.2   10800.00
      7      732.14  161.86    0.252  0.60( 0.60) 0.99   28349.5   11910.00
      8      675.33  173.20    0.242  0.60( 0.60) 0.99   30053.0   12300.00
      9      561.34  205.22    0.228  0.60( 0.60) 0.99   35761.5   12410.00
     10      533.97  213.28    0.226  0.60( 0.60) 0.99   37193.7   10600.00
     11      524.91  230.29    0.220  0.60( 0.59) 0.99   40636.8   12201.00
     12      529.28  237.59    0.218  0.60( 0.59) 0.99   41847.4   12261.00
     13      519.39  250.16    0.214  0.60( 0.59) 0.99   43334.0   10410.00
     14      509.47  262.14    0.210  0.60( 0.59) 0.99   44435.9   12101.10
     15      498.09  271.63    0.207  0.60( 0.59) 0.99   45257.3   10700.00
     16      487.05  289.16    0.202  0.60( 0.60) 0.99   46814.0   10200.00
     17      475.54  302.30    0.198  0.60( 0.60) 0.99   47752.2   12010.00
     18      441.09  330.62    0.189  0.60( 0.60) 0.99   48426.0   10210.00
     19      388.46  378.54    0.178  0.60( 0.60) 0.99   48925.0   12000.00
     20      356.70  447.21    0.170  0.60( 0.60) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        8.27   20.70    0.762  0.60( 0.59) 0.98      51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      293.10   20.70    0.762  0.60( 0.60) 0.99    2754.3     600.00
      2      491.85   71.90    0.379  0.60( 0.60) 0.99    9438.4   11831.00
      3      606.19   96.98    0.333  0.60( 0.60) 0.99   13123.5   11530.00
      4      705.40  117.77    0.294  0.60( 0.60) 0.99   17270.2   11000.00
      5      804.80  135.13    0.276  0.60( 0.60) 0.99   22217.9   11350.00
      6      829.31  141.50    0.271  0.60( 0.60) 0.99   24066.1   10850.00
      7      800.96  149.41    0.264  0.60( 0.60) 0.99   25950.3   10800.00
      8      732.33  161.86    0.252  0.60( 0.60) 0.99   28400.6   11910.00
      9      675.52  173.20    0.242  0.60( 0.60) 0.99   30104.1   12300.00
     10      561.52  205.22    0.228  0.60( 0.60) 0.99   35812.6   12410.00
     11      534.15  213.28    0.226  0.60( 0.60) 0.99   37244.8   10600.00
     12      525.09  230.29    0.220  0.60( 0.59) 0.99   40687.9   12201.00
     13      529.45  237.59    0.218  0.60( 0.59) 0.99   41898.5   12261.00
     14      519.56  250.16    0.214  0.60( 0.59) 0.99   43385.1   10410.00
     15      509.64  262.14    0.210  0.60( 0.59) 0.99   44487.0   12101.10
```

```
    16      498.25  271.63    0.207  0.60( 0.59) 0.99   45308.4   10700.00
    17      487.20  289.16    0.202  0.60( 0.60) 0.99   46865.1   10200.00
    18      475.69  302.30    0.198  0.60( 0.60) 0.99   47803.3   12010.00
    19      441.24  330.62    0.189  0.60( 0.60) 0.99   48477.1   10210.00
    20      388.60  378.54    0.178  0.60( 0.60) 0.99   48976.1   12000.00
    21      356.83  447.21    0.170  0.60( 0.60) 0.99   49560.9   10100.00
   TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      829.31  Tc(MIN.) =  141.503
  EFFECTIVE AREA(ACRES) =  24066.10  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     829.31
  FLOW VELOCITY(FEET/SEC.) =   8.92   FLOW DEPTH(FEET) =   5.57
  TRAVEL TIME(MIN.) =   3.16   Tc(MIN.) =  144.66
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4E02EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      120.67   10.61  0.60( 0.31) 0.52     147.4     800.00
      2       98.94   14.81  0.60( 0.34) 0.57     167.3     818.00
      3       87.28   16.53  0.60( 0.35) 0.58     171.0     810.00
    TOTAL AREA(ACRES) =      171.0

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      293.10   24.80    0.673  0.60( 0.60) 0.99    2754.3     600.00
    2      491.85   75.49    0.372  0.60( 0.60) 0.99    9438.4   11831.00
    3      606.19  100.39    0.327  0.60( 0.60) 0.99   13123.5   11530.00
    4      705.40  121.06    0.289  0.60( 0.60) 0.99   17270.2   11000.00
    5      804.80  138.31    0.274  0.60( 0.60) 0.99   22217.9   11350.00
    6      829.31  144.66    0.268  0.60( 0.60) 0.99   24066.1   10850.00
    7      800.96  152.60    0.261  0.60( 0.60) 0.99   25950.3   10800.00
    8      732.33  165.12    0.249  0.60( 0.60) 0.99   28400.6   11910.00
    9      675.52  176.52    0.239  0.60( 0.60) 0.99   30104.1   12300.00
   10      561.52  208.71    0.227  0.60( 0.60) 0.99   35812.6   12410.00
   11      534.15  216.81    0.225  0.60( 0.60) 0.99   37244.8   10600.00
   12      525.09  233.83    0.219  0.60( 0.59) 0.99   40687.9   12201.00
   13      529.45  241.12    0.217  0.60( 0.59) 0.99   41898.5   12261.00
   14      519.56  253.71    0.213  0.60( 0.59) 0.99   43385.1   10410.00
   15      509.64  265.71    0.209  0.60( 0.59) 0.99   44487.0   12101.10
   16      498.25  275.22    0.206  0.60( 0.59) 0.99   45308.4   10700.00
   17      487.20  292.76    0.201  0.60( 0.60) 0.99   46865.1   10200.00
   18      475.69  305.92    0.197  0.60( 0.60) 0.99   47803.3   12010.00
   19      441.24  334.32    0.188  0.60( 0.60) 0.99   48477.1   10210.00
   20      388.60  382.36    0.177  0.60( 0.60) 0.99   48976.1   12000.00
   21      356.83  451.11    0.170  0.60( 0.60) 0.99   49560.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      120.67   10.61    1.213  0.60( 0.31) 0.52     147.4     800.00
    2       98.94   14.81    0.962  0.60( 0.34) 0.57     167.3     818.00
    3       87.28   16.53    0.898  0.60( 0.35) 0.58     171.0     810.00
LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      413.78   10.61    1.213  0.60( 0.56) 0.94    1325.0     800.00
    2      392.04   14.81    0.962  0.60( 0.57) 0.95    1812.2     818.00
    3      380.39   16.53    0.898  0.60( 0.57) 0.96    2007.0     810.00
    4      344.76   24.80    0.673  0.60( 0.58) 0.97    2925.3     600.00
    5      516.67   75.49    0.372  0.60( 0.59) 0.99    9609.4   11831.00
    6      627.97  100.39    0.327  0.60( 0.59) 0.99   13294.5   11530.00
    7      724.68  121.06    0.289  0.60( 0.59) 0.99   17441.2   11000.00
    8      823.04  138.31    0.274  0.60( 0.59) 0.99   22388.9   11350.00
    9      847.17  144.66    0.268  0.60( 0.59) 0.99   24237.1   10850.00
   10      818.34  152.60    0.261  0.60( 0.60) 0.99   26121.3   10800.00
   11      748.97  165.12    0.249  0.60( 0.60) 0.99   28571.6   11910.00
   12      691.47  176.52    0.239  0.60( 0.60) 0.99   30275.1   12300.00
   13      576.66  208.71    0.227  0.60( 0.59) 0.99   35983.6   12410.00
   14      549.13  216.81    0.225  0.60( 0.59) 0.99   37415.8   10600.00
   15      539.71  233.83    0.219  0.60( 0.59) 0.99   40858.9   12201.00
   16      543.92  241.12    0.217  0.60( 0.59) 0.99   42069.5   12261.00
   17      533.77  253.71    0.213  0.60( 0.59) 0.99   43556.1   10410.00
   18      523.60  265.71    0.209  0.60( 0.59) 0.99   44658.0   12101.10
   19      512.01  275.22    0.206  0.60( 0.59) 0.99   45479.4   10700.00
   20      500.61  292.76    0.201  0.60( 0.59) 0.99   47036.1   10200.00
   21      488.82  305.92    0.197  0.60( 0.59) 0.99   47974.3   12010.00
   22      453.78  334.32    0.188  0.60( 0.59) 0.99   48648.1   10210.00
   23      400.44  382.36    0.177  0.60( 0.59) 0.99   49147.1   12000.00
```

```
    24      368.15  451.11    0.170  0.60( 0.59) 0.99   49731.9   10100.00
   TOTAL AREA(ACRES) =     49731.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      847.17  Tc(MIN.) =  144.660
  EFFECTIVE AREA(ACRES) =  24237.10  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  144.66
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        1.30      0.60     1.000     -
  USER-DEFINED               -        1.30      0.60     0.850     -
  USER-DEFINED               -        1.40      0.60     0.100     -
  USER-DEFINED               -        1.70      0.60     0.900     -
  USER-DEFINED               -       12.40      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =    0.39
  EFFECTIVE AREA(ACRES) =  24255.40   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  144.66
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =  24282.30   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
```



```
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  144.66
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.40      0.60     1.000     -
  USER-DEFINED               -        0.40      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.70      0.60     0.850     -
  USER-DEFINED               -        0.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    0.03
  EFFECTIVE AREA(ACRES) =  24285.60   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  144.66
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.00      0.60     1.000     -
  USER-DEFINED               -        1.20      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     0.900     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  USER-DEFINED               -        2.10      0.60     0.900     -
  USER-DEFINED               -        2.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    0.09
  EFFECTIVE AREA(ACRES) =  24296.40   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  144.66
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.60      0.60     1.000     -
  USER-DEFINED               -        9.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =  24311.00   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     847.17
  FLOW VELOCITY(FEET/SEC.) =   7.57   FLOW DEPTH(FEET) =   6.11
  TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  146.61
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  146.61
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.70      0.60     1.000     -
  USER-DEFINED               -        1.30      0.60     0.850     -
  USER-DEFINED               -        1.30      0.60     0.900     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  USER-DEFINED               -        2.10      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
```



```
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    0.15
  EFFECTIVE AREA(ACRES) =  24318.80   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  146.61
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.20      0.60     1.000     -
  USER-DEFINED               -        3.50      0.60     1.000     -
  USER-DEFINED               -        6.10      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    0.22
  EFFECTIVE AREA(ACRES) =  24331.60   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =     847.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.00   CHANNEL SLOPE =  0.0088
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     847.17
  FLOW VELOCITY(FEET/SEC.) =   8.94   FLOW DEPTH(FEET) =   5.62
  TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =  150.63
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4F02EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE | |
|---|---|---|---|---|---|---|---|
| 1 | 222.53 | 11.09 | 0.60( 0.46) | 0.76 | 340.6 | 940.00 | |
| 2 | 221.70 | 11.29 | 0.60( 0.46) | 0.77 | 345.5 | 930.00 | |
| 3 | 176.56 | 15.44 | 0.60( 0.48) | 0.81 | 435.0 | 910.00 | |
| 4 | 122.82 | 20.68 | 0.60( 0.51) | 0.84 | 531.5 | 900.00 | |
| 5 | 113.09 | 21.88 | 0.60( 0.51) | 0.85 | 553.3 | 920.00 | |
| 6 | 112.26 | 21.97 | 0.60( 0.51) | 0.85 | 553.8 | 950.00 | |

TOTAL AREA(ACRES) = 553.8

**********

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 815.71 | 16.64 | 0.894 | 0.60( 0.56) | 0.94 | 1419.5 | 800.00 |
| 2 | 660.88 | 21.17 | 0.752 | 0.60( 0.57) | 0.95 | 1906.7 | 818.00 |
| 3 | 604.15 | 23.04 | 0.711 | 0.60( 0.57) | 0.96 | 2101.5 | 810.00 |
| 4 | 344.76 | 32.28 | 0.574 | 0.60( 0.58) | 0.97 | 3019.8 | 600.00 |
| 5 | 516.67 | 82.26 | 0.360 | 0.60( 0.59) | 0.99 | 9703.9 | 11831.00 |
| 6 | 627.97 | 106.83 | 0.315 | 0.60( 0.59) | 0.99 | 13389.0 | 11530.00 |
| 7 | 724.68 | 127.27 | 0.283 | 0.60( 0.59) | 0.99 | 17535.7 | 11000.00 |
| 8 | 823.04 | 144.33 | 0.268 | 0.60( 0.59) | 0.99 | 22483.4 | 11350.00 |
| 9 | 847.17 | 150.63 | 0.262 | 0.60( 0.59) | 0.99 | 24331.6 | 10850.00 |
| 10 | 818.34 | 158.63 | 0.255 | 0.60( 0.60) | 0.99 | 26215.8 | 10800.00 |
| 11 | 748.97 | 171.29 | 0.244 | 0.60( 0.60) | 0.99 | 28666.1 | 11910.00 |
| 12 | 691.47 | 182.81 | 0.235 | 0.60( 0.60) | 0.99 | 30369.6 | 12300.00 |
| 13 | 576.66 | 215.28 | 0.225 | 0.60( 0.59) | 0.99 | 36078.1 | 12410.00 |
| 14 | 549.13 | 223.47 | 0.222 | 0.60( 0.59) | 0.99 | 37510.3 | 10600.00 |
| 15 | 539.71 | 240.52 | 0.217 | 0.60( 0.59) | 0.99 | 40953.4 | 12201.00 |
| 16 | 543.92 | 247.80 | 0.215 | 0.60( 0.59) | 0.99 | 42164.0 | 12261.00 |
| 17 | 533.77 | 260.42 | 0.211 | 0.60( 0.59) | 0.99 | 43650.6 | 10410.00 |
| 18 | 523.60 | 272.45 | 0.207 | 0.60( 0.59) | 0.99 | 44752.5 | 12101.10 |
| 19 | 512.01 | 282.00 | 0.204 | 0.60( 0.59) | 0.99 | 45573.9 | 10700.00 |
| 20 | 500.61 | 299.57 | 0.199 | 0.60( 0.59) | 0.99 | 47130.6 | 10200.00 |
| 21 | 488.82 | 312.78 | 0.195 | 0.60( 0.59) | 0.99 | 48068.8 | 12010.00 |
| 22 | 453.78 | 341.31 | 0.186 | 0.60( 0.59) | 0.99 | 48742.6 | 10210.00 |
| 23 | 400.44 | 389.57 | 0.177 | 0.60( 0.59) | 0.99 | 49241.6 | 12000.00 |
| 24 | 368.15 | 458.47 | 0.169 | 0.60( 0.59) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.45 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 222.53 | 11.09 | 1.184 | 0.60( 0.46) | 0.76 | 340.6 | 940.00 |
| 2 | 221.70 | 11.29 | 1.172 | 0.60( 0.46) | 0.77 | 345.5 | 930.00 |
| 3 | 176.56 | 15.44 | 0.936 | 0.60( 0.48) | 0.81 | 435.0 | 910.00 |
| 4 | 122.82 | 20.68 | 0.762 | 0.60( 0.51) | 0.84 | 531.5 | 900.00 |
| 5 | 113.09 | 21.88 | 0.736 | 0.60( 0.51) | 0.85 | 553.3 | 920.00 |
| 6 | 112.26 | 21.97 | 0.735 | 0.60( 0.51) | 0.85 | 553.8 | 950.00 |

LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1038.23 | 11.09 | 1.184 | 0.60( 0.54) | 0.89 | 1286.5 | 940.00 |
| 2 | 1037.41 | 11.29 | 1.172 | 0.60( 0.54) | 0.90 | 1308.6 | 930.00 |
| 3 | 992.27 | 15.44 | 0.936 | 0.60( 0.54) | 0.91 | 1752.6 | 910.00 |
| 4 | 980.02 | 16.64 | 0.894 | 0.60( 0.55) | 0.91 | 1876.5 | 800.00 |
| 5 | 800.44 | 20.68 | 0.762 | 0.60( 0.56) | 0.93 | 2385.5 | 900.00 |
| 6 | 779.73 | 21.17 | 0.752 | 0.60( 0.56) | 0.93 | 2447.1 | 818.00 |
| 7 | 752.38 | 21.88 | 0.736 | 0.60( 0.56) | 0.93 | 2534.2 | 920.00 |
| 8 | 749.05 | 21.97 | 0.735 | 0.60( 0.56) | 0.93 | 2543.2 | 950.00 |
| 9 | 704.83 | 23.04 | 0.711 | 0.60( 0.56) | 0.94 | 2655.3 | 810.00 |
| 10 | 387.98 | 32.28 | 0.574 | 0.60( 0.57) | 0.95 | 3573.6 | 600.00 |
| 11 | 543.75 | 82.26 | 0.360 | 0.60( 0.59) | 0.98 | 10257.7 | 11831.00 |
| 12 | 651.64 | 106.83 | 0.315 | 0.60( 0.59) | 0.98 | 13942.8 | 11530.00 |
| 13 | 746.01 | 127.27 | 0.283 | 0.60( 0.59) | 0.99 | 18089.5 | 11000.00 |
| 14 | 843.22 | 144.33 | 0.268 | 0.60( 0.59) | 0.99 | 23037.2 | 11350.00 |
| 15 | 866.92 | 150.63 | 0.262 | 0.60( 0.59) | 0.99 | 24885.4 | 10850.00 |
| 16 | 837.55 | 158.63 | 0.255 | 0.60( 0.59) | 0.99 | 26769.6 | 10800.00 |
| 17 | 767.32 | 171.29 | 0.244 | 0.60( 0.59) | 0.99 | 29219.9 | 11910.00 |
| 18 | 709.16 | 182.81 | 0.235 | 0.60( 0.59) | 0.99 | 30923.4 | 12300.00 |
| 19 | 593.59 | 215.28 | 0.225 | 0.60( 0.59) | 0.99 | 36631.9 | 12410.00 |
| 20 | 565.87 | 223.47 | 0.222 | 0.60( 0.59) | 0.99 | 38064.1 | 10600.00 |
| 21 | 556.05 | 240.52 | 0.217 | 0.60( 0.59) | 0.99 | 41507.2 | 12201.00 |
| 22 | 560.09 | 247.80 | 0.215 | 0.60( 0.59) | 0.99 | 42717.8 | 12261.00 |
| 23 | 549.65 | 260.42 | 0.211 | 0.60( 0.59) | 0.99 | 44204.4 | 10410.00 |
| 24 | 539.19 | 272.45 | 0.207 | 0.60( 0.59) | 0.99 | 45306.3 | 12101.10 |
| 25 | 527.38 | 282.00 | 0.204 | 0.60( 0.59) | 0.99 | 46127.7 | 10700.00 |
| 26 | 515.57 | 299.57 | 0.199 | 0.60( 0.59) | 0.99 | 47684.4 | 10200.00 |
| 27 | 503.47 | 312.78 | 0.195 | 0.60( 0.59) | 0.99 | 48622.6 | 12010.00 |
| 28 | 467.76 | 341.31 | 0.186 | 0.60( 0.59) | 0.99 | 49296.4 | 10210.00 |
| 29 | 413.73 | 389.57 | 0.177 | 0.60( 0.59) | 0.99 | 49795.4 | 12000.00 |
| 30 | 380.84 | 458.47 | 0.169 | 0.60( 0.59) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1038.23 Tc(MIN.) = 11.086

EFFECTIVE AREA(ACRES) = 1286.54 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50380.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.45 FEET.

**********

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

---

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

==========

MAINLINE Tc(MIN.) = 11.09

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.30 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.60 | 0.850 | - |
| USER-DEFINED | - | 0.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.10 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 0.80 | 0.60 | 0.850 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666

SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 2.47

```
  EFFECTIVE AREA(ACRES) =   1290.04   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    50383.7       PEAK FLOW RATE(CFS) =    1038.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.09
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.184
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.60     1.000     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  USER-DEFINED               -        1.50      0.60     1.000     -
  USER-DEFINED               -        1.60      0.60     1.000     -
  USER-DEFINED               -        1.80      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    4.47
  EFFECTIVE AREA(ACRES) =   1298.54   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    50392.2       PEAK FLOW RATE(CFS) =    1038.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.09
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.184
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.30      0.60     1.000     -
  USER-DEFINED               -        3.70      0.60     1.000     -
  USER-DEFINED               -        3.90      0.60     1.000     -
  USER-DEFINED               -        5.90      0.60     1.000     -
  USER-DEFINED               -        9.10      0.60     1.000     -
  USER-DEFINED               -       20.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =   24.46
  EFFECTIVE AREA(ACRES) =   1345.04   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    50438.7       PEAK FLOW RATE(CFS) =    1038.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    50438.7  TC(MIN.) =     11.09
  EFFECTIVE AREA(ACRES) =   1345.04  AREA-AVERAGED Fm(INCH/HR)=  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap = 0.898
  PEAK FLOW RATE(CFS)   =    1038.23
```



```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1     1038.23   11.09    1.184  0.60( 0.54) 0.90    1345.0     940.00
     2     1037.41   11.29    1.172  0.60( 0.54) 0.90    1367.1     930.00
     3      992.27   15.44    0.936  0.60( 0.55) 0.91    1811.1     910.00
     4      980.02   16.64    0.894  0.60( 0.55) 0.91    1935.0     800.00
     5      800.44   20.68    0.762  0.60( 0.56) 0.93    2444.0     900.00
     6      779.73   21.17    0.752  0.60( 0.56) 0.93    2505.6     818.00
     7      752.38   21.88    0.736  0.60( 0.56) 0.93    2592.7     920.00
     8      749.05   21.97    0.735  0.60( 0.56) 0.93    2601.7     950.00
     9      704.83   23.04    0.711  0.60( 0.56) 0.94    2713.8     810.00
    10      387.98   32.28    0.574  0.60( 0.57) 0.95    3632.1     600.00
    11      543.75   82.26    0.360  0.60( 0.59) 0.98   10316.2   11831.00
    12      651.64  106.83    0.315  0.60( 0.59) 0.98   14001.3   11530.00
    13      746.01  127.27    0.283  0.60( 0.59) 0.99   18148.0   11000.00
    14      843.22  144.33    0.268  0.60( 0.59) 0.99   23095.8   11350.00
    15      866.92  150.63    0.262  0.60( 0.59) 0.99   24943.9   10850.00
    16      837.55  158.63    0.255  0.60( 0.59) 0.99   26828.1   10800.00
    17      767.32  171.29    0.244  0.60( 0.59) 0.99   29278.4   11910.00
    18      709.16  182.81    0.235  0.60( 0.59) 0.99   30981.9   12300.00
    19      593.59  215.28    0.225  0.60( 0.59) 0.99   36690.4   12410.00
    20      565.87  223.47    0.222  0.60( 0.59) 0.99   38122.6   10600.00
    21      556.05  240.52    0.217  0.60( 0.59) 0.99   41565.7   12201.00
    22      560.09  247.80    0.215  0.60( 0.59) 0.99   42776.3   12261.00
    23      549.65  260.42    0.211  0.60( 0.59) 0.99   44262.9   10410.00
    24      539.19  272.45    0.207  0.60( 0.59) 0.99   45364.8   12101.10
    25      527.38  282.00    0.204  0.60( 0.59) 0.99   46186.2   10700.00
    26      515.57  299.57    0.199  0.60( 0.59) 0.99   47742.9   10200.00
    27      503.47  312.78    0.195  0.60( 0.59) 0.99   48681.1   12010.00
    28      467.76  341.31    0.186  0.60( 0.59) 0.99   49354.9   10210.00
    29      413.73  389.57    0.177  0.60( 0.59) 0.99   49853.9   12000.00
    30      380.84  458.47    0.169  0.60( 0.59) 0.99   50438.7   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 2-YR EV FEB 2023 ROKAMOTO                                           *
 **********************************************************************

  FILE NAME: RI02EV27.DAT
  TIME/DATE OF STUDY: 11:50 02/15/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.857
   2)   10.00;  1.238
   3)   15.00;  0.945
   4)   20.00;  0.774
   5)   25.00;  0.667
   6)   30.00;  0.591
   7)   40.00;  0.510
   8)   50.00;  0.453
   9)   60.00;  0.399
  10)   90.00;  0.345
  11)  120.00;  0.290
  12)  180.00;  0.236
  13)  360.00;  0.180
  14) 1200.00;  0.083
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     1038.23   11.09  0.60( 0.54) 0.90    1345.0      940.00
      2      800.44   20.68  0.60( 0.56) 0.93    2444.0      900.00
      3      387.98   32.28  0.60( 0.57) 0.95    3632.1      600.00
      4      543.75   82.26  0.60( 0.59) 0.98   10316.2    11831.00
      5      651.64  106.83  0.60( 0.59) 0.98   14001.3    11530.00
      6      746.01  127.27  0.60( 0.59) 0.99   18148.0    11000.00
      7      866.92  150.63  0.60( 0.59) 0.99   24943.9    10850.00
      8      767.32  171.29  0.60( 0.59) 0.99   29278.4    11910.00
      9      709.16  182.81  0.60( 0.59) 0.99   30981.9    12300.00
     10      593.59  215.28  0.60( 0.59) 0.99   36690.4    12410.00
     11      565.87  223.47  0.60( 0.59) 0.99   38122.6    10600.00
     12      560.09  247.80  0.60( 0.59) 0.99   42776.3    12261.00
     13      549.65  260.42  0.60( 0.59) 0.99   44262.9    10410.00
     14      539.19  272.45  0.60( 0.59) 0.99   45364.8    12101.10
     15      527.38  282.00  0.60( 0.59) 0.99   46186.2    10700.00
     16      515.57  299.57  0.60( 0.59) 0.99   47742.9    10200.00
     17      503.47  312.78  0.60( 0.59) 0.99   48681.1    12010.00
     18      467.76  341.31  0.60( 0.59) 0.99   49354.9    10210.00
     19      413.73  389.57  0.60( 0.59) 0.99   49853.9    12000.00
     20      380.84  458.47  0.60( 0.59) 0.99   50438.7    10100.00
   TOTAL AREA(ACRES) =    50438.7

**************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     1038.23   11.09  0.60( 0.54) 0.90    1345.0      940.00
      2      800.44   20.68  0.60( 0.56) 0.93    2444.0      900.00
      3      387.98   32.28  0.60( 0.57) 0.95    3632.1      600.00
      4      543.75   82.26  0.60( 0.59) 0.98   10316.2    11831.00
      5      651.64  106.83  0.60( 0.59) 0.98   14001.3    11530.00
      6      746.01  127.27  0.60( 0.59) 0.99   18148.0    11000.00
      7      866.92  150.63  0.60( 0.59) 0.99   24943.9    10850.00
      8      767.32  171.29  0.60( 0.59) 0.99   29278.4    11910.00
      9      709.16  182.81  0.60( 0.59) 0.99   30981.9    12300.00
     10      593.59  215.28  0.60( 0.59) 0.99   36690.4    12410.00
     11      565.87  223.47  0.60( 0.59) 0.99   38122.6    10600.00
     12      560.09  247.80  0.60( 0.59) 0.99   42776.3    12261.00
     13      549.65  260.42  0.60( 0.59) 0.99   44262.9    10410.00
```

```
     14      539.19  272.45  0.60( 0.59) 0.99   45364.8   12101.10
     15      527.38  282.00  0.60( 0.59) 0.99   46186.2   10700.00
     16      515.57  299.57  0.60( 0.59) 0.99   47742.9   10200.00
     17      503.47  312.78  0.60( 0.59) 0.99   48681.1   12010.00
     18      467.76  341.31  0.60( 0.59) 0.99   49354.9   10210.00
     19      413.73  389.57  0.60( 0.59) 0.99   49853.9   12000.00
     20      380.84  458.47  0.60( 0.59) 0.99   50438.7   10100.00
    TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.038
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.60     0.500     -
  USER-DEFINED               -        0.90      0.60     0.850     -
  USER-DEFINED               -        3.40      0.60     0.100     -
  USER-DEFINED               -        3.60      0.60     1.000     -
  USER-DEFINED               -       10.10      0.60     0.850     -
  USER-DEFINED               -       17.40      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1046.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
  AVERAGE FLOW DEPTH(FEET) =   6.21   TRAVEL TIME(MIN.) =   2.32
  Tc(MIN.) =   13.40
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   16.98
  EFFECTIVE AREA(ACRES) =   1381.14     AREA-AVERAGED Fm(INCH/HR) =   0.54
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.90
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =    1038.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.18   FLOW VELOCITY(FEET/SEC.) =   9.05
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105862.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1038.23
  FLOW VELOCITY(FEET/SEC.) =   8.52   FLOW DEPTH(FEET) =   6.37
  TRAVEL TIME(MIN.) =   0.29   Tc(MIN.) =   13.69
```



```
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   13.69
  RAINFALL INTENSITY(INCH/HR) =   1.02
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =    1381.14
  TOTAL STREAM AREA(ACRES) =   50474.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    1038.23

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.009
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        6.56      0.60     1.000     0   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =      2.41

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.94      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.26
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.43
  AVERAGE FLOW DEPTH(FEET) =   0.57   TRAVEL TIME(MIN.) =   1.98
  Tc(MIN.) =   15.89
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =    7.63
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =       9.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =   7.07
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.73      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.09
  AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   2.11
  Tc(MIN.) =   18.01
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =    3.21
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      10.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =   7.89
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      105.64      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.23
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   2.33
  Tc(MIN.) =   20.33
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =   15.87
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =      23.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =   8.70
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.710
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      127.13      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   1.10   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   23.01
  SUBAREA AREA(ACRES) =   127.13       SUBAREA RUNOFF(CFS) =   12.55
  EFFECTIVE AREA(ACRES) =    281.00     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      281.0         PEAK FLOW RATE(CFS) =      27.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   8.03
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12720.00 =    5198.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.01
  RAINFALL INTENSITY(INCH/HR) =   0.71
  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     281.00
```

TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 27.73

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1038.23 | 13.69 | 1.022 | 0.60( 0.54) | 0.90 | 1381.1 | 940.00 |
| 1 | 800.44 | 23.47 | 0.700 | 0.60( 0.56) | 0.93 | 2480.1 | 900.00 |
| 1 | 387.98 | 35.62 | 0.545 | 0.60( 0.57) | 0.95 | 3668.2 | 600.00 |
| 1 | 543.75 | 85.33 | 0.353 | 0.60( 0.59) | 0.98 | 10352.3 | 11831.00 |
| 1 | 651.64 | 109.77 | 0.309 | 0.60( 0.59) | 0.98 | 14037.4 | 11530.00 |
| 1 | 746.01 | 130.10 | 0.281 | 0.60( 0.59) | 0.99 | 18184.1 | 11000.00 |
| 1 | 866.92 | 153.36 | 0.260 | 0.60( 0.59) | 0.99 | 24980.0 | 10850.00 |
| 1 | 767.32 | 174.10 | 0.241 | 0.60( 0.59) | 0.99 | 29314.5 | 11910.00 |
| 1 | 709.16 | 185.68 | 0.234 | 0.60( 0.59) | 0.99 | 31018.0 | 12300.00 |
| 1 | 593.59 | 218.29 | 0.224 | 0.60( 0.59) | 0.99 | 36726.5 | 12410.00 |
| 1 | 565.87 | 226.50 | 0.222 | 0.60( 0.59) | 0.99 | 38158.7 | 10600.00 |
| 1 | 560.09 | 250.85 | 0.214 | 0.60( 0.59) | 0.99 | 42812.4 | 12261.00 |
| 1 | 549.65 | 263.47 | 0.210 | 0.60( 0.59) | 0.99 | 44299.0 | 10410.00 |
| 1 | 539.19 | 275.53 | 0.206 | 0.60( 0.59) | 0.99 | 45400.9 | 12101.10 |
| 1 | 527.38 | 285.09 | 0.203 | 0.60( 0.59) | 0.99 | 46222.3 | 10700.00 |
| 1 | 515.57 | 302.68 | 0.198 | 0.60( 0.59) | 0.99 | 47779.0 | 10200.00 |
| 1 | 503.47 | 315.91 | 0.194 | 0.60( 0.59) | 0.99 | 48717.2 | 12010.00 |
| 1 | 467.76 | 344.50 | 0.185 | 0.60( 0.59) | 0.99 | 49391.0 | 10210.00 |
| 1 | 413.73 | 392.85 | 0.176 | 0.60( 0.59) | 0.99 | 49890.0 | 12000.00 |
| 1 | 380.84 | 461.82 | 0.168 | 0.60( 0.59) | 0.99 | 50474.8 | 10100.00 |
| 2 | 27.73 | 23.01 | 0.710 | 0.60( 0.60) | 1.00 | 281.0 | 12710.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1065.97 | 13.69 | 1.022 | 0.60( 0.54) | 0.91 | 1548.3 | 940.00 |
| 2 | 839.21 | 23.01 | 0.710 | 0.60( 0.56) | 0.93 | 2710.1 | 12710.00 |
| 3 | 825.72 | 23.47 | 0.700 | 0.60( 0.56) | 0.94 | 2761.1 | 900.00 |
| 4 | 387.97 | 35.62 | 0.545 | 0.60( 0.57) | 0.95 | 3949.2 | 600.00 |
| 5 | 543.75 | 85.33 | 0.353 | 0.60( 0.59) | 0.98 | 10633.3 | 11831.00 |
| 6 | 651.64 | 109.77 | 0.309 | 0.60( 0.59) | 0.98 | 14318.4 | 11530.00 |
| 7 | 746.01 | 130.10 | 0.281 | 0.60( 0.59) | 0.99 | 18465.1 | 11000.00 |
| 8 | 866.92 | 153.36 | 0.260 | 0.60( 0.59) | 0.99 | 25261.0 | 10850.00 |
| 9 | 767.32 | 174.10 | 0.241 | 0.60( 0.59) | 0.99 | 29595.5 | 11910.00 |
| 10 | 709.16 | 185.68 | 0.234 | 0.60( 0.59) | 0.99 | 31299.0 | 12300.00 |
| 11 | 593.59 | 218.29 | 0.224 | 0.60( 0.59) | 0.99 | 37007.5 | 12410.00 |
| 12 | 565.87 | 226.50 | 0.222 | 0.60( 0.59) | 0.99 | 38439.7 | 10600.00 |
| 13 | 560.09 | 250.85 | 0.214 | 0.60( 0.59) | 0.99 | 43093.4 | 12261.00 |
| 14 | 549.65 | 263.47 | 0.210 | 0.60( 0.59) | 0.99 | 44580.0 | 10410.00 |
| 15 | 539.19 | 275.53 | 0.206 | 0.60( 0.59) | 0.99 | 45681.9 | 12101.10 |
| 16 | 527.38 | 285.09 | 0.203 | 0.60( 0.59) | 0.99 | 46503.3 | 10700.00 |
| 17 | 515.57 | 302.68 | 0.198 | 0.60( 0.59) | 0.99 | 48060.0 | 10200.00 |
| 18 | 503.47 | 315.91 | 0.194 | 0.60( 0.59) | 0.99 | 48998.2 | 12010.00 |
| 19 | 467.76 | 344.50 | 0.185 | 0.60( 0.59) | 0.99 | 49672.0 | 10210.00 |
| 20 | 413.73 | 392.85 | 0.176 | 0.60( 0.59) | 0.99 | 50171.0 | 12000.00 |
| 21 | 380.84 | 461.82 | 0.168 | 0.60( 0.59) | 0.99 | 50755.8 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1065.97 Tc(MIN.) = 13.69



EFFECTIVE AREA(ACRES) = 1548.34 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 50755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.28 FEET.

**********
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 51
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.808
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 0.50 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.841
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1066.20
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.38
AVERAGE FLOW DEPTH(FEET) = 6.51 TRAVEL TIME(MIN.) = 5.31
Tc(MIN.) = 19.00
SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.46
EFFECTIVE AREA(ACRES) = 1550.04 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 50757.5 PEAK FLOW RATE(CFS) = 1065.97
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.51 FLOW VELOCITY(FEET/SEC.) = 8.38
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.49 FEET.

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 19.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.808
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.60 | 0.850 | - |
| USER-DEFINED | - | 0.70 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.50 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.40 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 2.30 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 9.30 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =    4.78
  EFFECTIVE AREA(ACRES) =   1565.74   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =    1065.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.808
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       11.20      0.60     1.000     -
  USER-DEFINED                -       11.40      0.60     1.000     -
  USER-DEFINED                -       11.80      0.60     1.000     -
  USER-DEFINED                -       27.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   11.65
  EFFECTIVE AREA(ACRES) =   1627.84   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =    1065.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3C02EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      516.54   15.31  0.60( 0.25) 0.41     835.0     410.00
      2      516.28   17.26  0.60( 0.25) 0.41     924.4     420.00
      3      494.44   21.62  0.60( 0.25) 0.41    1109.6     310.00
      4      475.85   23.63  0.60( 0.25) 0.41    1175.7     400.00
      5      443.81   26.40  0.60( 0.25) 0.41    1236.8     300.00
      6      438.25   26.88  0.60( 0.25) 0.41    1245.9     430.00
      7      437.09   26.98  0.60( 0.25) 0.41    1247.9     320.00
      8      324.81   43.35  0.60( 0.26) 0.43    1292.3     390.00
    TOTAL AREA(ACRES) =     1292.3

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1065.97   19.00    0.808  0.60( 0.55) 0.91    1627.8     940.00
```



```
      2      839.21   28.65    0.612  0.60( 0.56) 0.94    2789.6   12710.00
      3      825.72   29.12    0.604  0.60( 0.56) 0.94    2840.6     900.00
      4      387.97   42.46    0.496  0.60( 0.57) 0.95    4028.7     600.00
      5      543.75   91.60    0.342  0.60( 0.59) 0.98   10712.8   11831.00
      6      651.64  115.77    0.298  0.60( 0.59) 0.98   14397.9   11530.00
      7      746.01  135.90    0.276  0.60( 0.59) 0.99   18544.6   11000.00
      8      866.92  158.95    0.255  0.60( 0.59) 0.99   25340.5   10850.00
      9      767.32  179.87    0.236  0.60( 0.59) 0.99   29675.0   11910.00
     10      709.16  191.56    0.232  0.60( 0.59) 0.99   31378.5   12300.00
     11      593.59  224.43    0.222  0.60( 0.59) 0.99   37087.0   12410.00
     12      565.87  232.71    0.220  0.60( 0.59) 0.99   38519.2   10600.00
     13      560.09  257.08    0.212  0.60( 0.59) 0.99   43172.9   12261.00
     14      549.65  269.73    0.208  0.60( 0.59) 0.99   44659.5   10410.00
     15      539.19  281.82    0.204  0.60( 0.59) 0.99   45761.4   12101.10
     16      527.38  291.42    0.201  0.60( 0.59) 0.99   46582.8   10700.00
     17      515.57  309.04    0.196  0.60( 0.59) 0.99   48139.5   10200.00
     18      503.47  322.32    0.192  0.60( 0.59) 0.99   49077.7   12010.00
     19      467.76  351.02    0.183  0.60( 0.59) 0.99   49751.5   10210.00
     20      413.73  399.57    0.175  0.60( 0.59) 0.99   50250.5   12000.00
     21      380.84  468.69    0.167  0.60( 0.59) 0.99   50835.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.49 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      516.54   15.31    0.934  0.60( 0.25) 0.41     835.0     410.00
    2      516.28   17.26    0.868  0.60( 0.25) 0.41     924.4     420.00
    3      494.44   21.62    0.739  0.60( 0.25) 0.41    1109.6     310.00
    4      475.85   23.63    0.696  0.60( 0.25) 0.41    1175.7     400.00
    5      443.81   26.40    0.646  0.60( 0.25) 0.41    1236.8     300.00
    6      438.25   26.88    0.638  0.60( 0.25) 0.41    1245.9     430.00
    7      437.09   26.98    0.637  0.60( 0.25) 0.41    1247.9     320.00
    8      324.81   43.35    0.491  0.60( 0.26) 0.43    1292.3     390.00
LONGEST FLOWPATH FROM NODE    390.00 TO NODE  12720.50 =   13248.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1582.50   15.31    0.934  0.60( 0.43) 0.72    2146.8     410.00
    2     1582.25   17.26    0.868  0.60( 0.43) 0.72    2403.6     420.00
    3     1573.55   19.00    0.808  0.60( 0.43) 0.72    2625.9     940.00
    4     1498.76   21.62    0.739  0.60( 0.44) 0.73    3053.2     310.00
    5     1432.93   23.63    0.696  0.60( 0.45) 0.74    3361.4     400.00
    6     1335.89   26.40    0.646  0.60( 0.46) 0.76    3755.5     300.00
    7     1319.16   26.88    0.638  0.60( 0.46) 0.76    3821.8     430.00
    8     1315.43   26.98    0.637  0.60( 0.46) 0.76    3837.0     320.00
    9     1264.87   28.65    0.612  0.60( 0.46) 0.77    4042.0   12710.00
   10     1248.14   29.12    0.604  0.60( 0.47) 0.78    4094.3     900.00
   11      718.92   42.46    0.496  0.60( 0.50) 0.83    5318.6     600.00
   12      715.62   43.35    0.491  0.60( 0.50) 0.83    5442.7     390.00
   13      770.08   91.60    0.342  0.60( 0.55) 0.92   12005.1   11831.00
   14      848.66  115.77    0.298  0.60( 0.56) 0.94   15690.2   11530.00
   15      928.42  135.90    0.276  0.60( 0.57) 0.95   19836.9   11000.00
   16     1035.61  158.95    0.255  0.60( 0.58) 0.96   26632.8   10850.00
   17      923.55  179.87    0.236  0.60( 0.58) 0.97   30967.3   11910.00
   18      862.93  191.56    0.232  0.60( 0.58) 0.97   32670.8   12300.00
   19      740.60  224.43    0.222  0.60( 0.58) 0.97   38379.3   12410.00
   20      711.17  232.71    0.220  0.60( 0.58) 0.97   39811.5   10600.00
```

```
     21      700.38  257.08    0.212  0.60( 0.58) 0.97   44465.2   12261.00
     22      687.33  269.73    0.208  0.60( 0.58) 0.97   45951.8   10410.00
     23      674.39  281.82    0.204  0.60( 0.58) 0.97   47053.7   12101.10
     24      660.60  291.42    0.201  0.60( 0.58) 0.97   47875.1   10700.00
     25      645.15  309.04    0.196  0.60( 0.58) 0.97   49431.8   10200.00
     26      630.33  322.32    0.192  0.60( 0.58) 0.97   50370.0   12010.00
     27      588.71  351.02    0.183  0.60( 0.58) 0.97   51043.8   10210.00
     28      529.80  399.57    0.175  0.60( 0.58) 0.98   51542.8   12000.00
     29      491.64  468.69    0.167  0.60( 0.59) 0.98   52127.6   10100.00
    TOTAL AREA(ACRES) =     52127.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1582.50  Tc(MIN.) =   15.311
  EFFECTIVE AREA(ACRES) =   2146.79  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52127.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12722.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    258.00  DOWNSTREAM(FEET) =    255.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1269.00   CHANNEL SLOPE =  0.0024
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.821
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.60     0.850     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        0.40      0.60     0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.732
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1582.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.38
  AVERAGE FLOW DEPTH(FEET) =   9.09   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   18.62
  SUBAREA AREA(ACRES) =     1.40       SUBAREA RUNOFF(CFS) =    0.48
  EFFECTIVE AREA(ACRES) =   2148.19     AREA-AVERAGED Fm(INCH/HR) =   0.43
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.72
  TOTAL AREA(ACRES) =    52129.0         PEAK FLOW RATE(CFS) =    1582.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.09   FLOW VELOCITY(FEET/SEC.) =   6.38
```



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  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12722.00 =  109948.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.62
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.821
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     0.100     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     0.100     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  USER-DEFINED               -        1.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    1.37
  EFFECTIVE AREA(ACRES) =   2152.39   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    52133.2       PEAK FLOW RATE(CFS) =    1582.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.62
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.821
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.30      0.60     1.000     -
  USER-DEFINED               -        3.20      0.60     1.000     -
  USER-DEFINED               -        3.70      0.60     1.000     -
  USER-DEFINED               -       12.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =    4.02
  EFFECTIVE AREA(ACRES) =   2172.59   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    52153.4       PEAK FLOW RATE(CFS) =    1582.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
```

```
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.778
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -        0.10      0.60     1.000     -
USER-DEFINED               -        0.50      0.60     0.850     -
USER-DEFINED               -        0.50      0.60     1.000     -
USER-DEFINED               -        0.80      0.60     1.000     -
USER-DEFINED               -        1.20      0.60     1.000     -
USER-DEFINED               -        1.50      0.60     0.100     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1583.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.22
AVERAGE FLOW DEPTH(FEET) =   8.01   TRAVEL TIME(MIN.) =   1.27
Tc(MIN.) =   19.89
SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    1.51
EFFECTIVE AREA(ACRES) =   2177.19     AREA-AVERAGED Fm(INCH/HR) =   0.43
AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.72
TOTAL AREA(ACRES) =    52158.0         PEAK FLOW RATE(CFS) =    1582.50
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  8.01   FLOW VELOCITY(FEET/SEC.) =   8.23
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.49 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   19.89
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.778
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -        2.50      0.60     0.100     -
USER-DEFINED               -        2.60      0.60     1.000     -
USER-DEFINED               -        2.80      0.60     1.000     -
USER-DEFINED               -        5.40      0.60     1.000     -
USER-DEFINED               -        6.20      0.60     1.000     -
USER-DEFINED               -        6.50      0.60     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =    5.38
EFFECTIVE AREA(ACRES) =   2203.19   AREA-AVERAGED Fm(INCH/HR) =  0.43
AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
TOTAL AREA(ACRES) =    52184.0       PEAK FLOW RATE(CFS) =    1582.50
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   19.89
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.778
SUBAREA LOSS RATE DATA(AMC  II):
```



```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -        6.70      0.60     1.000     -
USER-DEFINED               -       12.00      0.60     1.000     -
USER-DEFINED               -       20.30      0.60     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =    6.24
EFFECTIVE AREA(ACRES) =   2242.19   AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.73
TOTAL AREA(ACRES) =    52223.0       PEAK FLOW RATE(CFS) =    1582.50
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   19.89
RAINFALL INTENSITY(INCH/HR) =   0.78
AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.60
AREA-AVERAGED Ap =  0.73
EFFECTIVE STREAM AREA(ACRES) =    2242.19
TOTAL STREAM AREA(ACRES) =   52222.99
PEAK FLOW RATE(CFS) AT CONFLUENCE =    1582.50

****************************************************************************
FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.014
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"      -        6.33      0.60     1.000     0   13.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA RUNOFF(CFS) =      2.36
TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =      2.36

****************************************************************************
FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.884
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.62      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.50
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   16.77
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =    8.87
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      10.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.76   FLOW VELOCITY(FEET/SEC.) =   6.08
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.783
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       59.52      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.53
  AVERAGE FLOW DEPTH(FEET) =   0.89   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   19.72
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =    9.84
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =      16.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.682
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       64.05      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.03
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   4.58
  Tc(MIN.) =   24.30
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =    4.74
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =      16.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   5.84
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.02      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.92
  AVERAGE FLOW DEPTH(FEET) =   0.90   TRAVEL TIME(MIN.) =   4.53
  Tc(MIN.) =   28.83
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =    0.21
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =      16.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   6.90
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
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```
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   28.83
 RAINFALL INTENSITY(INCH/HR) =   0.61
 AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =     190.54
 TOTAL STREAM AREA(ACRES) =     190.54
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      16.60

 ** CONFLUENCE DATA **
  STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1     1582.50   19.89     0.778  0.60( 0.44) 0.73    2242.2     410.00
     1     1582.25   21.84     0.735  0.60( 0.44) 0.73    2499.0     420.00
     1     1573.55   23.59     0.697  0.60( 0.44) 0.73    2721.3     940.00
     1     1498.76   26.26     0.648  0.60( 0.44) 0.74    3148.6     310.00
     1     1432.93   28.33     0.616  0.60( 0.45) 0.75    3456.8     400.00
     1     1335.89   31.18     0.581  0.60( 0.46) 0.76    3850.9     300.00
     1     1319.16   31.67     0.577  0.60( 0.46) 0.77    3917.2     430.00
     1     1315.43   31.78     0.577  0.60( 0.46) 0.77    3932.4     320.00
     1     1264.87   33.49     0.563  0.60( 0.47) 0.78    4137.4   12710.00
     1     1248.14   33.98     0.559  0.60( 0.47) 0.78    4189.7     900.00
     1      718.92   48.04     0.464  0.60( 0.50) 0.83    5414.0     600.00
     1      715.62   48.93     0.459  0.60( 0.50) 0.83    5538.1     390.00
     1      770.08   97.08     0.332  0.60( 0.55) 0.92   12100.5   11831.00
     1      848.66  121.12     0.289  0.60( 0.56) 0.94   15785.6   11530.00
     1      928.42  141.14     0.271  0.60( 0.57) 0.95   19932.3   11000.00
     1     1035.61  164.04     0.250  0.60( 0.58) 0.96   26728.2   10850.00
     1      923.55  185.10     0.234  0.60( 0.58) 0.97   31062.7   11910.00
     1      862.93  196.88     0.231  0.60( 0.58) 0.97   32766.2   12300.00
     1      740.60  229.97     0.220  0.60( 0.58) 0.97   38474.7   12410.00
     1      711.17  238.30     0.218  0.60( 0.58) 0.97   39906.9   10600.00
     1      700.38  262.69     0.210  0.60( 0.58) 0.97   44560.6   12261.00
     1      687.33  275.37     0.206  0.60( 0.58) 0.97   46047.2   10410.00
     1      674.39  287.48     0.203  0.60( 0.58) 0.97   47149.1   12101.10
     1      660.60  297.11     0.200  0.60( 0.58) 0.97   47970.5   10700.00
     1      645.15  314.77     0.194  0.60( 0.58) 0.97   49527.2   10200.00
     1      630.33  328.08     0.190  0.60( 0.58) 0.97   50465.4   12010.00
     1      588.71  356.88     0.181  0.60( 0.58) 0.97   51139.2   10210.00
     1      529.80  405.60     0.175  0.60( 0.58) 0.98   51638.2   12000.00
     1      491.64  474.82     0.167  0.60( 0.59) 0.98   52223.0   10100.00
     2       16.60   28.83     0.609  0.60( 0.60) 1.00     190.5   12730.00

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

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1     1597.14   19.89     0.778  0.60( 0.44) 0.74    2373.7     410.00
     2     1597.43   21.84     0.735  0.60( 0.45) 0.74    2643.4     420.00
```



```
     3     1589.11   23.59     0.697  0.60( 0.45) 0.74    2877.2     940.00
     4     1514.85   26.26     0.648  0.60( 0.45) 0.75    3322.2     310.00
     5     1449.45   28.33     0.616  0.60( 0.46) 0.76    3644.0     400.00
     6     1432.56   28.83     0.609  0.60( 0.46) 0.76    3716.3   12730.00
     7     1351.74   31.18     0.581  0.60( 0.46) 0.78    4041.5     300.00
     8     1334.91   31.67     0.577  0.60( 0.47) 0.78    4107.8     430.00
     9     1331.16   31.78     0.577  0.60( 0.47) 0.78    4122.9     320.00
    10     1280.21   33.49     0.563  0.60( 0.47) 0.79    4328.0   12710.00
    11     1263.37   33.98     0.559  0.60( 0.47) 0.79    4380.2     900.00
    12      731.58   48.04     0.464  0.60( 0.50) 0.83    5604.5     600.00
    13      728.14   48.93     0.459  0.60( 0.50) 0.84    5728.6     390.00
    14      779.14   97.08     0.332  0.60( 0.55) 0.92   12291.0   11831.00
    15      856.54  121.12     0.289  0.60( 0.56) 0.94   15976.1   11530.00
    16      935.81  141.14     0.271  0.60( 0.57) 0.95   20122.8   11000.00
    17     1042.43  164.04     0.250  0.60( 0.58) 0.96   26918.7   10850.00
    18      929.94  185.10     0.234  0.60( 0.58) 0.97   31253.3   11910.00
    19      869.22  196.88     0.231  0.60( 0.58) 0.97   32956.8   12300.00
    20      746.61  229.97     0.220  0.60( 0.58) 0.97   38665.2   12410.00
    21      717.11  238.30     0.218  0.60( 0.58) 0.97   40097.4   10600.00
    22      706.11  262.69     0.210  0.60( 0.58) 0.97   44751.1   12261.00
    23      692.95  275.37     0.206  0.60( 0.58) 0.97   46237.7   10410.00
    24      679.91  287.48     0.203  0.60( 0.58) 0.97   47339.7   12101.10
    25      666.04  297.11     0.200  0.60( 0.58) 0.97   48161.0   10700.00
    26      650.45  314.77     0.194  0.60( 0.58) 0.97   49717.7   10200.00
    27      635.51  328.08     0.190  0.60( 0.58) 0.97   50656.0   12010.00
    28      593.64  356.88     0.181  0.60( 0.58) 0.97   51329.7   10210.00
    29      534.57  405.60     0.175  0.60( 0.59) 0.98   51828.8   12000.00
    30      496.18  474.82     0.167  0.60( 0.59) 0.98   52413.5   10100.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    1597.43    Tc(MIN.) =    21.84
 EFFECTIVE AREA(ACRES) =    2643.40   AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.74
 TOTAL AREA(ACRES) =    52413.5
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    252.10  DOWNSTREAM(FEET) =    240.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0101
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.696
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.30      0.60     1.000     -
 USER-DEFINED               -        0.40      0.60     1.000     -
 USER-DEFINED               -        0.40      0.60     0.100     -
 USER-DEFINED               -        0.60      0.60     0.100     -
 USER-DEFINED               -        1.50      0.60     1.000     -
 USER-DEFINED               -        3.20      0.60     0.850     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.784
```

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1598.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.02
AVERAGE FLOW DEPTH(FEET) = 6.95 TRAVEL TIME(MIN.) = 1.82
Tc(MIN.) = 23.66
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 1.30
EFFECTIVE AREA(ACRES) = 2649.80 AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.74
TOTAL AREA(ACRES) = 52419.9 PEAK FLOW RATE(CFS) = 1598.43
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.95 FLOW VELOCITY(FEET/SEC.) = 11.01
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 23.66
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.696
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.90 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 8.70 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 10.30 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 1.98
EFFECTIVE AREA(ACRES) = 2672.70 AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.74
TOTAL AREA(ACRES) = 52442.8 PEAK FLOW RATE(CFS) = 1597.43
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 52442.8 TC(MIN.) = 23.66
EFFECTIVE AREA(ACRES) = 2672.70 AREA-AVERAGED Fm(INCH/HR)= 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.745
PEAK FLOW RATE(CFS) = 1597.43

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1597.14 | 21.70 | 0.738 | 0.60( 0.45) | 0.74 | 2403.0 | 410.00 |
| 2 | 1597.43 | 23.66 | 0.696 | 0.60( 0.45) | 0.74 | 2672.7 | 420.00 |
| 3 | 1589.11 | 25.40 | 0.661 | 0.60( 0.45) | 0.75 | 2906.5 | 940.00 |
| 4 | 1514.85 | 28.10 | 0.620 | 0.60( 0.45) | 0.75 | 3351.5 | 310.00 |
| 5 | 1449.45 | 30.19 | 0.589 | 0.60( 0.46) | 0.76 | 3673.3 | 400.00 |
| 6 | 1432.56 | 30.69 | 0.585 | 0.60( 0.46) | 0.77 | 3745.6 | 12730.00 |
| 7 | 1351.74 | 33.07 | 0.566 | 0.60( 0.47) | 0.78 | 4070.8 | 300.00 |
| 8 | 1334.91 | 33.57 | 0.562 | 0.60( 0.47) | 0.78 | 4137.1 | 430.00 |
| 9 | 1331.16 | 33.68 | 0.561 | 0.60( 0.47) | 0.78 | 4152.2 | 320.00 |
| 10 | 1280.21 | 35.41 | 0.547 | 0.60( 0.47) | 0.79 | 4357.3 | 12710.00 |
| 11 | 1263.37 | 35.91 | 0.543 | 0.60( 0.47) | 0.79 | 4409.5 | 900.00 |
| 12 | 731.58 | 50.24 | 0.452 | 0.60( 0.50) | 0.84 | 5633.8 | 600.00 |
| 13 | 728.14 | 51.14 | 0.447 | 0.60( 0.50) | 0.84 | 5757.9 | 390.00 |
| 14 | 779.14 | 99.26 | 0.328 | 0.60( 0.55) | 0.92 | 12320.3 | 11831.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 856.54 | 123.24 | 0.287 | 0.60( 0.56) | 0.94 | 16005.4 | 11530.00 |
| 16 | 935.81 | 143.21 | 0.269 | 0.60( 0.57) | 0.95 | 20152.1 | 11000.00 |
| 17 | 1042.43 | 166.06 | 0.249 | 0.60( 0.58) | 0.96 | 26948.0 | 10850.00 |
| 18 | 929.94 | 187.18 | 0.234 | 0.60( 0.58) | 0.97 | 31282.6 | 11910.00 |
| 19 | 869.22 | 199.00 | 0.230 | 0.60( 0.58) | 0.97 | 32986.1 | 12300.00 |
| 20 | 746.61 | 232.17 | 0.220 | 0.60( 0.58) | 0.97 | 38694.5 | 12410.00 |
| 21 | 717.11 | 240.52 | 0.217 | 0.60( 0.58) | 0.97 | 40126.7 | 10600.00 |
| 22 | 706.11 | 264.92 | 0.210 | 0.60( 0.58) | 0.97 | 44780.4 | 12261.00 |
| 23 | 692.95 | 277.61 | 0.206 | 0.60( 0.58) | 0.97 | 46267.0 | 10410.00 |
| 24 | 679.91 | 289.73 | 0.202 | 0.60( 0.58) | 0.97 | 47369.0 | 12101.10 |
| 25 | 666.04 | 299.37 | 0.199 | 0.60( 0.58) | 0.97 | 48190.3 | 10700.00 |
| 26 | 650.45 | 317.04 | 0.193 | 0.60( 0.58) | 0.97 | 49747.0 | 10200.00 |
| 27 | 635.51 | 330.36 | 0.189 | 0.60( 0.58) | 0.97 | 50685.3 | 12010.00 |
| 28 | 593.64 | 359.21 | 0.180 | 0.60( 0.58) | 0.97 | 51359.0 | 10210.00 |
| 29 | 534.57 | 407.98 | 0.174 | 0.60( 0.59) | 0.98 | 51858.1 | 12000.00 |
| 30 | 496.18 | 477.25 | 0.166 | 0.60( 0.59) | 0.98 | 52442.8 | 10100.00 |

============================================================================
============================================================================
END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 2-YR EV FEB 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI02EV28.DAT
  TIME/DATE OF STUDY: 11:50 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.857
   2)   10.00;  1.238
   3)   15.00;  0.945
   4)   20.00;  0.774
   5)   25.00;  0.667
   6)   30.00;  0.591
   7)   40.00;  0.510
   8)   50.00;  0.453
   9)   60.00;  0.399
  10)   90.00;  0.345
  11)  120.00;  0.290
  12)  180.00;  0.236
  13)  360.00;  0.180
  14) 1200.00;  0.083
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV27.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)     NODE
      1     1597.43   23.66  0.60( 0.45) 0.74    2672.7     420.00
      2     1351.74   33.07  0.60( 0.47) 0.78    4070.8     300.00
      3      731.58   50.24  0.60( 0.50) 0.84    5633.8     600.00
      4      779.14   99.26  0.60( 0.55) 0.92   12320.3   11831.00
      5      856.54  123.24  0.60( 0.56) 0.94   16005.4   11530.00
      6      935.81  143.21  0.60( 0.57) 0.95   20152.1   11000.00
      7     1042.43  166.06  0.60( 0.58) 0.96   26948.0   10850.00
      8      929.94  187.18  0.60( 0.58) 0.97   31282.6   11910.00
      9      869.22  199.00  0.60( 0.58) 0.97   32986.1   12300.00
     10      746.61  232.17  0.60( 0.58) 0.97   38694.5   12410.00
     11      717.11  240.52  0.60( 0.58) 0.97   40126.7   10600.00
     12      706.11  264.92  0.60( 0.58) 0.97   44780.4   12261.00
     13      692.95  277.61  0.60( 0.58) 0.97   46267.0   10410.00
     14      679.91  289.73  0.60( 0.58) 0.97   47369.0   12101.10
     15      666.04  299.37  0.60( 0.58) 0.97   48190.3   10700.00
     16      650.45  317.04  0.60( 0.58) 0.97   49747.0   10200.00
     17      635.51  330.36  0.60( 0.58) 0.97   50685.3   12010.00
     18      593.64  359.21  0.60( 0.58) 0.97   51359.0   10210.00
     19      534.57  407.98  0.60( 0.59) 0.98   51858.1   12000.00
     20      496.18  477.25  0.60( 0.59) 0.98   52442.8   10100.00
    TOTAL AREA(ACRES) =    52442.8

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501T.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)     NODE
      1       71.25   40.57  0.60( 0.59) 0.98    1023.7   50120.00
      2       56.82   44.15  0.60( 0.59) 0.98    1046.4   50150.00
      3       24.29   51.88  0.60( 0.59) 0.98    1063.4   50100.00
    TOTAL AREA(ACRES) =     1063.4

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|
| 1 | 71.25 | 40.57 | 0.60( 0.59) | 0.98 | 1023.7 | 50120.00 |
| 2 | 56.82 | 44.15 | 0.60( 0.59) | 0.98 | 1046.4 | 50150.00 |
| 3 | 24.29 | 51.88 | 0.60( 0.59) | 0.98 | 1063.4 | 50100.00 |

TOTAL AREA(ACRES) = 1063.4

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 71.25 | 40.57 | 0.507 | 0.60( 0.59) | 0.98 | 1023.7 | 50120.00 |
| 2 | 56.82 | 44.15 | 0.486 | 0.60( 0.59) | 0.98 | 1046.4 | 50150.00 |
| 3 | 24.29 | 51.88 | 0.443 | 0.60( 0.59) | 0.98 | 1063.4 | 50100.00 |

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1597.43 | 23.66 | 0.696 | 0.60( 0.45) | 0.74 | 2672.7 | 420.00 |
| 2 | 1351.74 | 33.07 | 0.566 | 0.60( 0.47) | 0.78 | 4070.8 | 300.00 |
| 3 | 731.58 | 50.24 | 0.452 | 0.60( 0.50) | 0.84 | 5633.8 | 600.00 |
| 4 | 779.14 | 99.26 | 0.328 | 0.60( 0.55) | 0.92 | 12320.3 | 11831.00 |
| 5 | 856.54 | 123.24 | 0.287 | 0.60( 0.56) | 0.94 | 16005.4 | 11530.00 |
| 6 | 935.81 | 143.21 | 0.269 | 0.60( 0.57) | 0.95 | 20152.1 | 11000.00 |
| 7 | 1042.43 | 166.06 | 0.249 | 0.60( 0.58) | 0.96 | 26948.0 | 10850.00 |
| 8 | 929.94 | 187.18 | 0.234 | 0.60( 0.58) | 0.97 | 31282.6 | 11910.00 |
| 9 | 869.22 | 199.00 | 0.230 | 0.60( 0.58) | 0.97 | 32986.1 | 12300.00 |
| 10 | 746.61 | 232.17 | 0.220 | 0.60( 0.58) | 0.97 | 38694.5 | 12410.00 |
| 11 | 717.11 | 240.52 | 0.217 | 0.60( 0.58) | 0.97 | 40126.7 | 10600.00 |
| 12 | 706.11 | 264.92 | 0.210 | 0.60( 0.58) | 0.97 | 44780.4 | 12261.00 |
| 13 | 692.95 | 277.61 | 0.206 | 0.60( 0.58) | 0.97 | 46267.0 | 10410.00 |
| 14 | 679.91 | 289.73 | 0.202 | 0.60( 0.58) | 0.97 | 47369.0 | 12101.10 |
| 15 | 666.04 | 299.37 | 0.199 | 0.60( 0.58) | 0.97 | 48190.3 | 10700.00 |
| 16 | 650.45 | 317.04 | 0.193 | 0.60( 0.58) | 0.97 | 49747.0 | 10200.00 |
| 17 | 635.51 | 330.36 | 0.189 | 0.60( 0.58) | 0.97 | 50685.3 | 12010.00 |
| 18 | 593.64 | 359.21 | 0.180 | 0.60( 0.58) | 0.97 | 51359.0 | 10210.00 |
| 19 | 534.57 | 407.98 | 0.174 | 0.60( 0.59) | 0.98 | 51858.1 | 12000.00 |
| 20 | 496.18 | 477.25 | 0.166 | 0.60( 0.59) | 0.98 | 52442.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1654.47 | 23.66 | 0.696 | 0.60( 0.47) | 0.79 | 3269.6 | 420.00 |
| 2 | 1416.63 | 33.07 | 0.566 | 0.60( 0.49) | 0.81 | 4905.1 | 300.00 |
| 3 | 1151.97 | 40.57 | 0.507 | 0.60( 0.50) | 0.83 | 5777.5 | 50120.00 |
| 4 | 1008.39 | 44.15 | 0.486 | 0.60( 0.51) | 0.84 | 6125.7 | 50150.00 |
| 5 | 762.77 | 50.24 | 0.452 | 0.60( 0.51) | 0.86 | 6693.6 | 600.00 |
| 6 | 757.46 | 51.88 | 0.443 | 0.60( 0.52) | 0.86 | 6920.7 | 50100.00 |
| 7 | 797.13 | 99.26 | 0.328 | 0.60( 0.56) | 0.93 | 13383.7 | 11831.00 |
| 8 | 872.29 | 123.24 | 0.287 | 0.60( 0.56) | 0.94 | 17068.8 | 11530.00 |
| 9 | 950.57 | 143.21 | 0.269 | 0.60( 0.57) | 0.95 | 21215.5 | 11000.00 |
| 10 | 1056.07 | 166.06 | 0.249 | 0.60( 0.58) | 0.96 | 28011.4 | 10850.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 942.76 | 187.18 | 0.234 | 0.60( 0.58) | 0.97 | 32345.9 | 11910.00 |
| 12 | 881.85 | 199.00 | 0.230 | 0.60( 0.58) | 0.97 | 34049.4 | 12300.00 |
| 13 | 758.67 | 232.17 | 0.220 | 0.60( 0.58) | 0.97 | 39757.9 | 12410.00 |
| 14 | 729.02 | 240.52 | 0.217 | 0.60( 0.58) | 0.97 | 41190.1 | 10600.00 |
| 15 | 717.61 | 264.92 | 0.210 | 0.60( 0.58) | 0.97 | 45843.8 | 12261.00 |
| 16 | 704.23 | 277.61 | 0.206 | 0.60( 0.58) | 0.97 | 47330.4 | 10410.00 |
| 17 | 690.98 | 289.73 | 0.202 | 0.60( 0.58) | 0.97 | 48432.3 | 12101.10 |
| 18 | 676.95 | 299.37 | 0.199 | 0.60( 0.58) | 0.97 | 49253.7 | 10700.00 |
| 19 | 661.05 | 317.04 | 0.193 | 0.60( 0.58) | 0.97 | 50810.4 | 10200.00 |
| 20 | 645.89 | 330.36 | 0.189 | 0.60( 0.58) | 0.97 | 51748.7 | 12010.00 |
| 21 | 603.53 | 359.21 | 0.180 | 0.60( 0.58) | 0.98 | 52422.4 | 10210.00 |
| 22 | 544.14 | 407.98 | 0.174 | 0.60( 0.59) | 0.98 | 52921.4 | 12000.00 |
| 23 | 505.32 | 477.25 | 0.166 | 0.60( 0.59) | 0.98 | 53506.2 | 10100.00 |

TOTAL AREA(ACRES) = 53506.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1654.47 Tc(MIN.) = 23.658

EFFECTIVE AREA(ACRES) = 3269.62 AREA-AVERAGED Fm(INCH/HR) = 0.47

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 53506.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53506.2 TC(MIN.) = 23.66

EFFECTIVE AREA(ACRES) = 3269.62 AREA-AVERAGED Fm(INCH/HR)= 0.47

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.788

PEAK FLOW RATE(CFS) = 1654.47

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1654.47 | 23.66 | 0.696 | 0.60( 0.47) | 0.79 | 3269.6 | 420.00 |
| 2 | 1416.63 | 33.07 | 0.566 | 0.60( 0.49) | 0.81 | 4905.1 | 300.00 |
| 3 | 1151.97 | 40.57 | 0.507 | 0.60( 0.50) | 0.83 | 5777.5 | 50120.00 |
| 4 | 1008.39 | 44.15 | 0.486 | 0.60( 0.51) | 0.84 | 6125.7 | 50150.00 |
| 5 | 762.77 | 50.24 | 0.452 | 0.60( 0.51) | 0.86 | 6693.6 | 600.00 |
| 6 | 757.46 | 51.88 | 0.443 | 0.60( 0.52) | 0.86 | 6920.7 | 50100.00 |
| 7 | 797.13 | 99.26 | 0.328 | 0.60( 0.56) | 0.93 | 13383.7 | 11831.00 |
| 8 | 872.29 | 123.24 | 0.287 | 0.60( 0.56) | 0.94 | 17068.8 | 11530.00 |
| 9 | 950.57 | 143.21 | 0.269 | 0.60( 0.57) | 0.95 | 21215.5 | 11000.00 |
| 10 | 1056.07 | 166.06 | 0.249 | 0.60( 0.58) | 0.96 | 28011.4 | 10850.00 |
| 11 | 942.76 | 187.18 | 0.234 | 0.60( 0.58) | 0.97 | 32345.9 | 11910.00 |
| 12 | 881.85 | 199.00 | 0.230 | 0.60( 0.58) | 0.97 | 34049.4 | 12300.00 |
| 13 | 758.67 | 232.17 | 0.220 | 0.60( 0.58) | 0.97 | 39757.9 | 12410.00 |
| 14 | 729.02 | 240.52 | 0.217 | 0.60( 0.58) | 0.97 | 41190.1 | 10600.00 |
| 15 | 717.61 | 264.92 | 0.210 | 0.60( 0.58) | 0.97 | 45843.8 | 12261.00 |
| 16 | 704.23 | 277.61 | 0.206 | 0.60( 0.58) | 0.97 | 47330.4 | 10410.00 |
| 17 | 690.98 | 289.73 | 0.202 | 0.60( 0.58) | 0.97 | 48432.3 | 12101.10 |
| 18 | 676.95 | 299.37 | 0.199 | 0.60( 0.58) | 0.97 | 49253.7 | 10700.00 |
| 19 | 661.05 | 317.04 | 0.193 | 0.60( 0.58) | 0.97 | 50810.4 | 10200.00 |
| 20 | 645.89 | 330.36 | 0.189 | 0.60( 0.58) | 0.97 | 51748.7 | 12010.00 |
| 21 | 603.53 | 359.21 | 0.180 | 0.60( 0.58) | 0.98 | 52422.4 | 10210.00 |
| 22 | 544.14 | 407.98 | 0.174 | 0.60( 0.59) | 0.98 | 52921.4 | 12000.00 |
| 23 | 505.32 | 477.25 | 0.166 | 0.60( 0.59) | 0.98 | 53506.2 | 10100.00 |

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 2-YR EV FEB 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI02EV29.DAT
  TIME/DATE OF STUDY: 11:50 02/15/2023
================================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
================================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.853
   2)   10.00;  1.236
   3)   15.00;  0.943
   4)   20.00;  0.773
   5)   25.00;  0.666
   6)   30.00;  0.591
   7)   40.00;  0.509
   8)   50.00;  0.452
   9)   60.00;  0.398
  10)   90.00;  0.340
  11)  120.00;  0.286
  12)  180.00;  0.230
  13)  360.00;  0.176
  14) 1200.00;  0.082
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1654.47   23.66  0.60( 0.47) 0.79    3269.6     420.00
      2     1416.63   33.07  0.60( 0.49) 0.81    4905.1     300.00
      3      762.77   50.24  0.60( 0.51) 0.86    6693.6     600.00
      4      797.13   99.26  0.60( 0.56) 0.93   13383.7   11831.00
      5      872.29  123.24  0.60( 0.56) 0.94   17068.8   11530.00
      6      950.57  143.21  0.60( 0.57) 0.95   21215.5   11000.00
      7     1056.07  166.06  0.60( 0.58) 0.96   28011.4   10850.00
      8      942.76  187.18  0.60( 0.58) 0.97   32345.9   11910.00
      9      881.85  199.00  0.60( 0.58) 0.97   34049.4   12300.00
     10      758.67  232.17  0.60( 0.58) 0.97   39757.9   12410.00
     11      729.02  240.52  0.60( 0.58) 0.97   41190.1   10600.00
     12      717.61  264.92  0.60( 0.58) 0.97   45843.8   12261.00
     13      704.23  277.61  0.60( 0.58) 0.97   47330.4   10410.00
     14      690.98  289.73  0.60( 0.58) 0.97   48432.3   12101.10
     15      676.95  299.37  0.60( 0.58) 0.97   49253.7   10700.00
     16      661.05  317.04  0.60( 0.58) 0.97   50810.4   10200.00
     17      645.89  330.36  0.60( 0.58) 0.97   51748.7   12010.00
     18      603.53  359.21  0.60( 0.58) 0.98   52422.4   10210.00
     19      544.14  407.98  0.60( 0.59) 0.98   52921.4   12000.00
     20      505.32  477.25  0.60( 0.59) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =    53506.2

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1654.47   23.66  0.60( 0.47) 0.79    3269.6     420.00
      2     1416.63   33.07  0.60( 0.49) 0.81    4905.1     300.00
      3      762.77   50.24  0.60( 0.51) 0.86    6693.6     600.00
      4      797.13   99.26  0.60( 0.56) 0.93   13383.7   11831.00
      5      872.29  123.24  0.60( 0.56) 0.94   17068.8   11530.00
      6      950.57  143.21  0.60( 0.57) 0.95   21215.5   11000.00
      7     1056.07  166.06  0.60( 0.58) 0.96   28011.4   10850.00
      8      942.76  187.18  0.60( 0.58) 0.97   32345.9   11910.00
      9      881.85  199.00  0.60( 0.58) 0.97   34049.4   12300.00
     10      758.67  232.17  0.60( 0.58) 0.97   39757.9   12410.00
     11      729.02  240.52  0.60( 0.58) 0.97   41190.1   10600.00
     12      717.61  264.92  0.60( 0.58) 0.97   45843.8   12261.00
     13      704.23  277.61  0.60( 0.58) 0.97   47330.4   10410.00
```

```
     14      690.98  289.73  0.60( 0.58) 0.97   48432.3   12101.10
     15      676.95  299.37  0.60( 0.58) 0.97   49253.7   10700.00
     16      661.05  317.04  0.60( 0.58) 0.97   50810.4   10200.00
     17      645.89  330.36  0.60( 0.58) 0.97   51748.7   12010.00
     18      603.53  359.21  0.60( 0.58) 0.98   52422.4   10210.00
     19      544.14  407.98  0.60( 0.59) 0.98   52921.4   12000.00
     20      505.32  477.25  0.60( 0.59) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1654.47
  FLOW VELOCITY(FEET/SEC.) =  10.04   FLOW DEPTH(FEET) =   7.41
  TRAVEL TIME(MIN.) =   5.18   Tc(MIN.) =   28.84
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114892.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.608
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.30      0.60     0.100     -
  USER-DEFINED               -        9.40      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =    7.89
  EFFECTIVE AREA(ACRES) =   3293.32   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =    1654.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.608
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.60     0.100     -
  USER-DEFINED               -        0.40      0.60     0.500     -
  USER-DEFINED               -        0.50      0.60     0.900     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.70      0.60     0.100     -
  USER-DEFINED               -        0.70      0.60     0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.455
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    0.94
  EFFECTIVE AREA(ACRES) =   3296.42   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =    1654.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.608
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.60     0.850     -
  USER-DEFINED               -        1.00      0.60     1.000     -
  USER-DEFINED               -        1.40      0.60     1.000     -
  USER-DEFINED               -        1.50      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     0.100     -
  USER-DEFINED               -        2.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    0.95
  EFFECTIVE AREA(ACRES) =   3305.62   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =    1654.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.608
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.60      0.60     1.000     -
  USER-DEFINED               -        3.70      0.60     0.500     -
  USER-DEFINED               -        4.10      0.60     0.500     -
  USER-DEFINED               -        5.40      0.60     0.900     -
  USER-DEFINED               -        6.70      0.60     1.000     -
  USER-DEFINED               -       12.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
```

```
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =    2.67
  EFFECTIVE AREA(ACRES) =   3341.12   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =    1654.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.608
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.90      0.60     1.000     -
  USER-DEFINED               -       38.60      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =    3.52
  EFFECTIVE AREA(ACRES) =   3392.62   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =    1654.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1654.47
  FLOW VELOCITY(FEET/SEC.) =  10.29   FLOW DEPTH(FEET) =   7.32
  TRAVEL TIME(MIN.) =   0.20   Tc(MIN.) =   29.03
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115014.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XX02.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       10.08   12.60  0.60( 0.55) 0.91      28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```



```
** MAIN STREAM CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1654.47   29.03    0.605  0.60( 0.47) 0.79    3392.6     420.00
    2     1416.63   38.66    0.520  0.60( 0.49) 0.81    5028.1     300.00
    3      762.77   56.77    0.415  0.60( 0.51) 0.86    6816.6     600.00
    4      797.13  105.71    0.312  0.60( 0.55) 0.92   13506.7   11831.00
    5      872.29  129.56    0.277  0.60( 0.56) 0.94   17191.8   11530.00
    6      950.57  149.39    0.259  0.60( 0.57) 0.95   21338.5   11000.00
    7     1056.07  172.07    0.237  0.60( 0.58) 0.96   28134.4   10850.00
    8      942.76  193.37    0.226  0.60( 0.58) 0.97   32468.9   11910.00
    9      881.85  205.29    0.222  0.60( 0.58) 0.97   34172.4   12300.00
   10      758.67  238.70    0.212  0.60( 0.58) 0.97   39880.9   12410.00
   11      729.02  247.12    0.210  0.60( 0.58) 0.97   41313.1   10600.00
   12      717.61  271.55    0.203  0.60( 0.58) 0.97   45966.8   12261.00
   13      704.23  284.27    0.199  0.60( 0.58) 0.97   47453.4   10410.00
   14      690.98  296.42    0.195  0.60( 0.58) 0.97   48555.3   12101.10
   15      676.95  306.09    0.192  0.60( 0.58) 0.97   49376.7   10700.00
   16      661.05  323.81    0.187  0.60( 0.58) 0.97   50933.4   10200.00
   17      645.89  337.16    0.183  0.60( 0.58) 0.97   51871.7   12010.00
   18      603.53  366.12    0.175  0.60( 0.58) 0.97   52545.4   10210.00
   19      544.14  415.09    0.170  0.60( 0.58) 0.97   53044.4   12000.00
   20      505.32  484.49    0.162  0.60( 0.58) 0.98   53629.2   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115014.81 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       10.08   12.60    1.084  0.60( 0.55) 0.91      28.7   50200.00
LONGEST FLOWPATH FROM NODE  50200.00 TO NODE  12902.00 =    1426.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1664.54   12.60    1.084  0.60( 0.47) 0.79    1500.9   50200.00
    2     1655.58   29.03    0.605  0.60( 0.47) 0.79    3421.3     420.00
    3     1417.50   38.66    0.520  0.60( 0.49) 0.81    5056.8     300.00
    4      763.47   56.77    0.415  0.60( 0.51) 0.86    6845.3     600.00
    5      797.66  105.71    0.312  0.60( 0.55) 0.92   13535.4   11831.00
    6      872.75  129.56    0.277  0.60( 0.56) 0.94   17220.5   11530.00
    7      951.01  149.39    0.259  0.60( 0.57) 0.95   21367.2   11000.00
    8     1056.47  172.07    0.237  0.60( 0.58) 0.96   28163.1   10850.00
    9      943.15  193.37    0.226  0.60( 0.58) 0.97   32497.6   11910.00
   10      882.22  205.29    0.222  0.60( 0.58) 0.97   34201.1   12300.00
   11      759.02  238.70    0.212  0.60( 0.58) 0.97   39909.6   12410.00
   12      729.38  247.12    0.210  0.60( 0.58) 0.97   41341.8   10600.00
   13      717.95  271.55    0.203  0.60( 0.58) 0.97   45995.5   12261.00
   14      704.57  284.27    0.199  0.60( 0.58) 0.97   47482.1   10410.00
   15      691.31  296.42    0.195  0.60( 0.58) 0.97   48584.0   12101.10
   16      677.28  306.09    0.192  0.60( 0.58) 0.97   49405.4   10700.00
   17      661.37  323.81    0.187  0.60( 0.58) 0.97   50962.1   10200.00
   18      646.20  337.16    0.183  0.60( 0.58) 0.97   51900.4   12010.00
   19      603.83  366.12    0.175  0.60( 0.58) 0.97   52574.1   10210.00
   20      544.43  415.09    0.170  0.60( 0.58) 0.97   53073.1   12000.00
   21      505.59  484.49    0.162  0.60( 0.58) 0.98   53657.9   10100.00
  TOTAL AREA(ACRES) =     53657.9
```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1664.54 Tc(MIN.) = 12.599
EFFECTIVE AREA(ACRES) = 1500.88 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 53657.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12
----------
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1
----------
>>>>>DEFINE MEMORY BANK # 1 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: E503XX02.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 10.17 | 40.85 | 0.60( 0.59) | 0.99 | 366.4 | 50300.00 |

TOTAL AREA(ACRES) = 366.4

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11
----------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1664.54 | 12.60 | 1.084 | 0.60( 0.47) | 0.79 | 1500.9 | 50200.00 |
| 2 | 1655.58 | 29.03 | 0.605 | 0.60( 0.47) | 0.79 | 3421.3 | 420.00 |
| 3 | 1417.50 | 38.66 | 0.520 | 0.60( 0.49) | 0.81 | 5056.8 | 300.00 |
| 4 | 763.47 | 56.77 | 0.415 | 0.60( 0.51) | 0.86 | 6845.3 | 600.00 |
| 5 | 797.66 | 105.71 | 0.312 | 0.60( 0.55) | 0.92 | 13535.4 | 11831.00 |
| 6 | 872.75 | 129.56 | 0.277 | 0.60( 0.56) | 0.94 | 17220.5 | 11530.00 |
| 7 | 951.01 | 149.39 | 0.259 | 0.60( 0.57) | 0.95 | 21367.2 | 11000.00 |
| 8 | 1056.47 | 172.07 | 0.237 | 0.60( 0.58) | 0.96 | 28163.1 | 10850.00 |
| 9 | 943.15 | 193.37 | 0.226 | 0.60( 0.58) | 0.97 | 32497.6 | 11910.00 |
| 10 | 882.22 | 205.29 | 0.222 | 0.60( 0.58) | 0.97 | 34201.1 | 12300.00 |
| 11 | 759.02 | 238.70 | 0.212 | 0.60( 0.58) | 0.97 | 39909.6 | 12410.00 |
| 12 | 729.38 | 247.12 | 0.210 | 0.60( 0.58) | 0.97 | 41341.8 | 10600.00 |
| 13 | 717.95 | 271.55 | 0.203 | 0.60( 0.58) | 0.97 | 45995.5 | 12261.00 |
| 14 | 704.57 | 284.27 | 0.199 | 0.60( 0.58) | 0.97 | 47482.1 | 10410.00 |
| 15 | 691.31 | 296.42 | 0.195 | 0.60( 0.58) | 0.97 | 48584.0 | 12101.10 |
| 16 | 677.28 | 306.09 | 0.192 | 0.60( 0.58) | 0.97 | 49405.4 | 10700.00 |
| 17 | 661.37 | 323.81 | 0.187 | 0.60( 0.58) | 0.97 | 50962.1 | 10200.00 |
| 18 | 646.20 | 337.16 | 0.183 | 0.60( 0.58) | 0.97 | 51900.4 | 12010.00 |
| 19 | 603.83 | 366.12 | 0.175 | 0.60( 0.58) | 0.97 | 52574.1 | 10210.00 |
| 20 | 544.43 | 415.09 | 0.170 | 0.60( 0.58) | 0.97 | 53073.1 | 12000.00 |
| 21 | 505.59 | 484.49 | 0.162 | 0.60( 0.58) | 0.98 | 53657.9 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 10.17 | 40.85 | 0.504 | 0.60( 0.59) | 0.99 | 366.4 | 50300.00 |

LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1671.29 | 12.60 | 1.084 | 0.60( 0.48) | 0.80 | 1613.9 | 50200.00 |
| 2 | 1664.27 | 29.03 | 0.605 | 0.60( 0.48) | 0.80 | 3681.8 | 420.00 |
| 3 | 1427.43 | 38.66 | 0.520 | 0.60( 0.49) | 0.82 | 5403.6 | 300.00 |
| 4 | 1348.53 | 40.85 | 0.504 | 0.60( 0.50) | 0.83 | 5639.6 | 50300.00 |
| 5 | 771.85 | 56.77 | 0.415 | 0.60( 0.52) | 0.86 | 7211.7 | 600.00 |
| 6 | 803.95 | 105.71 | 0.312 | 0.60( 0.56) | 0.93 | 13901.8 | 11831.00 |
| 7 | 878.34 | 129.56 | 0.277 | 0.60( 0.56) | 0.94 | 17586.9 | 11530.00 |
| 8 | 956.22 | 149.39 | 0.259 | 0.60( 0.57) | 0.95 | 21733.6 | 11000.00 |
| 9 | 1061.26 | 172.07 | 0.237 | 0.60( 0.58) | 0.96 | 28529.5 | 10850.00 |
| 10 | 947.70 | 193.37 | 0.226 | 0.60( 0.58) | 0.97 | 32864.0 | 11910.00 |
| 11 | 886.71 | 205.29 | 0.222 | 0.60( 0.58) | 0.97 | 34567.5 | 12300.00 |
| 12 | 763.31 | 238.70 | 0.212 | 0.60( 0.58) | 0.97 | 40276.0 | 12410.00 |
| 13 | 733.61 | 247.12 | 0.210 | 0.60( 0.58) | 0.97 | 41708.2 | 10600.00 |
| 14 | 722.04 | 271.55 | 0.203 | 0.60( 0.58) | 0.97 | 46361.9 | 12261.00 |
| 15 | 708.58 | 284.27 | 0.199 | 0.60( 0.58) | 0.97 | 47848.5 | 10410.00 |
| 16 | 695.25 | 296.42 | 0.195 | 0.60( 0.58) | 0.97 | 48950.4 | 12101.10 |
| 17 | 681.15 | 306.09 | 0.192 | 0.60( 0.58) | 0.97 | 49771.8 | 10700.00 |
| 18 | 665.14 | 323.81 | 0.187 | 0.60( 0.58) | 0.97 | 51328.5 | 10200.00 |
| 19 | 649.88 | 337.16 | 0.183 | 0.60( 0.58) | 0.97 | 52266.8 | 12010.00 |
| 20 | 607.36 | 366.12 | 0.175 | 0.60( 0.58) | 0.97 | 52940.5 | 10210.00 |
| 21 | 547.85 | 415.09 | 0.170 | 0.60( 0.58) | 0.97 | 53439.5 | 12000.00 |
| 22 | 508.86 | 484.49 | 0.162 | 0.60( 0.58) | 0.98 | 54024.3 | 10100.00 |

TOTAL AREA(ACRES) = 54024.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1671.29 Tc(MIN.) = 12.599
EFFECTIVE AREA(ACRES) = 1613.90 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 54024.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12
----------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 51
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 215.00 DOWNSTREAM(FEET) = 214.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.53 CHANNEL SLOPE = 0.0011
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 1671.29
FLOW VELOCITY(FEET/SEC.) = 4.88 FLOW DEPTH(FEET) = 10.68
TRAVEL TIME(MIN.) = 3.06 Tc(MIN.) = 15.66

```
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115910.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XX02.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        7.19   22.32  0.60( 0.58) 0.97      70.5   50400.00
    TOTAL AREA(ACRES) =       70.5

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1671.29   15.66    0.921  0.60( 0.48) 0.80    1613.9   50200.00
      2     1664.27   32.09    0.574  0.60( 0.48) 0.80    3681.8     420.00
      3     1427.43   41.84    0.499  0.60( 0.49) 0.82    5403.6     300.00
      4     1348.53   44.07    0.486  0.60( 0.50) 0.83    5639.6   50300.00
      5      771.85   60.47    0.397  0.60( 0.52) 0.86    7211.7     600.00
      6      803.95  109.38    0.305  0.60( 0.56) 0.93   13901.8   11831.00
      7      878.34  133.15    0.274  0.60( 0.56) 0.94   17586.9   11530.00
      8      956.22  152.91    0.255  0.60( 0.57) 0.95   21733.6   11000.00
      9     1061.26  175.50    0.234  0.60( 0.58) 0.96   28529.5   10850.00
     10      947.70  196.89    0.225  0.60( 0.58) 0.97   32864.0   11910.00
     11      886.71  208.87    0.221  0.60( 0.58) 0.97   34567.5   12300.00
     12      763.31  242.42    0.211  0.60( 0.58) 0.97   40276.0   12410.00
     13      733.61  250.88    0.209  0.60( 0.58) 0.97   41708.2   10600.00
     14      722.04  275.31    0.201  0.60( 0.58) 0.97   46361.9   12261.00
     15      708.58  288.06    0.198  0.60( 0.58) 0.97   47848.5   10410.00
     16      695.25  300.23    0.194  0.60( 0.58) 0.97   48950.4   12101.10
     17      681.15  309.91    0.191  0.60( 0.58) 0.97   49771.8   10700.00
     18      665.14  327.66    0.186  0.60( 0.58) 0.97   51328.5   10200.00
     19      649.88  341.03    0.182  0.60( 0.58) 0.97   52266.8   12010.00
     20      607.36  370.06    0.175  0.60( 0.58) 0.97   52940.5   10210.00
     21      547.85  419.12    0.169  0.60( 0.58) 0.97   53439.5   12000.00
     22      508.86  488.60    0.162  0.60( 0.58) 0.98   54024.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115910.34 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        7.19   22.32    0.723  0.60( 0.58) 0.97      70.5   50400.00
  LONGEST FLOWPATH FROM NODE  50400.00 TO NODE  12903.00 =    3607.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1678.47   15.66    0.921  0.60( 0.48) 0.81    1663.4   50200.00
      2     1675.63   22.32    0.723  0.60( 0.48) 0.81    2522.2   50400.00
```



```
      3     1665.22   32.09    0.574  0.60( 0.48) 0.81    3752.3     420.00
      4     1428.26   41.84    0.499  0.60( 0.49) 0.82    5474.1     300.00
      5     1349.34   44.07    0.486  0.60( 0.50) 0.83    5710.1   50300.00
      6      772.51   60.47    0.397  0.60( 0.52) 0.86    7282.2     600.00
      7      804.45  109.38    0.305  0.60( 0.56) 0.93   13972.3   11831.00
      8      878.80  133.15    0.274  0.60( 0.56) 0.94   17657.4   11530.00
      9      956.65  152.91    0.255  0.60( 0.57) 0.95   21804.1   11000.00
     10     1061.65  175.50    0.234  0.60( 0.58) 0.96   28600.0   10850.00
     11      948.08  196.89    0.225  0.60( 0.58) 0.97   32934.5   11910.00
     12      887.08  208.87    0.221  0.60( 0.58) 0.97   34638.0   12300.00
     13      763.66  242.42    0.211  0.60( 0.58) 0.97   40346.5   12410.00
     14      733.96  250.88    0.209  0.60( 0.58) 0.97   41778.7   10600.00
     15      722.37  275.31    0.201  0.60( 0.58) 0.97   46432.4   12261.00
     16      708.91  288.06    0.198  0.60( 0.58) 0.97   47919.0   10410.00
     17      695.57  300.23    0.194  0.60( 0.58) 0.97   49020.9   12101.10
     18      681.47  309.91    0.191  0.60( 0.58) 0.97   49842.3   10700.00
     19      665.45  327.66    0.186  0.60( 0.58) 0.97   51399.0   10200.00
     20      650.19  341.03    0.182  0.60( 0.58) 0.97   52337.3   12010.00
     21      607.66  370.06    0.175  0.60( 0.58) 0.97   53011.0   10210.00
     22      548.13  419.12    0.169  0.60( 0.58) 0.97   53510.0   12000.00
     23      509.13  488.60    0.162  0.60( 0.58) 0.98   54094.8   10100.00
   TOTAL AREA(ACRES) =     54094.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1678.47  Tc(MIN.) =   15.658
  EFFECTIVE AREA(ACRES) =   1663.36  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    54094.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115910.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12904.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    214.00  DOWNSTREAM(FEET) =    213.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   767.57   CHANNEL SLOPE =  0.0013
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1678.47
  FLOW VELOCITY(FEET/SEC.) =   5.18   FLOW DEPTH(FEET) =  10.39
  TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =   18.13
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116677.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3B02EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 89.21 | 20.90 | 0.60( 0.26) | 0.43 | 200.4 | 203.00 |
| 2 | 86.32 | 23.19 | 0.60( 0.26) | 0.43 | 213.7 | 210.00 |

TOTAL AREA(ACRES) = 213.7

**********

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1678.47 | 18.13 | 0.837 | 0.60( 0.48) | 0.81 | 1663.4 | 50200.00 |
| 2 | 1675.63 | 24.79 | 0.671 | 0.60( 0.48) | 0.81 | 2522.2 | 50400.00 |
| 3 | 1665.22 | 34.57 | 0.554 | 0.60( 0.48) | 0.81 | 3752.3 | 420.00 |
| 4 | 1428.26 | 44.41 | 0.484 | 0.60( 0.49) | 0.82 | 5474.1 | 300.00 |
| 5 | 1349.34 | 46.68 | 0.471 | 0.60( 0.50) | 0.83 | 5710.1 | 50300.00 |
| 6 | 772.51 | 63.47 | 0.391 | 0.60( 0.52) | 0.86 | 7282.2 | 600.00 |
| 7 | 804.45 | 112.35 | 0.300 | 0.60( 0.56) | 0.93 | 13972.3 | 11831.00 |
| 8 | 878.80 | 136.05 | 0.271 | 0.60( 0.56) | 0.94 | 17657.4 | 11530.00 |
| 9 | 956.65 | 155.75 | 0.253 | 0.60( 0.57) | 0.95 | 21804.1 | 11000.00 |
| 10 | 1061.65 | 178.27 | 0.232 | 0.60( 0.58) | 0.96 | 28600.0 | 10850.00 |
| 11 | 948.08 | 199.74 | 0.224 | 0.60( 0.58) | 0.97 | 32934.5 | 11910.00 |
| 12 | 887.08 | 211.77 | 0.220 | 0.60( 0.58) | 0.97 | 34638.0 | 12300.00 |
| 13 | 763.66 | 245.43 | 0.210 | 0.60( 0.58) | 0.97 | 40346.5 | 12410.00 |
| 14 | 733.96 | 253.91 | 0.208 | 0.60( 0.58) | 0.97 | 41778.7 | 10600.00 |
| 15 | 722.37 | 278.37 | 0.200 | 0.60( 0.58) | 0.97 | 46432.4 | 12261.00 |
| 16 | 708.91 | 291.12 | 0.197 | 0.60( 0.58) | 0.97 | 47919.0 | 10410.00 |
| 17 | 695.57 | 303.31 | 0.193 | 0.60( 0.58) | 0.97 | 49020.9 | 12101.10 |
| 18 | 681.47 | 313.01 | 0.190 | 0.60( 0.58) | 0.97 | 49842.3 | 10700.00 |
| 19 | 665.45 | 330.77 | 0.185 | 0.60( 0.58) | 0.97 | 51399.0 | 10200.00 |
| 20 | 650.19 | 344.16 | 0.181 | 0.60( 0.58) | 0.97 | 52337.3 | 12010.00 |
| 21 | 607.66 | 373.24 | 0.175 | 0.60( 0.58) | 0.97 | 53011.0 | 10210.00 |
| 22 | 548.13 | 422.39 | 0.169 | 0.60( 0.58) | 0.97 | 53510.0 | 12000.00 |
| 23 | 509.13 | 491.93 | 0.161 | 0.60( 0.58) | 0.98 | 54094.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116677.91 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 89.21 | 20.90 | 0.754 | 0.60( 0.26) | 0.43 | 200.4 | 203.00 |
| 2 | 86.32 | 23.19 | 0.705 | 0.60( 0.26) | 0.43 | 213.7 | 210.00 |

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 7986.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1767.69 | 18.13 | 0.837 | 0.60( 0.46) | 0.77 | 1837.2 | 50200.00 |
| 2 | 1766.51 | 20.90 | 0.754 | 0.60( 0.46) | 0.77 | 2221.2 | 203.00 |
| 3 | 1762.63 | 23.19 | 0.705 | 0.60( 0.47) | 0.78 | 2530.3 | 210.00 |
| 4 | 1755.39 | 24.79 | 0.671 | 0.60( 0.47) | 0.78 | 2735.9 | 50400.00 |
| 5 | 1726.27 | 34.57 | 0.554 | 0.60( 0.47) | 0.78 | 3966.0 | 420.00 |
| 6 | 1481.63 | 44.41 | 0.484 | 0.60( 0.49) | 0.81 | 5687.8 | 300.00 |
| 7 | 1401.28 | 46.68 | 0.471 | 0.60( 0.49) | 0.81 | 5923.8 | 50300.00 |
| 8 | 815.67 | 63.47 | 0.391 | 0.60( 0.51) | 0.85 | 7495.9 | 600.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | 837.52 | 112.35 | 0.300 | 0.60( 0.55) | 0.92 | 14186.0 | 11831.00 |
| 10 | 908.69 | 136.05 | 0.271 | 0.60( 0.56) | 0.93 | 17871.1 | 11530.00 |
| 11 | 984.51 | 155.75 | 0.253 | 0.60( 0.57) | 0.95 | 22017.8 | 11000.00 |
| 12 | 1087.20 | 178.27 | 0.232 | 0.60( 0.57) | 0.96 | 28813.7 | 10850.00 |
| 13 | 972.79 | 199.74 | 0.224 | 0.60( 0.58) | 0.96 | 33148.2 | 11910.00 |
| 14 | 911.39 | 211.77 | 0.220 | 0.60( 0.58) | 0.96 | 34851.7 | 12300.00 |
| 15 | 786.86 | 245.43 | 0.210 | 0.60( 0.58) | 0.97 | 40560.2 | 12410.00 |
| 16 | 756.88 | 253.91 | 0.208 | 0.60( 0.58) | 0.97 | 41992.4 | 10600.00 |
| 17 | 744.49 | 278.37 | 0.200 | 0.60( 0.58) | 0.97 | 46646.1 | 12261.00 |
| 18 | 730.60 | 291.12 | 0.197 | 0.60( 0.58) | 0.97 | 48132.7 | 10410.00 |
| 19 | 716.86 | 303.31 | 0.193 | 0.60( 0.58) | 0.97 | 49234.6 | 12101.10 |
| 20 | 702.44 | 313.01 | 0.190 | 0.60( 0.58) | 0.97 | 50056.0 | 10700.00 |
| 21 | 685.83 | 330.77 | 0.185 | 0.60( 0.58) | 0.97 | 51612.7 | 10200.00 |
| 22 | 670.12 | 344.16 | 0.181 | 0.60( 0.58) | 0.97 | 52551.0 | 12010.00 |
| 23 | 626.90 | 373.24 | 0.175 | 0.60( 0.58) | 0.97 | 53224.7 | 10210.00 |
| 24 | 566.78 | 422.39 | 0.169 | 0.60( 0.58) | 0.97 | 53723.7 | 12000.00 |
| 25 | 526.91 | 491.93 | 0.161 | 0.60( 0.58) | 0.97 | 54308.5 | 10100.00 |

TOTAL AREA(ACRES) = 54308.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1767.69 Tc(MIN.) = 18.128

EFFECTIVE AREA(ACRES) = 1837.19 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.77

TOTAL AREA(ACRES) = 54308.5

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116677.91 FEET.

**********

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

---

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

==========

MAINLINE Tc(MIN.) = 18.13

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.60 | 0.900 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.80 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.20 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 1.50 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 3.00 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641

SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 2.77

EFFECTIVE AREA(ACRES) = 1843.99 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.77

TOTAL AREA(ACRES) = 54315.3 PEAK FLOW RATE(CFS) = 1767.69

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

---

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

==========

MAINLINE Tc(MIN.) = 18.13

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.60 | 0.60 | 0.850 | - |
| USER-DEFINED | - | 15.10 | 0.60 | 0.850 | - |
| USER-DEFINED | - | 20.00 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.928
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 9.76
EFFECTIVE AREA(ACRES) = 1882.69 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78
TOTAL AREA(ACRES) = 54354.0 PEAK FLOW RATE(CFS) = 1767.69
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 54354.0 TC(MIN.) = 18.13
EFFECTIVE AREA(ACRES) = 1882.69 AREA-AVERAGED Fm(INCH/HR)= 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.775
PEAK FLOW RATE(CFS) = 1767.69

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1767.69 | 18.13 | 0.837 | 0.60( 0.47) | 0.78 | 1882.7 | 50200.00 |
| 2 | 1766.51 | 20.90 | 0.754 | 0.60( 0.47) | 0.78 | 2266.7 | 203.00 |
| 3 | 1762.63 | 23.19 | 0.705 | 0.60( 0.47) | 0.78 | 2575.8 | 210.00 |
| 4 | 1755.39 | 24.79 | 0.671 | 0.60( 0.47) | 0.78 | 2781.4 | 50400.00 |
| 5 | 1726.27 | 34.57 | 0.554 | 0.60( 0.47) | 0.79 | 4011.5 | 420.00 |
| 6 | 1481.63 | 44.41 | 0.484 | 0.60( 0.49) | 0.81 | 5733.3 | 300.00 |
| 7 | 1401.28 | 46.68 | 0.471 | 0.60( 0.49) | 0.82 | 5969.3 | 50300.00 |
| 8 | 815.67 | 63.47 | 0.391 | 0.60( 0.51) | 0.85 | 7541.4 | 600.00 |
| 9 | 837.52 | 112.35 | 0.300 | 0.60( 0.55) | 0.92 | 14231.5 | 11831.00 |
| 10 | 908.69 | 136.05 | 0.271 | 0.60( 0.56) | 0.93 | 17916.6 | 11530.00 |
| 11 | 984.51 | 155.75 | 0.253 | 0.60( 0.57) | 0.95 | 22063.3 | 11000.00 |
| 12 | 1087.20 | 178.27 | 0.232 | 0.60( 0.57) | 0.96 | 28859.2 | 10850.00 |
| 13 | 972.79 | 199.74 | 0.224 | 0.60( 0.58) | 0.96 | 33193.7 | 11910.00 |
| 14 | 911.39 | 211.77 | 0.220 | 0.60( 0.58) | 0.96 | 34897.2 | 12300.00 |
| 15 | 786.86 | 245.43 | 0.210 | 0.60( 0.58) | 0.97 | 40605.7 | 12410.00 |
| 16 | 756.88 | 253.91 | 0.208 | 0.60( 0.58) | 0.97 | 42037.9 | 10600.00 |
| 17 | 744.49 | 278.37 | 0.200 | 0.60( 0.58) | 0.97 | 46691.6 | 12261.00 |
| 18 | 730.60 | 291.12 | 0.197 | 0.60( 0.58) | 0.97 | 48178.2 | 10410.00 |
| 19 | 716.86 | 303.31 | 0.193 | 0.60( 0.58) | 0.97 | 49280.1 | 12101.10 |
| 20 | 702.44 | 313.01 | 0.190 | 0.60( 0.58) | 0.97 | 50101.5 | 10700.00 |
| 21 | 685.83 | 330.77 | 0.185 | 0.60( 0.58) | 0.97 | 51658.2 | 10200.00 |
| 22 | 670.12 | 344.16 | 0.181 | 0.60( 0.58) | 0.97 | 52596.5 | 12010.00 |
| 23 | 626.90 | 373.24 | 0.175 | 0.60( 0.58) | 0.97 | 53270.2 | 10210.00 |
| 24 | 566.78 | 422.39 | 0.169 | 0.60( 0.58) | 0.97 | 53769.2 | 12000.00 |
| 25 | 526.91 | 491.93 | 0.161 | 0.60( 0.58) | 0.97 | 54354.0 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NO PA5              *
* 2-YR EV FEB 2023 ROKAMOTO                                            *
 ***********************************************************************

  FILE NAME: RI02EV33.DAT
  TIME/DATE OF STUDY: 10:54 02/16/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.825
   2)   10.00;  1.217
   3)   15.00;  0.932
   4)   20.00;  0.766
   5)   25.00;  0.662
   6)   30.00;  0.587
   7)   40.00;  0.506
   8)   50.00;  0.449
   9)   60.00;  0.395
  10)   90.00;  0.340
  11)  120.00;  0.286
  12)  180.00;  0.232
  13)  360.00;  0.178
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X02.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      170.57   51.53  0.60( 0.49) 0.81    2407.7   13100.00
      2      195.69   91.33  0.60( 0.48) 0.81    3776.8   13000.00
      3      193.58   94.68  0.60( 0.48) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

****************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X02.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       71.12   52.96  0.60( 0.49) 0.82    1090.8   13200.00
      2       65.38   59.51  0.60( 0.50) 0.83    1127.6   13210.00
    TOTAL AREA(ACRES) =     1127.6

****************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       71.12   52.96  0.60( 0.49) 0.82    1090.8   13200.00
      2       65.38   59.51  0.60( 0.50) 0.83    1127.6   13210.00
    TOTAL AREA(ACRES) =      1127.6

****************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       71.12   52.96    0.433  0.60( 0.49) 0.82    1090.8   13200.00
      2       65.38   59.51    0.398  0.60( 0.50) 0.83    1127.6   13210.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      170.57   51.53    0.441  0.60( 0.49) 0.81    2407.7   13100.00
     2      195.69   91.33    0.338  0.60( 0.48) 0.81    3776.8   13000.00
     3      193.58   94.68    0.332  0.60( 0.48) 0.81    3796.8   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      241.00   51.53    0.441  0.60( 0.49) 0.81    3469.1   13100.00
     2      242.59   52.96    0.433  0.60( 0.49) 0.81    3547.6   13200.00
     3      240.98   59.51    0.398  0.60( 0.49) 0.81    3809.6   13210.00
     4      251.19   91.33    0.338  0.60( 0.49) 0.81    4904.4   13000.00
     5      248.09   94.68    0.332  0.60( 0.49) 0.81    4924.4   13010.00
   TOTAL AREA(ACRES) =      4924.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      251.19  Tc(MIN.) =   91.333
 EFFECTIVE AREA(ACRES) =   4904.45  AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =     4924.4
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.327
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.40      0.60     0.100     -
 USER-DEFINED               -       15.60      0.60     1.000     -
 USER-DEFINED               -        0.10      0.60     0.600     -
 USER-DEFINED               -        5.30      0.60     1.000     -
 USER-DEFINED               -        0.20      0.60     1.000     -
 USER-DEFINED               -       22.60      0.60     0.100     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
```



```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     254.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.96
 AVERAGE FLOW DEPTH(FEET) =   3.49   TRAVEL TIME(MIN.) =   6.06
 Tc(MIN.) =   97.40
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =    6.36
 EFFECTIVE AREA(ACRES) =   4949.65     AREA-AVERAGED Fm(INCH/HR) =   0.49
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.81
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =     276.97

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.60   FLOW VELOCITY(FEET/SEC.) =   7.11
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      244.92   57.64    0.408  0.60( 0.49) 0.81    3514.3   13100.00
     2      245.64   59.06    0.400  0.60( 0.49) 0.81    3592.8   13200.00
     3      251.52   65.62    0.385  0.60( 0.49) 0.81    3854.8   13210.00
     4      276.97   97.40    0.327  0.60( 0.49) 0.81    4949.6   13000.00
     5      273.17  100.77    0.321  0.60( 0.49) 0.81    4969.6   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     276.97  Tc(MIN.) =   97.40
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.60
 AREA-AVERAGED Ap =  0.81  EFFECTIVE AREA(ACRES) =    4949.65

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   97.40
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.327
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.00      0.60     1.000     -
 USER-DEFINED               -        0.50      0.60     1.000     -
 USER-DEFINED               -        7.40      0.60     0.100     -
 USER-DEFINED               -        4.70      0.60     1.000     -
 USER-DEFINED               -        2.90      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =    1.96
 EFFECTIVE AREA(ACRES) =   4966.15   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =     278.93

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

```
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   97.40
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.327
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.30      0.60     1.000     -
 USER-DEFINED               -        0.20      0.60     0.100     -
 USER-DEFINED               -        5.30      0.60     1.000     -
 USER-DEFINED               -        0.30      0.60     1.000     -
 USER-DEFINED               -        0.20      0.60     1.000     -
 USER-DEFINED               -        0.60      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    0.05
 EFFECTIVE AREA(ACRES) =   4974.05   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =     278.98

********************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   97.40
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.327
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        4.30      0.60     1.000     -
 USER-DEFINED               -        0.80      0.60     1.000     -
 USER-DEFINED               -        1.10      0.60     1.000     -
 USER-DEFINED               -        6.90      0.60     1.000     -
 USER-DEFINED               -        7.90      0.60     1.000     -
 USER-DEFINED               -        1.00      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   4996.05   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =     278.98

********************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
```



```
 MAINLINE Tc(MIN.) =   97.40
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.327
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.40      0.60     1.000     -
 USER-DEFINED               -       14.60      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   5011.05   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =     278.98

********************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
--------------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
 FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
--------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
 ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.382
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      -        0.50      0.60     1.000    56    8.64
 NATURAL FAIR COVER
 "OPEN BRUSH"               -        0.30      0.60     1.000    56    8.64
 NATURAL FAIR COVER
 "OPEN BRUSH"               -        0.30      0.60     1.000    56    8.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      0.77
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      0.77

********************************************************************************
 FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
--------------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.324
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.66
  AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   0.48
  Tc(MIN.) =    9.12
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    0.85
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       1.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.99
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.41
  AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   0.77
  Tc(MIN.) =    9.89
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    1.31
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =       2.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   4.60
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
```



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----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.149
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        2.50      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.11
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   11.19
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    1.78
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =       4.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.087
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        3.00      0.60     1.000     -
  USER-DEFINED               -        2.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.43
  AVERAGE FLOW DEPTH(FEET) =   0.64   TRAVEL TIME(MIN.) =   1.08
  Tc(MIN.) =   12.27
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    2.81
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =       6.45
```

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  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.68   FLOW VELOCITY(FEET/SEC.) =   4.62
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.022
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        2.80      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        2.60      0.60     1.000     -
  USER-DEFINED               -        4.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.03
  AVERAGE FLOW DEPTH(FEET) =   0.75   TRAVEL TIME(MIN.) =   1.14
  Tc(MIN.) =   13.41
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =    4.11
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =       9.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.79   FLOW VELOCITY(FEET/SEC.) =   5.20
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.911
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  USER-DEFINED               -        1.50      0.60     1.000     -
  USER-DEFINED               -        8.20      0.60     1.000     -
  USER-DEFINED               -        2.70      0.60     1.000     -
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.67
  AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   2.21
  Tc(MIN.) =   15.62
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =    4.23
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      11.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   4.65
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.865
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        6.50      0.60     1.000     -
  USER-DEFINED               -        1.30      0.60     1.000     -
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        5.50      0.60     1.000     -
  USER-DEFINED               -        3.40      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.50
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   1.40
  Tc(MIN.) =   17.02
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =    4.37
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =      14.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.02   FLOW VELOCITY(FEET/SEC.) =   4.53
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
```

```
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.808
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.70      0.60     1.000     -
 USER-DEFINED               -        2.20      0.60     1.000     -
 USER-DEFINED               -        3.10      0.60     1.000     -
 USER-DEFINED               -        0.90      0.60     1.000     -
 USER-DEFINED               -        7.40      0.60     1.000     -
 USER-DEFINED               -        0.30      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.02
 AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   1.73
 Tc(MIN.) =   18.74
 SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =    2.73
 EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =      14.06
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.98   FLOW VELOCITY(FEET/SEC.) =   4.89
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   18.74
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.808
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       11.40      0.60     1.000     -
 USER-DEFINED               -        8.90      0.60     1.000     -
 USER-DEFINED               -        1.90      0.60     1.000     -
 USER-DEFINED               -        9.20      0.60     1.000     -
 USER-DEFINED               -        1.40      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =    6.14
 EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =      19.89

****************************************************************************
 FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
```



```
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.695
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.80      0.60     1.000     -
 USER-DEFINED               -        0.60      0.60     1.000     -
 USER-DEFINED               -        0.10      0.60     0.900     -
 USER-DEFINED               -        1.30      0.60     1.000     -
 USER-DEFINED               -        4.00      0.60     1.000     -
 USER-DEFINED               -        1.50      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
 AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   4.69
 Tc(MIN.) =   23.43
 SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =    0.71
 EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =      19.89
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   5.02
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   23.43
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.695
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.30      0.60     1.000     -
 USER-DEFINED               -        9.60      0.60     1.000     -
 USER-DEFINED               -        0.40      0.60     0.900     -
 USER-DEFINED               -        6.20      0.60     1.000     -
 USER-DEFINED               -        3.90      0.60     1.000     -
 USER-DEFINED               -        1.40      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
 SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =    1.88
 EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =      19.89
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.582
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.90      0.60     1.000     -
  USER-DEFINED               -        1.50      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     0.900     -
  USER-DEFINED               -        2.50      0.60     1.000     -
  USER-DEFINED               -        5.30      0.60     1.000     -
  USER-DEFINED               -        3.30      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.31
  AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   7.14
  Tc(MIN.) =   30.57
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =    0.03
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =      19.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.24   FLOW VELOCITY(FEET/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       19.89   30.57    0.582  0.60( 0.60) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      247.43   57.64    0.408  0.60( 0.49) 0.81    3575.7   13100.00
      2      248.10   59.06    0.400  0.60( 0.49) 0.81    3654.2   13200.00
      3      253.89   65.62    0.385  0.60( 0.49) 0.81    3916.2   13210.00
      4      278.98   97.40    0.327  0.60( 0.49) 0.81    5011.0   13000.00
      5      275.15  100.77    0.321  0.60( 0.49) 0.81    5031.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      207.33   30.57    0.582  0.60( 0.50) 0.83    2050.9   31100.00
      2      261.36   57.64    0.408  0.60( 0.49) 0.82    3730.2   13100.00
      3      261.77   59.06    0.400  0.60( 0.49) 0.82    3808.7   13200.00
      4      267.03   65.62    0.385  0.60( 0.49) 0.82    4070.7   13210.00
      5      290.14   97.40    0.327  0.60( 0.49) 0.82    5165.5   13000.00
      6      286.10  100.77    0.321  0.60( 0.49) 0.82    5185.5   13010.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      290.14  Tc(MIN.) =   97.396
  EFFECTIVE AREA(ACRES) =   5165.55  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.320
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.20      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  USER-DEFINED               -        4.80      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     290.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.81
  AVERAGE FLOW DEPTH(FEET) =   4.48   TRAVEL TIME(MIN.) =   3.95
  Tc(MIN.) =  101.35
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5174.95     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.82
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

DEPTH(FEET) = 4.48 FLOW VELOCITY(FEET/SEC.) = 4.81
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 207.33 | 34.88 | 0.548 | 0.60( 0.50) | 0.83 | 2060.3 | 31100.00 |
| 2 | 261.36 | 61.71 | 0.392 | 0.60( 0.49) | 0.82 | 3739.6 | 13100.00 |
| 3 | 261.77 | 63.12 | 0.389 | 0.60( 0.49) | 0.82 | 3818.1 | 13200.00 |
| 4 | 267.03 | 69.66 | 0.377 | 0.60( 0.49) | 0.82 | 4080.1 | 13210.00 |
| 5 | 290.14 | 101.35 | 0.320 | 0.60( 0.49) | 0.82 | 5174.9 | 13000.00 |
| 6 | 286.10 | 104.74 | 0.313 | 0.60( 0.49) | 0.82 | 5194.9 | 13010.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 290.14 Tc(MIN.) = 101.35
AREA-AVERAGED Fm(INCH/HR) = 0.49 AREA-AVERAGED Fp(INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 5174.95

**********
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 13.80 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 2.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.10 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 3.50 | 0.60 | 0.900 | - |
| USER-DEFINED | - | 6.90 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 0.39
EFFECTIVE AREA(ACRES) = 5203.05 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 290.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.10 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 2.40 | 0.60 | 0.900 | - |



| | | | | | |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 3.10 SUBAREA RUNOFF(CFS) = 0.09
EFFECTIVE AREA(ACRES) = 5206.15 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 5226.1 PEAK FLOW RATE(CFS) = 290.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 2.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 3.10 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 13.80 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 20.20 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 5226.35 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 5246.3 PEAK FLOW RATE(CFS) = 290.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 34.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 2.40 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 22.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 11.60 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.60 | 0.200 | - |
| USER-DEFINED | - | 4.80 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =    0.09
  EFFECTIVE AREA(ACRES) =   5302.75   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.82
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  101.35
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.320
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.60      0.60     1.000     -
  USER-DEFINED               -       46.40      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     0.200     -
  USER-DEFINED               -       60.70      0.60     1.000     -
  USER-DEFINED               -        5.80      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =    0.02
  EFFECTIVE AREA(ACRES) =   5417.35   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.82
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     290.14
  FLOW VELOCITY(FEET/SEC.) =   5.58   FLOW DEPTH(FEET) =   4.16
  TRAVEL TIME(MIN.) =   6.55   Tc(MIN.) =  107.90
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13303.00 =   37994.87 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      207.33   41.99    0.495  0.60( 0.51) 0.84    2302.7   31100.00
      2      261.36   68.43    0.380  0.60( 0.50) 0.83    3982.0   13100.00
```



```
      3      261.77   69.83    0.377  0.60( 0.50) 0.83    4060.5   13200.00
      4      267.03   76.34    0.365  0.60( 0.50) 0.83    4322.5   13210.00
      5      290.14  107.90    0.308  0.60( 0.49) 0.82    5417.4   13000.00
      6      286.10  111.31    0.302  0.60( 0.49) 0.82    5437.3   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     290.14  Tc(MIN.) =  107.90
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.82  EFFECTIVE AREA(ACRES) =    5417.35

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.40      0.60     1.000     -
  USER-DEFINED               -        0.80      0.60     1.000     -
  USER-DEFINED               -        1.40      0.60     0.100     -
  USER-DEFINED               -        2.60      0.60     1.000     -
  USER-DEFINED               -        2.20      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    0.35
  EFFECTIVE AREA(ACRES) =   5424.95   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.82
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.10      0.60     1.000     -
  USER-DEFINED               -        3.40      0.60     1.000     -
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        3.60      0.60     0.100     -
  USER-DEFINED               -        4.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =    0.90
```

```
  EFFECTIVE AREA(ACRES) =   5439.75   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.82
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.60      0.60     1.000     -
  USER-DEFINED               -        6.30      0.60     1.000     -
  USER-DEFINED               -        3.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5464.35   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     0.100     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.80      0.60     0.900     -
  USER-DEFINED               -        1.60      0.60     1.000     -
  USER-DEFINED               -       31.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =    0.10
  EFFECTIVE AREA(ACRES) =   5499.65   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =     290.14
```



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  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.70      0.60     0.100     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        2.60      0.60     0.900     -
  USER-DEFINED               -        5.50      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    0.50
  EFFECTIVE AREA(ACRES) =   5510.15   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  107.90
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.30      0.60     0.900     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     0.100     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        6.50      0.60     0.900     -
  USER-DEFINED               -        3.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    0.27
  EFFECTIVE AREA(ACRES) =   5521.75   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     1.000     -
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        3.50      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     290.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.59
  AVERAGE FLOW DEPTH(FEET) =   4.59   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =  111.26
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5528.45     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.59   FLOW VELOCITY(FEET/SEC.) =   4.59
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      207.33   45.65    0.474  0.60( 0.51) 0.85    2413.8   31100.00
      2      261.36   71.88    0.373  0.60( 0.50) 0.83    4093.1   13100.00
      3      261.77   73.28    0.371  0.60( 0.50) 0.83    4171.6   13200.00
      4      267.03   79.77    0.359  0.60( 0.50) 0.83    4433.6   13210.00
      5      290.14  111.26    0.302  0.60( 0.50) 0.83    5528.5   13000.00
      6      286.10  114.68    0.296  0.60( 0.50) 0.83    5548.4   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     290.14  Tc(MIN.) =  111.26
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    5528.45

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN.) =  111.26
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.40      0.60     1.000     -
  USER-DEFINED               -        4.80      0.60     1.000     -
  USER-DEFINED               -        0.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5535.55   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  111.26
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.80      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     1.000     -
  USER-DEFINED               -        9.40      0.60     1.000     -
  USER-DEFINED               -        1.20      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     0.900     -
  USER-DEFINED               -        2.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5558.35   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  111.26
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        0.20      0.60      1.000     -
  USER-DEFINED              -        0.30      0.60      1.000     -
  USER-DEFINED              -        0.20      0.60      0.900     -
  USER-DEFINED              -        2.70      0.60      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    0.01
  EFFECTIVE AREA(ACRES) =   5561.75   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        1.70      0.60      1.000     -
  USER-DEFINED              -        0.60      0.60      1.000     -
  USER-DEFINED              -        0.10      0.60      1.000     -
  USER-DEFINED              -        0.40      0.60      1.000     -
  USER-DEFINED              -        2.20      0.60      1.000     -
  USER-DEFINED              -        4.20      0.60      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     290.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.15
  AVERAGE FLOW DEPTH(FEET) =   3.96   TRAVEL TIME(MIN.) =   8.03
  Tc(MIN.) =  119.29
  SUBAREA AREA(ACRES) =     9.20       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5570.95     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.96   FLOW VELOCITY(FEET/SEC.) =   6.15
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** PEAK FLOW RATE TABLE **
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   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      207.33   54.40    0.425  0.60( 0.51) 0.85    2456.3   31100.00
      2      261.36   80.13    0.358  0.60( 0.50) 0.83    4135.6   13100.00
      3      261.77   81.53    0.356  0.60( 0.50) 0.83    4214.1   13200.00
      4      267.03   87.97    0.344  0.60( 0.50) 0.83    4476.1   13210.00
      5      290.14  119.29    0.287  0.60( 0.50) 0.83    5571.0   13000.00
      6      286.10  122.76    0.284  0.60( 0.50) 0.83    5590.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     290.14  Tc(MIN.) =  119.29
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    5570.95

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.10      0.60      1.000     -
  USER-DEFINED              -        2.30      0.60      1.000     -
  USER-DEFINED              -        0.20      0.60      1.000     -
  USER-DEFINED              -        6.90      0.60      1.000     -
  USER-DEFINED              -        0.70      0.60      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   5589.15   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       18.40      0.60      1.000     -
  USER-DEFINED              -        1.20      0.60      1.000     -
  USER-DEFINED              -        0.10      0.60      1.000     -
  USER-DEFINED              -       26.60      0.60      1.000     -
  USER-DEFINED              -        3.90      0.60      0.100     -
  USER-DEFINED              -        3.00      0.60      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
```

```
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =    0.91
  EFFECTIVE AREA(ACRES) =   5642.35   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -       14.00      0.60     1.000     -
  USER-DEFINED               -        4.30      0.60     0.100     -
  USER-DEFINED               -        5.30      0.60     1.000     -
  USER-DEFINED               -        2.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =    1.00
  EFFECTIVE AREA(ACRES) =   5669.95   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.20      0.60     1.000     -
  USER-DEFINED               -        6.10      0.60     1.000     -
  USER-DEFINED               -        7.50      0.60     0.900     -
  USER-DEFINED               -        5.40      0.60     1.000     -
  USER-DEFINED               -        1.60      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
```



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  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =    0.19
  EFFECTIVE AREA(ACRES) =   5695.65   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.00      0.60     0.100     -
  USER-DEFINED               -        3.70      0.60     1.000     -
  USER-DEFINED               -        2.10      0.60     1.000     -
  USER-DEFINED               -        2.60      0.60     0.900     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    0.53
  EFFECTIVE AREA(ACRES) =   5706.35   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =     290.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  119.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.287
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.60     1.000     -
  USER-DEFINED               -        8.20      0.60     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    0.21
  EFFECTIVE AREA(ACRES) =   5715.05   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =     290.14
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A02EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      253.57   16.02  0.60( 0.26) 0.43     423.9     120.00
      2      249.96   16.56  0.60( 0.26) 0.43     431.7     110.00
      3      195.31   25.12  0.60( 0.25) 0.42     498.0     100.00
      4      160.80   32.93  0.60( 0.26) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      207.33   54.40    0.425  0.60( 0.51) 0.85    2600.4   31100.00
      2      261.36   80.13    0.358  0.60( 0.50) 0.84    4279.7   13100.00
      3      261.77   81.53    0.356  0.60( 0.50) 0.84    4358.2   13200.00
      4      267.03   87.97    0.344  0.60( 0.50) 0.84    4620.2   13210.00
      5      290.14  119.29    0.287  0.60( 0.50) 0.83    5715.1   13000.00
      6      286.10  122.76    0.284  0.60( 0.50) 0.83    5735.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      253.57   16.02    0.898  0.60( 0.26) 0.43     423.9     120.00
      2      249.96   16.56    0.880  0.60( 0.26) 0.43     431.7     110.00
      3      195.31   25.12    0.660  0.60( 0.25) 0.42     498.0     100.00
      4      160.80   32.93    0.563  0.60( 0.26) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      460.90   16.02    0.898  0.60( 0.42) 0.70    1189.6     120.00
      2      457.29   16.56    0.880  0.60( 0.42) 0.70    1223.5     110.00
      3      402.64   25.12    0.660  0.60( 0.44) 0.73    1698.7     100.00
      4      327.04   32.93    0.563  0.60( 0.45) 0.75    2084.4     150.00
      5      328.73   54.40    0.425  0.60( 0.47) 0.79    3110.6   31100.00
      6      363.59   80.13    0.358  0.60( 0.48) 0.79    4789.9   13100.00
      7      363.26   81.53    0.356  0.60( 0.48) 0.79    4868.4   13200.00
      8      365.16   87.97    0.344  0.60( 0.48) 0.80    5130.4   13210.00
      9      372.15  119.29    0.287  0.60( 0.48) 0.80    6225.3   13000.00
     10      367.04  122.76    0.284  0.60( 0.48) 0.80    6245.2   13010.00
    TOTAL AREA(ACRES) =      6245.2
```



```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      460.90  Tc(MIN.) =   16.018
  EFFECTIVE AREA(ACRES) =   1189.63  AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE          GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        0.40      0.60     1.000     -
  USER-DEFINED              -        9.20      0.60     1.000     -
  USER-DEFINED              -        1.00      0.60     1.000     -
  USER-DEFINED              -        1.30      0.60     1.000     -
  USER-DEFINED              -        2.40      0.60     1.000     -
  USER-DEFINED              -        4.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     461.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.70
  AVERAGE FLOW DEPTH(FEET) =   4.47   TRAVEL TIME(MIN.) =   9.54
  Tc(MIN.) =   25.56
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =    0.89
  EFFECTIVE AREA(ACRES) =   1208.03     AREA-AVERAGED Fm(INCH/HR) =   0.42
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.71
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.47   FLOW VELOCITY(FEET/SEC.) =   7.70
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      460.90   25.56    0.654  0.60( 0.42) 0.71    1208.0     120.00
      2      457.29   26.14    0.645  0.60( 0.42) 0.71    1241.9     110.00
      3      402.64   34.99    0.547  0.60( 0.44) 0.73    1717.1     100.00
      4      327.04   43.32    0.487  0.60( 0.45) 0.75    2102.8     150.00
      5      328.73   64.77    0.386  0.60( 0.47) 0.79    3129.0   31100.00
      6      363.59   90.25    0.340  0.60( 0.48) 0.80    4808.3   13100.00
```

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     7      363.26   91.67    0.337  0.60( 0.48) 0.80    4886.8   13200.00
     8      365.16   98.09    0.325  0.60( 0.48) 0.80    5148.8   13210.00
     9      372.15  129.36    0.278  0.60( 0.48) 0.80    6243.7   13000.00
    10      367.04  132.86    0.274  0.60( 0.48) 0.80    6263.6   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     460.90  Tc(MIN.) =   25.56
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.71  EFFECTIVE AREA(ACRES) =    1208.03

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       19.20      0.60     1.000     -
  USER-DEFINED               -       20.90      0.60     1.000     -
  USER-DEFINED               -        4.10      0.60     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        4.30      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =    2.45
  EFFECTIVE AREA(ACRES) =   1257.63   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.04
  EFFECTIVE AREA(ACRES) =   1258.43   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
```



```
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.60     0.850     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        0.40      0.60     0.850     -
  USER-DEFINED               -        0.40      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.10
  EFFECTIVE AREA(ACRES) =   1259.73   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.60     0.900     -
  USER-DEFINED               -        0.80      0.60     1.000     -
  USER-DEFINED               -        1.00      0.60     1.000     -
  USER-DEFINED               -        1.10      0.60     1.000     -
  USER-DEFINED               -        1.10      0.60     0.100     -
  USER-DEFINED               -        2.80      0.60     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    1.10
  EFFECTIVE AREA(ACRES) =   1267.33   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.50      0.60     0.100     -
  USER-DEFINED               -        5.00      0.60     1.000     -
  USER-DEFINED               -        6.70      0.60     0.900     -
  USER-DEFINED               -        7.80      0.60     1.000     -
  USER-DEFINED               -       10.80      0.60     1.000     -
  USER-DEFINED               -       13.80      0.60     0.100     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   11.07
  EFFECTIVE AREA(ACRES) =   1314.93   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.56
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.54      0.60     1.000     -
  USER-DEFINED               -       36.64      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =    2.82
  EFFECTIVE AREA(ACRES) =   1373.11   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     460.90
  FLOW VELOCITY(FEET/SEC.) =   7.84   FLOW DEPTH(FEET) =   4.43
  TRAVEL TIME(MIN.) =   3.28   Tc(MIN.) =   28.84
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      460.90   28.84    0.604  0.60( 0.44) 0.73    1373.1     120.00
      2      457.29   29.42    0.596  0.60( 0.44) 0.73    1407.0     110.00
      3      402.64   38.38    0.519  0.60( 0.45) 0.74    1882.2     100.00
      4      327.04   46.90    0.467  0.60( 0.46) 0.76    2267.9     150.00
      5      328.73   68.35    0.380  0.60( 0.48) 0.79    3294.1   31100.00
      6      363.59   93.74    0.333  0.60( 0.48) 0.80    4973.4   13100.00
      7      363.26   95.15    0.331  0.60( 0.48) 0.80    5051.9   13200.00
      8      365.16  101.57    0.319  0.60( 0.48) 0.80    5313.9   13210.00
      9      372.15  132.82    0.274  0.60( 0.48) 0.80    6408.7   13000.00
     10      367.04  136.34    0.271  0.60( 0.48) 0.80    6428.7   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     460.90  Tc(MIN.) =   28.84
```



```
  AREA-AVERAGED Fm(INCH/HR) =  0.44  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.73  EFFECTIVE AREA(ACRES) =    1373.11

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.604
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.60     0.100     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  USER-DEFINED               -        0.20      0.60     1.000     -
  USER-DEFINED               -        3.70      0.60     1.000     -
  USER-DEFINED               -        0.30      0.60     0.100     -
  USER-DEFINED               -        3.20      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    0.27
  EFFECTIVE AREA(ACRES) =   1380.81   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.84
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.604
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.60      0.60     1.000     -
  USER-DEFINED               -        1.90      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    0.03
  EFFECTIVE AREA(ACRES) =   1386.91   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
```

CHANNEL FLOW THRU SUBAREA(CFS) = 460.90
FLOW VELOCITY(FEET/SEC.) = 6.15 FLOW DEPTH(FEET) = 5.00
TRAVEL TIME(MIN.) = 2.51 Tc(MIN.) = 31.35
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 460.90 | 31.35 | 0.576 | 0.60( 0.44) | 0.73 | 1386.9 | 120.00 |
| 2 | 457.29 | 31.94 | 0.571 | 0.60( 0.44) | 0.73 | 1420.8 | 110.00 |
| 3 | 402.64 | 40.98 | 0.500 | 0.60( 0.45) | 0.75 | 1896.0 | 100.00 |
| 4 | 327.04 | 49.63 | 0.451 | 0.60( 0.46) | 0.77 | 2281.7 | 150.00 |
| 5 | 328.73 | 71.08 | 0.375 | 0.60( 0.48) | 0.79 | 3307.9 | 31100.00 |
| 6 | 363.59 | 96.40 | 0.328 | 0.60( 0.48) | 0.80 | 4987.2 | 13100.00 |
| 7 | 363.26 | 97.81 | 0.326 | 0.60( 0.48) | 0.80 | 5065.7 | 13200.00 |
| 8 | 365.16 | 104.23 | 0.314 | 0.60( 0.48) | 0.80 | 5327.7 | 13210.00 |
| 9 | 372.15 | 135.47 | 0.272 | 0.60( 0.48) | 0.80 | 6422.5 | 13000.00 |
| 10 | 367.04 | 138.99 | 0.269 | 0.60( 0.48) | 0.80 | 6442.5 | 13010.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 460.90 Tc(MIN.) = 31.35
AREA-AVERAGED Fm(INCH/HR) = 0.44 AREA-AVERAGED Fp(INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.73 EFFECTIVE AREA(ACRES) = 1386.91

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 31.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 5.00 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 3.20 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 0.10 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.90 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 1.49
EFFECTIVE AREA(ACRES) = 1396.41 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 6452.0 PEAK FLOW RATE(CFS) = 460.90
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 31.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576



SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.30 | 0.60 | 0.200 | - |
| USER-DEFINED | - | 0.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 1.00 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 41.90 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 7.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 25.00 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 19.68
EFFECTIVE AREA(ACRES) = 1472.01 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 6527.6 PEAK FLOW RATE(CFS) = 460.90
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 31.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.60 | 0.850 | - |
| USER-DEFINED | - | 0.90 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.60 | 0.600 | - |
| USER-DEFINED | - | 13.20 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.50 | 0.60 | 0.200 | - |
| USER-DEFINED | - | 0.60 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 0.28
EFFECTIVE AREA(ACRES) = 1487.61 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 6543.2 PEAK FLOW RATE(CFS) = 460.90
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 31.35
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -       33.90      0.60     0.100     -
  USER-DEFINED             -       17.60      0.60     1.000     -
  USER-DEFINED             -       16.80      0.60     1.000     -
  USER-DEFINED             -        0.60      0.60     0.200     -
  USER-DEFINED             -        1.50      0.60     0.400     -
  USER-DEFINED             -       10.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   16.53
  EFFECTIVE AREA(ACRES) =   1568.01   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   31.35
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.576
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.30      0.60     0.600     -
  USER-DEFINED             -        0.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.06
  EFFECTIVE AREA(ACRES) =   1569.01   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   31.35
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.576
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.30      0.60     1.000     -
  USER-DEFINED             -        0.80      0.60     1.000     -
  USER-DEFINED             -        0.50      0.60     1.000     -
  USER-DEFINED             -        0.20      0.60     1.000     -
  USER-DEFINED             -        0.30      0.60     1.000     -
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1571.11   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   31.35
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.576
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        1.20      0.60     1.000     -
  USER-DEFINED             -        0.50      0.60     1.000     -
  USER-DEFINED             -        1.70      0.60     0.850     -
  USER-DEFINED             -        7.20      0.60     1.000     -
  USER-DEFINED             -        1.00      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    0.13
  EFFECTIVE AREA(ACRES) =   1582.71   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.72
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =     460.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1767.69   18.13  0.60( 0.47) 0.78    1882.7   50200.00
      2     1726.27   34.57  0.60( 0.47) 0.79    4011.5     420.00
      3     1481.63   44.41  0.60( 0.49) 0.81    5733.3     300.00
      4      815.67   63.47  0.60( 0.51) 0.85    7541.4     600.00
```

```
      5      837.52  112.35  0.60( 0.55) 0.92   14231.5   11831.00
      6      908.69  136.05  0.60( 0.56) 0.93   17916.6   11530.00
      7      984.51  155.75  0.60( 0.57) 0.95   22063.3   11000.00
      8     1087.20  178.27  0.60( 0.57) 0.96   28859.2   10850.00
      9      972.79  199.74  0.60( 0.58) 0.96   33193.7   11910.00
     10      911.39  211.77  0.60( 0.58) 0.96   34897.2   12300.00
     11      786.86  245.43  0.60( 0.58) 0.97   40605.7   12410.00
     12      744.49  278.37  0.60( 0.58) 0.97   46691.6   12261.00
     13      730.60  291.12  0.60( 0.58) 0.97   48178.2   10410.00
     14      716.86  303.31  0.60( 0.58) 0.97   49280.1   12101.10
     15      702.44  313.01  0.60( 0.58) 0.97   50101.5   10700.00
     16      685.83  330.77  0.60( 0.58) 0.97   51658.2   10200.00
     17      670.12  344.16  0.60( 0.58) 0.97   52596.5   12010.00
     18      626.90  373.24  0.60( 0.58) 0.97   53270.2   10210.00
     19      566.78  422.39  0.60( 0.58) 0.97   53769.2   12000.00
     20      526.91  491.93  0.60( 0.58) 0.97   54354.0   10100.00
    TOTAL AREA(ACRES) =    54354.0

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1767.69   18.13  0.60( 0.47) 0.78    1882.7   50200.00
      2     1726.27   34.57  0.60( 0.47) 0.79    4011.5     420.00
      3     1481.63   44.41  0.60( 0.49) 0.81    5733.3     300.00
      4      815.67   63.47  0.60( 0.51) 0.85    7541.4     600.00
      5      837.52  112.35  0.60( 0.55) 0.92   14231.5   11831.00
      6      908.69  136.05  0.60( 0.56) 0.93   17916.6   11530.00
      7      984.51  155.75  0.60( 0.57) 0.95   22063.3   11000.00
      8     1087.20  178.27  0.60( 0.57) 0.96   28859.2   10850.00
      9      972.79  199.74  0.60( 0.58) 0.96   33193.7   11910.00
     10      911.39  211.77  0.60( 0.58) 0.96   34897.2   12300.00
     11      786.86  245.43  0.60( 0.58) 0.97   40605.7   12410.00
     12      744.49  278.37  0.60( 0.58) 0.97   46691.6   12261.00
     13      730.60  291.12  0.60( 0.58) 0.97   48178.2   10410.00
     14      716.86  303.31  0.60( 0.58) 0.97   49280.1   12101.10
     15      702.44  313.01  0.60( 0.58) 0.97   50101.5   10700.00
     16      685.83  330.77  0.60( 0.58) 0.97   51658.2   10200.00
     17      670.12  344.16  0.60( 0.58) 0.97   52596.5   12010.00
     18      626.90  373.24  0.60( 0.58) 0.97   53270.2   10210.00
     19      566.78  422.39  0.60( 0.58) 0.97   53769.2   12000.00
     20      526.91  491.93  0.60( 0.58) 0.97   54354.0   10100.00
    TOTAL AREA(ACRES) =     54354.0

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



```
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1767.69
  FLOW VELOCITY(FEET/SEC.) =   4.20   FLOW DEPTH(FEET) =  11.85
  TRAVEL TIME(MIN.) =   5.51   Tc(MIN.) =   23.64
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118067.44 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1767.69   23.64    0.690  0.60( 0.47) 0.78    1882.7   50200.00
      2     1726.27   40.12    0.505  0.60( 0.47) 0.79    4011.5     420.00
      3     1481.63   50.17    0.448  0.60( 0.49) 0.81    5733.3     300.00
      4      815.67   70.16    0.376  0.60( 0.51) 0.85    7541.4     600.00
      5      837.52  119.00    0.288  0.60( 0.55) 0.92   14231.5   11831.00
      6      908.69  142.56    0.266  0.60( 0.56) 0.93   17916.6   11530.00
      7      984.51  162.13    0.248  0.60( 0.57) 0.95   22063.3   11000.00
      8     1087.20  184.49    0.231  0.60( 0.57) 0.96   28859.2   10850.00
      9      972.79  206.14    0.224  0.60( 0.58) 0.96   33193.7   11910.00
     10      911.39  218.28    0.221  0.60( 0.58) 0.96   34897.2   12300.00
     11      786.86  252.18    0.210  0.60( 0.58) 0.97   40605.7   12410.00
     12      744.49  285.21    0.200  0.60( 0.58) 0.97   46691.6   12261.00
     13      730.60  298.00    0.197  0.60( 0.58) 0.97   48178.2   10410.00
     14      716.86  310.22    0.193  0.60( 0.58) 0.97   49280.1   12101.10
     15      702.44  319.95    0.190  0.60( 0.58) 0.97   50101.5   10700.00
     16      685.83  337.76    0.185  0.60( 0.58) 0.97   51658.2   10200.00
     17      670.12  351.20    0.181  0.60( 0.58) 0.97   52596.5   12010.00
     18      626.90  380.39    0.176  0.60( 0.58) 0.97   53270.2   10210.00
     19      566.78  429.72    0.170  0.60( 0.58) 0.97   53769.2   12000.00
     20      526.91  499.40    0.162  0.60( 0.58) 0.97   54354.0   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1767.69  Tc(MIN.) =   23.64
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.78  EFFECTIVE AREA(ACRES) =    1882.69

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1767.69   23.64    0.690  0.60( 0.47) 0.78    1882.7   50200.00
      2     1726.27   40.12    0.505  0.60( 0.47) 0.79    4011.5     420.00
      3     1481.63   50.17    0.448  0.60( 0.49) 0.81    5733.3     300.00
      4      815.67   70.16    0.376  0.60( 0.51) 0.85    7541.4     600.00
      5      837.52  119.00    0.288  0.60( 0.55) 0.92   14231.5   11831.00
      6      908.69  142.56    0.266  0.60( 0.56) 0.93   17916.6   11530.00
      7      984.51  162.13    0.248  0.60( 0.57) 0.95   22063.3   11000.00
      8     1087.20  184.49    0.231  0.60( 0.57) 0.96   28859.2   10850.00
      9      972.79  206.14    0.224  0.60( 0.58) 0.96   33193.7   11910.00
     10      911.39  218.28    0.221  0.60( 0.58) 0.96   34897.2   12300.00
     11      786.86  252.18    0.210  0.60( 0.58) 0.97   40605.7   12410.00
     12      744.49  285.21    0.200  0.60( 0.58) 0.97   46691.6   12261.00
     13      730.60  298.00    0.197  0.60( 0.58) 0.97   48178.2   10410.00
     14      716.86  310.22    0.193  0.60( 0.58) 0.97   49280.1   12101.10
     15      702.44  319.95    0.190  0.60( 0.58) 0.97   50101.5   10700.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 16 | 685.83 | 337.76 | 0.185 | 0.60( 0.58) | 0.97 | 51658.2 | 10200.00 |
| 17 | 670.12 | 351.20 | 0.181 | 0.60( 0.58) | 0.97 | 52596.5 | 12010.00 |
| 18 | 626.90 | 380.39 | 0.176 | 0.60( 0.58) | 0.97 | 53270.2 | 10210.00 |
| 19 | 566.78 | 429.72 | 0.170 | 0.60( 0.58) | 0.97 | 53769.2 | 12000.00 |
| 20 | 526.91 | 499.40 | 0.162 | 0.60( 0.58) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118067.44 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 460.90 | 31.35 | 0.576 | 0.60( 0.43) | 0.72 | 1582.7 | 120.00 |
| 2 | 457.29 | 31.94 | 0.571 | 0.60( 0.43) | 0.72 | 1616.6 | 110.00 |
| 3 | 402.64 | 40.98 | 0.500 | 0.60( 0.44) | 0.73 | 2091.8 | 100.00 |
| 4 | 327.04 | 49.63 | 0.451 | 0.60( 0.45) | 0.75 | 2477.5 | 150.00 |
| 5 | 328.73 | 71.08 | 0.375 | 0.60( 0.47) | 0.78 | 3503.7 | 31100.00 |
| 6 | 363.59 | 96.40 | 0.328 | 0.60( 0.48) | 0.79 | 5183.0 | 13100.00 |
| 7 | 363.26 | 97.81 | 0.326 | 0.60( 0.48) | 0.79 | 5261.5 | 13200.00 |
| 8 | 365.16 | 104.23 | 0.314 | 0.60( 0.48) | 0.79 | 5523.5 | 13210.00 |
| 9 | 372.15 | 135.47 | 0.272 | 0.60( 0.48) | 0.80 | 6618.3 | 13000.00 |
| 10 | 367.04 | 138.99 | 0.269 | 0.60( 0.48) | 0.80 | 6638.3 | 13010.00 |

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2228.59 | 23.64 | 0.690 | 0.60( 0.45) | 0.75 | 3076.3 | 50200.00 |
| 2 | 2209.22 | 31.35 | 0.576 | 0.60( 0.45) | 0.76 | 4461.3 | 120.00 |
| 3 | 2204.11 | 31.94 | 0.571 | 0.60( 0.46) | 0.76 | 4571.7 | 110.00 |
| 4 | 2134.17 | 40.12 | 0.505 | 0.60( 0.46) | 0.77 | 6057.6 | 420.00 |
| 5 | 2107.79 | 40.98 | 0.500 | 0.60( 0.46) | 0.77 | 6252.0 | 100.00 |
| 6 | 1821.82 | 49.63 | 0.451 | 0.60( 0.47) | 0.79 | 8118.2 | 150.00 |
| 7 | 1808.71 | 50.17 | 0.448 | 0.60( 0.48) | 0.79 | 8236.6 | 300.00 |
| 8 | 1144.33 | 70.16 | 0.376 | 0.60( 0.50) | 0.83 | 11001.2 | 600.00 |
| 9 | 1144.81 | 71.08 | 0.375 | 0.60( 0.50) | 0.83 | 11170.7 | 31100.00 |
| 10 | 1191.00 | 96.40 | 0.328 | 0.60( 0.51) | 0.86 | 16319.2 | 13100.00 |
| 11 | 1191.30 | 97.81 | 0.326 | 0.60( 0.52) | 0.86 | 16590.8 | 13200.00 |
| 12 | 1196.07 | 104.23 | 0.314 | 0.60( 0.52) | 0.87 | 17731.9 | 13210.00 |
| 13 | 1205.98 | 119.00 | 0.288 | 0.60( 0.53) | 0.88 | 20272.5 | 11831.00 |
| 14 | 1259.43 | 135.47 | 0.272 | 0.60( 0.53) | 0.89 | 23426.2 | 13000.00 |
| 15 | 1264.95 | 138.99 | 0.269 | 0.60( 0.54) | 0.89 | 23996.9 | 13010.00 |
| 16 | 1271.35 | 142.56 | 0.266 | 0.60( 0.54) | 0.90 | 24554.9 | 11530.00 |
| 17 | 1323.12 | 162.13 | 0.248 | 0.60( 0.55) | 0.91 | 28701.6 | 11000.00 |
| 18 | 1402.02 | 184.49 | 0.231 | 0.60( 0.56) | 0.93 | 35497.5 | 10850.00 |
| 19 | 1278.75 | 206.14 | 0.224 | 0.60( 0.56) | 0.93 | 39832.1 | 11910.00 |
| 20 | 1212.38 | 218.28 | 0.221 | 0.60( 0.56) | 0.94 | 41535.5 | 12300.00 |
| 21 | 1073.97 | 252.18 | 0.210 | 0.60( 0.57) | 0.94 | 47244.0 | 12410.00 |
| 22 | 1018.07 | 285.21 | 0.200 | 0.60( 0.57) | 0.95 | 53329.9 | 12261.00 |
| 23 | 998.94 | 298.00 | 0.197 | 0.60( 0.57) | 0.95 | 54816.5 | 10410.00 |
| 24 | 980.20 | 310.22 | 0.193 | 0.60( 0.57) | 0.95 | 55918.4 | 12101.10 |
| 25 | 961.79 | 319.95 | 0.190 | 0.60( 0.57) | 0.95 | 56739.8 | 10700.00 |
| 26 | 937.89 | 337.76 | 0.185 | 0.60( 0.57) | 0.95 | 58296.5 | 10200.00 |
| 27 | 916.68 | 351.20 | 0.181 | 0.60( 0.57) | 0.95 | 59234.8 | 12010.00 |
| 28 | 866.61 | 380.39 | 0.176 | 0.60( 0.57) | 0.95 | 59908.5 | 10210.00 |
| 29 | 798.63 | 429.72 | 0.170 | 0.60( 0.57) | 0.95 | 60407.6 | 12000.00 |
| 30 | 747.67 | 499.40 | 0.162 | 0.60( 0.57) | 0.95 | 60992.3 | 10100.00 |

TOTAL AREA(ACRES) = 60992.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:



PEAK FLOW RATE(CFS) = 2228.59 Tc(MIN.) = 23.643
EFFECTIVE AREA(ACRES) = 3076.34 AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.75
TOTAL AREA(ACRES) = 60992.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118067.44 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60992.3 TC(MIN.) = 23.64
EFFECTIVE AREA(ACRES) = 3076.34 AREA-AVERAGED Fm(INCH/HR)= 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.753
PEAK FLOW RATE(CFS) = 2228.59

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2228.59 | 23.64 | 0.690 | 0.60( 0.45) | 0.75 | 3076.3 | 50200.00 |
| 2 | 2209.22 | 31.35 | 0.576 | 0.60( 0.45) | 0.76 | 4461.3 | 120.00 |
| 3 | 2204.11 | 31.94 | 0.571 | 0.60( 0.46) | 0.76 | 4571.7 | 110.00 |
| 4 | 2134.17 | 40.12 | 0.505 | 0.60( 0.46) | 0.77 | 6057.6 | 420.00 |
| 5 | 2107.79 | 40.98 | 0.500 | 0.60( 0.46) | 0.77 | 6252.0 | 100.00 |
| 6 | 1821.82 | 49.63 | 0.451 | 0.60( 0.47) | 0.79 | 8118.2 | 150.00 |
| 7 | 1808.71 | 50.17 | 0.448 | 0.60( 0.48) | 0.79 | 8236.6 | 300.00 |
| 8 | 1144.33 | 70.16 | 0.376 | 0.60( 0.50) | 0.83 | 11001.2 | 600.00 |
| 9 | 1144.81 | 71.08 | 0.375 | 0.60( 0.50) | 0.83 | 11170.7 | 31100.00 |
| 10 | 1191.00 | 96.40 | 0.328 | 0.60( 0.51) | 0.86 | 16319.2 | 13100.00 |
| 11 | 1191.30 | 97.81 | 0.326 | 0.60( 0.52) | 0.86 | 16590.8 | 13200.00 |
| 12 | 1196.07 | 104.23 | 0.314 | 0.60( 0.52) | 0.87 | 17731.9 | 13210.00 |
| 13 | 1205.98 | 119.00 | 0.288 | 0.60( 0.53) | 0.88 | 20272.5 | 11831.00 |
| 14 | 1259.43 | 135.47 | 0.272 | 0.60( 0.53) | 0.89 | 23426.2 | 13000.00 |
| 15 | 1264.95 | 138.99 | 0.269 | 0.60( 0.54) | 0.89 | 23996.9 | 13010.00 |
| 16 | 1271.35 | 142.56 | 0.266 | 0.60( 0.54) | 0.90 | 24554.9 | 11530.00 |
| 17 | 1323.12 | 162.13 | 0.248 | 0.60( 0.55) | 0.91 | 28701.6 | 11000.00 |
| 18 | 1402.02 | 184.49 | 0.231 | 0.60( 0.56) | 0.93 | 35497.5 | 10850.00 |
| 19 | 1278.75 | 206.14 | 0.224 | 0.60( 0.56) | 0.93 | 39832.1 | 11910.00 |
| 20 | 1212.38 | 218.28 | 0.221 | 0.60( 0.56) | 0.94 | 41535.5 | 12300.00 |
| 21 | 1073.97 | 252.18 | 0.210 | 0.60( 0.57) | 0.94 | 47244.0 | 12410.00 |
| 22 | 1018.07 | 285.21 | 0.200 | 0.60( 0.57) | 0.95 | 53329.9 | 12261.00 |
| 23 | 998.94 | 298.00 | 0.197 | 0.60( 0.57) | 0.95 | 54816.5 | 10410.00 |
| 24 | 980.20 | 310.22 | 0.193 | 0.60( 0.57) | 0.95 | 55918.4 | 12101.10 |
| 25 | 961.79 | 319.95 | 0.190 | 0.60( 0.57) | 0.95 | 56739.8 | 10700.00 |
| 26 | 937.89 | 337.76 | 0.185 | 0.60( 0.57) | 0.95 | 58296.5 | 10200.00 |
| 27 | 916.68 | 351.20 | 0.181 | 0.60( 0.57) | 0.95 | 59234.8 | 12010.00 |
| 28 | 866.61 | 380.39 | 0.176 | 0.60( 0.57) | 0.95 | 59908.5 | 10210.00 |
| 29 | 798.63 | 429.72 | 0.170 | 0.60( 0.57) | 0.95 | 60407.6 | 12000.00 |
| 30 | 747.67 | 499.40 | 0.162 | 0.60( 0.57) | 0.95 | 60992.3 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 2-YR EV AUG 2023 ROKAMOTO                                            *
 ***********************************************************************

  FILE NAME: RI02EV34.DAT
  TIME/DATE OF STUDY: 16:10 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.819
   2)   10.00;  1.213
   3)   15.00;  0.930
   4)   20.00;  0.765
   5)   25.00;  0.661
   6)   30.00;  0.587
   7)   40.00;  0.505
   8)   50.00;  0.448
   9)   60.00;  0.390
  10)   90.00;  0.336
  11)  120.00;  0.280
  12)  180.00;  0.226
  13)  360.00;  0.170
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     2228.59   23.64  0.60( 0.45) 0.75    3076.3   50200.00
      2     2134.17   40.12  0.60( 0.46) 0.77    6057.6     420.00
      3     1144.81   71.08  0.60( 0.50) 0.83   11170.7   31100.00
      4     1196.07  104.23  0.60( 0.52) 0.87   17731.9   13210.00
      5     1205.98  119.00  0.60( 0.53) 0.88   20272.5   11831.00
      6     1271.35  142.56  0.60( 0.54) 0.90   24554.9   11530.00
      7     1323.12  162.13  0.60( 0.55) 0.91   28701.6   11000.00
      8     1402.02  184.49  0.60( 0.56) 0.93   35497.5   10850.00
      9     1278.75  206.14  0.60( 0.56) 0.93   39832.1   11910.00
     10     1212.38  218.28  0.60( 0.56) 0.94   41535.5   12300.00
     11     1073.97  252.18  0.60( 0.57) 0.94   47244.0   12410.00
     12     1018.07  285.21  0.60( 0.57) 0.95   53329.9   12261.00
     13      998.94  298.00  0.60( 0.57) 0.95   54816.5   10410.00
     14      980.20  310.22  0.60( 0.57) 0.95   55918.4   12101.10
     15      961.79  319.95  0.60( 0.57) 0.95   56739.8   10700.00
     16      937.89  337.76  0.60( 0.57) 0.95   58296.5   10200.00
     17      916.68  351.20  0.60( 0.57) 0.95   59234.8   12010.00
     18      866.61  380.39  0.60( 0.57) 0.95   59908.5   10210.00
     19      798.63  429.72  0.60( 0.57) 0.95   60407.6   12000.00
     20      747.67  499.40  0.60( 0.57) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

******************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     2228.59   23.64  0.60( 0.45) 0.75    3076.3   50200.00
      2     2134.17   40.12  0.60( 0.46) 0.77    6057.6     420.00
      3     1144.81   71.08  0.60( 0.50) 0.83   11170.7   31100.00
      4     1196.07  104.23  0.60( 0.52) 0.87   17731.9   13210.00
      5     1205.98  119.00  0.60( 0.53) 0.88   20272.5   11831.00
      6     1271.35  142.56  0.60( 0.54) 0.90   24554.9   11530.00
      7     1323.12  162.13  0.60( 0.55) 0.91   28701.6   11000.00
      8     1402.02  184.49  0.60( 0.56) 0.93   35497.5   10850.00
      9     1278.75  206.14  0.60( 0.56) 0.93   39832.1   11910.00
     10     1212.38  218.28  0.60( 0.56) 0.94   41535.5   12300.00
     11     1073.97  252.18  0.60( 0.57) 0.94   47244.0   12410.00
     12     1018.07  285.21  0.60( 0.57) 0.95   53329.9   12261.00
     13      998.94  298.00  0.60( 0.57) 0.95   54816.5   10410.00
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     14      980.20  310.22  0.60( 0.57) 0.95   55918.4   12101.10
     15      961.79  319.95  0.60( 0.57) 0.95   56739.8   10700.00
     16      937.89  337.76  0.60( 0.57) 0.95   58296.5   10200.00
     17      916.68  351.20  0.60( 0.57) 0.95   59234.8   12010.00
     18      866.61  380.39  0.60( 0.57) 0.95   59908.5   10210.00
     19      798.63  429.72  0.60( 0.57) 0.95   60407.6   12000.00
     20      747.67  499.40  0.60( 0.57) 0.95   60992.3   10100.00
    TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2228.59
  FLOW VELOCITY(FEET/SEC.) =   9.08   FLOW DEPTH(FEET) =   9.05
  TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =   24.79
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505T.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        7.45   28.69  0.60( 0.59) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2228.59   24.79    0.665  0.60( 0.45) 0.75    3076.3   50200.00
      2     2134.17   41.27    0.498  0.60( 0.46) 0.77    6057.6     420.00
      3     1144.81   72.43    0.368  0.60( 0.50) 0.83   11170.7   31100.00
      4     1196.07  105.56    0.307  0.60( 0.52) 0.87   17731.9   13210.00
      5     1205.98  120.33    0.280  0.60( 0.53) 0.88   20272.5   11831.00
      6     1271.35  143.88    0.259  0.60( 0.54) 0.90   24554.9   11530.00
      7     1323.12  163.44    0.241  0.60( 0.55) 0.91   28701.6   11000.00
      8     1402.02  185.78    0.224  0.60( 0.56) 0.93   35497.5   10850.00
      9     1278.75  207.45    0.217  0.60( 0.56) 0.93   39832.1   11910.00
     10     1212.38  219.61    0.214  0.60( 0.56) 0.94   41535.5   12300.00
     11     1073.97  253.56    0.203  0.60( 0.57) 0.94   47244.0   12410.00
     12     1018.07  286.60    0.193  0.60( 0.57) 0.95   53329.9   12261.00
     13      998.94  299.40    0.189  0.60( 0.57) 0.95   54816.5   10410.00
```



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     14      980.20  311.62    0.185  0.60( 0.57) 0.95   55918.4   12101.10
     15      961.79  321.37    0.182  0.60( 0.57) 0.95   56739.8   10700.00
     16      937.89  339.18    0.176  0.60( 0.57) 0.95   58296.5   10200.00
     17      916.68  352.62    0.172  0.60( 0.57) 0.95   59234.8   12010.00
     18      866.61  381.84    0.168  0.60( 0.57) 0.95   59908.5   10210.00
     19      798.63  431.20    0.162  0.60( 0.57) 0.95   60407.6   12000.00
     20      747.67  500.90    0.155  0.60( 0.57) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        7.45   28.69    0.606  0.60( 0.59) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2236.04   24.79    0.665  0.60( 0.46) 0.76    3208.7   50200.00
      2     2213.69   28.69    0.606  0.60( 0.46) 0.77    3935.3   50500.00
      3     2137.60   41.27    0.498  0.60( 0.46) 0.77    6210.8     420.00
      4     1147.35   72.43    0.368  0.60( 0.50) 0.83   11323.8   31100.00
      5     1198.19  105.56    0.307  0.60( 0.52) 0.87   17885.1   13210.00
      6     1207.91  120.33    0.280  0.60( 0.53) 0.88   20425.7   11831.00
      7     1273.13  143.88    0.259  0.60( 0.54) 0.90   24708.1   11530.00
      8     1324.79  163.44    0.241  0.60( 0.55) 0.91   28854.8   11000.00
      9     1403.56  185.78    0.224  0.60( 0.56) 0.93   35650.7   10850.00
     10     1280.25  207.45    0.217  0.60( 0.56) 0.93   39985.2   11910.00
     11     1213.85  219.61    0.214  0.60( 0.56) 0.94   41688.7   12300.00
     12     1075.37  253.56    0.203  0.60( 0.57) 0.94   47397.2   12410.00
     13     1019.40  286.60    0.193  0.60( 0.57) 0.95   53483.1   12261.00
     14     1000.24  299.40    0.189  0.60( 0.57) 0.95   54969.7   10410.00
     15      981.48  311.62    0.185  0.60( 0.57) 0.95   56071.6   12101.10
     16      963.05  321.37    0.182  0.60( 0.57) 0.95   56893.0   10700.00
     17      939.11  339.18    0.176  0.60( 0.57) 0.95   58449.7   10200.00
     18      917.87  352.62    0.172  0.60( 0.57) 0.95   59388.0   12010.00
     19      867.77  381.84    0.168  0.60( 0.57) 0.95   60061.7   10210.00
     20      799.75  431.20    0.162  0.60( 0.57) 0.95   60560.7   12000.00
     21      748.74  500.90    0.155  0.60( 0.57) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2236.04  Tc(MIN.) =   24.786
  EFFECTIVE AREA(ACRES) =   3208.68  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
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  CHANNEL FLOW THRU SUBAREA(CFS) =    2236.04
  FLOW VELOCITY(FEET/SEC.) =   9.25   FLOW DEPTH(FEET) =   8.98
  TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =   25.50
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610506T.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        7.14   22.42  0.60( 0.60) 1.00      49.6   50600.00
    TOTAL AREA(ACRES) =       49.6

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2236.04   25.50    0.654  0.60( 0.46) 0.76    3208.7   50200.00
      2     2213.69   29.40    0.596  0.60( 0.46) 0.77    3935.3   50500.00
      3     2137.60   41.99    0.494  0.60( 0.46) 0.77    6210.8     420.00
      4     1147.35   73.27    0.366  0.60( 0.50) 0.83   11323.8   31100.00
      5     1198.19  106.40    0.305  0.60( 0.52) 0.87   17885.1   13210.00
      6     1207.91  121.16    0.279  0.60( 0.53) 0.88   20425.7   11831.00
      7     1273.13  144.70    0.258  0.60( 0.54) 0.90   24708.1   11530.00
      8     1324.79  164.25    0.240  0.60( 0.55) 0.91   28854.8   11000.00
      9     1403.56  186.58    0.224  0.60( 0.56) 0.93   35650.7   10850.00
     10     1280.25  208.27    0.217  0.60( 0.56) 0.93   39985.2   11910.00
     11     1213.85  220.44    0.213  0.60( 0.56) 0.94   41688.7   12300.00
     12     1075.37  254.41    0.203  0.60( 0.57) 0.94   47397.2   12410.00
     13     1019.40  287.47    0.193  0.60( 0.57) 0.95   53483.1   12261.00
     14     1000.24  300.27    0.189  0.60( 0.57) 0.95   54969.7   10410.00
     15      981.48  312.50    0.185  0.60( 0.57) 0.95   56071.6   12101.10
     16      963.05  322.25    0.182  0.60( 0.57) 0.95   56893.0   10700.00
     17      939.11  340.06    0.176  0.60( 0.57) 0.95   58449.7   10200.00
     18      917.87  353.51    0.172  0.60( 0.57) 0.95   59388.0   12010.00
     19      867.77  382.74    0.168  0.60( 0.57) 0.95   60061.7   10210.00
     20      799.75  432.12    0.162  0.60( 0.57) 0.95   60560.7   12000.00
     21      748.74  501.84    0.155  0.60( 0.57) 0.95   61145.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        7.14   22.42    0.715  0.60( 0.60) 1.00      49.6   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```



```
      1     2243.18   22.42    0.715  0.60( 0.46) 0.77    2871.5   50600.00
      2     2239.39   25.50    0.654  0.60( 0.46) 0.77    3258.3   50200.00
      3     2213.69   29.40    0.596  0.60( 0.46) 0.77    3984.9   50500.00
      4     2137.60   41.99    0.494  0.60( 0.47) 0.78    6260.4     420.00
      5     1147.35   73.27    0.366  0.60( 0.50) 0.83   11373.4   31100.00
      6     1198.19  106.40    0.305  0.60( 0.52) 0.87   17934.7   13210.00
      7     1207.91  121.16    0.279  0.60( 0.53) 0.88   20475.3   11831.00
      8     1273.13  144.70    0.258  0.60( 0.54) 0.90   24757.7   11530.00
      9     1324.79  164.25    0.240  0.60( 0.55) 0.91   28904.4   11000.00
     10     1403.56  186.58    0.224  0.60( 0.56) 0.93   35700.3   10850.00
     11     1280.25  208.27    0.217  0.60( 0.56) 0.94   40034.8   11910.00
     12     1213.85  220.44    0.213  0.60( 0.56) 0.94   41738.3   12300.00
     13     1075.37  254.41    0.203  0.60( 0.57) 0.94   47446.8   12410.00
     14     1019.40  287.47    0.193  0.60( 0.57) 0.95   53532.7   12261.00
     15     1000.24  300.27    0.189  0.60( 0.57) 0.95   55019.3   10410.00
     16      981.48  312.50    0.185  0.60( 0.57) 0.95   56121.2   12101.10
     17      963.05  322.25    0.182  0.60( 0.57) 0.95   56942.6   10700.00
     18      939.11  340.06    0.176  0.60( 0.57) 0.95   58499.3   10200.00
     19      917.87  353.51    0.172  0.60( 0.57) 0.95   59437.6   12010.00
     20      867.77  382.74    0.168  0.60( 0.57) 0.95   60111.3   10210.00
     21      799.75  432.12    0.162  0.60( 0.57) 0.95   60610.3   12000.00
     22      748.74  501.84    0.155  0.60( 0.57) 0.95   61195.1   10100.00
   TOTAL AREA(ACRES) =     61195.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2243.18  Tc(MIN.) =   22.425
  EFFECTIVE AREA(ACRES) =   2871.47  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    61195.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1604.97   CHANNEL SLOPE =  0.0075
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2243.18
  FLOW VELOCITY(FEET/SEC.) =  10.72   FLOW DEPTH(FEET) =   8.35
  TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =   24.92
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120690.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.92
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.663
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.20      0.60     1.000     -
  USER-DEFINED                -        4.00      0.60     1.000     -
```

```
  USER-DEFINED               -        2.00      0.60     1.000     -
  USER-DEFINED               -        9.70      0.60     1.000     -
  USER-DEFINED               -        2.60      0.60     1.000     -
  USER-DEFINED               -        1.80      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =    1.15
  EFFECTIVE AREA(ACRES) =   2891.77   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    61215.4       PEAK FLOW RATE(CFS) =    2243.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.92
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.663
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.50      0.60     1.000     -
  USER-DEFINED               -        7.20      0.60     1.000     -
  USER-DEFINED               -        5.80      0.60     1.000     -
  USER-DEFINED               -        0.10      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =    0.94
  EFFECTIVE AREA(ACRES) =   2908.37   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    61232.0       PEAK FLOW RATE(CFS) =    2243.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P02EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      194.02   10.81  0.60( 0.22) 0.37     221.7     429.00
      2      201.81   12.63  0.60( 0.22) 0.37     258.9     425.00
      3      202.30   12.83  0.60( 0.22) 0.37     263.0     400.00
      4      203.94   14.48  0.60( 0.22) 0.37     297.3     300.00
      5      198.94   22.38  0.60( 0.22) 0.37     440.6     210.00
      6      195.86   23.21  0.60( 0.22) 0.37     449.5     410.00
      7      187.76   25.35  0.60( 0.22) 0.37     471.9     200.00
      8      183.91   26.92  0.60( 0.22) 0.37     487.0     230.00
      9      177.74   28.12  0.60( 0.22) 0.37     491.2     220.50
```



```
    TOTAL AREA(ACRES) =      491.2

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2243.18   24.92    0.663  0.60( 0.46) 0.77    2908.4   50600.00
      2     2239.39   27.99    0.617  0.60( 0.46) 0.77    3295.2   50200.00
      3     2213.69   31.91    0.571  0.60( 0.46) 0.77    4021.8   50500.00
      4     2137.60   44.52    0.479  0.60( 0.47) 0.78    6297.3     420.00
      5     1147.35   76.22    0.361  0.60( 0.50) 0.83   11410.3   31100.00
      6     1198.19  109.32    0.300  0.60( 0.52) 0.87   17971.6   13210.00
      7     1207.91  124.07    0.276  0.60( 0.53) 0.88   20512.2   11831.00
      8     1273.13  147.57    0.255  0.60( 0.54) 0.90   24794.6   11530.00
      9     1324.79  167.09    0.238  0.60( 0.55) 0.91   28941.3   11000.00
     10     1403.56  189.38    0.223  0.60( 0.56) 0.93   35737.2   10850.00
     11     1280.25  211.14    0.216  0.60( 0.56) 0.94   40071.7   11910.00
     12     1213.85  223.35    0.213  0.60( 0.56) 0.94   41775.2   12300.00
     13     1075.37  257.41    0.202  0.60( 0.57) 0.94   47483.7   12410.00
     14     1019.40  290.51    0.192  0.60( 0.57) 0.95   53569.6   12261.00
     15     1000.24  303.32    0.188  0.60( 0.57) 0.95   55056.2   10410.00
     16      981.48  315.56    0.184  0.60( 0.57) 0.95   56158.1   12101.10
     17      963.05  325.33    0.181  0.60( 0.57) 0.95   56979.5   10700.00
     18      939.11  343.16    0.175  0.60( 0.57) 0.95   58536.2   10200.00
     19      917.87  356.63    0.171  0.60( 0.57) 0.95   59474.5   12010.00
     20      867.77  385.90    0.167  0.60( 0.57) 0.95   60148.2   10210.00
     21      799.75  435.34    0.162  0.60( 0.57) 0.95   60647.2   12000.00
     22      748.74  505.12    0.154  0.60( 0.57) 0.95   61232.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120690.78 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      194.02   10.81    1.167  0.60( 0.22) 0.37     221.7     429.00
      2      201.81   12.63    1.064  0.60( 0.22) 0.37     258.9     425.00
      3      202.30   12.83    1.053  0.60( 0.22) 0.37     263.0     400.00
      4      203.94   14.48    0.959  0.60( 0.22) 0.37     297.3     300.00
      5      198.94   22.38    0.715  0.60( 0.22) 0.37     440.6     210.00
      6      195.86   23.21    0.698  0.60( 0.22) 0.37     449.5     410.00
      7      187.76   25.35    0.656  0.60( 0.22) 0.37     471.9     200.00
      8      183.91   26.92    0.633  0.60( 0.22) 0.37     487.0     230.00
      9      177.74   28.12    0.615  0.60( 0.22) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2437.20   10.81    1.167  0.60( 0.43) 0.71    1483.0     429.00
      2     2444.99   12.63    1.064  0.60( 0.43) 0.71    1732.8     425.00
      3     2445.48   12.83    1.053  0.60( 0.43) 0.71    1760.2     400.00
      4     2447.12   14.48    0.959  0.60( 0.43) 0.71    1987.6     300.00
      5     2442.11   22.38    0.715  0.60( 0.43) 0.71    3052.8     210.00
      6     2439.03   23.21    0.698  0.60( 0.43) 0.71    3158.8     410.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7 | 2432.56 | 24.92 | 0.663 | 0.60( 0.43) | 0.71 | 3375.8 | 50600.00 |
| 8 | 2430.42 | 25.35 | 0.656 | 0.60( 0.43) | 0.71 | 3433.8 | 200.00 |
| 9 | 2424.63 | 26.92 | 0.633 | 0.60( 0.43) | 0.72 | 3647.0 | 230.00 |
| 10 | 2417.79 | 27.99 | 0.617 | 0.60( 0.43) | 0.72 | 3785.9 | 50200.00 |
| 11 | 2416.27 | 28.12 | 0.615 | 0.60( 0.43) | 0.72 | 3810.6 | 220.50 |
| 12 | 2376.59 | 31.91 | 0.571 | 0.60( 0.44) | 0.73 | 4513.0 | 50500.00 |
| 13 | 2274.25 | 44.52 | 0.479 | 0.60( 0.45) | 0.75 | 6788.5 | 420.00 |
| 14 | 1250.21 | 76.22 | 0.361 | 0.60( 0.49) | 0.82 | 11901.5 | 31100.00 |
| 15 | 1283.70 | 109.32 | 0.300 | 0.60( 0.51) | 0.85 | 18462.8 | 13210.00 |
| 16 | 1286.70 | 124.07 | 0.276 | 0.60( 0.52) | 0.87 | 21003.4 | 11831.00 |
| 17 | 1345.89 | 147.57 | 0.255 | 0.60( 0.53) | 0.89 | 25285.8 | 11530.00 |
| 18 | 1392.53 | 167.09 | 0.238 | 0.60( 0.54) | 0.90 | 29432.5 | 11000.00 |
| 19 | 1467.17 | 189.38 | 0.223 | 0.60( 0.55) | 0.92 | 36228.4 | 10850.00 |
| 20 | 1341.93 | 211.14 | 0.216 | 0.60( 0.56) | 0.93 | 40562.9 | 11910.00 |
| 21 | 1274.44 | 223.35 | 0.213 | 0.60( 0.56) | 0.93 | 42266.4 | 12300.00 |
| 22 | 1132.94 | 257.41 | 0.202 | 0.60( 0.56) | 0.94 | 47974.9 | 12410.00 |
| 23 | 1074.03 | 290.51 | 0.192 | 0.60( 0.57) | 0.94 | 54060.8 | 12261.00 |
| 24 | 1053.74 | 303.32 | 0.188 | 0.60( 0.57) | 0.94 | 55547.4 | 10410.00 |
| 25 | 1033.89 | 315.56 | 0.184 | 0.60( 0.57) | 0.94 | 56649.3 | 12101.10 |
| 26 | 1014.59 | 325.33 | 0.181 | 0.60( 0.57) | 0.95 | 57470.7 | 10700.00 |
| 27 | 989.07 | 343.16 | 0.175 | 0.60( 0.57) | 0.95 | 59027.4 | 10200.00 |
| 28 | 966.64 | 356.63 | 0.171 | 0.60( 0.57) | 0.95 | 59965.7 | 12010.00 |
| 29 | 915.45 | 385.90 | 0.167 | 0.60( 0.57) | 0.95 | 60639.4 | 10210.00 |
| 30 | 845.92 | 435.34 | 0.162 | 0.60( 0.57) | 0.95 | 61138.4 | 12000.00 |
| 31 | 792.77 | 505.12 | 0.154 | 0.60( 0.57) | 0.95 | 61723.2 | 10100.00 |

TOTAL AREA(ACRES) = 61723.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2447.12 Tc(MIN.) = 14.483
EFFECTIVE AREA(ACRES) = 1987.62 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 61723.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120690.78 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.807
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 7.00 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 3.30 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.60 | 0.100 | - |
| USER-DEFINED | - | 1.40 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.60 | 0.100 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2448.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.63
AVERAGE FLOW DEPTH(FEET) = 9.21 TRAVEL TIME(MIN.) = 4.25



Tc(MIN.) = 18.74
SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 2.65
EFFECTIVE AREA(ACRES) = 2000.02 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71
TOTAL AREA(ACRES) = 61735.6 PEAK FLOW RATE(CFS) = 2447.12
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.21 FLOW VELOCITY(FEET/SEC.) = 9.63
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123149.14 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
>>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
PEAK FLOWRATE TABLE FILE NAME: 0610507T.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 10.23 | 29.92 | 0.60( 0.60) | 0.99 | 236.8 | 50700.00 |

TOTAL AREA(ACRES) = 236.8

****************************************************************************
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2437.20 | 15.07 | 0.928 | 0.60( 0.43) | 0.71 | 1495.4 | 429.00 |
| 2 | 2444.99 | 16.89 | 0.868 | 0.60( 0.43) | 0.71 | 1745.2 | 425.00 |
| 3 | 2445.48 | 17.09 | 0.861 | 0.60( 0.43) | 0.71 | 1772.6 | 400.00 |
| 4 | 2447.12 | 18.74 | 0.807 | 0.60( 0.43) | 0.71 | 2000.0 | 300.00 |
| 5 | 2442.11 | 26.64 | 0.637 | 0.60( 0.43) | 0.71 | 3065.2 | 210.00 |
| 6 | 2439.03 | 27.48 | 0.624 | 0.60( 0.43) | 0.71 | 3171.2 | 410.00 |
| 7 | 2432.56 | 29.19 | 0.599 | 0.60( 0.43) | 0.72 | 3388.2 | 50600.00 |
| 8 | 2430.42 | 29.61 | 0.593 | 0.60( 0.43) | 0.72 | 3446.2 | 200.00 |
| 9 | 2424.63 | 31.19 | 0.577 | 0.60( 0.43) | 0.72 | 3659.4 | 230.00 |
| 10 | 2417.79 | 32.26 | 0.568 | 0.60( 0.43) | 0.72 | 3798.3 | 50200.00 |
| 11 | 2416.27 | 32.40 | 0.567 | 0.60( 0.43) | 0.72 | 3823.0 | 220.50 |
| 12 | 2376.59 | 36.20 | 0.536 | 0.60( 0.44) | 0.73 | 4525.4 | 50500.00 |
| 13 | 2274.25 | 48.85 | 0.455 | 0.60( 0.45) | 0.75 | 6800.9 | 420.00 |
| 14 | 1250.21 | 81.26 | 0.352 | 0.60( 0.49) | 0.82 | 11913.9 | 31100.00 |
| 15 | 1283.70 | 114.32 | 0.291 | 0.60( 0.51) | 0.85 | 18475.2 | 13210.00 |
| 16 | 1286.70 | 129.07 | 0.272 | 0.60( 0.52) | 0.87 | 21015.8 | 11831.00 |
| 17 | 1345.89 | 152.52 | 0.251 | 0.60( 0.53) | 0.89 | 25298.2 | 11530.00 |
| 18 | 1392.53 | 171.99 | 0.233 | 0.60( 0.54) | 0.90 | 29444.9 | 11000.00 |
| 19 | 1467.17 | 194.22 | 0.222 | 0.60( 0.55) | 0.92 | 36240.8 | 10850.00 |
| 20 | 1341.93 | 216.08 | 0.215 | 0.60( 0.56) | 0.93 | 40575.3 | 11910.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 21 | 1274.44 | 228.36 | 0.211 | 0.60( 0.56) | 0.93 | 42278.8 | 12300.00 |
| 22 | 1132.94 | 262.57 | 0.200 | 0.60( 0.56) | 0.94 | 47987.3 | 12410.00 |
| 23 | 1074.03 | 295.74 | 0.190 | 0.60( 0.57) | 0.94 | 54073.2 | 12261.00 |
| 24 | 1053.74 | 308.58 | 0.186 | 0.60( 0.57) | 0.94 | 55559.8 | 10410.00 |
| 25 | 1033.89 | 320.84 | 0.182 | 0.60( 0.57) | 0.94 | 56661.7 | 12101.10 |
| 26 | 1014.59 | 330.63 | 0.179 | 0.60( 0.57) | 0.95 | 57483.1 | 10700.00 |
| 27 | 989.07 | 348.51 | 0.174 | 0.60( 0.57) | 0.95 | 59039.8 | 10200.00 |
| 28 | 966.64 | 362.00 | 0.170 | 0.60( 0.57) | 0.95 | 59978.1 | 12010.00 |
| 29 | 915.45 | 391.34 | 0.167 | 0.60( 0.57) | 0.95 | 60651.8 | 10210.00 |
| 30 | 845.92 | 440.90 | 0.161 | 0.60( 0.57) | 0.95 | 61150.8 | 12000.00 |
| 31 | 792.77 | 510.76 | 0.154 | 0.60( 0.57) | 0.95 | 61735.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123149.14 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 10.23 | 29.92 | 0.588 | 0.60( 0.60) | 0.99 | 236.8 | 50700.00 |

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2445.32 | 15.07 | 0.928 | 0.60( 0.44) | 0.73 | 1614.7 | 429.00 |
| 2 | 2453.51 | 16.89 | 0.868 | 0.60( 0.44) | 0.73 | 1878.8 | 425.00 |
| 3 | 2454.04 | 17.09 | 0.861 | 0.60( 0.44) | 0.73 | 1907.8 | 400.00 |
| 4 | 2455.91 | 18.74 | 0.807 | 0.60( 0.44) | 0.73 | 2148.3 | 300.00 |
| 5 | 2451.98 | 26.64 | 0.637 | 0.60( 0.44) | 0.73 | 3276.0 | 210.00 |
| 6 | 2449.01 | 27.48 | 0.624 | 0.60( 0.44) | 0.73 | 3388.6 | 410.00 |
| 7 | 2442.72 | 29.19 | 0.599 | 0.60( 0.44) | 0.73 | 3619.2 | 50600.00 |
| 8 | 2440.62 | 29.61 | 0.593 | 0.60( 0.44) | 0.73 | 3680.6 | 200.00 |
| 9 | 2439.51 | 29.92 | 0.588 | 0.60( 0.44) | 0.73 | 3725.1 | 50700.00 |
| 10 | 2434.67 | 31.19 | 0.577 | 0.60( 0.44) | 0.73 | 3896.2 | 230.00 |
| 11 | 2427.68 | 32.26 | 0.568 | 0.60( 0.44) | 0.73 | 4035.1 | 50200.00 |
| 12 | 2426.14 | 32.40 | 0.567 | 0.60( 0.44) | 0.73 | 4059.7 | 220.50 |
| 13 | 2385.92 | 36.20 | 0.536 | 0.60( 0.44) | 0.74 | 4762.2 | 50500.00 |
| 14 | 2282.15 | 48.85 | 0.455 | 0.60( 0.45) | 0.76 | 7037.7 | 420.00 |
| 15 | 1256.33 | 81.26 | 0.352 | 0.60( 0.49) | 0.82 | 12150.7 | 31100.00 |
| 16 | 1288.76 | 114.32 | 0.291 | 0.60( 0.51) | 0.86 | 18712.0 | 13210.00 |
| 17 | 1291.43 | 129.07 | 0.272 | 0.60( 0.52) | 0.87 | 21252.6 | 11831.00 |
| 18 | 1350.25 | 152.52 | 0.251 | 0.60( 0.53) | 0.89 | 25535.0 | 11530.00 |
| 19 | 1396.59 | 171.99 | 0.233 | 0.60( 0.54) | 0.90 | 29681.7 | 11000.00 |
| 20 | 1471.02 | 194.22 | 0.222 | 0.60( 0.55) | 0.92 | 36477.6 | 10850.00 |
| 21 | 1345.66 | 216.08 | 0.215 | 0.60( 0.56) | 0.93 | 40812.1 | 11910.00 |
| 22 | 1278.11 | 228.36 | 0.211 | 0.60( 0.56) | 0.93 | 42515.6 | 12300.00 |
| 23 | 1136.42 | 262.57 | 0.200 | 0.60( 0.56) | 0.94 | 48224.1 | 12410.00 |
| 24 | 1077.34 | 295.74 | 0.190 | 0.60( 0.57) | 0.94 | 54310.0 | 12261.00 |
| 25 | 1056.97 | 308.58 | 0.186 | 0.60( 0.57) | 0.94 | 55796.6 | 10410.00 |
| 26 | 1037.06 | 320.84 | 0.182 | 0.60( 0.57) | 0.94 | 56898.5 | 12101.10 |
| 27 | 1017.71 | 330.63 | 0.179 | 0.60( 0.57) | 0.95 | 57719.9 | 10700.00 |
| 28 | 992.09 | 348.51 | 0.174 | 0.60( 0.57) | 0.95 | 59276.6 | 10200.00 |
| 29 | 969.59 | 362.00 | 0.170 | 0.60( 0.57) | 0.95 | 60214.8 | 12010.00 |
| 30 | 918.35 | 391.34 | 0.167 | 0.60( 0.57) | 0.95 | 60888.6 | 10210.00 |
| 31 | 848.72 | 440.90 | 0.161 | 0.60( 0.57) | 0.95 | 61387.6 | 12000.00 |
| 32 | 795.45 | 510.76 | 0.154 | 0.60( 0.57) | 0.95 | 61972.4 | 10100.00 |

TOTAL AREA(ACRES) = 61972.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2455.91 Tc(MIN.) = 18.737



EFFECTIVE AREA(ACRES) = 2148.30 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 61972.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123149.14 FEET.

**********
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.751
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.40 | 0.60 | 1.000 | - |
| USER-DEFINED | - | 2.90 | 0.60 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2456.13
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.20
AVERAGE FLOW DEPTH(FEET) = 9.99 TRAVEL TIME(MIN.) = 1.94
Tc(MIN.) = 20.67
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 0.45
EFFECTIVE AREA(ACRES) = 2151.60 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 61975.7 PEAK FLOW RATE(CFS) = 2455.91
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.99 FLOW VELOCITY(FEET/SEC.) = 8.20
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124101.87 FEET.

**********
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: RI02EV36.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 212.85 | 41.95 | 0.60( 0.53) | 0.89 | 1194.3 | 110.00 |
| 2 | 182.13 | 45.87 | 0.60( 0.53) | 0.88 | 1308.8 | 100.00 |
| 3 | 166.70 | 48.25 | 0.60( 0.53) | 0.88 | 1371.9 | 100.00 |
| 4 | 138.00 | 55.27 | 0.60( 0.54) | 0.89 | 1542.5 | 130.00 |
| 5 | 114.28 | 88.34 | 0.60( 0.56) | 0.93 | 2427.8 | 20100.00 |
| 6 | 99.46 | 100.42 | 0.60( 0.56) | 0.93 | 2568.9 | 13600.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7 | 61.98 | 214.44 | 0.60( 0.56) | 0.93 | 3822.6 | 13510.00 | |
| 8 | 61.68 | 223.75 | 0.60( 0.56) | 0.93 | 3859.7 | 13500.00 | |

TOTAL AREA(ACRES) = 3859.7

**********

FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2445.32 | 17.01 | 0.864 | 0.60( 0.44) | 0.73 | 1618.0 | 429.00 |
| 2 | 2453.51 | 18.82 | 0.804 | 0.60( 0.44) | 0.73 | 1882.1 | 425.00 |
| 3 | 2454.04 | 19.02 | 0.797 | 0.60( 0.44) | 0.73 | 1911.1 | 400.00 |
| 4 | 2455.91 | 20.67 | 0.751 | 0.60( 0.44) | 0.73 | 2151.6 | 300.00 |
| 5 | 2451.98 | 28.58 | 0.608 | 0.60( 0.44) | 0.73 | 3279.3 | 210.00 |
| 6 | 2449.01 | 29.41 | 0.596 | 0.60( 0.44) | 0.73 | 3391.9 | 410.00 |
| 7 | 2442.72 | 31.12 | 0.578 | 0.60( 0.44) | 0.73 | 3622.5 | 50600.00 |
| 8 | 2440.62 | 31.55 | 0.574 | 0.60( 0.44) | 0.73 | 3683.9 | 200.00 |
| 9 | 2439.51 | 31.86 | 0.572 | 0.60( 0.44) | 0.73 | 3728.4 | 50700.00 |
| 10 | 2434.67 | 33.13 | 0.561 | 0.60( 0.44) | 0.73 | 3899.5 | 230.00 |
| 11 | 2427.68 | 34.21 | 0.553 | 0.60( 0.44) | 0.73 | 4038.4 | 50200.00 |
| 12 | 2426.14 | 34.34 | 0.551 | 0.60( 0.44) | 0.73 | 4063.0 | 220.50 |
| 13 | 2385.92 | 38.15 | 0.520 | 0.60( 0.44) | 0.74 | 4765.5 | 50500.00 |
| 14 | 2282.15 | 50.83 | 0.443 | 0.60( 0.45) | 0.76 | 7041.0 | 420.00 |
| 15 | 1256.33 | 83.55 | 0.348 | 0.60( 0.49) | 0.82 | 12154.0 | 31100.00 |
| 16 | 1288.76 | 116.59 | 0.286 | 0.60( 0.51) | 0.86 | 18715.3 | 13210.00 |
| 17 | 1291.43 | 131.35 | 0.270 | 0.60( 0.52) | 0.87 | 21255.9 | 11831.00 |
| 18 | 1350.25 | 154.76 | 0.249 | 0.60( 0.53) | 0.89 | 25538.3 | 11530.00 |
| 19 | 1396.59 | 174.22 | 0.231 | 0.60( 0.54) | 0.90 | 29685.0 | 11000.00 |
| 20 | 1471.02 | 196.42 | 0.221 | 0.60( 0.55) | 0.92 | 36480.9 | 10850.00 |
| 21 | 1345.66 | 218.34 | 0.214 | 0.60( 0.56) | 0.93 | 40815.4 | 11910.00 |
| 22 | 1278.11 | 230.64 | 0.210 | 0.60( 0.56) | 0.93 | 42518.9 | 12300.00 |
| 23 | 1136.42 | 264.92 | 0.200 | 0.60( 0.56) | 0.94 | 48227.4 | 12410.00 |
| 24 | 1077.34 | 298.12 | 0.189 | 0.60( 0.57) | 0.94 | 54313.3 | 12261.00 |
| 25 | 1056.97 | 310.97 | 0.185 | 0.60( 0.57) | 0.94 | 55799.9 | 10410.00 |
| 26 | 1037.06 | 323.24 | 0.181 | 0.60( 0.57) | 0.94 | 56901.8 | 12101.10 |
| 27 | 1017.71 | 333.05 | 0.178 | 0.60( 0.57) | 0.95 | 57723.2 | 10700.00 |
| 28 | 992.09 | 350.94 | 0.173 | 0.60( 0.57) | 0.95 | 59279.9 | 10200.00 |
| 29 | 969.59 | 364.44 | 0.170 | 0.60( 0.57) | 0.95 | 60218.1 | 12010.00 |
| 30 | 918.35 | 393.82 | 0.166 | 0.60( 0.57) | 0.95 | 60891.9 | 10210.00 |
| 31 | 848.72 | 443.42 | 0.161 | 0.60( 0.57) | 0.95 | 61390.9 | 12000.00 |
| 32 | 795.45 | 513.33 | 0.154 | 0.60( 0.57) | 0.95 | 61975.7 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124101.87 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 212.85 | 41.95 | 0.494 | 0.60( 0.53) | 0.89 | 1194.3 | 110.00 |
| 2 | 182.13 | 45.87 | 0.472 | 0.60( 0.53) | 0.88 | 1308.8 | 100.00 |
| 3 | 166.70 | 48.25 | 0.458 | 0.60( 0.53) | 0.88 | 1371.9 | 100.00 |
| 4 | 138.00 | 55.27 | 0.417 | 0.60( 0.54) | 0.89 | 1542.5 | 130.00 |
| 5 | 114.28 | 88.34 | 0.339 | 0.60( 0.56) | 0.93 | 2427.8 | 20100.00 |
| 6 | 99.46 | 100.42 | 0.317 | 0.60( 0.56) | 0.93 | 2568.9 | 13600.00 |
| 7 | 61.98 | 214.44 | 0.215 | 0.60( 0.56) | 0.93 | 3822.6 | 13510.00 |
| 8 | 61.68 | 223.75 | 0.212 | 0.60( 0.56) | 0.93 | 3859.7 | 13500.00 |



LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2658.18 | 17.01 | 0.864 | 0.60( 0.46) | 0.77 | 2102.2 | 429.00 |
| 2 | 2666.36 | 18.82 | 0.804 | 0.60( 0.46) | 0.77 | 2418.0 | 425.00 |
| 3 | 2666.89 | 19.02 | 0.797 | 0.60( 0.46) | 0.77 | 2452.7 | 400.00 |
| 4 | 2668.76 | 20.67 | 0.751 | 0.60( 0.46) | 0.76 | 2740.2 | 300.00 |
| 5 | 2649.56 | 28.58 | 0.608 | 0.60( 0.46) | 0.76 | 4092.9 | 210.00 |
| 6 | 2629.01 | 29.41 | 0.596 | 0.60( 0.46) | 0.76 | 4229.4 | 410.00 |
| 7 | 2627.47 | 31.12 | 0.578 | 0.60( 0.46) | 0.76 | 4508.6 | 50600.00 |
| 8 | 2626.77 | 31.55 | 0.574 | 0.60( 0.46) | 0.76 | 4582.1 | 200.00 |
| 9 | 2626.65 | 31.86 | 0.572 | 0.60( 0.46) | 0.76 | 4635.5 | 50700.00 |
| 10 | 2625.72 | 33.13 | 0.561 | 0.60( 0.46) | 0.76 | 4842.7 | 230.00 |
| 11 | 2621.84 | 34.21 | 0.553 | 0.60( 0.46) | 0.76 | 5012.3 | 50200.00 |
| 12 | 2620.67 | 34.34 | 0.551 | 0.60( 0.46) | 0.76 | 5040.7 | 220.50 |
| 13 | 2589.78 | 38.15 | 0.520 | 0.60( 0.46) | 0.77 | 5851.5 | 50500.00 |
| 14 | 2567.65 | 41.95 | 0.494 | 0.60( 0.46) | 0.77 | 6642.2 | 110.00 |
| 15 | 2504.85 | 45.87 | 0.472 | 0.60( 0.46) | 0.77 | 7460.2 | 100.00 |
| 16 | 2469.91 | 48.25 | 0.458 | 0.60( 0.46) | 0.78 | 7951.3 | 100.00 |
| 17 | 2438.32 | 50.83 | 0.443 | 0.60( 0.47) | 0.78 | 8475.4 | 420.00 |
| 18 | 2280.98 | 55.27 | 0.417 | 0.60( 0.47) | 0.79 | 9277.1 | 130.00 |
| 19 | 1374.04 | 83.55 | 0.348 | 0.60( 0.50) | 0.84 | 14453.7 | 31100.00 |
| 20 | 1375.31 | 88.34 | 0.339 | 0.60( 0.50) | 0.84 | 15532.8 | 20100.00 |
| 21 | 1372.35 | 100.42 | 0.317 | 0.60( 0.51) | 0.85 | 18073.0 | 13600.00 |
| 22 | 1382.91 | 116.59 | 0.286 | 0.60( 0.52) | 0.87 | 21462.0 | 13210.00 |
| 23 | 1380.72 | 131.35 | 0.270 | 0.60( 0.53) | 0.88 | 24164.8 | 11831.00 |
| 24 | 1431.85 | 154.76 | 0.249 | 0.60( 0.54) | 0.89 | 28704.7 | 11530.00 |
| 25 | 1471.79 | 174.22 | 0.231 | 0.60( 0.54) | 0.91 | 33065.3 | 11000.00 |
| 26 | 1538.92 | 196.42 | 0.221 | 0.60( 0.55) | 0.92 | 40105.4 | 10850.00 |
| 27 | 1429.93 | 214.44 | 0.215 | 0.60( 0.56) | 0.93 | 43867.4 | 13510.00 |
| 28 | 1407.52 | 218.34 | 0.214 | 0.60( 0.56) | 0.93 | 44653.5 | 11910.00 |
| 29 | 1377.63 | 223.75 | 0.212 | 0.60( 0.56) | 0.93 | 45424.4 | 13500.00 |
| 30 | 1339.17 | 230.64 | 0.210 | 0.60( 0.56) | 0.93 | 46378.6 | 12300.00 |
| 31 | 1194.38 | 264.92 | 0.200 | 0.60( 0.56) | 0.94 | 52087.0 | 12410.00 |
| 32 | 1132.29 | 298.12 | 0.189 | 0.60( 0.56) | 0.94 | 58172.9 | 12261.00 |
| 33 | 1110.77 | 310.97 | 0.185 | 0.60( 0.57) | 0.94 | 59659.5 | 10410.00 |
| 34 | 1089.75 | 323.24 | 0.181 | 0.60( 0.57) | 0.94 | 60761.5 | 12101.10 |
| 35 | 1069.51 | 333.05 | 0.178 | 0.60( 0.57) | 0.94 | 61582.9 | 10700.00 |
| 36 | 1042.28 | 350.94 | 0.173 | 0.60( 0.57) | 0.95 | 63139.6 | 10200.00 |
| 37 | 1018.82 | 364.44 | 0.170 | 0.60( 0.57) | 0.95 | 64077.8 | 12010.00 |
| 38 | 966.66 | 393.82 | 0.166 | 0.60( 0.57) | 0.95 | 64751.5 | 10210.00 |
| 39 | 895.50 | 443.42 | 0.161 | 0.60( 0.57) | 0.95 | 65250.6 | 12000.00 |
| 40 | 840.05 | 513.33 | 0.154 | 0.60( 0.57) | 0.95 | 65835.4 | 10100.00 |

TOTAL AREA(ACRES) = 65835.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2668.76 Tc(MIN.) = 20.674

EFFECTIVE AREA(ACRES) = 2740.20 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76

TOTAL AREA(ACRES) = 65835.4

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124101.87 FEET.

**********

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 51

---

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

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2668.76
  FLOW VELOCITY(FEET/SEC.) =  12.74   FLOW DEPTH(FEET) =   8.36
  TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =   20.90
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124271.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101G.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        4.52   82.13  0.60( 0.59) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2658.18   17.23    0.856  0.60( 0.46) 0.77    2102.2     429.00
      2     2666.36   19.05    0.796  0.60( 0.46) 0.77    2418.0     425.00
      3     2666.89   19.24    0.790  0.60( 0.46) 0.77    2452.7     400.00
      4     2668.76   20.90    0.746  0.60( 0.46) 0.76    2740.2     300.00
      5     2649.56   28.80    0.605  0.60( 0.46) 0.76    4092.9     210.00
      6     2629.01   29.64    0.592  0.60( 0.46) 0.76    4229.4     410.00
      7     2627.47   31.35    0.576  0.60( 0.46) 0.76    4508.6   50600.00
      8     2626.77   31.77    0.572  0.60( 0.46) 0.76    4582.1     200.00
      9     2626.65   32.08    0.570  0.60( 0.46) 0.76    4635.5   50700.00
     10     2625.72   33.35    0.560  0.60( 0.46) 0.76    4842.7     230.00
     11     2621.84   34.43    0.551  0.60( 0.46) 0.76    5012.3   50200.00
     12     2620.67   34.56    0.550  0.60( 0.46) 0.76    5040.7     220.50
     13     2589.78   38.37    0.518  0.60( 0.46) 0.77    5851.5   50500.00
     14     2567.65   42.17    0.493  0.60( 0.46) 0.77    6642.2     110.00
     15     2504.85   46.10    0.470  0.60( 0.46) 0.77    7460.2     100.00
     16     2469.91   48.48    0.457  0.60( 0.46) 0.78    7951.3     100.00
     17     2438.32   51.05    0.442  0.60( 0.47) 0.78    8475.4     420.00
     18     2280.98   55.50    0.416  0.60( 0.47) 0.79    9277.1     130.00
     19     1374.04   83.81    0.347  0.60( 0.50) 0.84   14453.7   31100.00
     20     1375.31   88.60    0.339  0.60( 0.50) 0.84   15532.8   20100.00
```



```
     21     1372.35  100.68    0.316  0.60( 0.51) 0.85   18073.0   13600.00
     22     1382.91  116.85    0.286  0.60( 0.52) 0.87   21462.0   13210.00
     23     1380.72  131.61    0.270  0.60( 0.53) 0.88   24164.8   11831.00
     24     1431.85  155.02    0.248  0.60( 0.54) 0.89   28704.7   11530.00
     25     1471.79  174.48    0.231  0.60( 0.54) 0.91   33065.3   11000.00
     26     1538.92  196.68    0.221  0.60( 0.55) 0.92   40105.4   10850.00
     27     1429.93  214.70    0.215  0.60( 0.56) 0.93   43867.4   13510.00
     28     1407.52  218.60    0.214  0.60( 0.56) 0.93   44653.5   11910.00
     29     1377.63  224.01    0.212  0.60( 0.56) 0.93   45424.4   13500.00
     30     1339.17  230.91    0.210  0.60( 0.56) 0.93   46378.6   12300.00
     31     1194.38  265.19    0.199  0.60( 0.56) 0.94   52087.0   12410.00
     32     1132.29  298.40    0.189  0.60( 0.56) 0.94   58172.9   12261.00
     33     1110.77  311.24    0.185  0.60( 0.57) 0.94   59659.5   10410.00
     34     1089.75  323.52    0.181  0.60( 0.57) 0.94   60761.5   12101.10
     35     1069.51  333.33    0.178  0.60( 0.57) 0.94   61582.9   10700.00
     36     1042.28  351.22    0.173  0.60( 0.57) 0.95   63139.6   10200.00
     37     1018.82  364.72    0.169  0.60( 0.57) 0.95   64077.8   12010.00
     38      966.66  394.11    0.166  0.60( 0.57) 0.95   64751.5   10210.00
     39      895.50  443.72    0.161  0.60( 0.57) 0.95   65250.6   12000.00
     40      840.05  513.62    0.154  0.60( 0.57) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124271.65 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1        4.52   82.13    0.350  0.60( 0.59) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2660.49   17.23    0.856  0.60( 0.47) 0.78    2226.2     429.00
    2     2668.74   19.05    0.796  0.60( 0.47) 0.78    2555.1     425.00
    3     2669.28   19.24    0.790  0.60( 0.47) 0.78    2591.2     400.00
    4     2671.21   20.90    0.746  0.60( 0.47) 0.78    2890.6     300.00
    5     2652.30   28.80    0.605  0.60( 0.46) 0.77    4300.1     210.00
    6     2631.77   29.64    0.592  0.60( 0.46) 0.77    4442.6     410.00
    7     2630.31   31.35    0.576  0.60( 0.46) 0.77    4734.2   50600.00
    8     2629.62   31.77    0.572  0.60( 0.46) 0.77    4810.8     200.00
    9     2629.52   32.08    0.570  0.60( 0.46) 0.77    4866.3   50700.00
   10     2628.65   33.35    0.560  0.60( 0.46) 0.77    5082.6     230.00
   11     2624.82   34.43    0.551  0.60( 0.46) 0.77    5260.0   50200.00
   12     2623.66   34.56    0.550  0.60( 0.46) 0.77    5289.4     220.50
   13     2592.91   38.37    0.518  0.60( 0.47) 0.78    6127.6   50500.00
   14     2570.91   42.17    0.493  0.60( 0.47) 0.78    6945.7     110.00
   15     2508.25   46.10    0.470  0.60( 0.47) 0.78    7791.9     100.00
   16     2473.38   48.48    0.457  0.60( 0.47) 0.78    8300.1     100.00
   17     2441.87   51.05    0.442  0.60( 0.47) 0.79    8842.8     420.00
   18     2284.60   55.50    0.416  0.60( 0.48) 0.79    9676.5     130.00
   19     1432.41   82.13    0.350  0.60( 0.50) 0.84   14737.3   10100.00
   20     1378.52   83.81    0.347  0.60( 0.50) 0.84   15044.7   31100.00
   21     1379.68   88.60    0.339  0.60( 0.51) 0.85   16123.8   20100.00
   22     1376.43  100.68    0.316  0.60( 0.51) 0.86   18664.0   13600.00
   23     1386.59  116.85    0.286  0.60( 0.52) 0.87   22053.0   13210.00
   24     1384.20  131.61    0.270  0.60( 0.53) 0.88   24755.8   11831.00
   25     1435.05  155.02    0.248  0.60( 0.54) 0.89   29295.7   11530.00
   26     1474.77  174.48    0.231  0.60( 0.54) 0.91   33656.3   11000.00
   27     1541.77  196.68    0.221  0.60( 0.55) 0.92   40696.4   10850.00
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     28     1432.70  214.70    0.215  0.60( 0.56) 0.93   44458.4   13510.00
     29     1410.28  218.60    0.214  0.60( 0.56) 0.93   45244.5   11910.00
     30     1380.37  224.01    0.212  0.60( 0.56) 0.93   46015.4   13500.00
     31     1341.88  230.91    0.210  0.60( 0.56) 0.93   46969.6   12300.00
     32     1196.96  265.19    0.199  0.60( 0.56) 0.94   52678.0   12410.00
     33     1134.74  298.40    0.189  0.60( 0.57) 0.94   58763.9   12261.00
     34     1113.16  311.24    0.185  0.60( 0.57) 0.94   60250.5   10410.00
     35     1092.09  323.52    0.181  0.60( 0.57) 0.94   61352.5   12101.10
     36     1071.81  333.33    0.178  0.60( 0.57) 0.95   62173.9   10700.00
     37     1044.51  351.22    0.173  0.60( 0.57) 0.95   63730.6   10200.00
     38     1021.01  364.72    0.169  0.60( 0.57) 0.95   64668.8   12010.00
     39      968.81  394.11    0.166  0.60( 0.57) 0.95   65342.5   10210.00
     40      897.57  443.72    0.161  0.60( 0.57) 0.95   65841.6   12000.00
     41      842.03  513.62    0.154  0.60( 0.57) 0.95   66426.4   10100.00
    TOTAL AREA(ACRES) =     66426.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2671.21  Tc(MIN.) =   20.896
  EFFECTIVE AREA(ACRES) =   2890.57  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    66426.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124271.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13700.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    176.93  DOWNSTREAM(FEET) =    170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.10   CHANNEL SLOPE =  0.0266
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2671.21
  FLOW VELOCITY(FEET/SEC.) =  18.05   FLOW DEPTH(FEET) =   7.02
  TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =   21.14
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124531.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610508T.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        5.79   30.21  0.60( 0.59) 0.99     131.3   50800.00
    TOTAL AREA(ACRES) =      131.3

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2660.49   17.47    0.848  0.60( 0.47) 0.78    2226.2     429.00
      2     2668.74   19.29    0.789  0.60( 0.47) 0.78    2555.1     425.00
      3     2669.28   19.48    0.782  0.60( 0.47) 0.78    2591.2     400.00
      4     2671.21   21.14    0.741  0.60( 0.47) 0.78    2890.6     300.00
      5     2652.30   29.04    0.601  0.60( 0.46) 0.77    4300.1     210.00
      6     2631.77   29.88    0.589  0.60( 0.46) 0.77    4442.6     410.00
      7     2630.31   31.59    0.574  0.60( 0.46) 0.77    4734.2   50600.00
      8     2629.62   32.01    0.570  0.60( 0.46) 0.77    4810.8     200.00
      9     2629.52   32.32    0.568  0.60( 0.46) 0.77    4866.3   50700.00
     10     2628.65   33.59    0.558  0.60( 0.46) 0.77    5082.6     230.00
     11     2624.82   34.67    0.549  0.60( 0.46) 0.77    5260.0   50200.00
     12     2623.66   34.80    0.548  0.60( 0.46) 0.77    5289.4     220.50
     13     2592.91   38.61    0.516  0.60( 0.47) 0.78    6127.6   50500.00
     14     2570.91   42.42    0.491  0.60( 0.47) 0.78    6945.7     110.00
     15     2508.25   46.34    0.469  0.60( 0.47) 0.78    7791.9     100.00
     16     2473.38   48.73    0.455  0.60( 0.47) 0.78    8300.1     100.00
     17     2441.87   51.30    0.440  0.60( 0.47) 0.79    8842.8     420.00
     18     2284.60   55.75    0.415  0.60( 0.48) 0.79    9676.5     130.00
     19     1432.41   82.41    0.350  0.60( 0.50) 0.84   14737.3   10100.00
     20     1378.52   84.10    0.347  0.60( 0.50) 0.84   15044.7   31100.00
     21     1379.68   88.88    0.338  0.60( 0.51) 0.85   16123.8   20100.00
     22     1376.43  100.97    0.316  0.60( 0.51) 0.86   18664.0   13600.00
     23     1386.59  117.14    0.285  0.60( 0.52) 0.87   22053.0   13210.00
     24     1384.20  131.89    0.269  0.60( 0.53) 0.88   24755.8   11831.00
     25     1435.05  155.30    0.248  0.60( 0.54) 0.89   29295.7   11530.00
     26     1474.77  174.76    0.231  0.60( 0.54) 0.91   33656.3   11000.00
     27     1541.77  196.95    0.221  0.60( 0.55) 0.92   40696.4   10850.00
     28     1432.70  214.98    0.215  0.60( 0.56) 0.93   44458.4   13510.00
     29     1410.28  218.88    0.214  0.60( 0.56) 0.93   45244.5   11910.00
     30     1380.37  224.29    0.212  0.60( 0.56) 0.93   46015.4   13500.00
     31     1341.88  231.19    0.210  0.60( 0.56) 0.93   46969.6   12300.00
     32     1196.96  265.48    0.199  0.60( 0.56) 0.94   52678.0   12410.00
     33     1134.74  298.69    0.189  0.60( 0.57) 0.94   58763.9   12261.00
     34     1113.16  311.54    0.185  0.60( 0.57) 0.94   60250.5   10410.00
     35     1092.09  323.82    0.181  0.60( 0.57) 0.94   61352.5   12101.10
     36     1071.81  333.63    0.178  0.60( 0.57) 0.95   62173.9   10700.00
     37     1044.51  351.52    0.173  0.60( 0.57) 0.95   63730.6   10200.00
     38     1021.01  365.03    0.169  0.60( 0.57) 0.95   64668.8   12010.00
     39      968.81  394.42    0.166  0.60( 0.57) 0.95   65342.5   10210.00
     40      897.57  444.03    0.161  0.60( 0.57) 0.95   65841.6   12000.00
     41      842.03  513.94    0.154  0.60( 0.57) 0.95   66426.4   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124531.75 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        5.79   30.21    0.585  0.60( 0.59) 0.99     131.3   50800.00
  LONGEST FLOWPATH FROM NODE  50800.00 TO NODE  13700.00 =    5946.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2665.35 | 17.47 | 0.848 | 0.60( 0.47) | 0.79 | 2302.1 | 429.00 |
| 2 | 2673.73 | 19.29 | 0.789 | 0.60( 0.47) | 0.78 | 2638.9 | 425.00 |
| 3 | 2674.27 | 19.48 | 0.782 | 0.60( 0.47) | 0.78 | 2675.8 | 400.00 |
| 4 | 2676.34 | 21.14 | 0.741 | 0.60( 0.47) | 0.78 | 2982.4 | 300.00 |
| 5 | 2658.02 | 29.04 | 0.601 | 0.60( 0.47) | 0.78 | 4426.3 | 210.00 |
| 6 | 2637.53 | 29.88 | 0.589 | 0.60( 0.47) | 0.78 | 4572.5 | 410.00 |
| 7 | 2637.28 | 30.21 | 0.585 | 0.60( 0.47) | 0.78 | 4629.9 | 50800.00 |
| 8 | 2635.99 | 31.59 | 0.574 | 0.60( 0.47) | 0.78 | 4865.4 | 50600.00 |
| 9 | 2635.27 | 32.01 | 0.570 | 0.60( 0.47) | 0.78 | 4942.0 | 200.00 |
| 10 | 2635.14 | 32.32 | 0.568 | 0.60( 0.47) | 0.78 | 4997.6 | 50700.00 |
| 11 | 2634.17 | 33.59 | 0.558 | 0.60( 0.47) | 0.78 | 5213.9 | 230.00 |
| 12 | 2630.25 | 34.67 | 0.549 | 0.60( 0.47) | 0.78 | 5391.3 | 50200.00 |
| 13 | 2629.07 | 34.80 | 0.548 | 0.60( 0.47) | 0.78 | 5420.7 | 220.50 |
| 14 | 2598.02 | 38.61 | 0.516 | 0.60( 0.47) | 0.78 | 6258.9 | 50500.00 |
| 15 | 2575.77 | 42.42 | 0.491 | 0.60( 0.47) | 0.78 | 7077.0 | 110.00 |
| 16 | 2512.89 | 46.34 | 0.469 | 0.60( 0.47) | 0.79 | 7923.2 | 100.00 |
| 17 | 2477.89 | 48.73 | 0.455 | 0.60( 0.47) | 0.79 | 8431.4 | 100.00 |
| 18 | 2446.23 | 51.30 | 0.440 | 0.60( 0.47) | 0.79 | 8974.1 | 420.00 |
| 19 | 2288.71 | 55.75 | 0.415 | 0.60( 0.48) | 0.80 | 9807.7 | 130.00 |
| 20 | 1435.87 | 82.41 | 0.350 | 0.60( 0.50) | 0.84 | 14868.6 | 10100.00 |
| 21 | 1381.95 | 84.10 | 0.347 | 0.60( 0.51) | 0.84 | 15175.9 | 31100.00 |
| 22 | 1383.02 | 88.88 | 0.338 | 0.60( 0.51) | 0.85 | 16255.0 | 20100.00 |
| 23 | 1379.55 | 100.97 | 0.316 | 0.60( 0.51) | 0.86 | 18795.2 | 13600.00 |
| 24 | 1389.42 | 117.14 | 0.285 | 0.60( 0.52) | 0.87 | 22184.2 | 13210.00 |
| 25 | 1386.87 | 131.89 | 0.269 | 0.60( 0.53) | 0.88 | 24887.0 | 11831.00 |
| 26 | 1437.51 | 155.30 | 0.248 | 0.60( 0.54) | 0.90 | 29426.9 | 11530.00 |
| 27 | 1477.05 | 174.76 | 0.231 | 0.60( 0.54) | 0.91 | 33787.6 | 11000.00 |
| 28 | 1543.96 | 196.95 | 0.221 | 0.60( 0.55) | 0.92 | 40827.6 | 10850.00 |
| 29 | 1434.83 | 214.98 | 0.215 | 0.60( 0.56) | 0.93 | 44589.7 | 13510.00 |
| 30 | 1412.39 | 218.88 | 0.214 | 0.60( 0.56) | 0.93 | 45375.8 | 11910.00 |
| 31 | 1382.47 | 224.29 | 0.212 | 0.60( 0.56) | 0.93 | 46146.7 | 13500.00 |
| 32 | 1343.96 | 231.19 | 0.210 | 0.60( 0.56) | 0.93 | 47100.9 | 12300.00 |
| 33 | 1198.93 | 265.48 | 0.199 | 0.60( 0.56) | 0.94 | 52809.3 | 12410.00 |
| 34 | 1136.61 | 298.69 | 0.189 | 0.60( 0.57) | 0.94 | 58895.2 | 12261.00 |
| 35 | 1114.99 | 311.54 | 0.185 | 0.60( 0.57) | 0.94 | 60381.8 | 10410.00 |
| 36 | 1093.88 | 323.82 | 0.181 | 0.60( 0.57) | 0.94 | 61483.8 | 12101.10 |
| 37 | 1073.57 | 333.63 | 0.178 | 0.60( 0.57) | 0.95 | 62305.1 | 10700.00 |
| 38 | 1046.21 | 351.52 | 0.173 | 0.60( 0.57) | 0.95 | 63861.8 | 10200.00 |
| 39 | 1022.69 | 365.03 | 0.169 | 0.60( 0.57) | 0.95 | 64800.1 | 12010.00 |
| 40 | 970.46 | 394.42 | 0.166 | 0.60( 0.57) | 0.95 | 65473.8 | 10210.00 |
| 41 | 899.17 | 444.03 | 0.161 | 0.60( 0.57) | 0.95 | 65972.9 | 12000.00 |
| 42 | 843.55 | 513.94 | 0.154 | 0.60( 0.57) | 0.95 | 66557.6 | 10100.00 |

TOTAL AREA(ACRES) = 66557.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2676.34 Tc(MIN.) = 21.136
EFFECTIVE AREA(ACRES) = 2982.42 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78
TOTAL AREA(ACRES) = 66557.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124531.75 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66557.6 TC(MIN.) = 21.14
EFFECTIVE AREA(ACRES) = 2982.42 AREA-AVERAGED Fm(INCH/HR)= 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.783
PEAK FLOW RATE(CFS) = 2676.34



** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 2665.35 | 17.47 | 0.848 | 0.60( 0.47) | 0.79 | 0.79 | 2302.1 | 429.00 |
| 2 | 2673.73 | 19.29 | 0.789 | 0.60( 0.47) | 0.78 | 0.78 | 2638.9 | 425.00 |
| 3 | 2674.27 | 19.48 | 0.782 | 0.60( 0.47) | 0.78 | 0.78 | 2675.8 | 400.00 |
| 4 | 2676.34 | 21.14 | 0.741 | 0.60( 0.47) | 0.78 | 0.78 | 2982.4 | 300.00 |
| 5 | 2658.02 | 29.04 | 0.601 | 0.60( 0.47) | 0.78 | 0.78 | 4426.3 | 210.00 |
| 6 | 2637.53 | 29.88 | 0.589 | 0.60( 0.47) | 0.78 | 0.78 | 4572.5 | 410.00 |
| 7 | 2637.28 | 30.21 | 0.585 | 0.60( 0.47) | 0.78 | 0.78 | 4629.9 | 50800.00 |
| 8 | 2635.99 | 31.59 | 0.574 | 0.60( 0.47) | 0.78 | 0.78 | 4865.4 | 50600.00 |
| 9 | 2635.27 | 32.01 | 0.570 | 0.60( 0.47) | 0.78 | 0.78 | 4942.0 | 200.00 |
| 10 | 2635.14 | 32.32 | 0.568 | 0.60( 0.47) | 0.78 | 0.78 | 4997.6 | 50700.00 |
| 11 | 2634.17 | 33.59 | 0.558 | 0.60( 0.47) | 0.78 | 0.78 | 5213.9 | 230.00 |
| 12 | 2630.25 | 34.67 | 0.549 | 0.60( 0.47) | 0.78 | 0.78 | 5391.3 | 50200.00 |
| 13 | 2629.07 | 34.80 | 0.548 | 0.60( 0.47) | 0.78 | 0.78 | 5420.7 | 220.50 |
| 14 | 2598.02 | 38.61 | 0.516 | 0.60( 0.47) | 0.78 | 0.78 | 6258.9 | 50500.00 |
| 15 | 2575.77 | 42.42 | 0.491 | 0.60( 0.47) | 0.78 | 0.78 | 7077.0 | 110.00 |
| 16 | 2512.89 | 46.34 | 0.469 | 0.60( 0.47) | 0.79 | 0.79 | 7923.2 | 100.00 |
| 17 | 2477.89 | 48.73 | 0.455 | 0.60( 0.47) | 0.79 | 0.79 | 8431.4 | 100.00 |
| 18 | 2446.23 | 51.30 | 0.440 | 0.60( 0.47) | 0.79 | 0.79 | 8974.1 | 420.00 |
| 19 | 2288.71 | 55.75 | 0.415 | 0.60( 0.48) | 0.80 | 0.80 | 9807.7 | 130.00 |
| 20 | 1435.87 | 82.41 | 0.350 | 0.60( 0.50) | 0.84 | 0.84 | 14868.6 | 10100.00 |
| 21 | 1381.95 | 84.10 | 0.347 | 0.60( 0.51) | 0.84 | 0.84 | 15175.9 | 31100.00 |
| 22 | 1383.02 | 88.88 | 0.338 | 0.60( 0.51) | 0.85 | 0.85 | 16255.0 | 20100.00 |
| 23 | 1379.55 | 100.97 | 0.316 | 0.60( 0.51) | 0.86 | 0.86 | 18795.2 | 13600.00 |
| 24 | 1389.42 | 117.14 | 0.285 | 0.60( 0.52) | 0.87 | 0.87 | 22184.2 | 13210.00 |
| 25 | 1386.87 | 131.89 | 0.269 | 0.60( 0.53) | 0.88 | 0.88 | 24887.0 | 11831.00 |
| 26 | 1437.51 | 155.30 | 0.248 | 0.60( 0.54) | 0.90 | 0.90 | 29426.9 | 11530.00 |
| 27 | 1477.05 | 174.76 | 0.231 | 0.60( 0.54) | 0.91 | 0.91 | 33787.6 | 11000.00 |
| 28 | 1543.96 | 196.95 | 0.221 | 0.60( 0.55) | 0.92 | 0.92 | 40827.6 | 10850.00 |
| 29 | 1434.83 | 214.98 | 0.215 | 0.60( 0.56) | 0.93 | 0.93 | 44589.7 | 13510.00 |
| 30 | 1412.39 | 218.88 | 0.214 | 0.60( 0.56) | 0.93 | 0.93 | 45375.8 | 11910.00 |
| 31 | 1382.47 | 224.29 | 0.212 | 0.60( 0.56) | 0.93 | 0.93 | 46146.7 | 13500.00 |
| 32 | 1343.96 | 231.19 | 0.210 | 0.60( 0.56) | 0.93 | 0.93 | 47100.9 | 12300.00 |
| 33 | 1198.93 | 265.48 | 0.199 | 0.60( 0.56) | 0.94 | 0.94 | 52809.3 | 12410.00 |
| 34 | 1136.61 | 298.69 | 0.189 | 0.60( 0.57) | 0.94 | 0.94 | 58895.2 | 12261.00 |
| 35 | 1114.99 | 311.54 | 0.185 | 0.60( 0.57) | 0.94 | 0.94 | 60381.8 | 10410.00 |
| 36 | 1093.88 | 323.82 | 0.181 | 0.60( 0.57) | 0.94 | 0.94 | 61483.8 | 12101.10 |
| 37 | 1073.57 | 333.63 | 0.178 | 0.60( 0.57) | 0.95 | 0.95 | 62305.1 | 10700.00 |
| 38 | 1046.21 | 351.52 | 0.173 | 0.60( 0.57) | 0.95 | 0.95 | 63861.8 | 10200.00 |
| 39 | 1022.69 | 365.03 | 0.169 | 0.60( 0.57) | 0.95 | 0.95 | 64800.1 | 12010.00 |
| 40 | 970.46 | 394.42 | 0.166 | 0.60( 0.57) | 0.95 | 0.95 | 65473.8 | 10210.00 |
| 41 | 899.17 | 444.03 | 0.161 | 0.60( 0.57) | 0.95 | 0.95 | 65972.9 | 12000.00 |
| 42 | 843.55 | 513.94 | 0.154 | 0.60( 0.57) | 0.95 | 0.95 | 66557.6 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 2-YR EV FEB 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI02EV36.DAT
  TIME/DATE OF STUDY: 11:38 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.806
   2)   10.00;  1.204
   3)   15.00;  0.925
   4)   20.00;  0.762
   5)   25.00;  0.659
   6)   30.00;  0.585
   7)   40.00;  0.504
   8)   50.00;  0.447
   9)   60.00;  0.390
  10)   90.00;  0.336
  11)  120.00;  0.280
  12)  180.00;  0.226
  13)  360.00;  0.170
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.148
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.60     1.000     0   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.67
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      1.67

****************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.024
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.13
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   2.23
  Tc(MIN.) =   13.22
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =    2.84
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =       4.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

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

```
 FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
 CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.862
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.32      0.60     1.000     -
 USER-DEFINED               -        4.70      0.60     1.000     -
 USER-DEFINED               -       25.05      0.60     1.000     -
 USER-DEFINED               -        0.45      0.60     1.000     -
 USER-DEFINED               -        0.44      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.89
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.50
 AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   3.70
 Tc(MIN.) =   16.93
 SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =    7.31
 EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =       9.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =   3.70
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.716
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.03      0.60     1.000     -
 USER-DEFINED               -        2.51      0.60     1.000     -
 USER-DEFINED               -        1.52      0.60     1.000     -
 USER-DEFINED               -       12.30      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.12
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.73
 AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   5.30
 Tc(MIN.) =   22.23
 SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =    2.44
```



```
 EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =       9.87
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.96   FLOW VELOCITY(FEET/SEC.) =   3.60
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
 CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.635
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       10.22      0.60     1.000     -
 USER-DEFINED               -        4.19      0.60     1.000     -
 USER-DEFINED               -        0.07      0.60     1.000     -
 USER-DEFINED               -        1.11      0.60     1.000     -
 USER-DEFINED               -        5.56      0.60     1.000     -
 USER-DEFINED               -        0.09      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.22
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.28
 AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   4.38
 Tc(MIN.) =   26.60
 SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =    0.68
 EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.60
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =       9.87
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.00   FLOW VELOCITY(FEET/SEC.) =   3.26
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: S35X02.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
```

```
 STREAM        Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
    1        18.94  124.94  0.60( 0.57) 0.95    1542.7   13510.00
    2        19.25  134.44  0.60( 0.57) 0.94    1579.8   13500.00
  TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
 STREAM        Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
    1        18.94  124.94  0.60( 0.57) 0.95    1542.7   13510.00
    2        19.25  134.44  0.60( 0.57) 0.94    1579.8   13500.00
  TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.261
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.60     1.000     -
  USER-DEFINED               -        2.36      0.60     1.000     -
  USER-DEFINED               -        0.60      0.60     1.000     -
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        2.22      0.60     1.000     -
  USER-DEFINED               -        3.42      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.06
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   6.80
  Tc(MIN.) =  141.24
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1606.33     AREA-AVERAGED Fm(INCH/HR) =   0.57
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.95
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1606.3         PEAK FLOW RATE(CFS) =      20.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.16   FLOW VELOCITY(FEET/SEC.) =   5.13
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  141.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.261
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.44      0.60     1.000     -
  USER-DEFINED               -        0.01      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1607.78   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =      20.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1        20.27  131.83    0.269  0.60( 0.57) 0.95    1570.7   13510.00
    2        20.58  141.24    0.261  0.60( 0.57) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1         9.87   26.60    0.635  0.60( 0.60) 1.00      86.4   13600.00
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

  ** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1        29.08   26.60    0.635  0.60( 0.57) 0.96     403.4   13600.00
    2        20.27  131.83    0.269  0.60( 0.57) 0.95    1657.1   13510.00
    3        20.58  141.24    0.261  0.60( 0.57) 0.95    1694.2   13500.00
  TOTAL AREA(ACRES) =      1694.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       29.08  Tc(MIN.) =   26.603
  EFFECTIVE AREA(ACRES) =    403.36  AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1694.2
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.578
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       5.39      0.60     1.000     -
  USER-DEFINED               -      16.30      0.60     1.000     -
  USER-DEFINED               -       4.08      0.60     1.000     -
  USER-DEFINED               -      12.36      0.60     1.000     -
  USER-DEFINED               -      11.23      0.60     1.000     -
  USER-DEFINED               -       5.16      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.48
  AVERAGE FLOW DEPTH(FEET) =   1.33   TRAVEL TIME(MIN.) =   4.21
  Tc(MIN.) =   30.82
  SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    457.88     AREA-AVERAGED Fm(INCH/HR) =   0.58
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.96
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =      29.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.33   FLOW VELOCITY(FEET/SEC.) =   5.48
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   30.82
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.578
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      53.93      0.60     1.000     -
  USER-DEFINED               -       0.45      0.60     1.000     -
  USER-DEFINED               -       3.98      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =    0.00
```



```
  EFFECTIVE AREA(ACRES) =    516.24   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =      29.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P201XX02.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)           (ACRES)     NODE
      1       19.79   22.40  0.60( 0.51) 0.85      133.8   20100.00
    TOTAL AREA(ACRES) =      133.8

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       29.08   30.82    0.578  0.60( 0.58) 0.97      516.2   13600.00
      2       20.27  136.44    0.265  0.60( 0.57) 0.95     1770.0   13510.00
      3       20.58  145.80    0.257  0.60( 0.57) 0.95     1807.1   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       19.79   22.40    0.713  0.60( 0.51) 0.85      133.8   20100.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       48.87   22.40    0.713  0.60( 0.56) 0.94      509.0   20100.00
      2       37.41   30.82    0.578  0.60( 0.57) 0.94      650.0   13600.00
      3       24.09  136.44    0.265  0.60( 0.57) 0.95     1903.8   13510.00
      4       24.27  145.80    0.257  0.60( 0.57) 0.94     1940.9   13500.00
    TOTAL AREA(ACRES) =      1940.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       48.87  Tc(MIN.) =   22.397
  EFFECTIVE AREA(ACRES) =    509.02  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     1940.9
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  51
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.96      0.60     1.000     -
  USER-DEFINED               -        0.01      0.60     1.000     -
  USER-DEFINED               -        1.56      0.60     1.000     -
  USER-DEFINED               -       10.45      0.60     1.000     -
  USER-DEFINED               -       44.94      0.60     1.000     -
  USER-DEFINED               -        9.66      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.56
  AVERAGE FLOW DEPTH(FEET) =   1.89   TRAVEL TIME(MIN.) =  10.93
  Tc(MIN.) =   33.33
  SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    576.60     AREA-AVERAGED Fm(INCH/HR) =   0.57
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.94
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.89   FLOW VELOCITY(FEET/SEC.) =   4.56
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.33
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       16.49      0.60     1.000     -
  USER-DEFINED               -       20.39      0.60     1.000     -
  USER-DEFINED               -        7.02      0.60     1.000     -
  USER-DEFINED               -       12.58      0.60     1.000     -
  USER-DEFINED               -       42.49      0.60     1.000     -
  USER-DEFINED               -        5.73      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =    0.00
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  EFFECTIVE AREA(ACRES) =    681.30   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.33
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.78      0.60     1.000     -
  USER-DEFINED               -        6.25      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    689.33   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.60     1.000     -
  USER-DEFINED               -       24.24      0.60     1.000     -
  USER-DEFINED               -        1.34      0.60     1.000     -
  USER-DEFINED               -       74.98      0.60     1.000     -
  USER-DEFINED               -      101.12      0.60     1.000     -
  USER-DEFINED               -       16.90      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.32
  AVERAGE FLOW DEPTH(FEET) =   1.94   TRAVEL TIME(MIN.) =  10.87
```

```
  Tc(MIN.) =   44.20
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    908.58     AREA-AVERAGED Fm(INCH/HR) =   0.58
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.94   FLOW VELOCITY(FEET/SEC.) =   4.32
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.20
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.60     1.000     -
  USER-DEFINED               -       10.02      0.60     1.000     -
  USER-DEFINED               -        4.45      0.60     1.000     -
  USER-DEFINED               -      179.37      0.60     1.000     -
  USER-DEFINED               -       11.47      0.60     1.000     -
  USER-DEFINED               -        0.17      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =    0.01
  EFFECTIVE AREA(ACRES) =   1124.01   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2555.8       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.20
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.60     0.850     -
  USER-DEFINED               -        5.14      0.60     1.000     -
  USER-DEFINED               -       11.22      0.60     1.000     -
  USER-DEFINED               -        0.33      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
```



```
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1140.73   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.420
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        2.17      0.60     1.000     -
  USER-DEFINED               -        9.19      0.60     1.000     -
  USER-DEFINED               -       67.57      0.60     1.000     -
  USER-DEFINED               -       35.19      0.60     1.000     -
  USER-DEFINED               -       30.67      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.61
  AVERAGE FLOW DEPTH(FEET) =   1.88   TRAVEL TIME(MIN.) =  10.53
  Tc(MIN.) =   54.73
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1285.74     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.88   FLOW VELOCITY(FEET/SEC.) =   4.61
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.73
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.420
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -       0.89      0.60     1.000     -
  USER-DEFINED             -      20.65      0.60     1.000     -
  USER-DEFINED             -       2.69      0.60     1.000     -
  USER-DEFINED             -       8.45      0.60     1.000     -
  USER-DEFINED             -      96.93      0.60     1.000     -
  USER-DEFINED             -      13.19      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1428.54   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.73
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.420
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -       42.54      0.60     1.000     -
  USER-DEFINED             -       16.96      0.60     1.000     -
  USER-DEFINED             -       80.60      0.60     1.000     -
  USER-DEFINED             -        1.56      0.60     1.000     -
  USER-DEFINED             -        2.00      0.60     1.000     -
  USER-DEFINED             -        3.11      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1575.31   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3007.1       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.392
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -       0.89      0.60     1.000     -
  USER-DEFINED             -      23.73      0.60     1.000     -
  USER-DEFINED             -       0.27      0.60     1.000     -
  USER-DEFINED             -      19.87      0.60     1.000     -
  USER-DEFINED             -       6.40      0.60     1.000     -
  USER-DEFINED             -       3.14      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.35
  AVERAGE FLOW DEPTH(FEET) =   1.74   TRAVEL TIME(MIN.) =   4.95
  Tc(MIN.) =   59.68
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1629.61     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3061.4         PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.74   FLOW VELOCITY(FEET/SEC.) =   5.35
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   59.68
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.392
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -       0.67      0.60     1.000     -
  USER-DEFINED             -       9.52      0.60     1.000     -
  USER-DEFINED             -       0.71      0.60     1.000     -
  USER-DEFINED             -       0.22      0.60     1.000     -
  USER-DEFINED             -      39.42      0.60     1.000     -
  USER-DEFINED             -       0.62      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1680.77   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.98
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =      48.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

```
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   59.68
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.392
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.11      0.60     1.000     -
 USER-DEFINED               -        0.77      0.60     1.000     -
 USER-DEFINED               -        0.22      0.60     1.000     -
 USER-DEFINED               -        2.69      0.60     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =   1684.56   AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.98
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =      48.87
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 2P02EVAA.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
     1      140.95   18.14  0.60( 0.21) 0.35     167.3     110.00
     2      140.05   21.10  0.60( 0.22) 0.37     199.3     100.00
     3      133.31   22.95  0.60( 0.22) 0.37     211.1     100.00
     4      102.00   28.72  0.60( 0.24) 0.40     221.1     130.00
   TOTAL AREA(ACRES) =      221.1

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
 FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  15.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.22
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
```



```
 PIPE-FLOW(CFS) =      48.87
 PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   60.53
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       48.87   60.53    0.389  0.60( 0.59) 0.98     1684.6   20100.00
     2       37.41   71.62    0.369  0.60( 0.59) 0.98     1825.6   13600.00
     3       24.09  182.03    0.225  0.60( 0.58) 0.97     3079.3   13510.00
     4       24.27  191.30    0.222  0.60( 0.58) 0.97     3116.4   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      140.95   18.14    0.823  0.60( 0.21) 0.35      167.3     110.00
     2      140.05   21.10    0.739  0.60( 0.22) 0.37      199.3     100.00
     3      133.31   22.95    0.701  0.60( 0.22) 0.37      211.1     100.00
     4      102.00   28.72    0.604  0.60( 0.24) 0.40      221.1     130.00
 LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      171.92   18.14    0.823  0.60( 0.49) 0.83      672.1     110.00
     2      172.42   21.10    0.739  0.60( 0.49) 0.83      786.6     100.00
     3      166.70   22.95    0.701  0.60( 0.50) 0.83      849.7     100.00
     4      138.00   28.72    0.604  0.60( 0.51) 0.86     1020.3     130.00
     5      114.28   60.53    0.389  0.60( 0.55) 0.91     1905.7   20100.00
     6       99.46   71.62    0.369  0.60( 0.55) 0.92     2046.7   13600.00
     7       61.98  182.03    0.225  0.60( 0.56) 0.93     3300.4   13510.00
     8       61.68  191.30    0.222  0.60( 0.56) 0.93     3337.5   13500.00
   TOTAL AREA(ACRES) =      3337.5

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      172.42  Tc(MIN.) =   21.104
 EFFECTIVE AREA(ACRES) =    786.59  AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3337.5
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   21.10
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.739
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -        1.11      0.60     1.000     -
  USER-DEFINED               -        0.44      0.60     1.000     -
  USER-DEFINED               -        1.49      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     1.000     -
  USER-DEFINED               -        1.09      0.60     1.000     -
  USER-DEFINED               -       18.57      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =    3.06
  EFFECTIVE AREA(ACRES) =    810.99   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =     176.02

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      203.08   18.14    0.823  0.60( 0.50) 0.83     696.5     110.00
      2      176.02   21.10    0.739  0.60( 0.50) 0.83     811.0     100.00
      3      166.70   22.95    0.701  0.60( 0.50) 0.83     874.1     100.00
      4      138.00   28.72    0.604  0.60( 0.52) 0.86    1044.7     130.00
      5      114.28   60.53    0.389  0.60( 0.55) 0.91    1930.1   20100.00
      6       99.46   71.62    0.369  0.60( 0.55) 0.92    2071.1   13600.00
      7       61.98  182.03    0.225  0.60( 0.56) 0.93    3324.8   13510.00
      8       61.68  191.30    0.222  0.60( 0.56) 0.93    3361.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     203.08  Tc(MIN.) =   18.14
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =     696.55

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.14
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.823
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.39      0.60     1.000     -
  USER-DEFINED               -        2.30      0.60     1.000     -
  USER-DEFINED               -        5.19      0.60     1.000     -
  USER-DEFINED               -       28.71      0.60     1.000     -
  USER-DEFINED               -        0.17      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =    9.78
  EFFECTIVE AREA(ACRES) =    745.31   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =     212.85

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        9.23      0.60     1.000     -
  USER-DEFINED               -        0.54      0.60     1.000     -
  USER-DEFINED               -        5.66      0.60     1.000     -
  USER-DEFINED               -        3.66      0.60     1.000     -
  USER-DEFINED               -        0.67      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     214.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.88
  AVERAGE FLOW DEPTH(FEET) =   3.48   TRAVEL TIME(MIN.) =   2.65
  Tc(MIN.) =   20.79
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =    2.62
  EFFECTIVE AREA(ACRES) =    765.29     AREA-AVERAGED Fm(INCH/HR) =   0.51
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.85
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.47   FLOW VELOCITY(FEET/SEC.) =   5.88
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.79
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.56      0.60     1.000     -
  USER-DEFINED               -        9.40      0.60     1.000     -
  USER-DEFINED               -        2.76      0.60     1.000     -
  USER-DEFINED               -       17.38      0.60     1.000     -
  USER-DEFINED               -        2.46      0.60     1.000     -
  USER-DEFINED               -        5.56      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =    5.14
  EFFECTIVE AREA(ACRES) =    804.41   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  MAINLINE Tc(MIN.) =   20.79
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.65      0.60     1.000     -
  USER-DEFINED               -        1.70      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    0.31
  EFFECTIVE AREA(ACRES) =    806.76   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.79
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.29      0.60     1.000     -
  USER-DEFINED               -       31.25      0.60     1.000     -
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        6.26      0.60     1.000     -
  USER-DEFINED               -        0.07      0.60     1.000     -
  USER-DEFINED               -        0.22      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =    5.69
  EFFECTIVE AREA(ACRES) =    850.07   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.79
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.60     0.850     -
  USER-DEFINED               -        3.06      0.60     0.850     -
  USER-DEFINED               -       17.76      0.60     0.500     -
```



```
  USER-DEFINED               -        7.31      0.60     0.500     -
  USER-DEFINED               -        0.34      0.60     1.000     -
  USER-DEFINED               -        8.22      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   12.36
  EFFECTIVE AREA(ACRES) =    889.23   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.79
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.07
  EFFECTIVE AREA(ACRES) =    889.76   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        5.28      0.60     1.000     -
  USER-DEFINED               -        0.52      0.60     1.000     -
  USER-DEFINED               -        3.61      0.60     1.000     -
  USER-DEFINED               -        0.67      0.60     1.000     -
  USER-DEFINED               -        1.37      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     212.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.40
  AVERAGE FLOW DEPTH(FEET) =   3.33   TRAVEL TIME(MIN.) =   7.46
  Tc(MIN.) =   28.24
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =    0.12
  EFFECTIVE AREA(ACRES) =    901.43     AREA-AVERAGED Fm(INCH/HR) =   0.51
```

```
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.85
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.33   FLOW VELOCITY(FEET/SEC.) =   6.39
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.60     1.000     -
  USER-DEFINED               -       23.04      0.60     1.000     -
  USER-DEFINED               -        1.18      0.60     1.000     -
  USER-DEFINED               -        1.56      0.60     1.000     -
  USER-DEFINED               -       53.20      0.60     1.000     -
  USER-DEFINED               -        2.08      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =    0.88
  EFFECTIVE AREA(ACRES) =    989.39   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.60     1.000     -
  USER-DEFINED               -        0.18      0.60     1.000     -
  USER-DEFINED               -        0.38      0.60     1.000     -
  USER-DEFINED               -        0.22      0.60     1.000     -
  USER-DEFINED               -        7.73      0.60     1.000     -
  USER-DEFINED               -        4.37      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =    0.13
  EFFECTIVE AREA(ACRES) =   1002.28   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.57      0.60     1.000     -
  USER-DEFINED               -        1.97      0.60     1.000     -
  USER-DEFINED               -        1.00      0.60     1.000     -
  USER-DEFINED               -        2.98      0.60     1.000     -
  USER-DEFINED               -        2.39      0.60     1.000     -
  USER-DEFINED               -        1.67      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =    0.13
  EFFECTIVE AREA(ACRES) =   1014.86   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.44      0.60     1.000     -
  USER-DEFINED               -        2.65      0.60     0.850     -
  USER-DEFINED               -        1.16      0.60     0.850     -
  USER-DEFINED               -        0.47      0.60     0.500     -
  USER-DEFINED               -        0.25      0.60     0.500     -
  USER-DEFINED               -       20.24      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =    0.76
  EFFECTIVE AREA(ACRES) =   1040.07   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.60     1.000     -
  USER-DEFINED               -        6.75      0.60     1.000     -
```

```
  USER-DEFINED               -        0.02      0.60     1.000     -
  USER-DEFINED               -        0.93      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =    0.15
  EFFECTIVE AREA(ACRES) =   1054.85   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.49      0.60     1.000     -
  USER-DEFINED               -       13.31      0.60     1.000     -
  USER-DEFINED               -        0.87      0.60     1.000     -
  USER-DEFINED               -       20.26      0.60     1.000     -
  USER-DEFINED               -        1.21      0.60     1.000     -
  USER-DEFINED               -        0.05      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     212.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.95
  AVERAGE FLOW DEPTH(FEET) =   3.45   TRAVEL TIME(MIN.) =   7.08
  Tc(MIN.) =   35.32
  SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1099.04     AREA-AVERAGED Fm(INCH/HR) =   0.53
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.88
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.45   FLOW VELOCITY(FEET/SEC.) =   5.95
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.56      0.60     1.000     -
  USER-DEFINED               -        0.81      0.60     1.000     -
  USER-DEFINED               -        0.01      0.60     1.000     -
  USER-DEFINED               -        1.11      0.60     1.000     -
  USER-DEFINED               -        0.59      0.60     1.000     -
  USER-DEFINED               -        3.04      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1117.16   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.88
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.60     0.400     -
  USER-DEFINED               -        1.30      0.60     0.850     -
  USER-DEFINED               -        0.10      0.60     0.400     -
  USER-DEFINED               -        1.70      0.60     0.850     -
  USER-DEFINED               -        0.10      0.60     0.850     -
  USER-DEFINED               -        2.90      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    0.50
  EFFECTIVE AREA(ACRES) =   1123.36   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.88
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -        0.10      0.60     0.500     -
  USER-DEFINED               -        0.10      0.60     0.350     -
  USER-DEFINED               -        6.90      0.60     0.850     -
  USER-DEFINED               -        0.40      0.60     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    0.59
  EFFECTIVE AREA(ACRES) =   1130.86   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.88
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.55      0.60     1.000     -
  USER-DEFINED               -        0.01      0.60     1.000     -
  USER-DEFINED               -        1.35      0.60     1.000     -
  USER-DEFINED               -        0.44      0.60     1.000     -
  USER-DEFINED               -        0.67      0.60     1.000     -
  USER-DEFINED               -        1.06      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1136.94   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.88
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.16      0.60     1.000     -
  USER-DEFINED               -        2.45      0.60     1.000     -
  USER-DEFINED               -        6.15      0.60     1.000     -
  USER-DEFINED               -        1.34      0.60     1.000     -
  USER-DEFINED               -       18.46      0.60     1.000     -
  USER-DEFINED               -        4.13      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1171.63   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.89
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.32
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.69      0.60     1.000     -
  USER-DEFINED               -        0.73      0.60     1.000     -
  USER-DEFINED               -        0.41      0.60     1.000     -
  USER-DEFINED               -        1.37      0.60     1.000     -
  USER-DEFINED               -        3.11      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1185.94   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.89
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =     212.85
  FLOW VELOCITY(FEET/SEC.) =   9.75   FLOW DEPTH(FEET) =   2.70
  TRAVEL TIME(MIN.) =   0.49   Tc(MIN.) =   35.81
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.493
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.23      0.60     1.000     -
  USER-DEFINED               -        1.52      0.60     1.000     -
  USER-DEFINED               -        0.06      0.60     1.000     -
  USER-DEFINED               -        0.13      0.60     1.000     -
  USER-DEFINED               -        6.45      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     212.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.01
  AVERAGE FLOW DEPTH(FEET) =   3.76   TRAVEL TIME(MIN.) =   6.14
  Tc(MIN.) =   41.95
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =   1194.33     AREA-AVERAGED Fm(INCH/HR) =   0.53
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.89
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =     212.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.76   FLOW VELOCITY(FEET/SEC.) =   5.01
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     3859.7  TC(MIN.) =     41.95
  EFFECTIVE AREA(ACRES) =   1194.33  AREA-AVERAGED Fm(INCH/HR)=  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap = 0.888
  PEAK FLOW RATE(CFS)   =     212.85

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      212.85   41.95    0.493  0.60( 0.53) 0.89    1194.3     110.00
      2      182.13   45.87    0.471  0.60( 0.53) 0.88    1308.8     100.00
      3      166.70   48.25    0.457  0.60( 0.53) 0.88    1371.9     100.00
      4      138.00   55.27    0.417  0.60( 0.54) 0.89    1542.5     130.00
      5      114.28   88.34    0.339  0.60( 0.56) 0.93    2427.8   20100.00
```



```
      6       99.46  100.42    0.317  0.60( 0.56) 0.93    2568.9   13600.00
      7       61.98  214.44    0.215  0.60( 0.56) 0.93    3822.6   13510.00
      8       61.68  223.75    0.212  0.60( 0.56) 0.93    3859.7   13500.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 2-YR EV AUG 2023 ROKAMOTO                                            *
 ***********************************************************************

  FILE NAME: RI02EV37.DAT
  TIME/DATE OF STUDY: 16:11 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.802
   2)   10.00;  1.202
   3)   15.00;  0.923
   4)   20.00;  0.761
   5)   25.00;  0.659
   6)   30.00;  0.585
   7)   40.00;  0.503
   8)   50.00;  0.446
   9)   60.00;  0.390
  10)   90.00;  0.336
  11)  120.00;  0.280
  12)  180.00;  0.226
  13)  360.00;  0.170
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     2676.34   21.14  0.60( 0.47) 0.78    2982.4     300.00
      2     2598.02   38.61  0.60( 0.47) 0.78    6258.9   50500.00
      3     1435.87   82.41  0.60( 0.50) 0.84   14868.6   10100.00
      4     1379.55  100.97  0.60( 0.51) 0.86   18795.2   13600.00
      5     1389.42  117.14  0.60( 0.52) 0.87   22184.2   13210.00
      6     1386.87  131.89  0.60( 0.53) 0.88   24887.0   11831.00
      7     1437.51  155.30  0.60( 0.54) 0.90   29426.9   11530.00
      8     1477.05  174.76  0.60( 0.54) 0.91   33787.6   11000.00
      9     1543.96  196.95  0.60( 0.55) 0.92   40827.6   10850.00
     10     1434.83  214.98  0.60( 0.56) 0.93   44589.7   13510.00
     11     1198.93  265.48  0.60( 0.56) 0.94   52809.3   12410.00
     12     1136.61  298.69  0.60( 0.57) 0.94   58895.2   12261.00
     13     1114.99  311.54  0.60( 0.57) 0.94   60381.8   10410.00
     14     1093.88  323.82  0.60( 0.57) 0.94   61483.8   12101.10
     15     1073.57  333.63  0.60( 0.57) 0.95   62305.1   10700.00
     16     1046.21  351.52  0.60( 0.57) 0.95   63861.8   10200.00
     17     1022.69  365.03  0.60( 0.57) 0.95   64800.1   12010.00
     18      970.46  394.42  0.60( 0.57) 0.95   65473.8   10210.00
     19      899.17  444.03  0.60( 0.57) 0.95   65972.9   12000.00
     20      843.55  513.94  0.60( 0.57) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     2676.34   21.14  0.60( 0.47) 0.78    2982.4     300.00
      2     2598.02   38.61  0.60( 0.47) 0.78    6258.9   50500.00
      3     1435.87   82.41  0.60( 0.50) 0.84   14868.6   10100.00
      4     1379.55  100.97  0.60( 0.51) 0.86   18795.2   13600.00
      5     1389.42  117.14  0.60( 0.52) 0.87   22184.2   13210.00
      6     1386.87  131.89  0.60( 0.53) 0.88   24887.0   11831.00
      7     1437.51  155.30  0.60( 0.54) 0.90   29426.9   11530.00
      8     1477.05  174.76  0.60( 0.54) 0.91   33787.6   11000.00
      9     1543.96  196.95  0.60( 0.55) 0.92   40827.6   10850.00
     10     1434.83  214.98  0.60( 0.56) 0.93   44589.7   13510.00
     11     1198.93  265.48  0.60( 0.56) 0.94   52809.3   12410.00
     12     1136.61  298.69  0.60( 0.57) 0.94   58895.2   12261.00
     13     1114.99  311.54  0.60( 0.57) 0.94   60381.8   10410.00
```

```
     14     1093.88  323.82  0.60( 0.57) 0.94   61483.8   12101.10
     15     1073.57  333.63  0.60( 0.57) 0.95   62305.1   10700.00
     16     1046.21  351.52  0.60( 0.57) 0.95   63861.8   10200.00
     17     1022.69  365.03  0.60( 0.57) 0.95   64800.1   12010.00
     18      970.46  394.42  0.60( 0.57) 0.95   65473.8   10210.00
     19      899.17  444.03  0.60( 0.57) 0.95   65972.9   12000.00
     20      843.55  513.94  0.60( 0.57) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2676.34
  FLOW VELOCITY(FEET/SEC.) =   7.29   FLOW DEPTH(FEET) =  11.07
  TRAVEL TIME(MIN.) =   4.33   Tc(MIN.) =   25.46
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126423.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102G.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1       23.78   20.85  0.60( 0.58) 0.96     198.9   10230.00
      2       18.42   27.77  0.60( 0.57) 0.96     227.7   10250.00
      3       15.17   31.87  0.60( 0.57) 0.95     240.4   10200.00
      4        8.86   39.09  0.60( 0.57) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2676.34   25.46    0.652  0.60( 0.47) 0.78    2982.4     300.00
      2     2598.02   42.97    0.486  0.60( 0.47) 0.78    6258.9   50500.00
      3     1435.87   87.47    0.341  0.60( 0.50) 0.84   14868.6   10100.00
      4     1379.55  106.08    0.306  0.60( 0.51) 0.86   18795.2   13600.00
```



```
      5     1389.42  122.24    0.278  0.60( 0.52) 0.87   22184.2   13210.00
      6     1386.87  136.99    0.265  0.60( 0.53) 0.88   24887.0   11831.00
      7     1437.51  160.36    0.244  0.60( 0.54) 0.90   29426.9   11530.00
      8     1477.05  179.78    0.226  0.60( 0.54) 0.91   33787.6   11000.00
      9     1543.96  201.92    0.219  0.60( 0.55) 0.92   40827.6   10850.00
     10     1434.83  220.04    0.214  0.60( 0.56) 0.93   44589.7   13510.00
     11     1198.93  270.77    0.198  0.60( 0.56) 0.94   52809.3   12410.00
     12     1136.61  304.05    0.187  0.60( 0.57) 0.94   58895.2   12261.00
     13     1114.99  316.93    0.183  0.60( 0.57) 0.94   60381.8   10410.00
     14     1093.88  329.23    0.180  0.60( 0.57) 0.94   61483.8   12101.10
     15     1073.57  339.07    0.177  0.60( 0.57) 0.95   62305.1   10700.00
     16     1046.21  356.99    0.171  0.60( 0.57) 0.95   63861.8   10200.00
     17     1022.69  370.53    0.169  0.60( 0.57) 0.95   64800.1   12010.00
     18      970.46  399.99    0.166  0.60( 0.57) 0.95   65473.8   10210.00
     19      899.17  449.72    0.160  0.60( 0.57) 0.95   65972.9   12000.00
     20      843.55  519.72    0.153  0.60( 0.57) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126423.58 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       23.78   20.85    0.744  0.60( 0.58) 0.96     198.9   10230.00
    2       18.42   27.77    0.618  0.60( 0.57) 0.96     227.7   10250.00
    3       15.17   31.87    0.570  0.60( 0.57) 0.95     240.4   10200.00
    4        8.86   39.09    0.510  0.60( 0.57) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2700.13   20.85    0.744  0.60( 0.48) 0.80    2640.4   10230.00
    2     2696.55   25.46    0.652  0.60( 0.48) 0.79    3200.5     300.00
    3     2684.45   27.77    0.618  0.60( 0.48) 0.79    3641.6   10250.00
    4     2662.85   31.87    0.570  0.60( 0.47) 0.79    4421.8   10200.00
    5     2624.24   39.09    0.510  0.60( 0.47) 0.79    5778.9   10220.00
    6     2606.45   42.97    0.486  0.60( 0.47) 0.79    6505.1   50500.00
    7     1441.78   87.47    0.341  0.60( 0.50) 0.84   15114.8   10100.00
    8     1384.86  106.08    0.306  0.60( 0.51) 0.86   19041.5   13600.00
    9     1394.24  122.24    0.278  0.60( 0.52) 0.87   22430.5   13210.00
   10     1391.46  136.99    0.265  0.60( 0.53) 0.88   25133.3   11831.00
   11     1441.74  160.36    0.244  0.60( 0.54) 0.90   29673.2   11530.00
   12     1480.98  179.78    0.226  0.60( 0.54) 0.91   34033.9   11000.00
   13     1547.76  201.92    0.219  0.60( 0.55) 0.92   41073.9   10850.00
   14     1438.54  220.04    0.214  0.60( 0.56) 0.93   44835.9   13510.00
   15     1202.36  270.77    0.198  0.60( 0.56) 0.94   53055.6   12410.00
   16     1139.86  304.05    0.187  0.60( 0.57) 0.94   59141.5   12261.00
   17     1118.18  316.93    0.183  0.60( 0.57) 0.94   60628.1   10410.00
   18     1096.99  329.23    0.180  0.60( 0.57) 0.94   61730.0   12101.10
   19     1076.64  339.07    0.177  0.60( 0.57) 0.95   62551.4   10700.00
   20     1049.18  356.99    0.171  0.60( 0.57) 0.95   64108.1   10200.00
   21     1025.62  370.53    0.169  0.60( 0.57) 0.95   65046.3   12010.00
   22      973.33  399.99    0.166  0.60( 0.57) 0.95   65720.1   10210.00
   23      901.95  449.72    0.160  0.60( 0.57) 0.95   66219.1   12000.00
   24      846.20  519.72    0.153  0.60( 0.57) 0.95   66803.9   10100.00
  TOTAL AREA(ACRES) =     66803.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     2700.13  Tc(MIN.) =   20.846
```

```
  EFFECTIVE AREA(ACRES) =   2640.45  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126423.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2700.13
  FLOW VELOCITY(FEET/SEC.) =   7.06   FLOW DEPTH(FEET) =  11.29
  TRAVEL TIME(MIN.) =   4.88   Tc(MIN.) =   25.73
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128491.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103G.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      100.02   24.05  0.60( 0.45) 0.75     396.7   10380.00
      2       99.68   24.58  0.60( 0.45) 0.75     403.1   10300.00
      3       86.78   29.19  0.60( 0.45) 0.76     440.4   10320.00
      4       81.58   32.88  0.60( 0.46) 0.76     455.7   10340.00
      5       76.28   36.17  0.60( 0.46) 0.76     460.8   10360.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2700.13   25.73    0.648  0.60( 0.48) 0.80    2640.4   10230.00
      2     2696.55   30.35    0.582  0.60( 0.48) 0.79    3200.5     300.00
      3     2684.45   32.66    0.563  0.60( 0.48) 0.79    3641.6   10250.00
      4     2662.85   36.77    0.529  0.60( 0.47) 0.79    4421.8   10200.00
      5     2624.24   44.01    0.480  0.60( 0.47) 0.79    5778.9   10220.00
      6     2606.45   47.90    0.458  0.60( 0.47) 0.79    6505.1   50500.00
      7     1441.78   93.18    0.330  0.60( 0.50) 0.84   15114.8   10100.00
```



```
      8     1384.86  111.85    0.295  0.60( 0.51) 0.86   19041.5   13600.00
      9     1394.24  128.00    0.273  0.60( 0.52) 0.87   22430.5   13210.00
     10     1391.46  142.75    0.260  0.60( 0.53) 0.88   25133.3   11831.00
     11     1441.74  166.07    0.239  0.60( 0.54) 0.90   29673.2   11530.00
     12     1480.98  185.45    0.224  0.60( 0.54) 0.91   34033.9   11000.00
     13     1547.76  207.53    0.217  0.60( 0.55) 0.92   41073.9   10850.00
     14     1438.54  225.75    0.212  0.60( 0.56) 0.93   44835.9   13510.00
     15     1202.36  276.75    0.196  0.60( 0.56) 0.94   53055.6   12410.00
     16     1139.86  310.11    0.186  0.60( 0.57) 0.94   59141.5   12261.00
     17     1118.18  323.01    0.182  0.60( 0.57) 0.94   60628.1   10410.00
     18     1096.99  335.34    0.178  0.60( 0.57) 0.94   61730.0   12101.10
     19     1076.64  345.21    0.175  0.60( 0.57) 0.95   62551.4   10700.00
     20     1049.18  363.18    0.170  0.60( 0.57) 0.95   64108.1   10200.00
     21     1025.62  376.75    0.168  0.60( 0.57) 0.95   65046.3   12010.00
     22      973.33  406.29    0.165  0.60( 0.57) 0.95   65720.1   10210.00
     23      901.95  456.14    0.160  0.60( 0.57) 0.95   66219.1   12000.00
     24      846.20  526.24    0.152  0.60( 0.57) 0.95   66803.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128491.12 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      100.02   24.05    0.678  0.60( 0.45) 0.75     396.7   10380.00
    2       99.68   24.58    0.668  0.60( 0.45) 0.75     403.1   10300.00
    3       86.78   29.19    0.597  0.60( 0.45) 0.76     440.4   10320.00
    4       81.58   32.88    0.561  0.60( 0.46) 0.76     455.7   10340.00
    5       76.28   36.17    0.534  0.60( 0.46) 0.76     460.8   10360.00
LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2800.15   24.05    0.678  0.60( 0.47) 0.79    2864.6   10380.00
    2     2799.81   24.58    0.668  0.60( 0.47) 0.79    2925.4   10300.00
    3     2796.59   25.73    0.648  0.60( 0.47) 0.79    3052.9   10230.00
    4     2784.23   29.19    0.597  0.60( 0.47) 0.79    3501.1   10320.00
    5     2781.71   30.35    0.582  0.60( 0.47) 0.79    3645.7     300.00
    6     2766.35   32.66    0.563  0.60( 0.47) 0.79    4096.3   10250.00
    7     2764.84   32.88    0.561  0.60( 0.47) 0.79    4140.1   10340.00
    8     2742.25   36.17    0.534  0.60( 0.47) 0.79    4769.7   10360.00
    9     2738.43   36.77    0.529  0.60( 0.47) 0.79    4882.6   10200.00
   10     2692.77   44.01    0.480  0.60( 0.47) 0.79    6239.7   10220.00
   11     2671.82   47.90    0.458  0.60( 0.47) 0.79    6965.9   50500.00
   12     1488.90   93.18    0.330  0.60( 0.50) 0.84   15575.6   10100.00
   13     1427.00  111.85    0.295  0.60( 0.51) 0.86   19502.3   13600.00
   14     1433.18  128.00    0.273  0.60( 0.52) 0.87   22891.3   13210.00
   15     1428.50  142.75    0.260  0.60( 0.53) 0.88   25594.1   11831.00
   16     1475.79  166.07    0.239  0.60( 0.54) 0.89   30134.0   11530.00
   17     1513.00  185.45    0.224  0.60( 0.54) 0.91   34494.7   11000.00
   18     1578.80  207.53    0.217  0.60( 0.55) 0.92   41534.7   10850.00
   19     1468.77  225.75    0.212  0.60( 0.56) 0.93   45296.7   13510.00
   20     1230.32  276.75    0.196  0.60( 0.56) 0.94   53516.4   12410.00
   21     1166.34  310.11    0.186  0.60( 0.56) 0.94   59602.3   12261.00
   22     1144.08  323.01    0.182  0.60( 0.57) 0.94   61088.9   10410.00
   23     1122.36  335.34    0.178  0.60( 0.57) 0.94   62190.8   12101.10
   24     1101.56  345.21    0.175  0.60( 0.57) 0.94   63012.2   10700.00
   25     1073.40  363.18    0.170  0.60( 0.57) 0.95   64568.9   10200.00
   26     1049.63  376.75    0.168  0.60( 0.57) 0.95   65507.1   12010.00
```

```
    27      996.89  406.29    0.165  0.60( 0.57) 0.95   66180.9   10210.00
    28      924.75  456.14    0.160  0.60( 0.57) 0.95   66679.9   12000.00
    29      867.93  526.24    0.152  0.60( 0.57) 0.95   67264.7   10100.00
   TOTAL AREA(ACRES) =     67264.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2800.15  Tc(MIN.) =   24.048
  EFFECTIVE AREA(ACRES) =   2864.58  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    67264.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128491.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2800.15
  FLOW VELOCITY(FEET/SEC.) =  23.94   FLOW DEPTH(FEET) =   6.24
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =   24.30
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128855.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104G.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1        7.30   27.55  0.60( 0.48) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2800.15   24.30    0.673  0.60( 0.47) 0.79    2864.6   10380.00
      2     2799.81   24.83    0.662  0.60( 0.47) 0.79    2925.4   10300.00
      3     2796.59   25.98    0.644  0.60( 0.47) 0.79    3052.9   10230.00
      4     2784.23   29.45    0.593  0.60( 0.47) 0.79    3501.1   10320.00
```



```
      5     2781.71   30.60    0.580  0.60( 0.47) 0.79    3645.7     300.00
      6     2766.35   32.91    0.561  0.60( 0.47) 0.79    4096.3   10250.00
      7     2764.84   33.14    0.559  0.60( 0.47) 0.79    4140.1   10340.00
      8     2742.25   36.43    0.532  0.60( 0.47) 0.79    4769.7   10360.00
      9     2738.43   37.02    0.527  0.60( 0.47) 0.79    4882.6   10200.00
     10     2692.77   44.26    0.479  0.60( 0.47) 0.79    6239.7   10220.00
     11     2671.82   48.15    0.457  0.60( 0.47) 0.79    6965.9   50500.00
     12     1488.90   93.47    0.330  0.60( 0.50) 0.84   15575.6   10100.00
     13     1427.00  112.15    0.295  0.60( 0.51) 0.86   19502.3   13600.00
     14     1433.18  128.30    0.273  0.60( 0.52) 0.87   22891.3   13210.00
     15     1428.50  143.05    0.259  0.60( 0.53) 0.88   25594.1   11831.00
     16     1475.79  166.36    0.238  0.60( 0.54) 0.89   30134.0   11530.00
     17     1513.00  185.75    0.224  0.60( 0.54) 0.91   34494.7   11000.00
     18     1578.80  207.82    0.217  0.60( 0.55) 0.92   41534.7   10850.00
     19     1468.77  226.05    0.212  0.60( 0.56) 0.93   45296.7   13510.00
     20     1230.32  277.06    0.196  0.60( 0.56) 0.94   53516.4   12410.00
     21     1166.34  310.42    0.185  0.60( 0.56) 0.94   59602.3   12261.00
     22     1144.08  323.33    0.181  0.60( 0.57) 0.94   61088.9   10410.00
     23     1122.36  335.66    0.178  0.60( 0.57) 0.94   62190.8   12101.10
     24     1101.56  345.53    0.175  0.60( 0.57) 0.94   63012.2   10700.00
     25     1073.40  363.50    0.170  0.60( 0.57) 0.95   64568.9   10200.00
     26     1049.63  377.07    0.168  0.60( 0.57) 0.95   65507.1   12010.00
     27      996.89  406.62    0.165  0.60( 0.57) 0.95   66180.9   10210.00
     28      924.75  456.48    0.160  0.60( 0.57) 0.95   66679.9   12000.00
     29      867.93  526.58    0.152  0.60( 0.57) 0.95   67264.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128855.20 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1        7.30   27.55    0.621  0.60( 0.48) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2807.45   24.30    0.673  0.60( 0.47) 0.79    2903.7   10380.00
    2     2807.11   24.83    0.662  0.60( 0.47) 0.79    2965.3   10300.00
    3     2803.89   25.98    0.644  0.60( 0.47) 0.79    3094.7   10230.00
    4     2798.30   27.55    0.621  0.60( 0.47) 0.79    3299.8   10400.00
    5     2790.36   29.45    0.593  0.60( 0.47) 0.79    3545.4   10320.00
    6     2787.71   30.60    0.580  0.60( 0.47) 0.79    3690.0     300.00
    7     2772.15   32.91    0.561  0.60( 0.47) 0.79    4140.6   10250.00
    8     2770.63   33.14    0.559  0.60( 0.47) 0.79    4184.4   10340.00
    9     2747.76   36.43    0.532  0.60( 0.47) 0.79    4814.0   10360.00
   10     2743.89   37.02    0.527  0.60( 0.47) 0.79    4926.9   10200.00
   11     2697.72   44.26    0.479  0.60( 0.47) 0.79    6284.0   10220.00
   12     2676.54   48.15    0.457  0.60( 0.47) 0.79    7010.2   50500.00
   13     1492.30   93.47    0.330  0.60( 0.50) 0.84   15619.9   10100.00
   14     1430.05  112.15    0.295  0.60( 0.51) 0.85   19546.6   13600.00
   15     1436.00  128.30    0.273  0.60( 0.52) 0.87   22935.6   13210.00
   16     1431.18  143.05    0.259  0.60( 0.53) 0.88   25638.4   11831.00
   17     1478.25  166.36    0.238  0.60( 0.54) 0.89   30178.3   11530.00
   18     1515.32  185.75    0.224  0.60( 0.54) 0.91   34539.0   11000.00
   19     1581.04  207.82    0.217  0.60( 0.55) 0.92   41579.0   10850.00
   20     1470.96  226.05    0.212  0.60( 0.56) 0.93   45341.0   13510.00
   21     1232.35  277.06    0.196  0.60( 0.56) 0.94   53560.7   12410.00
   22     1168.26  310.42    0.185  0.60( 0.56) 0.94   59646.6   12261.00
```

```
     23     1145.96  323.33    0.181  0.60( 0.57) 0.94   61133.2   10410.00
     24     1124.19  335.66    0.178  0.60( 0.57) 0.94   62235.1   12101.10
     25     1103.37  345.53    0.175  0.60( 0.57) 0.94   63056.5   10700.00
     26     1075.15  363.50    0.170  0.60( 0.57) 0.95   64613.2   10200.00
     27     1051.37  377.07    0.168  0.60( 0.57) 0.95   65551.4   12010.00
     28      998.59  406.62    0.165  0.60( 0.57) 0.95   66225.1   10210.00
     29      926.40  456.48    0.160  0.60( 0.57) 0.95   66724.2   12000.00
     30      869.50  526.58    0.152  0.60( 0.57) 0.95   67309.0   10100.00
    TOTAL AREA(ACRES) =     67309.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2807.45  Tc(MIN.) =   24.301
  EFFECTIVE AREA(ACRES) =   2903.66  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    67309.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128855.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13802.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    141.00  DOWNSTREAM(FEET) =    135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1533.41   CHANNEL SLOPE =  0.0039
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2807.45
  FLOW VELOCITY(FEET/SEC.) =   8.90   FLOW DEPTH(FEET) =  10.26
  TRAVEL TIME(MIN.) =   2.87   Tc(MIN.) =   27.17
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130388.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506105N.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       32.00   17.46  0.60( 0.53) 0.88     140.9   10520.00
      2       10.21   60.70  0.60( 0.56) 0.93     403.6   10500.00
    TOTAL AREA(ACRES) =      403.6

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2807.45   27.17    0.627  0.60( 0.47) 0.79    2903.7   10380.00
    2     2807.11   27.70    0.619  0.60( 0.47) 0.79    2965.3   10300.00
    3     2803.89   28.86    0.602  0.60( 0.47) 0.79    3094.7   10230.00
    4     2798.30   30.42    0.582  0.60( 0.47) 0.79    3299.8   10400.00
    5     2790.36   32.33    0.566  0.60( 0.47) 0.79    3545.4   10320.00
    6     2787.71   33.48    0.556  0.60( 0.47) 0.79    3690.0     300.00
    7     2772.15   35.79    0.538  0.60( 0.47) 0.79    4140.6   10250.00
    8     2770.63   36.02    0.536  0.60( 0.47) 0.79    4184.4   10340.00
    9     2747.76   39.32    0.509  0.60( 0.47) 0.79    4814.0   10360.00
   10     2743.89   39.91    0.504  0.60( 0.47) 0.79    4926.9   10200.00
   11     2697.72   47.17    0.462  0.60( 0.47) 0.79    6284.0   10220.00
   12     2676.54   51.06    0.440  0.60( 0.47) 0.79    7010.2   50500.00
   13     1492.30   96.84    0.323  0.60( 0.50) 0.84   15619.9   10100.00
   14     1430.05  115.55    0.288  0.60( 0.51) 0.85   19546.6   13600.00
   15     1436.00  131.69    0.269  0.60( 0.52) 0.87   22935.6   13210.00
   16     1431.18  146.46    0.256  0.60( 0.53) 0.88   25638.4   11831.00
   17     1478.25  169.73    0.235  0.60( 0.54) 0.89   30178.3   11530.00
   18     1515.32  189.10    0.223  0.60( 0.54) 0.91   34539.0   11000.00
   19     1581.04  211.14    0.216  0.60( 0.55) 0.92   41579.0   10850.00
   20     1470.96  229.42    0.211  0.60( 0.56) 0.93   45341.0   13510.00
   21     1232.35  280.59    0.195  0.60( 0.56) 0.94   53560.7   12410.00
   22     1168.26  314.00    0.184  0.60( 0.56) 0.94   59646.6   12261.00
   23     1145.96  326.92    0.180  0.60( 0.57) 0.94   61133.2   10410.00
   24     1124.19  339.27    0.176  0.60( 0.57) 0.94   62235.1   12101.10
   25     1103.37  349.16    0.173  0.60( 0.57) 0.94   63056.5   10700.00
   26     1075.15  367.15    0.169  0.60( 0.57) 0.95   64613.2   10200.00
   27     1051.37  380.74    0.168  0.60( 0.57) 0.95   65551.4   12010.00
   28      998.59  410.34    0.165  0.60( 0.57) 0.95   66225.1   10210.00
   29      926.40  460.27    0.159  0.60( 0.57) 0.95   66724.2   12000.00
   30      869.50  530.43    0.152  0.60( 0.57) 0.95   67309.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130388.60 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       32.00   17.46    0.843  0.60( 0.53) 0.88     140.9   10520.00
    2       10.21   60.70    0.389  0.60( 0.56) 0.93     403.6   10500.00
LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  13802.00 =   12187.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2839.46   17.46    0.843  0.60( 0.48) 0.80    2007.0   10520.00
    2     2834.56   27.17    0.627  0.60( 0.48) 0.80    3103.5   10380.00
    3     2833.95   27.70    0.619  0.60( 0.48) 0.80    3168.4   10300.00
    4     2830.16   28.86    0.602  0.60( 0.48) 0.80    3304.7   10230.00
    5     2823.78   30.42    0.582  0.60( 0.48) 0.80    3519.4   10400.00
    6     2814.88   32.33    0.566  0.60( 0.48) 0.80    3776.6   10320.00
    7     2811.64   33.48    0.556  0.60( 0.48) 0.80    3928.2     300.00
    8     2794.92   35.79    0.538  0.60( 0.48) 0.80    4392.8   10250.00
    9     2793.28   36.02    0.536  0.60( 0.48) 0.80    4438.0   10340.00
   10     2768.75   39.32    0.509  0.60( 0.48) 0.80    5087.7   10360.00
   11     2764.58   39.91    0.504  0.60( 0.48) 0.80    5204.2   10200.00
   12     2714.76   47.17    0.462  0.60( 0.48) 0.79    6605.3   10220.00
   13     2691.62   51.06    0.440  0.60( 0.48) 0.79    7355.3   50500.00
   14     2437.34   60.70    0.389  0.60( 0.48) 0.80    9227.2   10500.00
```

```
    15     1500.80   96.84    0.323  0.60( 0.50) 0.84   16023.5   10100.00
    16     1437.62  115.55    0.288  0.60( 0.51) 0.86   19950.2   13600.00
    17     1443.08  131.69    0.269  0.60( 0.52) 0.87   23339.2   13210.00
    18     1437.92  146.46    0.256  0.60( 0.53) 0.88   26042.0   11831.00
    19     1484.43  169.73    0.235  0.60( 0.54) 0.89   30581.9   11530.00
    20     1521.18  189.10    0.223  0.60( 0.54) 0.91   34942.6   11000.00
    21     1586.73  211.14    0.216  0.60( 0.55) 0.92   41982.6   10850.00
    22     1476.49  229.42    0.211  0.60( 0.56) 0.93   45744.6   13510.00
    23     1237.46  280.59    0.195  0.60( 0.56) 0.94   53964.3   12410.00
    24     1173.10  314.00    0.184  0.60( 0.56) 0.94   60050.2   12261.00
    25     1150.70  326.92    0.180  0.60( 0.57) 0.94   61536.8   10410.00
    26     1128.83  339.27    0.176  0.60( 0.57) 0.94   62638.7   12101.10
    27     1107.92  349.16    0.173  0.60( 0.57) 0.94   63460.1   10700.00
    28     1079.60  367.15    0.169  0.60( 0.57) 0.95   65016.8   10200.00
    29     1055.78  380.74    0.168  0.60( 0.57) 0.95   65955.0   12010.00
    30     1002.92  410.34    0.165  0.60( 0.57) 0.95   66628.8   10210.00
    31      930.58  460.27    0.159  0.60( 0.57) 0.95   67127.8   12000.00
    32      873.49  530.43    0.152  0.60( 0.57) 0.95   67712.6   10100.00
  TOTAL AREA(ACRES) =     67712.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2839.46  Tc(MIN.) =   17.465
  EFFECTIVE AREA(ACRES) =   2007.04  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    67712.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130388.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    135.00  DOWNSTREAM(FEET) =    134.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.23   CHANNEL SLOPE =  0.0000
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =    2839.46
  FLOW VELOCITY(FEET/SEC.) =   2.37   FLOW DEPTH(FEET) =  20.00
  TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =   18.92
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13803.00 =  130595.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.92
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.796
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       48.80      0.60      0.800     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA AREA(ACRES) =   48.80      SUBAREA RUNOFF(CFS) =   13.88
  EFFECTIVE AREA(ACRES) =   2055.84   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    67761.4       PEAK FLOW RATE(CFS) =    2839.46
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506106G.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       10.57   19.99  0.60( 0.40) 0.67      36.9   10600.00
    TOTAL AREA(ACRES) =       36.9

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2839.46   18.92    0.796  0.60( 0.48) 0.80    2055.8   10520.00
      2     2834.56   28.64    0.605  0.60( 0.48) 0.80    3152.3   10380.00
      3     2833.95   29.17    0.597  0.60( 0.48) 0.80    3217.2   10300.00
      4     2830.16   30.32    0.582  0.60( 0.48) 0.80    3353.5   10230.00
      5     2823.78   31.89    0.569  0.60( 0.48) 0.80    3568.2   10400.00
      6     2814.88   33.80    0.554  0.60( 0.48) 0.80    3825.4   10320.00
      7     2811.64   34.95    0.544  0.60( 0.48) 0.80    3977.0     300.00
      8     2794.92   37.27    0.525  0.60( 0.48) 0.80    4441.6   10250.00
      9     2793.28   37.50    0.523  0.60( 0.48) 0.80    4486.8   10340.00
     10     2768.75   40.81    0.498  0.60( 0.48) 0.80    5136.5   10360.00
     11     2764.58   41.41    0.495  0.60( 0.48) 0.80    5253.0   10200.00
     12     2714.76   48.69    0.453  0.60( 0.48) 0.79    6654.1   10220.00
     13     2691.62   52.60    0.431  0.60( 0.48) 0.79    7404.1   50500.00
     14     2437.34   62.40    0.386  0.60( 0.48) 0.80    9276.0   10500.00
     15     1500.80   99.20    0.319  0.60( 0.50) 0.84   16072.3   10100.00
     16     1437.62  117.93    0.284  0.60( 0.51) 0.86   19999.0   13600.00
     17     1443.08  134.08    0.267  0.60( 0.52) 0.87   23388.0   13210.00
     18     1437.92  148.84    0.254  0.60( 0.53) 0.88   26090.8   11831.00
     19     1484.43  172.10    0.233  0.60( 0.54) 0.89   30630.7   11530.00
     20     1521.18  191.45    0.222  0.60( 0.54) 0.91   34991.4   11000.00
     21     1586.73  213.46    0.216  0.60( 0.55) 0.92   42031.4   10850.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 1476.49 | 231.79 | 0.210 | 0.60( 0.56) | 0.93 | 45793.4 | 13510.00 |
| 23 | 1237.46 | 283.07 | 0.194 | 0.60( 0.56) | 0.94 | 54013.1 | 12410.00 |
| 24 | 1173.10 | 316.51 | 0.184 | 0.60( 0.56) | 0.94 | 60099.0 | 12261.00 |
| 25 | 1150.70 | 329.45 | 0.180 | 0.60( 0.57) | 0.94 | 61585.6 | 10410.00 |
| 26 | 1128.83 | 341.81 | 0.176 | 0.60( 0.57) | 0.94 | 62687.5 | 12101.10 |
| 27 | 1107.92 | 351.71 | 0.173 | 0.60( 0.57) | 0.94 | 63508.9 | 10700.00 |
| 28 | 1079.60 | 369.71 | 0.169 | 0.60( 0.57) | 0.95 | 65065.6 | 10200.00 |
| 29 | 1055.78 | 383.32 | 0.168 | 0.60( 0.57) | 0.95 | 66003.8 | 12010.00 |
| 30 | 1002.92 | 412.95 | 0.164 | 0.60( 0.57) | 0.95 | 66677.5 | 10210.00 |
| 31 | 930.58 | 462.93 | 0.159 | 0.60( 0.57) | 0.95 | 67176.6 | 12000.00 |
| 32 | 873.49 | 533.14 | 0.151 | 0.60( 0.57) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130595.83 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 10.57 | 19.99 | 0.761 | 0.60( 0.40) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2850.02 | 18.92 | 0.796 | 0.60( 0.48) | 0.79 | 2090.8 | 10520.00 |
| 2 | 2849.48 | 19.99 | 0.761 | 0.60( 0.48) | 0.79 | 2213.5 | 10600.00 |
| 3 | 2840.54 | 28.64 | 0.605 | 0.60( 0.48) | 0.80 | 3189.2 | 10380.00 |
| 4 | 2839.75 | 29.17 | 0.597 | 0.60( 0.48) | 0.80 | 3254.1 | 10300.00 |
| 5 | 2835.81 | 30.32 | 0.582 | 0.60( 0.48) | 0.80 | 3390.4 | 10230.00 |
| 6 | 2829.30 | 31.89 | 0.569 | 0.60( 0.48) | 0.80 | 3605.1 | 10400.00 |
| 7 | 2820.26 | 33.80 | 0.554 | 0.60( 0.48) | 0.80 | 3862.3 | 10320.00 |
| 8 | 2816.93 | 34.95 | 0.544 | 0.60( 0.48) | 0.80 | 4013.9 | 300.00 |
| 9 | 2800.02 | 37.27 | 0.525 | 0.60( 0.48) | 0.80 | 4478.5 | 10250.00 |
| 10 | 2798.36 | 37.50 | 0.523 | 0.60( 0.48) | 0.80 | 4523.7 | 10340.00 |
| 11 | 2773.58 | 40.81 | 0.498 | 0.60( 0.48) | 0.79 | 5173.4 | 10360.00 |
| 12 | 2769.38 | 41.41 | 0.495 | 0.60( 0.48) | 0.79 | 5289.9 | 10200.00 |
| 13 | 2719.16 | 48.69 | 0.453 | 0.60( 0.48) | 0.79 | 6691.0 | 10220.00 |
| 14 | 2695.81 | 52.60 | 0.431 | 0.60( 0.48) | 0.79 | 7441.0 | 50500.00 |
| 15 | 2441.08 | 62.40 | 0.386 | 0.60( 0.48) | 0.80 | 9312.9 | 10500.00 |
| 16 | 1503.89 | 99.20 | 0.319 | 0.60( 0.50) | 0.84 | 16109.2 | 10100.00 |
| 17 | 1440.38 | 117.93 | 0.284 | 0.60( 0.51) | 0.86 | 20035.9 | 13600.00 |
| 18 | 1445.67 | 134.08 | 0.267 | 0.60( 0.52) | 0.87 | 23424.9 | 13210.00 |
| 19 | 1440.38 | 148.84 | 0.254 | 0.60( 0.53) | 0.88 | 26127.7 | 11831.00 |
| 20 | 1486.69 | 172.10 | 0.233 | 0.60( 0.54) | 0.89 | 30667.6 | 11530.00 |
| 21 | 1523.34 | 191.45 | 0.222 | 0.60( 0.54) | 0.91 | 35028.3 | 11000.00 |
| 22 | 1588.82 | 213.46 | 0.216 | 0.60( 0.55) | 0.92 | 42068.3 | 10850.00 |
| 23 | 1478.53 | 231.79 | 0.210 | 0.60( 0.56) | 0.93 | 45830.3 | 13510.00 |
| 24 | 1239.35 | 283.07 | 0.194 | 0.60( 0.56) | 0.94 | 54050.0 | 12410.00 |
| 25 | 1174.88 | 316.51 | 0.184 | 0.60( 0.56) | 0.94 | 60135.9 | 12261.00 |
| 26 | 1152.44 | 329.45 | 0.180 | 0.60( 0.57) | 0.94 | 61622.5 | 10410.00 |
| 27 | 1130.53 | 341.81 | 0.176 | 0.60( 0.57) | 0.94 | 62724.4 | 12101.10 |
| 28 | 1109.60 | 351.71 | 0.173 | 0.60( 0.57) | 0.94 | 63545.8 | 10700.00 |
| 29 | 1081.24 | 369.71 | 0.169 | 0.60( 0.57) | 0.94 | 65102.5 | 10200.00 |
| 30 | 1057.40 | 383.32 | 0.168 | 0.60( 0.57) | 0.95 | 66040.7 | 12010.00 |
| 31 | 1004.51 | 412.95 | 0.164 | 0.60( 0.57) | 0.95 | 66714.4 | 10210.00 |
| 32 | 932.12 | 462.93 | 0.159 | 0.60( 0.57) | 0.95 | 67213.5 | 12000.00 |
| 33 | 874.96 | 533.14 | 0.151 | 0.60( 0.57) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:



PEAK FLOW RATE(CFS) = 2850.02 Tc(MIN.) = 18.924
EFFECTIVE AREA(ACRES) = 2090.77 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130595.83 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 18.92
EFFECTIVE AREA(ACRES) = 2090.77 AREA-AVERAGED Fm(INCH/HR)= 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.795
PEAK FLOW RATE(CFS) = 2850.02

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2850.02 | 18.92 | 0.796 | 0.60( 0.48) | 0.79 | 2090.8 | 10520.00 |
| 2 | 2849.48 | 19.99 | 0.761 | 0.60( 0.48) | 0.79 | 2213.5 | 10600.00 |
| 3 | 2840.54 | 28.64 | 0.605 | 0.60( 0.48) | 0.80 | 3189.2 | 10380.00 |
| 4 | 2839.75 | 29.17 | 0.597 | 0.60( 0.48) | 0.80 | 3254.1 | 10300.00 |
| 5 | 2835.81 | 30.32 | 0.582 | 0.60( 0.48) | 0.80 | 3390.4 | 10230.00 |
| 6 | 2829.30 | 31.89 | 0.569 | 0.60( 0.48) | 0.80 | 3605.1 | 10400.00 |
| 7 | 2820.26 | 33.80 | 0.554 | 0.60( 0.48) | 0.80 | 3862.3 | 10320.00 |
| 8 | 2816.93 | 34.95 | 0.544 | 0.60( 0.48) | 0.80 | 4013.9 | 300.00 |
| 9 | 2800.02 | 37.27 | 0.525 | 0.60( 0.48) | 0.80 | 4478.5 | 10250.00 |
| 10 | 2798.36 | 37.50 | 0.523 | 0.60( 0.48) | 0.80 | 4523.7 | 10340.00 |
| 11 | 2773.58 | 40.81 | 0.498 | 0.60( 0.48) | 0.79 | 5173.4 | 10360.00 |
| 12 | 2769.38 | 41.41 | 0.495 | 0.60( 0.48) | 0.79 | 5289.9 | 10200.00 |
| 13 | 2719.16 | 48.69 | 0.453 | 0.60( 0.48) | 0.79 | 6691.0 | 10220.00 |
| 14 | 2695.81 | 52.60 | 0.431 | 0.60( 0.48) | 0.79 | 7441.0 | 50500.00 |
| 15 | 2441.08 | 62.40 | 0.386 | 0.60( 0.48) | 0.80 | 9312.9 | 10500.00 |
| 16 | 1503.89 | 99.20 | 0.319 | 0.60( 0.50) | 0.84 | 16109.2 | 10100.00 |
| 17 | 1440.38 | 117.93 | 0.284 | 0.60( 0.51) | 0.86 | 20035.9 | 13600.00 |
| 18 | 1445.67 | 134.08 | 0.267 | 0.60( 0.52) | 0.87 | 23424.9 | 13210.00 |
| 19 | 1440.38 | 148.84 | 0.254 | 0.60( 0.53) | 0.88 | 26127.7 | 11831.00 |
| 20 | 1486.69 | 172.10 | 0.233 | 0.60( 0.54) | 0.89 | 30667.6 | 11530.00 |
| 21 | 1523.34 | 191.45 | 0.222 | 0.60( 0.54) | 0.91 | 35028.3 | 11000.00 |
| 22 | 1588.82 | 213.46 | 0.216 | 0.60( 0.55) | 0.92 | 42068.3 | 10850.00 |
| 23 | 1478.53 | 231.79 | 0.210 | 0.60( 0.56) | 0.93 | 45830.3 | 13510.00 |
| 24 | 1239.35 | 283.07 | 0.194 | 0.60( 0.56) | 0.94 | 54050.0 | 12410.00 |
| 25 | 1174.88 | 316.51 | 0.184 | 0.60( 0.56) | 0.94 | 60135.9 | 12261.00 |
| 26 | 1152.44 | 329.45 | 0.180 | 0.60( 0.57) | 0.94 | 61622.5 | 10410.00 |
| 27 | 1130.53 | 341.81 | 0.176 | 0.60( 0.57) | 0.94 | 62724.4 | 12101.10 |
| 28 | 1109.60 | 351.71 | 0.173 | 0.60( 0.57) | 0.94 | 63545.8 | 10700.00 |
| 29 | 1081.24 | 369.71 | 0.169 | 0.60( 0.57) | 0.94 | 65102.5 | 10200.00 |
| 30 | 1057.40 | 383.32 | 0.168 | 0.60( 0.57) | 0.95 | 66040.7 | 12010.00 |
| 31 | 1004.51 | 412.95 | 0.164 | 0.60( 0.57) | 0.95 | 66714.4 | 10210.00 |
| 32 | 932.12 | 462.93 | 0.159 | 0.60( 0.57) | 0.95 | 67213.5 | 12000.00 |
| 33 | 874.96 | 533.14 | 0.151 | 0.60( 0.57) | 0.95 | 67798.3 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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            Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 2-YR EV AUG 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI02EV38.DAT
  TIME/DATE OF STUDY: 16:11 08/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.798
   2)   10.00;  1.199
   3)   15.00;  0.922
   4)   20.00;  0.760
   5)   25.00;  0.658
   6)   30.00;  0.584
   7)   40.00;  0.503
   8)   50.00;  0.446
   9)   60.00;  0.390
  10)   90.00;  0.336
  11)  120.00;  0.280
  12)  180.00;  0.226
  13)  360.00;  0.170
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI02EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     2850.02   18.92  0.60( 0.48) 0.79    2090.8   10520.00
      2     2719.16   48.69  0.60( 0.48) 0.79    6691.0   10220.00
      3     2441.08   62.40  0.60( 0.48) 0.80    9312.9   10500.00
      4     1503.89   99.20  0.60( 0.50) 0.84   16109.2   10100.00
      5     1440.38  117.93  0.60( 0.51) 0.86   20035.9   13600.00
      6     1445.67  134.08  0.60( 0.52) 0.87   23424.9   13210.00
      7     1440.38  148.84  0.60( 0.53) 0.88   26127.7   11831.00
      8     1486.69  172.10  0.60( 0.54) 0.89   30667.6   11530.00
      9     1523.34  191.45  0.60( 0.54) 0.91   35028.3   11000.00
     10     1588.82  213.46  0.60( 0.55) 0.92   42068.3   10850.00
     11     1478.53  231.79  0.60( 0.56) 0.93   45830.3   13510.00
     12     1239.35  283.07  0.60( 0.56) 0.94   54050.0   12410.00
     13     1174.88  316.51  0.60( 0.56) 0.94   60135.9   12261.00
     14     1152.44  329.45  0.60( 0.57) 0.94   61622.5   10410.00
     15     1130.53  341.81  0.60( 0.57) 0.94   62724.4   12101.10
     16     1081.24  369.71  0.60( 0.57) 0.94   65102.5   10200.00
     17     1057.40  383.32  0.60( 0.57) 0.95   66040.7   12010.00
     18     1004.51  412.95  0.60( 0.57) 0.95   66714.4   10210.00
     19      932.12  462.93  0.60( 0.57) 0.95   67213.5   12000.00
     20      874.96  533.14  0.60( 0.57) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     2850.02   18.92  0.60( 0.48) 0.79    2090.8   10520.00
      2     2719.16   48.69  0.60( 0.48) 0.79    6691.0   10220.00
      3     2441.08   62.40  0.60( 0.48) 0.80    9312.9   10500.00
      4     1503.89   99.20  0.60( 0.50) 0.84   16109.2   10100.00
      5     1440.38  117.93  0.60( 0.51) 0.86   20035.9   13600.00
      6     1445.67  134.08  0.60( 0.52) 0.87   23424.9   13210.00
      7     1440.38  148.84  0.60( 0.53) 0.88   26127.7   11831.00
      8     1486.69  172.10  0.60( 0.54) 0.89   30667.6   11530.00
      9     1523.34  191.45  0.60( 0.54) 0.91   35028.3   11000.00
     10     1588.82  213.46  0.60( 0.55) 0.92   42068.3   10850.00
     11     1478.53  231.79  0.60( 0.56) 0.93   45830.3   13510.00
     12     1239.35  283.07  0.60( 0.56) 0.94   54050.0   12410.00
     13     1174.88  316.51  0.60( 0.56) 0.94   60135.9   12261.00
```

```
     14     1152.44  329.45  0.60( 0.57) 0.94   61622.5   10410.00
     15     1130.53  341.81  0.60( 0.57) 0.94   62724.4   12101.10
     16     1081.24  369.71  0.60( 0.57) 0.94   65102.5   10200.00
     17     1057.40  383.32  0.60( 0.57) 0.95   66040.7   12010.00
     18     1004.51  412.95  0.60( 0.57) 0.95   66714.4   10210.00
     19      932.12  462.93  0.60( 0.57) 0.95   67213.5   12000.00
     20      874.96  533.14  0.60( 0.57) 0.95   67798.3   10100.00
    TOTAL AREA(ACRES) =     67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.60     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2851.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.49
  AVERAGE FLOW DEPTH(FEET) =  13.16   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   21.74
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =    3.82
  EFFECTIVE AREA(ACRES) =   2122.21     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =    2850.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.16   FLOW VELOCITY(FEET/SEC.) =   5.49
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131522.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =   21.74
  RAINFALL INTENSITY(INCH/HR) =   0.72
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.80
  EFFECTIVE STREAM AREA(ACRES) =    2122.21
  TOTAL STREAM AREA(ACRES) =   67829.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    2850.02

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
```



```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.072
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.60     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.37
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =      2.37

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.938
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.79
  AVERAGE FLOW DEPTH(FEET) =   0.57   TRAVEL TIME(MIN.) =   2.42
  Tc(MIN.) =   14.72
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =    4.50
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4         PEAK FLOW RATE(CFS) =       6.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   5.10
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.22
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   3.52
  Tc(MIN.) =   18.24
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =    3.60
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =       7.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.89   FLOW VELOCITY(FEET/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.699
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.60     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.49
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   4.76
  Tc(MIN.) =   23.00
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =    4.62
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =       8.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.79   FLOW VELOCITY(FEET/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.92
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.07
  PIPE TRAVEL TIME(MIN.) =   3.68    Tc(MIN.) =   26.68
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.68
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.633
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.60     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =   21.92
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3       PEAK FLOW RATE(CFS) =      26.05

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   26.68
  RAINFALL INTENSITY(INCH/HR) =   0.63
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
  TOTAL STREAM AREA(ACRES) =     150.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      26.05

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     2850.02   21.74    0.725  0.60( 0.48) 0.80    2122.2   10520.00
      1     2719.16   51.54    0.437  0.60( 0.48) 0.79    6722.5   10220.00
      1     2441.08   65.33    0.380  0.60( 0.48) 0.80    9344.3   10500.00
      1     1503.89  102.50    0.313  0.60( 0.50) 0.84   16140.7   10100.00
      1     1440.38  121.27    0.279  0.60( 0.51) 0.86   20067.3   13600.00
      1     1445.67  137.42    0.264  0.60( 0.52) 0.87   23456.3   13210.00
      1     1440.38  152.18    0.251  0.60( 0.53) 0.88   26159.1   11831.00
      1     1486.69  175.42    0.230  0.60( 0.54) 0.89   30699.0   11530.00
      1     1523.34  194.74    0.221  0.60( 0.54) 0.91   35059.7   11000.00
      1     1588.82  216.72    0.215  0.60( 0.55) 0.92   42099.7   10850.00
```

```
    1     1478.53  235.11    0.209  0.60( 0.56) 0.93   45861.8   13510.00
    1     1239.35  286.54    0.193  0.60( 0.56) 0.94   54081.4   12410.00
    1     1174.88  320.02    0.182  0.60( 0.56) 0.94   60167.3   12261.00
    1     1152.44  332.98    0.178  0.60( 0.57) 0.94   61653.9   10410.00
    1     1130.53  345.36    0.175  0.60( 0.57) 0.94   62755.9   12101.10
    1     1081.24  373.30    0.169  0.60( 0.57) 0.94   65133.9   10200.00
    1     1057.40  386.93    0.167  0.60( 0.57) 0.95   66072.2   12010.00
    1     1004.51  416.60    0.164  0.60( 0.57) 0.95   66745.9   10210.00
    1      932.12  466.65    0.159  0.60( 0.57) 0.95   67244.9   12000.00
    1      874.96  536.92    0.151  0.60( 0.57) 0.95   67829.7   10100.00
    2       26.05   26.68    0.633  0.60( 0.44) 0.73     150.3   13810.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2876.07   21.74    0.725  0.60( 0.48) 0.79    2244.7   10520.00
    2     2854.36   26.68    0.633  0.60( 0.48) 0.79    3035.7   13810.00
    3     2734.88   51.54    0.437  0.60( 0.48) 0.79    6872.7   10220.00
    4     2454.75   65.33    0.380  0.60( 0.48) 0.80    9494.6   10500.00
    5     1515.12  102.50    0.313  0.60( 0.50) 0.84   16291.0   10100.00
    6     1450.40  121.27    0.279  0.60( 0.51) 0.86   20217.6   13600.00
    7     1455.17  137.42    0.264  0.60( 0.52) 0.87   23606.6   13210.00
    8     1449.40  152.18    0.251  0.60( 0.53) 0.88   26309.4   11831.00
    9     1494.96  175.42    0.230  0.60( 0.54) 0.89   30849.3   11530.00
   10     1531.29  194.74    0.221  0.60( 0.54) 0.91   35210.0   11000.00
   11     1596.53  216.72    0.215  0.60( 0.55) 0.92   42250.0   10850.00
   12     1486.03  235.11    0.209  0.60( 0.56) 0.93   46012.0   13510.00
   13     1246.28  286.54    0.193  0.60( 0.56) 0.94   54231.7   12410.00
   14     1181.44  320.02    0.182  0.60( 0.56) 0.94   60317.6   12261.00
   15     1158.85  332.98    0.178  0.60( 0.56) 0.94   61804.2   10410.00
   16     1136.80  345.36    0.175  0.60( 0.57) 0.94   62906.1   12101.10
   17     1087.29  373.30    0.169  0.60( 0.57) 0.94   65284.2   10200.00
   18     1063.41  386.93    0.167  0.60( 0.57) 0.95   66222.5   12010.00
   19     1010.41  416.60    0.164  0.60( 0.57) 0.95   66896.2   10210.00
   20      937.82  466.65    0.159  0.60( 0.57) 0.95   67395.2   12000.00
   21      880.38  536.92    0.151  0.60( 0.57) 0.95   67980.0   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    2876.07    Tc(MIN.) =    21.74
  EFFECTIVE AREA(ACRES) =    2244.65   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    67980.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131522.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13820.00 TO NODE  13840.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    137.00  DOWNSTREAM(FEET) =    133.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1261.34   CHANNEL SLOPE =  0.0032
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.673
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.60      0.60      0.683     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.683
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2879.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.28
  AVERAGE FLOW DEPTH(FEET) =  10.77   TRAVEL TIME(MIN.) =   2.54
  Tc(MIN.) =   24.28
  SUBAREA AREA(ACRES) =    31.60       SUBAREA RUNOFF(CFS) =    7.48
  EFFECTIVE AREA(ACRES) =   2276.25     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =    68011.6          PEAK FLOW RATE(CFS) =    2876.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.77   FLOW VELOCITY(FEET/SEC.) =   8.27
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132784.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13820.00 TO NODE  13840.00 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.) =   24.28
  RAINFALL INTENSITY(INCH/HR) =   0.67
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.79
  EFFECTIVE STREAM AREA(ACRES) =    2276.25
  TOTAL STREAM AREA(ACRES) =   68011.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    2876.07

****************************************************************************
  FLOW PROCESS FROM NODE  13830.00 TO NODE  13831.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.985
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.60      1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =      1.76
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.809
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.57      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.86
  AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   4.64
  Tc(MIN.) =   18.50
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =    6.12
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =       7.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   4.25
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.23      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.68
  AVERAGE FLOW DEPTH(FEET) =   0.75   TRAVEL TIME(MIN.) =   6.71
  Tc(MIN.) =   25.21
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =    1.59
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =       7.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```



```
  DEPTH(FEET) =  0.72   FLOW VELOCITY(FEET/SEC.) =   4.52
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.51      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.10
  AVERAGE FLOW DEPTH(FEET) =   0.76   TRAVEL TIME(MIN.) =   3.83
  Tc(MIN.) =   29.05
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =       7.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.76   FLOW VELOCITY(FEET/SEC.) =   4.10
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.530
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.07
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.58
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   7.68
  Tc(MIN.) =   36.72
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =       7.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.81   FLOW VELOCITY(FEET/SEC.) =   3.58
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.467
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.98
  AVERAGE FLOW DEPTH(FEET) =   0.89   TRAVEL TIME(MIN.) =   9.50
  Tc(MIN.) =   46.23
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =       7.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.89   FLOW VELOCITY(FEET/SEC.) =   2.98
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
```



```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.388
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.60     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.79
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =  15.11
  Tc(MIN.) =   61.34
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =    5.64
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.58
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.97
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =       7.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.96   FLOW VELOCITY(FEET/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.51
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.07
  PIPE TRAVEL TIME(MIN.) =   1.82    Tc(MIN.) =   63.16
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.16
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.384
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.97      0.60     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
```

SUBAREA AREA(ACRES) = 5.97 SUBAREA RUNOFF(CFS) = 0.78
EFFECTIVE AREA(ACRES) = 565.50 AREA-AVERAGED Fm(INCH/HR) = 0.58
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 565.5 PEAK FLOW RATE(CFS) = 7.07
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 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.) = 63.16
RAINFALL INTENSITY(INCH/HR) = 0.38
AREA-AVERAGED Fm(INCH/HR) = 0.58
AREA-AVERAGED Fp(INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 565.50
TOTAL STREAM AREA(ACRES) = 565.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.07

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2876.07 | 24.28 | 0.673 | 0.60( 0.48) | 0.79 | 2276.3 | 10520.00 |
| 1 | 2854.36 | 29.23 | 0.595 | 0.60( 0.48) | 0.79 | 3067.3 | 13810.00 |
| 1 | 2734.88 | 54.11 | 0.423 | 0.60( 0.48) | 0.79 | 6904.3 | 10220.00 |
| 1 | 2454.75 | 67.97 | 0.376 | 0.60( 0.48) | 0.80 | 9526.2 | 10500.00 |
| 1 | 1515.12 | 105.48 | 0.307 | 0.60( 0.50) | 0.84 | 16322.6 | 10100.00 |
| 1 | 1450.40 | 124.28 | 0.276 | 0.60( 0.51) | 0.85 | 20249.2 | 13600.00 |
| 1 | 1455.17 | 140.43 | 0.262 | 0.60( 0.52) | 0.87 | 23638.2 | 13210.00 |
| 1 | 1449.40 | 155.20 | 0.248 | 0.60( 0.53) | 0.88 | 26341.0 | 11831.00 |
| 1 | 1494.96 | 178.41 | 0.227 | 0.60( 0.54) | 0.89 | 30880.9 | 11530.00 |
| 1 | 1531.29 | 197.72 | 0.220 | 0.60( 0.54) | 0.91 | 35241.6 | 11000.00 |
| 1 | 1596.53 | 219.66 | 0.214 | 0.60( 0.55) | 0.92 | 42281.6 | 10850.00 |
| 1 | 1486.03 | 238.10 | 0.208 | 0.60( 0.56) | 0.93 | 46043.6 | 13510.00 |
| 1 | 1246.28 | 289.67 | 0.192 | 0.60( 0.56) | 0.94 | 54263.3 | 12410.00 |
| 1 | 1181.44 | 323.20 | 0.181 | 0.60( 0.56) | 0.94 | 60349.2 | 12261.00 |
| 1 | 1158.85 | 336.17 | 0.177 | 0.60( 0.56) | 0.94 | 61835.8 | 10410.00 |
| 1 | 1136.80 | 348.56 | 0.174 | 0.60( 0.57) | 0.94 | 62937.7 | 12101.10 |
| 1 | 1087.29 | 376.54 | 0.168 | 0.60( 0.57) | 0.94 | 65315.8 | 10200.00 |
| 1 | 1063.41 | 390.19 | 0.167 | 0.60( 0.57) | 0.95 | 66254.1 | 12010.00 |
| 1 | 1010.41 | 419.90 | 0.164 | 0.60( 0.57) | 0.95 | 66927.8 | 10210.00 |
| 1 | 937.82 | 470.02 | 0.158 | 0.60( 0.57) | 0.95 | 67426.8 | 12000.00 |
| 1 | 880.38 | 540.33 | 0.151 | 0.60( 0.57) | 0.95 | 68011.6 | 10100.00 |
| 2 | 7.07 | 63.16 | 0.384 | 0.60( 0.58) | 0.97 | 565.5 | 13830.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2883.14 | 24.28 | 0.673 | 0.60( 0.48) | 0.81 | 2493.6 | 10520.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 2859.43 | 29.23 | 0.595 | 0.60( 0.48) | 0.81 | 3329.0 | 13810.00 |
| 3 | 2741.54 | 54.11 | 0.423 | 0.60( 0.48) | 0.80 | 7388.9 | 10220.00 |
| 4 | 2559.10 | 63.16 | 0.384 | 0.60( 0.49) | 0.81 | 9181.1 | 13830.00 |
| 5 | 2461.66 | 67.97 | 0.376 | 0.60( 0.49) | 0.81 | 10091.7 | 10500.00 |
| 6 | 1520.77 | 105.48 | 0.307 | 0.60( 0.51) | 0.84 | 16888.1 | 10100.00 |
| 7 | 1455.48 | 124.28 | 0.276 | 0.60( 0.51) | 0.86 | 20814.7 | 13600.00 |
| 8 | 1459.98 | 140.43 | 0.262 | 0.60( 0.52) | 0.87 | 24203.7 | 13210.00 |
| 9 | 1453.97 | 155.20 | 0.248 | 0.60( 0.53) | 0.88 | 26906.5 | 11831.00 |
| 10 | 1499.14 | 178.41 | 0.227 | 0.60( 0.54) | 0.89 | 31446.4 | 11530.00 |
| 11 | 1535.35 | 197.72 | 0.220 | 0.60( 0.54) | 0.91 | 35807.1 | 11000.00 |
| 12 | 1600.46 | 219.66 | 0.214 | 0.60( 0.55) | 0.92 | 42847.1 | 10850.00 |
| 13 | 1489.85 | 238.10 | 0.208 | 0.60( 0.56) | 0.93 | 46609.1 | 13510.00 |
| 14 | 1249.80 | 289.67 | 0.192 | 0.60( 0.56) | 0.94 | 54828.8 | 12410.00 |
| 15 | 1184.77 | 323.20 | 0.181 | 0.60( 0.56) | 0.94 | 60914.7 | 12261.00 |
| 16 | 1162.11 | 336.17 | 0.177 | 0.60( 0.56) | 0.94 | 62401.3 | 10410.00 |
| 17 | 1140.00 | 348.56 | 0.174 | 0.60( 0.57) | 0.94 | 63503.2 | 12101.10 |
| 18 | 1090.39 | 376.54 | 0.168 | 0.60( 0.57) | 0.94 | 65881.3 | 10200.00 |
| 19 | 1066.47 | 390.19 | 0.167 | 0.60( 0.57) | 0.95 | 66819.6 | 12010.00 |
| 20 | 1013.41 | 419.90 | 0.164 | 0.60( 0.57) | 0.95 | 67493.3 | 10210.00 |
| 21 | 940.73 | 470.02 | 0.158 | 0.60( 0.57) | 0.95 | 67992.3 | 12000.00 |
| 22 | 883.15 | 540.33 | 0.151 | 0.60( 0.57) | 0.95 | 68577.1 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2883.14 Tc(MIN.) = 24.28
EFFECTIVE AREA(ACRES) = 2493.62 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 68577.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132784.08 FEET.

**********
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 51
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.652
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 6.61 | 0.60 | 0.975 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2883.34
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.50
AVERAGE FLOW DEPTH(FEET) = 10.06 TRAVEL TIME(MIN.) = 1.15
Tc(MIN.) = 25.43
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 0.40
EFFECTIVE AREA(ACRES) = 2500.23 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 68583.7 PEAK FLOW RATE(CFS) = 2883.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 10.06 FLOW VELOCITY(FEET/SEC.) = 9.50

```
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133438.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 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.) =   25.43
  RAINFALL INTENSITY(INCH/HR) =   0.65
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.81
  EFFECTIVE STREAM AREA(ACRES) =    2500.23
  TOTAL STREAM AREA(ACRES) =   68583.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    2883.14

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.081
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.60     1.000    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.14
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =      2.14

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.990
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.85
```



```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.60
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   1.63
  Tc(MIN.) =   13.76
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    1.41
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =       3.15

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.53   FLOW VELOCITY(FEET/SEC.) =   3.73
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.32
  AVERAGE FLOW DEPTH(FEET) =   0.64   TRAVEL TIME(MIN.) =   2.57
  Tc(MIN.) =   16.34
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =    1.80
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =       4.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   3.32
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.810
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.50
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   2.11
  Tc(MIN.) =   18.45
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =    1.28
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =       4.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   3.41
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.701
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.62
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   4.42
  Tc(MIN.) =   22.88
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =    1.66
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =       4.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   3.47
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.592
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.60     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.12
  AVERAGE FLOW DEPTH(FEET) =   0.77   TRAVEL TIME(MIN.) =   6.57
  Tc(MIN.) =   29.45
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =    2.50
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.94
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =       4.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   2.96
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   5.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.36
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.34
  PIPE TRAVEL TIME(MIN.) =   4.74    Tc(MIN.) =   34.19
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.19
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.550
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.60     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   43.41       SUBAREA RUNOFF(CFS) =    6.30
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.86
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
```

```
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =       8.62

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 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.) =   34.19
  RAINFALL INTENSITY(INCH/HR) =   0.55
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.62

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2883.14   25.43    0.652  0.60( 0.48) 0.81    2500.2   10520.00
      1     2859.43   30.38    0.581  0.60( 0.48) 0.81    3335.6   13810.00
      1     2741.54   55.28    0.416  0.60( 0.48) 0.80    7395.5   10220.00
      1     2559.10   64.34    0.382  0.60( 0.49) 0.81    9187.8   13830.00
      1     2461.66   69.17    0.373  0.60( 0.49) 0.81   10098.3   10500.00
      1     1520.77  106.83    0.305  0.60( 0.51) 0.84   16894.7   10100.00
      1     1455.48  125.65    0.275  0.60( 0.51) 0.86   20821.3   13600.00
      1     1459.98  141.79    0.260  0.60( 0.52) 0.87   24210.3   13210.00
      1     1453.97  156.56    0.247  0.60( 0.53) 0.88   26913.1   11831.00
      1     1499.14  179.76    0.226  0.60( 0.54) 0.89   31453.0   11530.00
      1     1535.35  199.06    0.220  0.60( 0.54) 0.91   35813.7   11000.00
      1     1600.46  220.99    0.213  0.60( 0.55) 0.92   42853.7   10850.00
      1     1489.85  239.46    0.208  0.60( 0.56) 0.93   46615.8   13510.00
      1     1249.80  291.08    0.191  0.60( 0.56) 0.94   54835.4   12410.00
      1     1184.77  324.63    0.181  0.60( 0.56) 0.94   60921.3   12261.00
      1     1162.11  337.61    0.177  0.60( 0.56) 0.94   62407.9   10410.00
      1     1140.00  350.01    0.173  0.60( 0.57) 0.94   63509.9   12101.10
      1     1090.39  378.01    0.168  0.60( 0.57) 0.94   65887.9   10200.00
      1     1066.47  391.66    0.167  0.60( 0.57) 0.95   66826.2   12010.00
      1     1013.41  421.39    0.163  0.60( 0.57) 0.95   67499.9   10210.00
      1      940.73  471.54    0.158  0.60( 0.57) 0.95   67998.9   12000.00
      1      883.15  541.88    0.151  0.60( 0.57) 0.95   68583.7   10100.00
      2        8.62   34.19    0.550  0.60( 0.52) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2891.76   25.43    0.652  0.60( 0.49) 0.81    2591.9   10520.00
      2     2867.52   30.38    0.581  0.60( 0.48) 0.81    3445.1   13810.00
      3     2850.01   34.19    0.550  0.60( 0.48) 0.81    4080.0   13850.00
      4     2748.06   55.28    0.416  0.60( 0.48) 0.80    7518.7   10220.00
      5     2565.09   64.34    0.382  0.60( 0.49) 0.81    9311.0   13830.00
      6     2467.51   69.17    0.373  0.60( 0.49) 0.81   10221.5   10500.00
```



```
      7     1525.54  106.83    0.305  0.60( 0.51) 0.84   17017.9   10100.00
      8     1459.78  125.65    0.275  0.60( 0.51) 0.86   20944.5   13600.00
      9     1464.06  141.79    0.260  0.60( 0.52) 0.87   24333.6   13210.00
     10     1457.84  156.56    0.247  0.60( 0.53) 0.88   27036.4   11831.00
     11     1502.69  179.76    0.226  0.60( 0.54) 0.89   31576.2   11530.00
     12     1538.80  199.06    0.220  0.60( 0.54) 0.91   35936.9   11000.00
     13     1603.80  220.99    0.213  0.60( 0.55) 0.92   42976.9   10850.00
     14     1493.11  239.46    0.208  0.60( 0.56) 0.93   46739.0   13510.00
     15     1252.80  291.08    0.191  0.60( 0.56) 0.94   54958.6   12410.00
     16     1187.61  324.63    0.181  0.60( 0.56) 0.94   61044.5   12261.00
     17     1164.88  337.61    0.177  0.60( 0.56) 0.94   62531.1   10410.00
     18     1142.71  350.01    0.173  0.60( 0.57) 0.94   63633.1   12101.10
     19     1093.02  378.01    0.168  0.60( 0.57) 0.94   66011.2   10200.00
     20     1069.08  391.66    0.167  0.60( 0.57) 0.95   66949.4   12010.00
     21     1015.97  421.39    0.163  0.60( 0.57) 0.95   67623.1   10210.00
     22      943.21  471.54    0.158  0.60( 0.57) 0.95   68122.2   12000.00
     23      885.51  541.88    0.151  0.60( 0.57) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    2891.76    Tc(MIN.) =    25.43
  EFFECTIVE AREA(ACRES) =    2591.87   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133438.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2891.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.00
  AVERAGE FLOW DEPTH(FEET) =   8.02   TRAVEL TIME(MIN.) =   0.68
  Tc(MIN.) =   26.10
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    0.18
  EFFECTIVE AREA(ACRES) =   2596.76     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.81
  TOTAL AREA(ACRES) =    68711.8          PEAK FLOW RATE(CFS) =    2891.76
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.02   FLOW VELOCITY(FEET/SEC.) =  15.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134049.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 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.) =   26.10
  RAINFALL INTENSITY(INCH/HR) =   0.64
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.81
  EFFECTIVE STREAM AREA(ACRES) =    2596.76
  TOTAL STREAM AREA(ACRES) =   68711.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    2891.76

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.899
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.60     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.97
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =      1.97

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.770
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.45
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   4.00
  Tc(MIN.) =   19.70
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =    1.99
```



```
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =       3.11

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   3.47
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.658
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.60     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.32
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   5.27
  Tc(MIN.) =   24.98
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =    3.11
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.57
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =       4.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOW VELOCITY(FEET/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.575
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.60     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.99
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.11
  AVERAGE FLOW DEPTH(FEET) =   0.64   TRAVEL TIME(MIN.) =   6.16
  Tc(MIN.) =   31.14
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =    1.60
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.93
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =       4.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =   3.98
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.525
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.60     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.41
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.57
  AVERAGE FLOW DEPTH(FEET) =   1.07   TRAVEL TIME(MIN.) =   6.18
  Tc(MIN.) =   37.32
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =    2.44
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.93
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =       5.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.05   FLOW VELOCITY(FEET/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
```



```
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.89
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.10
  PIPE TRAVEL TIME(MIN.) =   4.49    Tc(MIN.) =   41.81
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   41.81
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.493
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.90      0.60     0.743     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   34.90       SUBAREA RUNOFF(CFS) =    3.98
  EFFECTIVE AREA(ACRES) =    192.83   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.90
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      192.8       PEAK FLOW RATE(CFS) =       8.76

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 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.) =   41.81
  RAINFALL INTENSITY(INCH/HR) =   0.49
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =     192.83
  TOTAL STREAM AREA(ACRES) =     192.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.76

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2891.76   26.10    0.642  0.60( 0.49) 0.81    2596.8   10520.00
      1     2867.52   31.06    0.575  0.60( 0.49) 0.81    3450.0   13810.00
      1     2850.01   34.87    0.545  0.60( 0.48) 0.81    4084.9   13850.00
      1     2748.06   55.96    0.413  0.60( 0.48) 0.80    7523.6   10220.00
      1     2565.09   65.04    0.381  0.60( 0.49) 0.81    9315.9   13830.00
      1     2467.51   69.87    0.372  0.60( 0.49) 0.81   10226.4   10500.00
      1     1525.54  107.62    0.303  0.60( 0.51) 0.84   17022.8   10100.00
      1     1459.78  126.45    0.274  0.60( 0.51) 0.86   20949.4   13600.00
      1     1464.06  142.60    0.260  0.60( 0.52) 0.87   24338.5   13210.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 1457.84 | 157.36 | 0.246 | 0.60( 0.53) | 0.88 | 27041.2 | 11831.00 |
| 1 | 1502.69 | 180.56 | 0.226 | 0.60( 0.54) | 0.89 | 31581.1 | 11530.00 |
| 1 | 1538.80 | 199.86 | 0.220 | 0.60( 0.54) | 0.91 | 35941.8 | 11000.00 |
| 1 | 1603.80 | 221.78 | 0.213 | 0.60( 0.55) | 0.92 | 42981.8 | 10850.00 |
| 1 | 1493.11 | 240.26 | 0.207 | 0.60( 0.56) | 0.93 | 46743.9 | 13510.00 |
| 1 | 1252.80 | 291.92 | 0.191 | 0.60( 0.56) | 0.94 | 54963.5 | 12410.00 |
| 1 | 1187.61 | 325.48 | 0.181 | 0.60( 0.56) | 0.94 | 61049.4 | 12261.00 |
| 1 | 1164.88 | 338.46 | 0.177 | 0.60( 0.56) | 0.94 | 62536.0 | 10410.00 |
| 1 | 1142.71 | 350.86 | 0.173 | 0.60( 0.57) | 0.94 | 63638.0 | 12101.10 |
| 1 | 1093.02 | 378.87 | 0.168 | 0.60( 0.57) | 0.94 | 66016.0 | 10200.00 |
| 1 | 1069.08 | 392.53 | 0.167 | 0.60( 0.57) | 0.95 | 66954.3 | 12010.00 |
| 1 | 1015.97 | 422.28 | 0.163 | 0.60( 0.57) | 0.95 | 67628.0 | 10210.00 |
| 1 | 943.21 | 472.43 | 0.158 | 0.60( 0.57) | 0.95 | 68127.1 | 12000.00 |
| 1 | 885.51 | 542.79 | 0.150 | 0.60( 0.57) | 0.95 | 68711.8 | 10100.00 |
| 2 | 8.76 | 41.81 | 0.493 | 0.60( 0.54) | 0.90 | 192.8 | 13870.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2900.52 | 26.10 | 0.642 | 0.60( 0.49) | 0.81 | 2717.2 | 10520.00 |
| 2 | 2875.12 | 31.06 | 0.575 | 0.60( 0.49) | 0.81 | 3593.2 | 13810.00 |
| 3 | 2858.09 | 34.87 | 0.545 | 0.60( 0.49) | 0.81 | 4245.7 | 13850.00 |
| 4 | 2825.22 | 41.81 | 0.493 | 0.60( 0.49) | 0.81 | 5409.5 | 13870.00 |
| 5 | 2755.40 | 55.96 | 0.413 | 0.60( 0.48) | 0.81 | 7716.4 | 10220.00 |
| 6 | 2571.87 | 65.04 | 0.381 | 0.60( 0.49) | 0.81 | 9508.7 | 13830.00 |
| 7 | 2474.13 | 69.87 | 0.372 | 0.60( 0.49) | 0.81 | 10419.3 | 10500.00 |
| 8 | 1530.93 | 107.62 | 0.303 | 0.60( 0.51) | 0.84 | 17215.6 | 10100.00 |
| 9 | 1464.66 | 126.45 | 0.274 | 0.60( 0.51) | 0.86 | 21142.3 | 13600.00 |
| 10 | 1468.68 | 142.60 | 0.260 | 0.60( 0.52) | 0.87 | 24531.3 | 13210.00 |
| 11 | 1462.22 | 157.36 | 0.246 | 0.60( 0.53) | 0.88 | 27234.1 | 11831.00 |
| 12 | 1506.70 | 180.56 | 0.226 | 0.60( 0.54) | 0.89 | 31774.0 | 11530.00 |
| 13 | 1542.71 | 199.86 | 0.220 | 0.60( 0.54) | 0.91 | 36134.6 | 11000.00 |
| 14 | 1607.59 | 221.78 | 0.213 | 0.60( 0.55) | 0.92 | 43174.7 | 10850.00 |
| 15 | 1496.79 | 240.26 | 0.207 | 0.60( 0.56) | 0.93 | 46936.7 | 13510.00 |
| 16 | 1256.20 | 291.92 | 0.191 | 0.60( 0.56) | 0.94 | 55156.3 | 12410.00 |
| 17 | 1190.82 | 325.48 | 0.181 | 0.60( 0.56) | 0.94 | 61242.2 | 12261.00 |
| 18 | 1168.03 | 338.46 | 0.177 | 0.60( 0.56) | 0.94 | 62728.8 | 10410.00 |
| 19 | 1145.78 | 350.86 | 0.173 | 0.60( 0.57) | 0.94 | 63830.8 | 12101.10 |
| 20 | 1096.01 | 378.87 | 0.168 | 0.60( 0.57) | 0.94 | 66208.9 | 10200.00 |
| 21 | 1072.04 | 392.53 | 0.167 | 0.60( 0.57) | 0.94 | 67147.1 | 12010.00 |
| 22 | 1018.88 | 422.28 | 0.163 | 0.60( 0.57) | 0.95 | 67820.8 | 10210.00 |
| 23 | 946.02 | 472.43 | 0.158 | 0.60( 0.57) | 0.95 | 68319.9 | 12000.00 |
| 24 | 888.19 | 542.79 | 0.150 | 0.60( 0.57) | 0.95 | 68904.7 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2900.52 Tc(MIN.) = 26.10
EFFECTIVE AREA(ACRES) = 2717.15 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 68904.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134049.28 FEET.

**********
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<



>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.582
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 117.69 | 0.60 | 0.724 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2909.03
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.79
AVERAGE FLOW DEPTH(FEET) = 14.23 TRAVEL TIME(MIN.) = 4.14
Tc(MIN.) = 30.25
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 17.01
EFFECTIVE AREA(ACRES) = 2834.84 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 69022.3 PEAK FLOW RATE(CFS) = 2900.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 14.22 FLOW VELOCITY(FEET/SEC.) = 4.78
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135239.48 FEET.

**********
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1
---
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 30.25
RAINFALL INTENSITY(INCH/HR) = 0.58
AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.81
EFFECTIVE STREAM AREA(ACRES) = 2834.84
TOTAL STREAM AREA(ACRES) = 69022.34
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2900.52

**********
FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21
---
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========
INITIAL SUBAREA FLOW-LENGTH(FEET) = 447.89
ELEVATION DATA: UPSTREAM(FEET) = 564.89 DOWNSTREAM(FEET) = 421.92

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.976

```
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.60     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =      2.69
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =      2.69

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.365
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.60     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.42
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   1.64
  Tc(MIN.) =    8.62
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =    5.65
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =       7.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   4.78
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.05
```



```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.13
  AVERAGE FLOW DEPTH(FEET) =   0.78   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =   10.42
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =    6.48
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      12.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.81   FLOW VELOCITY(FEET/SEC.) =   6.27
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   2.63
  Tc(MIN.) =   13.05
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =    6.15
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      15.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   6.20
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.882
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.60     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.00
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   3.18
  Tc(MIN.) =   16.23
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =    7.45
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =      17.62

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.00   FLOW VELOCITY(FEET/SEC.) =   5.92
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.32
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.62
  PIPE TRAVEL TIME(MIN.) =   3.07    Tc(MIN.) =   19.29
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.29
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.783
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.60     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =    4.24
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =      17.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   19.29
```



```
  RAINFALL INTENSITY(INCH/HR) =   0.78
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.60
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      17.62

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     2900.52   30.25    0.582  0.60( 0.49) 0.81    2834.8   10520.00
      1     2875.12   35.21    0.542  0.60( 0.49) 0.81    3710.9   13810.00
      1     2858.09   39.03    0.511  0.60( 0.49) 0.81    4363.4   13850.00
      1     2825.22   45.99    0.469  0.60( 0.48) 0.81    5527.2   13870.00
      1     2755.40   60.16    0.390  0.60( 0.48) 0.81    7834.1   10220.00
      1     2571.87   69.32    0.373  0.60( 0.49) 0.81    9626.4   13830.00
      1     2474.13   74.19    0.364  0.60( 0.49) 0.81   10537.0   10500.00
      1     1530.93  112.49    0.294  0.60( 0.51) 0.84   17333.3   10100.00
      1     1464.66  131.37    0.270  0.60( 0.51) 0.86   21260.0   13600.00
      1     1468.68  147.51    0.255  0.60( 0.52) 0.87   24649.0   13210.00
      1     1462.22  162.28    0.242  0.60( 0.53) 0.88   27351.8   11831.00
      1     1506.70  185.45    0.224  0.60( 0.54) 0.89   31891.7   11530.00
      1     1542.71  204.71    0.218  0.60( 0.54) 0.91   36252.3   11000.00
      1     1607.59  226.59    0.212  0.60( 0.55) 0.92   43292.4   10850.00
      1     1496.79  245.15    0.206  0.60( 0.56) 0.93   47054.4   13510.00
      1     1256.20  297.03    0.190  0.60( 0.56) 0.93   55274.0   12410.00
      1     1190.82  330.66    0.179  0.60( 0.56) 0.94   61359.9   12261.00
      1     1168.03  343.67    0.175  0.60( 0.56) 0.94   62846.5   10410.00
      1     1145.78  356.09    0.171  0.60( 0.56) 0.94   63948.5   12101.10
      1     1096.01  384.16    0.167  0.60( 0.57) 0.94   66326.6   10200.00
      1     1072.04  397.85    0.166  0.60( 0.57) 0.94   67264.8   12010.00
      1     1018.88  427.66    0.163  0.60( 0.57) 0.95   67938.5   10210.00
      1      946.02  477.92    0.157  0.60( 0.57) 0.95   68437.6   12000.00
      1      888.19  548.36    0.150  0.60( 0.57) 0.95   69022.3   10100.00
      2       17.62   19.29    0.783  0.60( 0.56) 0.94      79.6   13889.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     2918.14   19.29    0.783  0.60( 0.49) 0.82    1887.6   13889.00
      2     2903.41   30.25    0.582  0.60( 0.49) 0.81    2914.5   10520.00
      3     2877.81   35.21    0.542  0.60( 0.49) 0.81    3790.5   13810.00
      4     2860.62   39.03    0.511  0.60( 0.49) 0.81    4443.0   13850.00
      5     2827.55   45.99    0.469  0.60( 0.49) 0.81    5606.8   13870.00
      6     2757.34   60.16    0.390  0.60( 0.48) 0.81    7913.7   10220.00
      7     2573.72   69.32    0.373  0.60( 0.49) 0.81    9706.0   13830.00
      8     2475.94   74.19    0.364  0.60( 0.49) 0.81   10616.6   10500.00
      9     1532.39  112.49    0.294  0.60( 0.51) 0.84   17412.9   10100.00
     10     1466.00  131.37    0.270  0.60( 0.51) 0.86   21339.6   13600.00
     11     1469.95  147.51    0.255  0.60( 0.52) 0.87   24728.6   13210.00
     12     1463.42  162.28    0.242  0.60( 0.53) 0.88   27431.4   11831.00
     13     1507.82  185.45    0.224  0.60( 0.54) 0.89   31971.3   11530.00
     14     1543.79  204.71    0.218  0.60( 0.54) 0.91   36331.9   11000.00
     15     1608.64  226.59    0.212  0.60( 0.55) 0.92   43372.0   10850.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 16 | 1497.81 | 245.15 | 0.206 | 0.60( 0.56) | 0.93 | 47134.0 | 13510.00 |
| 17 | 1257.14 | 297.03 | 0.190 | 0.60( 0.56) | 0.93 | 55353.7 | 12410.00 |
| 18 | 1191.71 | 330.66 | 0.179 | 0.60( 0.56) | 0.94 | 61439.6 | 12261.00 |
| 19 | 1168.90 | 343.67 | 0.175 | 0.60( 0.56) | 0.94 | 62926.2 | 10410.00 |
| 20 | 1146.63 | 356.09 | 0.171 | 0.60( 0.56) | 0.94 | 64028.1 | 12101.10 |
| 21 | 1096.84 | 384.16 | 0.167 | 0.60( 0.57) | 0.94 | 66406.2 | 10200.00 |
| 22 | 1072.87 | 397.85 | 0.166 | 0.60( 0.57) | 0.94 | 67344.4 | 12010.00 |
| 23 | 1019.69 | 427.66 | 0.163 | 0.60( 0.57) | 0.95 | 68018.1 | 10210.00 |
| 24 | 946.80 | 477.92 | 0.157 | 0.60( 0.57) | 0.95 | 68517.2 | 12000.00 |
| 25 | 888.93 | 548.36 | 0.150 | 0.60( 0.57) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2918.14 Tc(MIN.) = 19.29
EFFECTIVE AREA(ACRES) = 1887.63 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135239.48 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 19.29
EFFECTIVE AREA(ACRES) = 1887.63 AREA-AVERAGED Fm(INCH/HR)= 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.816
PEAK FLOW RATE(CFS) = 2918.14

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2918.14 | 19.29 | 0.783 | 0.60( 0.49) | 0.82 | 1887.6 | 13889.00 |
| 2 | 2903.41 | 30.25 | 0.582 | 0.60( 0.49) | 0.81 | 2914.5 | 10520.00 |
| 3 | 2877.81 | 35.21 | 0.542 | 0.60( 0.49) | 0.81 | 3790.5 | 13810.00 |
| 4 | 2860.62 | 39.03 | 0.511 | 0.60( 0.49) | 0.81 | 4443.0 | 13850.00 |
| 5 | 2827.55 | 45.99 | 0.469 | 0.60( 0.49) | 0.81 | 5606.8 | 13870.00 |
| 6 | 2757.34 | 60.16 | 0.390 | 0.60( 0.48) | 0.81 | 7913.7 | 10220.00 |
| 7 | 2573.72 | 69.32 | 0.373 | 0.60( 0.49) | 0.81 | 9706.0 | 13830.00 |
| 8 | 2475.94 | 74.19 | 0.364 | 0.60( 0.49) | 0.81 | 10616.6 | 10500.00 |
| 9 | 1532.39 | 112.49 | 0.294 | 0.60( 0.51) | 0.84 | 17412.9 | 10100.00 |
| 10 | 1466.00 | 131.37 | 0.270 | 0.60( 0.51) | 0.86 | 21339.6 | 13600.00 |
| 11 | 1469.95 | 147.51 | 0.255 | 0.60( 0.52) | 0.87 | 24728.6 | 13210.00 |
| 12 | 1463.42 | 162.28 | 0.242 | 0.60( 0.53) | 0.88 | 27431.4 | 11831.00 |
| 13 | 1507.82 | 185.45 | 0.224 | 0.60( 0.54) | 0.89 | 31971.3 | 11530.00 |
| 14 | 1543.79 | 204.71 | 0.218 | 0.60( 0.54) | 0.91 | 36331.9 | 11000.00 |
| 15 | 1608.64 | 226.59 | 0.212 | 0.60( 0.55) | 0.92 | 43372.0 | 10850.00 |
| 16 | 1497.81 | 245.15 | 0.206 | 0.60( 0.56) | 0.93 | 47134.0 | 13510.00 |
| 17 | 1257.14 | 297.03 | 0.190 | 0.60( 0.56) | 0.93 | 55353.7 | 12410.00 |
| 18 | 1191.71 | 330.66 | 0.179 | 0.60( 0.56) | 0.94 | 61439.6 | 12261.00 |
| 19 | 1168.90 | 343.67 | 0.175 | 0.60( 0.56) | 0.94 | 62926.2 | 10410.00 |
| 20 | 1146.63 | 356.09 | 0.171 | 0.60( 0.56) | 0.94 | 64028.1 | 12101.10 |
| 21 | 1096.84 | 384.16 | 0.167 | 0.60( 0.57) | 0.94 | 66406.2 | 10200.00 |
| 22 | 1072.87 | 397.85 | 0.166 | 0.60( 0.57) | 0.94 | 67344.4 | 12010.00 |
| 23 | 1019.69 | 427.66 | 0.163 | 0.60( 0.57) | 0.95 | 68018.1 | 10210.00 |
| 24 | 946.80 | 477.92 | 0.157 | 0.60( 0.57) | 0.95 | 68517.2 | 12000.00 |
| 25 | 888.93 | 548.36 | 0.150 | 0.60( 0.57) | 0.95 | 69102.0 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 2-YR EV AUG 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI02EV39.DAT
  TIME/DATE OF STUDY: 16:11 08/09/2023
================================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
================================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  1.797
   2)   10.00;  1.198
   3)   15.00;  0.921
   4)   20.00;  0.760
   5)   25.00;  0.658
   6)   30.00;  0.584
   7)   40.00;  0.503
   8)   50.00;  0.446
   9)   60.00;  0.390
  10)   90.00;  0.336
  11)  120.00;  0.280
  12)  180.00;  0.226
  13)  360.00;  0.166
  14) 1200.00;  0.080
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.60     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.98
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      1.98

************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.039
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.60     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.35
  AVERAGE FLOW DEPTH(FEET) =   0.48   TRAVEL TIME(MIN.) =   2.02
  Tc(MIN.) =   12.88
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =    3.35
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.60
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =       4.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   5.69
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

************************************************************************
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```
 FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.947
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       23.85      0.60     0.982     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.78
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.74
 AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   1.65
 Tc(MIN.) =   14.53
 SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =    7.68
 EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.59
 AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.99
 TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      11.58

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   7.25
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
 FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
 DEPTH OF FLOW IN  36.0 INCH PIPE IS   7.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.53
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      11.58
 PIPE TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =   15.92
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   15.92
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.891
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       21.29      0.60     0.996     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
```



```
 SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =    5.63
 EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =      15.40

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
 FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  10.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.28
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      15.40
 PIPE TRAVEL TIME(MIN.) =   3.52    Tc(MIN.) =   19.44
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   19.44
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.778
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       43.53      0.60     0.649     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
 SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   15.23
 EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =      24.74

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: RI02EV38.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1     2918.14   19.29  0.60( 0.49) 0.82    1887.6   13889.00
     2     2827.55   45.99  0.60( 0.49) 0.81    5606.8   13870.00
     3     2757.34   60.16  0.60( 0.48) 0.81    7913.7   10220.00
     4     1532.39  112.49  0.60( 0.51) 0.84   17412.9   10100.00
```

```
      5     1466.00  131.37  0.60( 0.51) 0.86   21339.6   13600.00
      6     1469.95  147.51  0.60( 0.52) 0.87   24728.6   13210.00
      7     1463.42  162.28  0.60( 0.53) 0.88   27431.4   11831.00
      8     1507.82  185.45  0.60( 0.54) 0.89   31971.3   11530.00
      9     1543.79  204.71  0.60( 0.54) 0.91   36331.9   11000.00
     10     1608.64  226.59  0.60( 0.55) 0.92   43372.0   10850.00
     11     1497.81  245.15  0.60( 0.56) 0.93   47134.0   13510.00
     12     1257.14  297.03  0.60( 0.56) 0.93   55353.7   12410.00
     13     1191.71  330.66  0.60( 0.56) 0.94   61439.6   12261.00
     14     1168.90  343.67  0.60( 0.56) 0.94   62926.2   10410.00
     15     1146.63  356.09  0.60( 0.56) 0.94   64028.1   12101.10
     16     1096.84  384.16  0.60( 0.57) 0.94   66406.2   10200.00
     17     1072.87  397.85  0.60( 0.57) 0.94   67344.4   12010.00
     18     1019.69  427.66  0.60( 0.57) 0.95   68018.1   10210.00
     19      946.80  477.92  0.60( 0.57) 0.95   68517.2   12000.00
     20      888.93  548.36  0.60( 0.57) 0.95   69102.0   10100.00
   TOTAL AREA(ACRES) =    69102.0

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     2918.14   19.29  0.60( 0.49) 0.82    1887.6   13889.00
      2     2827.55   45.99  0.60( 0.49) 0.81    5606.8   13870.00
      3     2757.34   60.16  0.60( 0.48) 0.81    7913.7   10220.00
      4     1532.39  112.49  0.60( 0.51) 0.84   17412.9   10100.00
      5     1466.00  131.37  0.60( 0.51) 0.86   21339.6   13600.00
      6     1469.95  147.51  0.60( 0.52) 0.87   24728.6   13210.00
      7     1463.42  162.28  0.60( 0.53) 0.88   27431.4   11831.00
      8     1507.82  185.45  0.60( 0.54) 0.89   31971.3   11530.00
      9     1543.79  204.71  0.60( 0.54) 0.91   36331.9   11000.00
     10     1608.64  226.59  0.60( 0.55) 0.92   43372.0   10850.00
     11     1497.81  245.15  0.60( 0.56) 0.93   47134.0   13510.00
     12     1257.14  297.03  0.60( 0.56) 0.93   55353.7   12410.00
     13     1191.71  330.66  0.60( 0.56) 0.94   61439.6   12261.00
     14     1168.90  343.67  0.60( 0.56) 0.94   62926.2   10410.00
     15     1146.63  356.09  0.60( 0.56) 0.94   64028.1   12101.10
     16     1096.84  384.16  0.60( 0.57) 0.94   66406.2   10200.00
     17     1072.87  397.85  0.60( 0.57) 0.94   67344.4   12010.00
     18     1019.69  427.66  0.60( 0.57) 0.95   68018.1   10210.00
     19      946.80  477.92  0.60( 0.57) 0.95   68517.2   12000.00
     20      888.93  548.36  0.60( 0.57) 0.95   69102.0   10100.00
   TOTAL AREA(ACRES) =     69102.0

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    119.70  DOWNSTREAM(FEET) =    118.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1376.26   CHANNEL SLOPE =  0.0012
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



```
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       96.09      0.60      0.535     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.535
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2934.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.84
  AVERAGE FLOW DEPTH(FEET) =  12.94   TRAVEL TIME(MIN.) =   3.93
  Tc(MIN.) =   23.22
  SUBAREA AREA(ACRES) =    96.09       SUBAREA RUNOFF(CFS) =   32.29
  EFFECTIVE AREA(ACRES) =   1983.72     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =    69198.1          PEAK FLOW RATE(CFS) =    2918.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.92   FLOW VELOCITY(FEET/SEC.) =   5.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136615.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2918.14   23.22    0.694  0.60( 0.48) 0.80    1983.7   13889.00
      2     2827.55   49.95    0.446  0.60( 0.48) 0.81    5702.9   13870.00
      3     2757.34   64.15    0.383  0.60( 0.48) 0.80    8009.8   10220.00
      4     1532.39  117.11    0.285  0.60( 0.51) 0.84   17509.0   10100.00
      5     1466.00  136.04    0.266  0.60( 0.51) 0.86   21435.7   13600.00
      6     1469.95  152.17    0.251  0.60( 0.52) 0.87   24824.7   13210.00
      7     1463.42  166.95    0.238  0.60( 0.53) 0.88   27527.5   11831.00
      8     1507.82  190.08    0.223  0.60( 0.54) 0.89   32067.4   11530.00
      9     1543.79  209.32    0.216  0.60( 0.54) 0.90   36428.0   11000.00
     10     1608.64  231.15    0.209  0.60( 0.55) 0.92   43468.1   10850.00
     11     1497.81  249.80    0.203  0.60( 0.55) 0.92   47230.1   13510.00
     12     1257.14  301.89    0.185  0.60( 0.56) 0.93   55449.7   12410.00
     13     1191.71  335.58    0.174  0.60( 0.56) 0.94   61535.6   12261.00
     14     1168.90  348.61    0.170  0.60( 0.56) 0.94   63022.2   10410.00
     15     1146.63  361.06    0.166  0.60( 0.56) 0.94   64124.2   12101.10
     16     1096.84  389.19    0.163  0.60( 0.57) 0.94   66502.3   10200.00
     17     1072.87  402.90    0.162  0.60( 0.57) 0.94   67440.5   12010.00
     18     1019.69  432.78    0.159  0.60( 0.57) 0.94   68114.2   10210.00
     19      946.80  483.13    0.153  0.60( 0.57) 0.94   68613.3   12000.00
     20      888.93  553.65    0.146  0.60( 0.57) 0.95   69198.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136615.75 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       24.74   19.44    0.778  0.60( 0.51) 0.84     101.1   13900.00
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2942.89   19.44    0.778  0.60( 0.48) 0.80    1761.8   13900.00
     2     2935.27   23.22    0.694  0.60( 0.48) 0.80    2084.9   13889.00
     3     2833.89   49.95    0.446  0.60( 0.48) 0.81    5804.0   13870.00
     4     2762.77   64.15    0.383  0.60( 0.48) 0.80    8110.9   10220.00
     5     1536.45  117.11    0.285  0.60( 0.51) 0.84   17610.2   10100.00
     6     1469.77  136.04    0.266  0.60( 0.51) 0.86   21536.8   13600.00
     7     1473.51  152.17    0.251  0.60( 0.52) 0.87   24925.8   13210.00
     8     1466.80  166.95    0.238  0.60( 0.53) 0.88   27628.6   11831.00
     9     1510.98  190.08    0.223  0.60( 0.54) 0.89   32168.5   11530.00
    10     1546.86  209.32    0.216  0.60( 0.54) 0.90   36529.2   11000.00
    11     1611.61  231.15    0.209  0.60( 0.55) 0.92   43569.2   10850.00
    12     1500.69  249.80    0.203  0.60( 0.55) 0.92   47331.2   13510.00
    13     1259.78  301.89    0.185  0.60( 0.56) 0.93   55550.9   12410.00
    14     1194.19  335.58    0.174  0.60( 0.56) 0.94   61636.8   12261.00
    15     1171.31  348.61    0.170  0.60( 0.56) 0.94   63123.4   10410.00
    16     1148.99  361.06    0.166  0.60( 0.56) 0.94   64225.3   12101.10
    17     1099.16  389.19    0.163  0.60( 0.57) 0.94   66603.4   10200.00
    18     1075.16  402.90    0.162  0.60( 0.57) 0.94   67541.6   12010.00
    19     1021.94  432.78    0.159  0.60( 0.57) 0.94   68215.4   10210.00
    20      948.98  483.13    0.153  0.60( 0.57) 0.94   68714.4   12000.00
    21      891.01  553.65    0.146  0.60( 0.57) 0.95   69299.2   10100.00
   TOTAL AREA(ACRES) =     69299.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2942.89  Tc(MIN.) =   19.440
  EFFECTIVE AREA(ACRES) =   1761.81  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    69299.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136615.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.30      0.60     0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2965.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.86
  AVERAGE FLOW DEPTH(FEET) =   9.13   TRAVEL TIME(MIN.) =   0.47
  Tc(MIN.) =   19.91
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   44.50
  EFFECTIVE AREA(ACRES) =   1896.11     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.79
```



```
  TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =    2942.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.11   FLOW VELOCITY(FEET/SEC.) =  11.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136951.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.726
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       96.27      0.60     0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2955.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.25
  AVERAGE FLOW DEPTH(FEET) =   8.62   TRAVEL TIME(MIN.) =   1.76
  Tc(MIN.) =   21.67
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   25.32
  EFFECTIVE AREA(ACRES) =   1992.38     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.60  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =    2942.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.61   FLOW VELOCITY(FEET/SEC.) =  13.24
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138347.27 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    69529.8  TC(MIN.) =     21.67
  EFFECTIVE AREA(ACRES) =   1992.38  AREA-AVERAGED Fm(INCH/HR)=  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap = 0.791
  PEAK FLOW RATE(CFS)   =    2942.89

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2942.89   21.67    0.726  0.60( 0.47) 0.79    1992.4   13900.00
      2     2935.27   25.45    0.651  0.60( 0.48) 0.79    2315.4   13889.00
      3     2833.89   52.20    0.434  0.60( 0.48) 0.80    6034.6   13870.00
      4     2762.77   66.42    0.378  0.60( 0.48) 0.80    8341.5   10220.00
      5     1536.45  119.73    0.281  0.60( 0.50) 0.84   17840.7   10100.00
      6     1469.77  138.69    0.263  0.60( 0.51) 0.85   21767.4   13600.00
      7     1473.51  154.83    0.249  0.60( 0.52) 0.87   25156.4   13210.00
      8     1466.80  169.61    0.235  0.60( 0.53) 0.88   27859.2   11831.00
      9     1510.98  192.72    0.222  0.60( 0.53) 0.89   32399.1   11530.00
     10     1546.86  211.94    0.215  0.60( 0.54) 0.90   36759.8   11000.00
     11     1611.61  233.74    0.208  0.60( 0.55) 0.92   43799.8   10850.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | 1500.69 | 252.43 | 0.202 | 0.60( 0.55) | 0.92 | 47561.8 | 13510.00 |
| 13 | 1259.78 | 304.65 | 0.184 | 0.60( 0.56) | 0.93 | 55781.5 | 12410.00 |
| 14 | 1194.19 | 338.37 | 0.173 | 0.60( 0.56) | 0.94 | 61867.4 | 12261.00 |
| 15 | 1171.31 | 351.41 | 0.169 | 0.60( 0.56) | 0.94 | 63354.0 | 10410.00 |
| 16 | 1148.99 | 363.88 | 0.166 | 0.60( 0.56) | 0.94 | 64455.9 | 12101.10 |
| 17 | 1099.16 | 392.04 | 0.163 | 0.60( 0.57) | 0.94 | 66834.0 | 10200.00 |
| 18 | 1075.16 | 405.76 | 0.161 | 0.60( 0.57) | 0.94 | 67772.2 | 12010.00 |
| 19 | 1021.94 | 435.68 | 0.158 | 0.60( 0.57) | 0.94 | 68445.9 | 10210.00 |
| 20 | 948.98 | 486.09 | 0.153 | 0.60( 0.57) | 0.94 | 68945.0 | 12000.00 |
| 21 | 891.01 | 556.66 | 0.146 | 0.60( 0.57) | 0.94 | 69529.8 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
                    5 Hutton Centre Drive, Suite 500
                         Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP                                *
* REGIONAL WATERSHED S19- FREE DRAINING - PHASE CONDITION NO PA5       *
* 5-YR RM EV APRIL 2019 FKAZI                                          *
 ************************************************************************

  FILE NAME: RI05EV19.DAT
  TIME/DATE OF STUDY: 11:09 04/03/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.749
   2)   10.00;  1.821
   3)   15.00;  1.328
   4)   20.00;  1.137
   5)   25.00;  0.990
   6)   30.00;  0.887
   7)   40.00;  0.760
   8)   50.00;  0.677
   9)   60.00;  0.617
  10)   90.00;  0.514
  11)  120.00;  0.457
  12)  180.00;  0.384
  13)  360.00;  0.286
  14) 1200.00;  0.126
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  2.340
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"          -        1.62      0.50     0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      2.68
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      2.68

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.758
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.35      0.50     0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.22
  AVERAGE FLOW DEPTH(FEET) =   0.89   TRAVEL TIME(MIN.) =   3.44
  Tc(MIN.) =   10.64
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =    9.80
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.46
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      11.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.04   FLOW VELOCITY(FEET/SEC.) =   3.57
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

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

```
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.357
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.50     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.81
  AVERAGE FLOW DEPTH(FEET) =   1.51   TRAVEL TIME(MIN.) =   4.07
  Tc(MIN.) =   14.71
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   28.08
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.45
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      36.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.71   FLOW VELOCITY(FEET/SEC.) =   4.14
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.142
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.50     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.89
  AVERAGE FLOW DEPTH(FEET) =   2.23   TRAVEL TIME(MIN.) =   5.17
  Tc(MIN.) =   19.87
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   14.10
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.46
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =      41.62

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.20   FLOW VELOCITY(FEET/SEC.) =   2.86
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.948
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.50     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.49
  AVERAGE FLOW DEPTH(FEET) =   2.04   TRAVEL TIME(MIN.) =   7.14
  Tc(MIN.) =   27.01
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =   28.85
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =      58.62

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.07   FLOW VELOCITY(FEET/SEC.) =   4.55
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.53
  AVERAGE FLOW DEPTH(FEET) =   1.75   TRAVEL TIME(MIN.) =   4.27
  Tc(MIN.) =   31.28
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   21.06
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =      70.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  1.76   FLOW VELOCITY(FEET/SEC.) =   7.57
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.822
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.95
  AVERAGE FLOW DEPTH(FEET) =   1.58   TRAVEL TIME(MIN.) =   3.80
  Tc(MIN.) =   35.08
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =   24.61
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =      86.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.61   FLOW VELOCITY(FEET/SEC.) =  11.03
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.744
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     108.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.20
  AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   6.85
  Tc(MIN.) =   41.93
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =   43.75
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     109.69
```



```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.11   FLOW VELOCITY(FEET/SEC.) =   8.21
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   41.93
  RAINFALL INTENSITY(INCH/HR) =   0.74
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     109.69

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.606
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        3.46      0.50     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.44
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      3.44

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.458
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.79      0.50     1.000     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.43
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   1.49
  Tc(MIN.) =   13.68
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =    4.99
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =       7.98

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   4.79
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.117
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       54.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.41
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.51
  AVERAGE FLOW DEPTH(FEET) =   1.32   TRAVEL TIME(MIN.) =   6.99
  Tc(MIN.) =   20.66
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   30.17
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =      35.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.53   FLOW VELOCITY(FEET/SEC.) =   5.02
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.007
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       65.14      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.64
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   3.77
  Tc(MIN.) =   24.44
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =   29.68
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =      58.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.47   FLOW VELOCITY(FEET/SEC.) =   9.05
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.936
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.52      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      74.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.79
  AVERAGE FLOW DEPTH(FEET) =   1.68   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   27.64
  SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =   30.77
  EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =      81.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.73   FLOW VELOCITY(FEET/SEC.) =   9.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.859
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       70.48      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.99
  AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   4.55
  Tc(MIN.) =   32.19
  SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   22.77
  EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =      89.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.07   FLOW VELOCITY(FEET/SEC.) =   6.96
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      232.20      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.85
  AVERAGE FLOW DEPTH(FEET) =   2.04   TRAVEL TIME(MIN.) =   3.29
  Tc(MIN.) =   35.48
  SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =   66.29
  EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     145.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.17   FLOW VELOCITY(FEET/SEC.) =  10.29
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



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  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.753
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      110.82      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     158.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.01
  AVERAGE FLOW DEPTH(FEET) =   2.57   TRAVEL TIME(MIN.) =   5.34
  Tc(MIN.) =   40.82
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =   25.24
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7         PEAK FLOW RATE(CFS) =     145.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.49   FLOW VELOCITY(FEET/SEC.) =   7.83
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 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.) =   40.82
  RAINFALL INTENSITY(INCH/HR) =   0.75
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     145.56

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      109.69   41.93    0.744  0.50( 0.49) 0.98     484.1   11900.00
      2      145.56   40.82    0.753  0.50( 0.50) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      255.25   40.82    0.753  0.50( 0.50) 0.99    1091.9   11910.00
      2      249.92   41.93    0.744  0.50( 0.50) 0.99    1104.8   11900.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     255.25    Tc(MIN.) =    40.82
  EFFECTIVE AREA(ACRES) =    1091.90   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.99
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  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.723
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     266.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.49
  AVERAGE FLOW DEPTH(FEET) =   3.70   TRAVEL TIME(MIN.) =   3.64
  Tc(MIN.) =   44.46
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =   21.55
  EFFECTIVE AREA(ACRES) =   1199.37     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3         PEAK FLOW RATE(CFS) =     255.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.64   FLOW VELOCITY(FEET/SEC.) =   6.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.686
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     284.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.10
  AVERAGE FLOW DEPTH(FEET) =   3.65   TRAVEL TIME(MIN.) =   4.43
  Tc(MIN.) =   48.89
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =   57.64
  EFFECTIVE AREA(ACRES) =   1543.64     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
```



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  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =     261.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.54   FLOW VELOCITY(FEET/SEC.) =   6.95
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.643
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     272.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.99
  AVERAGE FLOW DEPTH(FEET) =   3.60   TRAVEL TIME(MIN.) =   6.82
  Tc(MIN.) =   55.70
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =   21.19
  EFFECTIVE AREA(ACRES) =   1708.82     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =     261.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.55   FLOW VELOCITY(FEET/SEC.) =   6.92
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.616
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     284.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.67
  AVERAGE FLOW DEPTH(FEET) =   3.77   TRAVEL TIME(MIN.) =   4.61
  Tc(MIN.) =   60.31
```

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  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =   45.17
  EFFECTIVE AREA(ACRES) =   2142.55     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =     261.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.65   FLOW VELOCITY(FEET/SEC.) =   6.55
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.591
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     272.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.44
  AVERAGE FLOW DEPTH(FEET) =   3.76   TRAVEL TIME(MIN.) =   7.14
  Tc(MIN.) =   67.45
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =   21.79
  EFFECTIVE AREA(ACRES) =   2407.97     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =     261.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.71   FLOW VELOCITY(FEET/SEC.) =   6.36
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.570
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



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  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     264.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.25
  AVERAGE FLOW DEPTH(FEET) =   4.10   TRAVEL TIME(MIN.) =   6.10
  Tc(MIN.) =   73.55
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =    6.16
  EFFECTIVE AREA(ACRES) =   2505.43     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =     261.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.08   FLOW VELOCITY(FEET/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2710.13   CHANNEL SLOPE =  0.0219
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.543
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     262.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.58
  AVERAGE FLOW DEPTH(FEET) =   3.96   TRAVEL TIME(MIN.) =   8.09
  Tc(MIN.) =   81.64
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =    2.06
  EFFECTIVE AREA(ACRES) =   2559.26     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =     261.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.95   FLOW VELOCITY(FEET/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX05.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```

```
 STREAM        Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.)  (INCH/HR)           (ACRES)    NODE
    1       197.11   35.87  0.50( 0.50) 1.00      624.4   40130.00
    2       188.26   38.23  0.50( 0.50) 1.00      654.2   40100.00
  TOTAL AREA(ACRES) =       654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1       261.87   81.64    0.543  0.50( 0.50) 1.00     2559.3   11910.00
    2       250.73   83.14    0.538  0.50( 0.50) 1.00     2572.1   11900.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1       197.11   35.87    0.812  0.50( 0.50) 1.00      624.4   40130.00
    2       188.26   38.23    0.783  0.50( 0.50) 1.00      654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   11231.26 FEET.

  ** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1       458.97   35.87    0.812  0.50( 0.50) 1.00     1748.9   40130.00
    2       450.13   38.23    0.783  0.50( 0.50) 1.00     1852.5   40100.00
    3       290.20   81.64    0.543  0.50( 0.50) 1.00     3213.5   11910.00
    4       275.63   83.14    0.538  0.50( 0.50) 1.00     3226.4   11900.00
  TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      458.97  Tc(MIN.) =   35.875
  EFFECTIVE AREA(ACRES) =   1748.93  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   28267.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     458.97
  FLOW VELOCITY(FEET/SEC.) =   5.60   FLOW DEPTH(FEET) =   5.23
  TRAVEL TIME(MIN.) =   2.94   Tc(MIN.) =   38.81
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   29253.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.81
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.775
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        2.40      0.50      1.000     -
  USER-DEFINED                -        1.70      0.50      1.000     -
  USER-DEFINED                -        1.50      0.50      1.000     -
  USER-DEFINED                -        1.30      0.50      1.000     -
  USER-DEFINED                -        0.90      0.50      1.000     -
  USER-DEFINED                -        0.60      0.50      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    2.08
  EFFECTIVE AREA(ACRES) =   1757.33   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.81
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.775
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.30      0.50      1.000     -
  USER-DEFINED                -        0.10      0.50      1.000     -
  USER-DEFINED                -        0.10      0.50      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.12
  EFFECTIVE AREA(ACRES) =   1757.83   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.81
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.775
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        0.70      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    0.49
  EFFECTIVE AREA(ACRES) =   1759.83   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.01      0.50     0.984     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     468.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   4.42   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   40.16
  SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   18.71
  EFFECTIVE AREA(ACRES) =   1837.84     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.39   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29900.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.16
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.10      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    0.40
  EFFECTIVE AREA(ACRES) =   1839.54   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.724
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.18      0.50     0.890     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     460.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.29
  AVERAGE FLOW DEPTH(FEET) =   5.38   TRAVEL TIME(MIN.) =   4.16
  Tc(MIN.) =   44.33
  SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    2.05
  EFFECTIVE AREA(ACRES) =   1847.72     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.37   FLOW VELOCITY(FEET/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   31223.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.33
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.724
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.90      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    0.50
  EFFECTIVE AREA(ACRES) =   1850.22   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =     458.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S18X05.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     6871.23   43.27  0.50( 0.50) 0.99    7177.4   11801.00
      2     6868.03   46.61  0.50( 0.50) 0.99    7821.6   11831.00
      3     6831.35   54.45  0.50( 0.50) 0.99    9253.7   11500.00
      4     6778.10   60.05  0.50( 0.50) 0.99   10627.1   11701.00
      5     6681.76   66.19  0.50( 0.50) 1.00   12121.5   11000.00
      6     6475.61   83.04  0.50( 0.50) 1.00   17603.2   11330.00
      7     6342.06   88.36  0.50( 0.50) 1.00   19494.9   10900.00
      8     6230.68   91.62  0.50( 0.50) 1.00   20592.4   10830.00
      9     5983.87   96.58  0.50( 0.50) 1.00   21984.5   11130.00
     10     5363.28  107.52  0.50( 0.50) 1.00   24463.0   11620.00
     11     5080.72  112.52  0.50( 0.50) 1.00   25521.2   10600.00
     12     4959.28  115.06  0.50( 0.50) 1.00   26061.4   11600.00
     13     4208.11  125.27  0.50( 0.50) 1.00   27870.7   10500.00
     14     3686.50  134.23  0.50( 0.50) 1.00   29001.0   10710.00
     15     3079.50  146.58  0.50( 0.50) 1.00   30024.8   10700.00
     16     2649.64  155.94  0.50( 0.50) 1.00   30698.5   10400.00
     17     2296.99  164.19  0.50( 0.50) 1.00   31188.4   10200.00
     18     1901.26  178.29  0.50( 0.50) 1.00   31917.9   10300.00
     19     1742.48  184.66  0.50( 0.50) 1.00   32047.5   10210.00
     20      608.82  267.18  0.50( 0.50) 1.00   32916.6   10100.00
    TOTAL AREA(ACRES) =    32916.6

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S25X05.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1893.24   82.32  0.50( 0.49) 0.99    5730.4   12500.00
      2     1840.67  101.00  0.50( 0.49) 0.99    7460.2   12300.00
      3     1831.66  103.75  0.50( 0.49) 0.99    7807.7   12330.00
      4     1786.92  113.52  0.50( 0.49) 0.98    8941.0   12410.00
      5     1724.88  122.39  0.50( 0.49) 0.98    9874.6   12400.00
      6     1697.93  124.27  0.50( 0.49) 0.98   10031.7   12211.00
      7     1549.17  132.90  0.50( 0.49) 0.98   10707.0   12201.00
      8     1383.71  141.46  0.50( 0.49) 0.98   11230.3   12111.00
      9     1282.12  147.13  0.50( 0.49) 0.98   11586.3   12231.00
     10     1154.55  155.77  0.50( 0.49) 0.98   12067.3   12261.00
     11     1138.83  156.90  0.50( 0.49) 0.98   12113.1   12101.10
```



```
     12      821.51  184.54  0.50( 0.49) 0.98   13109.5   12010.00
     13      621.28  203.48  0.50( 0.49) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =    13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1893.24   82.32  0.50( 0.49) 0.99    5730.4   12500.00
      2     1840.67  101.00  0.50( 0.49) 0.99    7460.2   12300.00
      3     1831.66  103.75  0.50( 0.49) 0.99    7807.7   12330.00
      4     1786.92  113.52  0.50( 0.49) 0.98    8941.0   12410.00
      5     1724.88  122.39  0.50( 0.49) 0.98    9874.6   12400.00
      6     1697.93  124.27  0.50( 0.49) 0.98   10031.7   12211.00
      7     1549.17  132.90  0.50( 0.49) 0.98   10707.0   12201.00
      8     1383.71  141.46  0.50( 0.49) 0.98   11230.3   12111.00
      9     1282.12  147.13  0.50( 0.49) 0.98   11586.3   12231.00
     10     1154.55  155.77  0.50( 0.49) 0.98   12067.3   12261.00
     11     1138.83  156.90  0.50( 0.49) 0.98   12113.1   12101.10
     12      821.51  184.54  0.50( 0.49) 0.98   13109.5   12010.00
     13      621.28  203.48  0.50( 0.49) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =    13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1893.24   82.32    0.540  0.50( 0.49) 0.99    5730.4   12500.00
      2     1840.67  101.00    0.493  0.50( 0.49) 0.99    7460.2   12300.00
      3     1831.66  103.75    0.488  0.50( 0.49) 0.99    7807.7   12330.00
      4     1786.92  113.52    0.469  0.50( 0.49) 0.98    8941.0   12410.00
      5     1724.88  122.39    0.454  0.50( 0.49) 0.98    9874.6   12400.00
      6     1697.93  124.27    0.452  0.50( 0.49) 0.98   10031.7   12211.00
      7     1549.17  132.90    0.441  0.50( 0.49) 0.98   10707.0   12201.00
      8     1383.71  141.46    0.431  0.50( 0.49) 0.98   11230.3   12111.00
      9     1282.12  147.13    0.424  0.50( 0.49) 0.98   11586.3   12231.00
     10     1154.55  155.77    0.413  0.50( 0.49) 0.98   12067.3   12261.00
     11     1138.83  156.90    0.412  0.50( 0.49) 0.98   12113.1   12101.10
     12      821.51  184.54    0.382  0.50( 0.49) 0.98   13109.5   12010.00
     13      621.28  203.48    0.371  0.50( 0.49) 0.98   13237.1   12000.00
  LONGEST FLOWPATH FROM NODE  12000.00 TO NODE  12527.00 =   77156.98 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     6871.23   43.27    0.733  0.50( 0.50) 0.99    7177.4   11801.00
      2     6868.03   46.61    0.705  0.50( 0.50) 0.99    7821.6   11831.00
      3     6831.35   54.45    0.650  0.50( 0.50) 0.99    9253.7   11500.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 6778.10 | 60.05 | 0.617 | 0.50( 0.50) | 0.99 | 10627.1 | 11701.00 |
| 5 | 6681.76 | 66.19 | 0.596 | 0.50( 0.50) | 1.00 | 12121.5 | 11000.00 |
| 6 | 6475.61 | 83.04 | 0.538 | 0.50( 0.50) | 1.00 | 17603.2 | 11330.00 |
| 7 | 6342.06 | 88.36 | 0.520 | 0.50( 0.50) | 1.00 | 19494.9 | 10900.00 |
| 8 | 6230.68 | 91.62 | 0.511 | 0.50( 0.50) | 1.00 | 20592.4 | 10830.00 |
| 9 | 5983.87 | 96.58 | 0.502 | 0.50( 0.50) | 1.00 | 21984.5 | 11130.00 |
| 10 | 5363.28 | 107.52 | 0.481 | 0.50( 0.50) | 1.00 | 24463.0 | 11620.00 |
| 11 | 5080.72 | 112.52 | 0.471 | 0.50( 0.50) | 1.00 | 25521.2 | 10600.00 |
| 12 | 4959.28 | 115.06 | 0.466 | 0.50( 0.50) | 1.00 | 26061.4 | 11600.00 |
| 13 | 4208.11 | 125.27 | 0.451 | 0.50( 0.50) | 1.00 | 27870.7 | 10500.00 |
| 14 | 3686.50 | 134.23 | 0.440 | 0.50( 0.50) | 1.00 | 29001.0 | 10710.00 |
| 15 | 3079.50 | 146.58 | 0.425 | 0.50( 0.50) | 1.00 | 30024.8 | 10700.00 |
| 16 | 2649.64 | 155.94 | 0.413 | 0.50( 0.50) | 1.00 | 30698.5 | 10400.00 |
| 17 | 2296.99 | 164.19 | 0.403 | 0.50( 0.50) | 1.00 | 31188.4 | 10200.00 |
| 18 | 1901.26 | 178.29 | 0.386 | 0.50( 0.50) | 1.00 | 31917.9 | 10300.00 |
| 19 | 1742.48 | 184.66 | 0.381 | 0.50( 0.50) | 1.00 | 32047.5 | 10210.00 |
| 20 | 608.82 | 267.18 | 0.337 | 0.50( 0.50) | 1.00 | 32916.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 8764.47 | 43.27 | 0.733 | 0.50( 0.50) | 0.99 | 10189.2 | 11801.00 |
| 2 | 8761.27 | 46.61 | 0.705 | 0.50( 0.50) | 0.99 | 11066.1 | 11831.00 |
| 3 | 8724.59 | 54.45 | 0.650 | 0.50( 0.50) | 0.99 | 13043.9 | 11500.00 |
| 4 | 8671.34 | 60.05 | 0.617 | 0.50( 0.50) | 0.99 | 14807.3 | 11701.00 |
| 5 | 8575.00 | 66.19 | 0.596 | 0.50( 0.50) | 0.99 | 16728.7 | 11000.00 |
| 6 | 8377.64 | 82.32 | 0.540 | 0.50( 0.50) | 0.99 | 23099.8 | 12500.00 |
| 7 | 8366.83 | 83.04 | 0.538 | 0.50( 0.50) | 0.99 | 23400.2 | 11330.00 |
| 8 | 8218.32 | 88.36 | 0.520 | 0.50( 0.50) | 0.99 | 25784.2 | 10900.00 |
| 9 | 8097.74 | 91.62 | 0.511 | 0.50( 0.50) | 0.99 | 27184.1 | 10830.00 |
| 10 | 7836.98 | 96.58 | 0.502 | 0.50( 0.50) | 0.99 | 29035.2 | 11130.00 |
| 11 | 7573.80 | 101.00 | 0.493 | 0.50( 0.50) | 0.99 | 30446.1 | 12300.00 |
| 12 | 7408.63 | 103.75 | 0.488 | 0.50( 0.50) | 0.99 | 31417.3 | 12330.00 |
| 13 | 7177.69 | 107.52 | 0.481 | 0.50( 0.50) | 0.99 | 32707.8 | 11620.00 |
| 14 | 6872.25 | 112.52 | 0.471 | 0.50( 0.50) | 0.99 | 34345.6 | 10600.00 |
| 15 | 6819.67 | 113.52 | 0.469 | 0.50( 0.50) | 0.99 | 34675.6 | 12410.00 |
| 16 | 6735.43 | 115.06 | 0.466 | 0.50( 0.50) | 0.99 | 35164.5 | 11600.00 |
| 17 | 6145.43 | 122.39 | 0.454 | 0.50( 0.50) | 0.99 | 37233.5 | 12400.00 |
| 18 | 5980.02 | 124.27 | 0.452 | 0.50( 0.50) | 0.99 | 37724.2 | 12211.00 |
| 19 | 5888.70 | 125.27 | 0.451 | 0.50( 0.50) | 0.99 | 37981.1 | 10500.00 |
| 20 | 5313.35 | 132.90 | 0.441 | 0.50( 0.50) | 0.99 | 39539.7 | 12201.00 |
| 21 | 5209.88 | 134.23 | 0.440 | 0.50( 0.50) | 0.99 | 39789.6 | 10710.00 |
| 22 | 4715.07 | 141.46 | 0.431 | 0.50( 0.50) | 0.99 | 40830.3 | 12111.00 |
| 23 | 4371.41 | 146.58 | 0.425 | 0.50( 0.50) | 0.99 | 41576.8 | 10700.00 |
| 24 | 4336.52 | 147.13 | 0.424 | 0.50( 0.50) | 0.99 | 41650.4 | 12231.00 |
| 25 | 3812.19 | 155.77 | 0.413 | 0.50( 0.50) | 0.99 | 42753.2 | 12261.00 |
| 26 | 3801.75 | 155.94 | 0.413 | 0.50( 0.50) | 0.99 | 42772.9 | 10400.00 |
| 27 | 3747.77 | 156.90 | 0.412 | 0.50( 0.50) | 0.99 | 42868.1 | 12101.10 |
| 28 | 3352.08 | 164.19 | 0.403 | 0.50( 0.50) | 0.99 | 43564.4 | 10200.00 |
| 29 | 2794.46 | 178.29 | 0.386 | 0.50( 0.50) | 0.99 | 44802.3 | 10300.00 |
| 30 | 2567.05 | 184.54 | 0.382 | 0.50( 0.50) | 0.99 | 45154.5 | 12010.00 |
| 31 | 2562.70 | 184.66 | 0.381 | 0.50( 0.50) | 0.99 | 45157.8 | 10210.00 |
| 32 | 2105.15 | 203.48 | 0.371 | 0.50( 0.50) | 0.99 | 45482.9 | 12000.00 |
| 33 | 1172.06 | 267.18 | 0.337 | 0.50( 0.50) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:



PEAK FLOW RATE(CFS) = 8764.47 Tc(MIN.) = 43.268
EFFECTIVE AREA(ACRES) = 10189.25 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 51
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>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.728
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.50 | 0.987 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8765.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.03
AVERAGE FLOW DEPTH(FEET) = 14.43 TRAVEL TIME(MIN.) = 0.63
Tc(MIN.) = 43.90
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 3.03
EFFECTIVE AREA(ACRES) = 10203.62 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 8764.47
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 14.43 FLOW VELOCITY(FEET/SEC.) = 14.03
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

**********
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
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>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
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** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 8764.47 | 43.90 | 0.728 | 0.50( 0.50) | 0.99 | 10203.6 | 11801.00 |
| 2 | 8761.27 | 47.24 | 0.700 | 0.50( 0.50) | 0.99 | 11080.5 | 11831.00 |
| 3 | 8724.59 | 55.08 | 0.646 | 0.50( 0.50) | 0.99 | 13058.3 | 11500.00 |
| 4 | 8671.34 | 60.69 | 0.615 | 0.50( 0.50) | 0.99 | 14821.7 | 11701.00 |
| 5 | 8575.00 | 66.82 | 0.594 | 0.50( 0.50) | 0.99 | 16743.1 | 11000.00 |
| 6 | 8377.64 | 82.96 | 0.538 | 0.50( 0.50) | 0.99 | 23114.1 | 12500.00 |
| 7 | 8366.83 | 83.68 | 0.536 | 0.50( 0.50) | 0.99 | 23414.6 | 11330.00 |
| 8 | 8218.32 | 89.00 | 0.517 | 0.50( 0.50) | 0.99 | 25798.5 | 10900.00 |
| 9 | 8097.74 | 92.27 | 0.510 | 0.50( 0.50) | 0.99 | 27198.5 | 10830.00 |
| 10 | 7836.98 | 97.23 | 0.500 | 0.50( 0.50) | 0.99 | 29049.6 | 11130.00 |
| 11 | 7573.80 | 101.65 | 0.492 | 0.50( 0.50) | 0.99 | 30460.5 | 12300.00 |
| 12 | 7408.63 | 104.41 | 0.487 | 0.50( 0.50) | 0.99 | 31431.6 | 12330.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 13 | 7177.69 | 108.18 | 0.479 | 0.50( 0.50) | 0.99 | 32722.1 | 11620.00 |
| 14 | 6872.25 | 113.19 | 0.470 | 0.50( 0.50) | 0.99 | 34359.9 | 10600.00 |
| 15 | 6819.67 | 114.19 | 0.468 | 0.50( 0.50) | 0.99 | 34690.0 | 12410.00 |
| 16 | 6735.43 | 115.74 | 0.465 | 0.50( 0.50) | 0.99 | 35178.9 | 11600.00 |
| 17 | 6145.43 | 123.08 | 0.453 | 0.50( 0.50) | 0.99 | 37247.9 | 12400.00 |
| 18 | 5980.02 | 124.96 | 0.451 | 0.50( 0.50) | 0.99 | 37738.5 | 12211.00 |
| 19 | 5888.70 | 125.97 | 0.450 | 0.50( 0.50) | 0.99 | 37995.4 | 10500.00 |
| 20 | 5313.35 | 133.62 | 0.440 | 0.50( 0.50) | 0.99 | 39554.1 | 12201.00 |
| 21 | 5209.88 | 134.95 | 0.439 | 0.50( 0.50) | 0.99 | 39804.0 | 10710.00 |
| 22 | 4715.07 | 142.20 | 0.430 | 0.50( 0.50) | 0.99 | 40844.7 | 12111.00 |
| 23 | 4371.41 | 147.34 | 0.424 | 0.50( 0.50) | 0.99 | 41591.2 | 10700.00 |
| 24 | 4336.52 | 147.88 | 0.423 | 0.50( 0.50) | 0.99 | 41664.8 | 12231.00 |
| 25 | 3812.19 | 156.55 | 0.413 | 0.50( 0.50) | 0.99 | 42767.6 | 12261.00 |
| 26 | 3801.75 | 156.72 | 0.412 | 0.50( 0.50) | 0.99 | 42787.3 | 10400.00 |
| 27 | 3747.77 | 157.68 | 0.411 | 0.50( 0.50) | 0.99 | 42882.5 | 12101.10 |
| 28 | 3352.08 | 164.99 | 0.402 | 0.50( 0.50) | 0.99 | 43578.7 | 10200.00 |
| 29 | 2794.46 | 179.13 | 0.385 | 0.50( 0.50) | 0.99 | 44816.7 | 10300.00 |
| 30 | 2567.05 | 185.40 | 0.381 | 0.50( 0.50) | 0.99 | 45168.9 | 12010.00 |
| 31 | 2562.70 | 185.52 | 0.381 | 0.50( 0.50) | 0.99 | 45172.2 | 10210.00 |
| 32 | 2105.15 | 204.39 | 0.371 | 0.50( 0.50) | 0.99 | 45497.3 | 12000.00 |
| 33 | 1172.06 | 268.23 | 0.336 | 0.50( 0.50) | 0.99 | 46168.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 458.97 | 44.33 | 0.724 | 0.50( 0.50) | 1.00 | 1850.2 | 40130.00 |
| 2 | 450.13 | 46.71 | 0.704 | 0.50( 0.50) | 1.00 | 1953.8 | 40100.00 |
| 3 | 290.20 | 91.13 | 0.512 | 0.50( 0.50) | 1.00 | 3314.7 | 11910.00 |
| 4 | 275.63 | 92.76 | 0.509 | 0.50( 0.50) | 1.00 | 3327.6 | 11900.00 |

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 31223.27 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9223.45 | 43.90 | 0.728 | 0.50( 0.50) | 0.99 | 12036.0 | 11801.00 |
| 2 | 9223.04 | 44.33 | 0.724 | 0.50( 0.50) | 0.99 | 12165.8 | 40130.00 |
| 3 | 9211.91 | 46.71 | 0.704 | 0.50( 0.50) | 0.99 | 12895.3 | 40100.00 |
| 4 | 9209.49 | 47.24 | 0.700 | 0.50( 0.50) | 0.99 | 13050.5 | 11831.00 |
| 5 | 9144.58 | 55.08 | 0.646 | 0.50( 0.50) | 0.99 | 15268.5 | 11500.00 |
| 6 | 9071.16 | 60.69 | 0.615 | 0.50( 0.50) | 0.99 | 17203.6 | 11701.00 |
| 7 | 8952.72 | 66.82 | 0.594 | 0.50( 0.50) | 0.99 | 19313.0 | 11000.00 |
| 8 | 8697.25 | 82.96 | 0.538 | 0.50( 0.50) | 0.99 | 26178.6 | 12500.00 |
| 9 | 8683.84 | 83.68 | 0.536 | 0.50( 0.50) | 0.99 | 26501.1 | 11330.00 |
| 10 | 8516.19 | 89.00 | 0.517 | 0.50( 0.50) | 0.99 | 29048.0 | 10900.00 |
| 11 | 8429.94 | 91.13 | 0.512 | 0.50( 0.50) | 0.99 | 30025.6 | 11910.00 |
| 12 | 8377.76 | 92.27 | 0.510 | 0.50( 0.50) | 0.99 | 30522.2 | 10830.00 |
| 13 | 8347.65 | 92.76 | 0.509 | 0.50( 0.50) | 0.99 | 30708.7 | 11900.00 |
| 14 | 7879.54 | 97.23 | 0.500 | 0.50( 0.50) | 0.99 | 32377.3 | 11130.00 |
| 15 | 7613.95 | 101.65 | 0.492 | 0.50( 0.50) | 0.99 | 33788.1 | 12300.00 |
| 16 | 7448.35 | 104.41 | 0.487 | 0.50( 0.50) | 0.99 | 34759.3 | 12330.00 |
| 17 | 7216.82 | 108.18 | 0.479 | 0.50( 0.50) | 0.99 | 36049.8 | 11620.00 |
| 18 | 6910.61 | 113.19 | 0.470 | 0.50( 0.50) | 0.99 | 37687.6 | 10600.00 |
| 19 | 6857.87 | 114.19 | 0.468 | 0.50( 0.50) | 0.99 | 38017.6 | 12410.00 |
| 20 | 6773.39 | 115.74 | 0.465 | 0.50( 0.50) | 0.99 | 38506.5 | 11600.00 |
| 21 | 6182.43 | 123.08 | 0.453 | 0.50( 0.50) | 0.99 | 40575.5 | 12400.00 |
| 22 | 6016.83 | 124.96 | 0.451 | 0.50( 0.50) | 0.99 | 41066.2 | 12211.00 |
| 23 | 5925.41 | 125.97 | 0.450 | 0.50( 0.50) | 0.99 | 41323.1 | 10500.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24 | 5349.30 | 133.62 | 0.440 | 0.50( 0.50) | 0.99 | 42881.7 | 12201.00 |
| 25 | 5245.70 | 134.95 | 0.439 | 0.50( 0.50) | 0.99 | 43131.6 | 10710.00 |
| 26 | 4750.17 | 142.20 | 0.430 | 0.50( 0.50) | 0.99 | 44172.4 | 12111.00 |
| 27 | 4406.00 | 147.34 | 0.424 | 0.50( 0.50) | 0.99 | 44918.8 | 10700.00 |
| 28 | 4371.05 | 147.88 | 0.423 | 0.50( 0.50) | 0.99 | 44992.4 | 12231.00 |
| 29 | 3845.87 | 156.55 | 0.413 | 0.50( 0.50) | 0.99 | 46095.3 | 12261.00 |
| 30 | 3835.41 | 156.72 | 0.412 | 0.50( 0.50) | 0.99 | 46114.9 | 10400.00 |
| 31 | 3781.33 | 157.68 | 0.411 | 0.50( 0.50) | 0.99 | 46210.1 | 12101.10 |
| 32 | 3384.92 | 164.99 | 0.402 | 0.50( 0.50) | 0.99 | 46906.4 | 10200.00 |
| 33 | 2825.89 | 179.13 | 0.385 | 0.50( 0.50) | 0.99 | 48144.3 | 10300.00 |
| 34 | 2598.15 | 185.40 | 0.381 | 0.50( 0.50) | 0.99 | 48496.5 | 12010.00 |
| 35 | 2593.79 | 185.52 | 0.381 | 0.50( 0.50) | 0.99 | 48499.8 | 10210.00 |
| 36 | 2135.41 | 204.39 | 0.371 | 0.50( 0.50) | 0.99 | 48824.9 | 12000.00 |
| 37 | 1199.48 | 268.23 | 0.336 | 0.50( 0.50) | 0.99 | 49495.7 | 10100.00 |

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 9223.45 Tc(MIN.) = 43.901
EFFECTIVE AREA(ACRES) = 12036.02 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 43.90
EFFECTIVE AREA(ACRES) = 12036.02 AREA-AVERAGED Fm(INCH/HR)= 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.993
PEAK FLOW RATE(CFS) = 9223.45

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9223.45 | 43.90 | 0.728 | 0.50( 0.50) | 0.99 | 12036.0 | 11801.00 |
| 2 | 9223.04 | 44.33 | 0.724 | 0.50( 0.50) | 0.99 | 12165.8 | 40130.00 |
| 3 | 9211.91 | 46.71 | 0.704 | 0.50( 0.50) | 0.99 | 12895.3 | 40100.00 |
| 4 | 9209.49 | 47.24 | 0.700 | 0.50( 0.50) | 0.99 | 13050.5 | 11831.00 |
| 5 | 9144.58 | 55.08 | 0.646 | 0.50( 0.50) | 0.99 | 15268.5 | 11500.00 |
| 6 | 9071.16 | 60.69 | 0.615 | 0.50( 0.50) | 0.99 | 17203.6 | 11701.00 |
| 7 | 8952.72 | 66.82 | 0.594 | 0.50( 0.50) | 0.99 | 19313.0 | 11000.00 |
| 8 | 8697.25 | 82.96 | 0.538 | 0.50( 0.50) | 0.99 | 26178.6 | 12500.00 |
| 9 | 8683.84 | 83.68 | 0.536 | 0.50( 0.50) | 0.99 | 26501.1 | 11330.00 |
| 10 | 8516.19 | 89.00 | 0.517 | 0.50( 0.50) | 0.99 | 29048.0 | 10900.00 |
| 11 | 8429.94 | 91.13 | 0.512 | 0.50( 0.50) | 0.99 | 30025.6 | 11910.00 |
| 12 | 8377.76 | 92.27 | 0.510 | 0.50( 0.50) | 0.99 | 30522.2 | 10830.00 |
| 13 | 8347.65 | 92.76 | 0.509 | 0.50( 0.50) | 0.99 | 30708.7 | 11900.00 |
| 14 | 7879.54 | 97.23 | 0.500 | 0.50( 0.50) | 0.99 | 32377.3 | 11130.00 |
| 15 | 7613.95 | 101.65 | 0.492 | 0.50( 0.50) | 0.99 | 33788.1 | 12300.00 |
| 16 | 7448.35 | 104.41 | 0.487 | 0.50( 0.50) | 0.99 | 34759.3 | 12330.00 |
| 17 | 7216.82 | 108.18 | 0.479 | 0.50( 0.50) | 0.99 | 36049.8 | 11620.00 |
| 18 | 6910.61 | 113.19 | 0.470 | 0.50( 0.50) | 0.99 | 37687.6 | 10600.00 |
| 19 | 6857.87 | 114.19 | 0.468 | 0.50( 0.50) | 0.99 | 38017.6 | 12410.00 |
| 20 | 6773.39 | 115.74 | 0.465 | 0.50( 0.50) | 0.99 | 38506.5 | 11600.00 |
| 21 | 6182.43 | 123.08 | 0.453 | 0.50( 0.50) | 0.99 | 40575.5 | 12400.00 |
| 22 | 6016.83 | 124.96 | 0.451 | 0.50( 0.50) | 0.99 | 41066.2 | 12211.00 |
| 23 | 5925.41 | 125.97 | 0.450 | 0.50( 0.50) | 0.99 | 41323.1 | 10500.00 |
| 24 | 5349.30 | 133.62 | 0.440 | 0.50( 0.50) | 0.99 | 42881.7 | 12201.00 |
| 25 | 5245.70 | 134.95 | 0.439 | 0.50( 0.50) | 0.99 | 43131.6 | 10710.00 |
| 26 | 4750.17 | 142.20 | 0.430 | 0.50( 0.50) | 0.99 | 44172.4 | 12111.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | 4406.00 | 147.34 | 0.424 | 0.50( 0.50) | 0.99 | 44918.8 | 10700.00 |
| 28 | 4371.05 | 147.88 | 0.423 | 0.50( 0.50) | 0.99 | 44992.4 | 12231.00 |
| 29 | 3845.87 | 156.55 | 0.413 | 0.50( 0.50) | 0.99 | 46095.3 | 12261.00 |
| 30 | 3835.41 | 156.72 | 0.412 | 0.50( 0.50) | 0.99 | 46114.9 | 10400.00 |
| 31 | 3781.33 | 157.68 | 0.411 | 0.50( 0.50) | 0.99 | 46210.1 | 12101.10 |
| 32 | 3384.92 | 164.99 | 0.402 | 0.50( 0.50) | 0.99 | 46906.4 | 10200.00 |
| 33 | 2825.89 | 179.13 | 0.385 | 0.50( 0.50) | 0.99 | 48144.3 | 10300.00 |
| 34 | 2598.15 | 185.40 | 0.381 | 0.50( 0.50) | 0.99 | 48496.5 | 12010.00 |
| 35 | 2593.79 | 185.52 | 0.381 | 0.50( 0.50) | 0.99 | 48499.8 | 10210.00 |
| 36 | 2135.41 | 204.39 | 0.371 | 0.50( 0.50) | 0.99 | 48824.9 | 12000.00 |
| 37 | 1199.48 | 268.23 | 0.336 | 0.50( 0.50) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV FEB 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI05EV26.DAT
  TIME/DATE OF STUDY: 11:11 02/15/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.738
   2)   10.00;  1.815
   3)   15.00;  1.325
   4)   20.00;  1.135
   5)   25.00;  0.989
   6)   30.00;  0.885
   7)   40.00;  0.759
   8)   50.00;  0.676
   9)   60.00;  0.615
  10)   90.00;  0.513
  11)  120.00;  0.455
  12)  180.00;  0.383
  13)  360.00;  0.284
  14) 1200.00;  0.125
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU05EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     9223.45   43.90  0.50( 0.50) 0.99   12036.0   11801.00
      2     9144.58   55.08  0.50( 0.50) 0.99   15268.5   11500.00
      3     9071.16   60.69  0.50( 0.50) 0.99   17203.6   11701.00
      4     8952.72   66.82  0.50( 0.50) 0.99   19313.0   11000.00
      5     8697.25   82.96  0.50( 0.50) 0.99   26178.6   12500.00
      6     8516.19   89.00  0.50( 0.50) 0.99   29048.0   10900.00
      7     7879.54   97.23  0.50( 0.50) 0.99   32377.3   11130.00
      8     7613.95  101.65  0.50( 0.50) 0.99   33788.1   12300.00
      9     7216.82  108.18  0.50( 0.50) 0.99   36049.8   11620.00
     10     6910.61  113.19  0.50( 0.50) 0.99   37687.6   10600.00
     11     6182.43  123.08  0.50( 0.50) 0.99   40575.5   12400.00
     12     5349.30  133.62  0.50( 0.50) 0.99   42881.7   12201.00
     13     4750.17  142.20  0.50( 0.50) 0.99   44172.4   12111.00
     14     4406.00  147.34  0.50( 0.50) 0.99   44918.8   10700.00
     15     3845.87  156.55  0.50( 0.50) 0.99   46095.3   12261.00
     16     3384.92  164.99  0.50( 0.50) 0.99   46906.4   10200.00
     17     2825.89  179.13  0.50( 0.50) 0.99   48144.3   10300.00
     18     2598.15  185.40  0.50( 0.50) 0.99   48496.5   12010.00
     19     2135.41  204.39  0.50( 0.50) 0.99   48824.9   12000.00
     20     1199.48  268.23  0.50( 0.50) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =    49495.7

**************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     9223.45   43.90  0.50( 0.50) 0.99   12036.0   11801.00
      2     9144.58   55.08  0.50( 0.50) 0.99   15268.5   11500.00
      3     9071.16   60.69  0.50( 0.50) 0.99   17203.6   11701.00
      4     8952.72   66.82  0.50( 0.50) 0.99   19313.0   11000.00
      5     8697.25   82.96  0.50( 0.50) 0.99   26178.6   12500.00
      6     8516.19   89.00  0.50( 0.50) 0.99   29048.0   10900.00
      7     7879.54   97.23  0.50( 0.50) 0.99   32377.3   11130.00
      8     7613.95  101.65  0.50( 0.50) 0.99   33788.1   12300.00
      9     7216.82  108.18  0.50( 0.50) 0.99   36049.8   11620.00
     10     6910.61  113.19  0.50( 0.50) 0.99   37687.6   10600.00
     11     6182.43  123.08  0.50( 0.50) 0.99   40575.5   12400.00
     12     5349.30  133.62  0.50( 0.50) 0.99   42881.7   12201.00
     13     4750.17  142.20  0.50( 0.50) 0.99   44172.4   12111.00
```

```
    14     4406.00  147.34  0.50( 0.50) 0.99   44918.8   10700.00
    15     3845.87  156.55  0.50( 0.50) 0.99   46095.3   12261.00
    16     3384.92  164.99  0.50( 0.50) 0.99   46906.4   10200.00
    17     2825.89  179.13  0.50( 0.50) 0.99   48144.3   10300.00
    18     2598.15  185.40  0.50( 0.50) 0.99   48496.5   12010.00
    19     2135.41  204.39  0.50( 0.50) 0.99   48824.9   12000.00
    20     1199.48  268.23  0.50( 0.50) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.715
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        0.90      0.50     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -       11.50      0.50     1.000     -
  USER-DEFINED               -        0.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    9224.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.84
  AVERAGE FLOW DEPTH(FEET) =  13.13   TRAVEL TIME(MIN.) =   1.37
  Tc(MIN.) =   45.27
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    2.73
  EFFECTIVE AREA(ACRES) =  12050.12     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =    9223.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.13   FLOW VELOCITY(FEET/SEC.) =  17.85
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9223.45   45.27    0.715  0.50( 0.50) 0.99   12050.1   11801.00
      2     9144.58   56.46    0.637  0.50( 0.50) 0.99   15282.6   11500.00
      3     9071.16   62.06    0.608  0.50( 0.50) 0.99   17217.7   11701.00
      4     8952.72   68.21    0.587  0.50( 0.50) 0.99   19327.1   11000.00
      5     8697.25   84.35    0.532  0.50( 0.50) 0.99   26192.7   12500.00
      6     8516.19   90.40    0.512  0.50( 0.50) 0.99   29062.1   10900.00
      7     7879.54   98.65    0.496  0.50( 0.50) 0.99   32391.4   11130.00
      8     7613.95  103.09    0.488  0.50( 0.50) 0.99   33802.2   12300.00
      9     7216.82  109.64    0.475  0.50( 0.50) 0.99   36063.9   11620.00
     10     6910.61  114.66    0.465  0.50( 0.50) 0.99   37701.7   10600.00
```



```
     11     6182.43  124.59    0.449  0.50( 0.50) 0.99   40589.6   12400.00
     12     5349.30  135.19    0.437  0.50( 0.50) 0.99   42895.8   12201.00
     13     4750.17  143.82    0.426  0.50( 0.50) 0.99   44186.5   12111.00
     14     4406.00  148.99    0.420  0.50( 0.50) 0.99   44932.9   10700.00
     15     3845.87  158.25    0.409  0.50( 0.50) 0.99   46109.4   12261.00
     16     3384.92  166.76    0.399  0.50( 0.50) 0.99   46920.5   10200.00
     17     2825.89  180.98    0.382  0.50( 0.50) 0.99   48158.4   10300.00
     18     2598.15  187.28    0.379  0.50( 0.50) 0.99   48510.6   12010.00
     19     2135.41  206.36    0.369  0.50( 0.50) 0.99   48839.0   12000.00
     20     1199.48  270.51    0.333  0.50( 0.50) 0.99   49509.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    9223.45  Tc(MIN.) =   45.27
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   12050.12

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O05EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       32.19   18.50  0.50( 0.49) 0.98      51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9223.45   45.27    0.715  0.50( 0.50) 0.99   12050.1   11801.00
      2     9144.58   56.46    0.637  0.50( 0.50) 0.99   15282.6   11500.00
      3     9071.16   62.06    0.608  0.50( 0.50) 0.99   17217.7   11701.00
      4     8952.72   68.21    0.587  0.50( 0.50) 0.99   19327.1   11000.00
      5     8697.25   84.35    0.532  0.50( 0.50) 0.99   26192.7   12500.00
      6     8516.19   90.40    0.512  0.50( 0.50) 0.99   29062.1   10900.00
      7     7879.54   98.65    0.496  0.50( 0.50) 0.99   32391.4   11130.00
      8     7613.95  103.09    0.488  0.50( 0.50) 0.99   33802.2   12300.00
      9     7216.82  109.64    0.475  0.50( 0.50) 0.99   36063.9   11620.00
     10     6910.61  114.66    0.465  0.50( 0.50) 0.99   37701.7   10600.00
     11     6182.43  124.59    0.449  0.50( 0.50) 0.99   40589.6   12400.00
     12     5349.30  135.19    0.437  0.50( 0.50) 0.99   42895.8   12201.00
     13     4750.17  143.82    0.426  0.50( 0.50) 0.99   44186.5   12111.00
     14     4406.00  148.99    0.420  0.50( 0.50) 0.99   44932.9   10700.00
     15     3845.87  158.25    0.409  0.50( 0.50) 0.99   46109.4   12261.00
     16     3384.92  166.76    0.399  0.50( 0.50) 0.99   46920.5   10200.00
     17     2825.89  180.98    0.382  0.50( 0.50) 0.99   48158.4   10300.00
     18     2598.15  187.28    0.379  0.50( 0.50) 0.99   48510.6   12010.00
     19     2135.41  206.36    0.369  0.50( 0.50) 0.99   48839.0   12000.00
     20     1199.48  270.51    0.333  0.50( 0.50) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.
```

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 32.19 | 18.50 | 1.192 | 0.50( 0.49) | 0.98 | 51.1 | 600.00 |

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9255.63 | 18.50 | 1.192 | 0.50( 0.50) | 0.99 | 4975.6 | 600.00 |
| 2 | 9233.71 | 45.27 | 0.715 | 0.50( 0.50) | 0.99 | 12101.2 | 11801.00 |
| 3 | 9151.22 | 56.46 | 0.637 | 0.50( 0.50) | 0.99 | 15333.7 | 11500.00 |
| 4 | 9076.49 | 62.06 | 0.608 | 0.50( 0.50) | 0.99 | 17268.8 | 11701.00 |
| 5 | 8957.09 | 68.21 | 0.587 | 0.50( 0.50) | 0.99 | 19378.2 | 11000.00 |
| 6 | 8699.10 | 84.35 | 0.532 | 0.50( 0.50) | 0.99 | 26243.8 | 12500.00 |
| 7 | 8517.11 | 90.40 | 0.512 | 0.50( 0.50) | 0.99 | 29113.2 | 10900.00 |
| 8 | 7879.91 | 98.65 | 0.496 | 0.50( 0.50) | 0.99 | 32442.5 | 11130.00 |
| 9 | 7614.31 | 103.09 | 0.488 | 0.50( 0.50) | 0.99 | 33853.3 | 12300.00 |
| 10 | 7217.18 | 109.64 | 0.475 | 0.50( 0.50) | 0.99 | 36115.0 | 11620.00 |
| 11 | 6910.96 | 114.66 | 0.465 | 0.50( 0.50) | 0.99 | 37752.8 | 10600.00 |
| 12 | 6182.76 | 124.59 | 0.449 | 0.50( 0.50) | 0.99 | 40640.7 | 12400.00 |
| 13 | 5349.63 | 135.19 | 0.437 | 0.50( 0.50) | 0.99 | 42946.9 | 12201.00 |
| 14 | 4750.48 | 143.82 | 0.426 | 0.50( 0.50) | 0.99 | 44237.6 | 12111.00 |
| 15 | 4406.31 | 148.99 | 0.420 | 0.50( 0.50) | 0.99 | 44984.0 | 10700.00 |
| 16 | 3846.17 | 158.25 | 0.409 | 0.50( 0.50) | 0.99 | 46160.5 | 12261.00 |
| 17 | 3385.21 | 166.76 | 0.399 | 0.50( 0.50) | 0.99 | 46971.6 | 10200.00 |
| 18 | 2826.17 | 180.98 | 0.382 | 0.50( 0.50) | 0.99 | 48209.5 | 10300.00 |
| 19 | 2598.44 | 187.28 | 0.379 | 0.50( 0.50) | 0.99 | 48561.7 | 12010.00 |
| 20 | 2135.68 | 206.36 | 0.369 | 0.50( 0.50) | 0.99 | 48890.1 | 12000.00 |
| 21 | 1199.73 | 270.51 | 0.333 | 0.50( 0.50) | 0.99 | 49560.9 | 10100.00 |

TOTAL AREA(ACRES) = 49560.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 9255.63 Tc(MIN.) = 18.501
EFFECTIVE AREA(ACRES) = 4975.60 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49560.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

**********
FLOW PROCESS FROM NODE 12601.00 TO NODE 12603.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 310.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1690.00 CHANNEL SLOPE = 0.0089
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 9255.63
FLOW VELOCITY(FEET/SEC.) = 16.30 FLOW DEPTH(FEET) = 13.76
TRAVEL TIME(MIN.) = 1.73 Tc(MIN.) = 20.23
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.45 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9255.63 | 20.23 | 1.128 | 0.50( 0.50) | 0.99 | 4975.6 | 600.00 |
| 2 | 9233.71 | 47.00 | 0.701 | 0.50( 0.50) | 0.99 | 12101.2 | 11801.00 |
| 3 | 9151.22 | 58.19 | 0.626 | 0.50( 0.50) | 0.99 | 15333.7 | 11500.00 |
| 4 | 9076.49 | 63.80 | 0.602 | 0.50( 0.50) | 0.99 | 17268.8 | 11701.00 |
| 5 | 8957.09 | 69.95 | 0.581 | 0.50( 0.50) | 0.99 | 19378.2 | 11000.00 |
| 6 | 8699.10 | 86.11 | 0.526 | 0.50( 0.50) | 0.99 | 26243.8 | 12500.00 |
| 7 | 8517.11 | 92.16 | 0.509 | 0.50( 0.50) | 0.99 | 29113.2 | 10900.00 |
| 8 | 7879.91 | 100.45 | 0.493 | 0.50( 0.50) | 0.99 | 32442.5 | 11130.00 |
| 9 | 7614.31 | 104.91 | 0.484 | 0.50( 0.50) | 0.99 | 33853.3 | 12300.00 |
| 10 | 7217.18 | 111.48 | 0.471 | 0.50( 0.50) | 0.99 | 36115.0 | 11620.00 |
| 11 | 6910.96 | 116.52 | 0.462 | 0.50( 0.50) | 0.99 | 37752.8 | 10600.00 |
| 12 | 6182.76 | 126.50 | 0.447 | 0.50( 0.50) | 0.99 | 40640.7 | 12400.00 |
| 13 | 5349.63 | 137.17 | 0.434 | 0.50( 0.50) | 0.99 | 42946.9 | 12201.00 |
| 14 | 4750.48 | 145.86 | 0.424 | 0.50( 0.50) | 0.99 | 44237.6 | 12111.00 |
| 15 | 4406.31 | 151.07 | 0.418 | 0.50( 0.50) | 0.99 | 44984.0 | 10700.00 |
| 16 | 3846.17 | 160.41 | 0.407 | 0.50( 0.50) | 0.99 | 46160.5 | 12261.00 |
| 17 | 3385.21 | 168.98 | 0.396 | 0.50( 0.50) | 0.99 | 46971.6 | 10200.00 |
| 18 | 2826.17 | 183.30 | 0.381 | 0.50( 0.50) | 0.99 | 48209.5 | 10300.00 |
| 19 | 2598.44 | 189.65 | 0.378 | 0.50( 0.50) | 0.99 | 48561.7 | 12010.00 |
| 20 | 2135.68 | 208.86 | 0.367 | 0.50( 0.50) | 0.99 | 48890.1 | 12000.00 |
| 21 | 1199.73 | 273.39 | 0.332 | 0.50( 0.50) | 0.99 | 49560.9 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 9255.63 Tc(MIN.) = 20.23
AREA-AVERAGED Fm(INCH/HR) = 0.50 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 4975.60

**********
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 1 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 4E05EVRL.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 211.44 | 10.04 | 0.50( 0.26) | 0.52 | 148.5 | 800.00 |
| 2 | 178.48 | 13.84 | 0.50( 0.29) | 0.57 | 167.9 | 818.00 |
| 3 | 161.90 | 15.20 | 0.50( 0.29) | 0.58 | 171.0 | 810.00 |

TOTAL AREA(ACRES) = 171.0

**********
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9255.63 | 20.23 | 1.128 | 0.50( 0.50) | 0.99 | 4975.6 | 600.00 |
| 2 | 9233.71 | 47.00 | 0.701 | 0.50( 0.50) | 0.99 | 12101.2 | 11801.00 |
| 3 | 9151.22 | 58.19 | 0.626 | 0.50( 0.50) | 0.99 | 15333.7 | 11500.00 |
| 4 | 9076.49 | 63.80 | 0.602 | 0.50( 0.50) | 0.99 | 17268.8 | 11701.00 |

```
    5     8957.09   69.95    0.581  0.50( 0.50) 0.99   19378.2   11000.00
    6     8699.10   86.11    0.526  0.50( 0.50) 0.99   26243.8   12500.00
    7     8517.11   92.16    0.509  0.50( 0.50) 0.99   29113.2   10900.00
    8     7879.91  100.45    0.493  0.50( 0.50) 0.99   32442.5   11130.00
    9     7614.31  104.91    0.484  0.50( 0.50) 0.99   33853.3   12300.00
   10     7217.18  111.48    0.471  0.50( 0.50) 0.99   36115.0   11620.00
   11     6910.96  116.52    0.462  0.50( 0.50) 0.99   37752.8   10600.00
   12     6182.76  126.50    0.447  0.50( 0.50) 0.99   40640.7   12400.00
   13     5349.63  137.17    0.434  0.50( 0.50) 0.99   42946.9   12201.00
   14     4750.48  145.86    0.424  0.50( 0.50) 0.99   44237.6   12111.00
   15     4406.31  151.07    0.418  0.50( 0.50) 0.99   44984.0   10700.00
   16     3846.17  160.41    0.407  0.50( 0.50) 0.99   46160.5   12261.00
   17     3385.21  168.98    0.396  0.50( 0.50) 0.99   46971.6   10200.00
   18     2826.17  183.30    0.381  0.50( 0.50) 0.99   48209.5   10300.00
   19     2598.44  189.65    0.378  0.50( 0.50) 0.99   48561.7   12010.00
   20     2135.68  208.86    0.367  0.50( 0.50) 0.99   48890.1   12000.00
   21     1199.73  273.39    0.332  0.50( 0.50) 0.99   49560.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1      211.44   10.04    1.811  0.50( 0.26) 0.52     148.5      800.00
    2      178.48   13.84    1.439  0.50( 0.29) 0.57     167.9      818.00
    3      161.90   15.20    1.317  0.50( 0.29) 0.58     171.0      810.00
LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1     9467.07   10.04    1.811  0.50( 0.48) 0.97    2617.8      800.00
    2     9434.11   13.84    1.439  0.50( 0.49) 0.97    3571.1      818.00
    3     9198.66   15.20    1.317  0.50( 0.49) 0.98    3908.9      810.00
    4     9387.72   20.23    1.128  0.50( 0.49) 0.98    5146.6      600.00
    5     9298.44   47.00    0.701  0.50( 0.49) 0.99   12272.2    11801.00
    6     9204.16   58.19    0.626  0.50( 0.49) 0.99   15504.7    11500.00
    7     9125.65   63.80    0.602  0.50( 0.49) 0.99   17439.8    11701.00
    8     9002.96   69.95    0.581  0.50( 0.50) 0.99   19549.2    11000.00
    9     8736.31   86.11    0.526  0.50( 0.50) 0.99   26414.8    12500.00
   10     8551.58   92.16    0.509  0.50( 0.50) 0.99   29284.2    10900.00
   11     7912.53  100.45    0.493  0.50( 0.50) 0.99   32613.5    11130.00
   12     7646.36  104.91    0.484  0.50( 0.50) 0.99   34024.3    12300.00
   13     7248.38  111.48    0.471  0.50( 0.50) 0.99   36286.0    11620.00
   14     6941.52  116.52    0.462  0.50( 0.50) 0.99   37923.8    10600.00
   15     6212.36  126.50    0.447  0.50( 0.50) 0.99   40811.7    12400.00
   16     5378.38  137.17    0.434  0.50( 0.50) 0.99   43117.9    12201.00
   17     4778.55  145.86    0.424  0.50( 0.50) 0.99   44408.6    12111.00
   18     4433.96  151.07    0.418  0.50( 0.50) 0.99   45155.0    10700.00
   19     3873.08  160.41    0.407  0.50( 0.50) 0.99   46331.5    12261.00
   20     3411.44  168.98    0.396  0.50( 0.50) 0.99   47142.6    10200.00
   21     2851.40  183.30    0.381  0.50( 0.50) 0.99   48380.5    10300.00
   22     2623.44  189.65    0.378  0.50( 0.50) 0.99   48732.7    12010.00
   23     2159.98  208.86    0.367  0.50( 0.50) 0.99   49061.1    12000.00
   24     1221.69  273.39    0.332  0.50( 0.50) 0.99   49731.9    10100.00
  TOTAL AREA(ACRES) =     49731.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     9467.07  Tc(MIN.) =   10.040
```



```
  EFFECTIVE AREA(ACRES) =   2617.84  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   10.04
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        1.30      0.50     1.000     -
  USER-DEFINED               -        1.30      0.50     0.850     -
  USER-DEFINED               -        1.40      0.50     0.100     -
  USER-DEFINED               -        1.70      0.50     0.900     -
  USER-DEFINED               -       12.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =   22.32
  EFFECTIVE AREA(ACRES) =   2636.14   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   10.04
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   31.74
  EFFECTIVE AREA(ACRES) =   2663.04   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   10.04
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.70      0.50     0.850     -
  USER-DEFINED               -        0.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    3.94
  EFFECTIVE AREA(ACRES) =   2666.34   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   10.04
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.00      0.50     1.000     -
  USER-DEFINED               -        1.20      0.50     1.000     -
  USER-DEFINED               -        1.70      0.50     0.900     -
  USER-DEFINED               -        1.90      0.50     1.000     -
  USER-DEFINED               -        2.10      0.50     0.900     -
  USER-DEFINED               -        2.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =   12.91
  EFFECTIVE AREA(ACRES) =   2677.14   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   10.04
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.60      0.50     1.000     -
  USER-DEFINED               -        9.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   17.23
  EFFECTIVE AREA(ACRES) =   2691.74   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    9467.07
  FLOW VELOCITY(FEET/SEC.) =  13.84   FLOW DEPTH(FEET) =  15.10
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =   11.11
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9467.07   11.11    1.707  0.50( 0.48) 0.97    2691.7     800.00
      2     9434.11   14.90    1.334  0.50( 0.49) 0.97    3645.0     818.00
      3     9198.66   16.27    1.277  0.50( 0.49) 0.98    3982.8     810.00
      4     9387.72   21.30    1.097  0.50( 0.49) 0.98    5220.5     600.00
      5     9298.44   48.07    0.692  0.50( 0.49) 0.99   12346.1   11801.00
      6     9204.16   59.26    0.619  0.50( 0.49) 0.99   15578.6   11500.00
      7     9125.65   64.88    0.598  0.50( 0.49) 0.99   17513.7   11701.00
      8     9002.96   71.03    0.578  0.50( 0.50) 0.99   19623.1   11000.00
      9     8736.31   87.20    0.523  0.50( 0.50) 0.99   26488.7   12500.00
     10     8551.58   93.26    0.507  0.50( 0.50) 0.99   29358.1   10900.00
     11     7912.53  101.57    0.491  0.50( 0.50) 0.99   32687.4   11130.00
     12     7646.36  106.03    0.482  0.50( 0.50) 0.99   34098.2   12300.00
     13     7248.38  112.62    0.469  0.50( 0.50) 0.99   36359.9   11620.00
     14     6941.52  117.67    0.459  0.50( 0.50) 0.99   37997.7   10600.00
     15     6212.36  127.69    0.446  0.50( 0.50) 0.99   40885.6   12400.00
     16     5378.38  138.40    0.433  0.50( 0.50) 0.99   43191.8   12201.00
     17     4778.55  147.12    0.422  0.50( 0.50) 0.99   44482.5   12111.00
     18     4433.96  152.36    0.416  0.50( 0.50) 0.99   45228.9   10700.00
     19     3873.08  161.74    0.405  0.50( 0.50) 0.99   46405.4   12261.00
     20     3411.44  170.35    0.395  0.50( 0.50) 0.99   47216.5   10200.00
     21     2851.40  184.74    0.380  0.50( 0.50) 0.99   48454.4   10300.00
     22     2623.44  191.12    0.377  0.50( 0.50) 0.99   48806.6   12010.00
     23     2159.98  210.40    0.366  0.50( 0.50) 0.99   49135.0   12000.00
     24     1221.69  275.17    0.331  0.50( 0.50) 0.99   49805.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    9467.07  Tc(MIN.) =   11.11
  AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    2691.74

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.11
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.707
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.50     1.000     -
```

```
  USER-DEFINED               -        0.70      0.50     1.000     -
  USER-DEFINED               -        1.30      0.50     0.850     -
  USER-DEFINED               -        1.30      0.50     0.900     -
  USER-DEFINED               -        1.90      0.50     1.000     -
  USER-DEFINED               -        2.10      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    8.76
  EFFECTIVE AREA(ACRES) =   2699.54   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.11
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.707
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.20      0.50     1.000     -
  USER-DEFINED               -        3.50      0.50     1.000     -
  USER-DEFINED               -        6.10      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   14.31
  EFFECTIVE AREA(ACRES) =   2712.34   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =    9467.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.00   CHANNEL SLOPE =  0.0088
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    9467.07
  FLOW VELOCITY(FEET/SEC.) =  16.34   FLOW DEPTH(FEET) =  13.90
  TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =   13.31
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9467.07   13.31    1.491  0.50( 0.48) 0.97    2712.3     800.00
      2     9434.11   17.11    1.245  0.50( 0.49) 0.97    3665.6     818.00
      3     9198.66   18.49    1.192  0.50( 0.49) 0.97    4003.4     810.00
      4     9387.72   23.50    1.033  0.50( 0.49) 0.98    5241.1     600.00
      5     9298.44   50.28    0.674  0.50( 0.49) 0.99   12366.7   11801.00
      6     9204.16   61.48    0.610  0.50( 0.49) 0.99   15599.2   11500.00
```



```
      7     9125.65   67.10    0.591  0.50( 0.49) 0.99   17534.3   11701.00
      8     9002.96   73.26    0.570  0.50( 0.50) 0.99   19643.8   11000.00
      9     8736.31   89.44    0.515  0.50( 0.50) 0.99   26509.3   12500.00
     10     8551.58   95.51    0.502  0.50( 0.50) 0.99   29378.7   10900.00
     11     7912.53  103.87    0.486  0.50( 0.50) 0.99   32708.0   11130.00
     12     7646.36  108.36    0.478  0.50( 0.50) 0.99   34118.8   12300.00
     13     7248.38  114.98    0.465  0.50( 0.50) 0.99   36380.5   11620.00
     14     6941.52  120.05    0.455  0.50( 0.50) 0.99   38018.3   10600.00
     15     6212.36  130.14    0.443  0.50( 0.50) 0.99   40906.2   12400.00
     16     5378.38  140.94    0.430  0.50( 0.50) 0.99   43212.4   12201.00
     17     4778.55  149.74    0.419  0.50( 0.50) 0.99   44503.1   12111.00
     18     4433.96  155.02    0.413  0.50( 0.50) 0.99   45249.5   10700.00
     19     3873.08  164.49    0.402  0.50( 0.50) 0.99   46426.0   12261.00
     20     3411.44  173.20    0.391  0.50( 0.50) 0.99   47237.1   10200.00
     21     2851.40  187.72    0.379  0.50( 0.50) 0.99   48475.0   10300.00
     22     2623.44  194.15    0.375  0.50( 0.50) 0.99   48827.2   12010.00
     23     2159.98  213.59    0.365  0.50( 0.50) 0.99   49155.6   12000.00
     24     1221.69  278.84    0.329  0.50( 0.50) 0.99   49826.4   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    9467.07  Tc(MIN.) =   13.31
  AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    2712.34

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4F05EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      444.41   10.57  0.50( 0.39) 0.78     360.1     940.00
      2      444.42   10.77  0.50( 0.39) 0.78     365.5     930.00
      3      402.73   14.22  0.50( 0.41) 0.81     450.0     910.00
      4      371.68   18.99  0.50( 0.42) 0.85     551.4     920.00
      5      368.10   19.23  0.50( 0.42) 0.85     552.9     900.00
      6      365.93   19.37  0.50( 0.42) 0.85     553.8     950.00
    TOTAL AREA(ACRES) =      553.8

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9467.07   13.31    1.491  0.50( 0.48) 0.97    2712.3     800.00
      2     9434.11   17.11    1.245  0.50( 0.49) 0.97    3665.6     818.00
      3     9198.66   18.49    1.192  0.50( 0.49) 0.97    4003.4     810.00
      4     9387.72   23.50    1.033  0.50( 0.49) 0.98    5241.1     600.00
      5     9298.44   50.28    0.674  0.50( 0.49) 0.99   12366.7   11801.00
      6     9204.16   61.48    0.610  0.50( 0.49) 0.99   15599.2   11500.00
      7     9125.65   67.10    0.591  0.50( 0.49) 0.99   17534.3   11701.00
      8     9002.96   73.26    0.570  0.50( 0.50) 0.99   19643.8   11000.00
      9     8736.31   89.44    0.515  0.50( 0.50) 0.99   26509.3   12500.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | 8551.58 | 95.51 | 0.502 | 0.50( 0.50) | 0.99 | 29378.7 | 10900.00 |
| 11 | 7912.53 | 103.87 | 0.486 | 0.50( 0.50) | 0.99 | 32708.0 | 11130.00 |
| 12 | 7646.36 | 108.36 | 0.478 | 0.50( 0.50) | 0.99 | 34118.8 | 12300.00 |
| 13 | 7248.38 | 114.98 | 0.465 | 0.50( 0.50) | 0.99 | 36380.5 | 11620.00 |
| 14 | 6941.52 | 120.05 | 0.455 | 0.50( 0.50) | 0.99 | 38018.3 | 10600.00 |
| 15 | 6212.36 | 130.14 | 0.443 | 0.50( 0.50) | 0.99 | 40906.2 | 12400.00 |
| 16 | 5378.38 | 140.94 | 0.430 | 0.50( 0.50) | 0.99 | 43212.4 | 12201.00 |
| 17 | 4778.55 | 149.74 | 0.419 | 0.50( 0.50) | 0.99 | 44503.1 | 12111.00 |
| 18 | 4433.96 | 155.02 | 0.413 | 0.50( 0.50) | 0.99 | 45249.5 | 10700.00 |
| 19 | 3873.08 | 164.49 | 0.402 | 0.50( 0.50) | 0.99 | 46426.0 | 12261.00 |
| 20 | 3411.44 | 173.20 | 0.391 | 0.50( 0.50) | 0.99 | 47237.1 | 10200.00 |
| 21 | 2851.40 | 187.72 | 0.379 | 0.50( 0.50) | 0.99 | 48475.0 | 10300.00 |
| 22 | 2623.44 | 194.15 | 0.375 | 0.50( 0.50) | 0.99 | 48827.2 | 12010.00 |
| 23 | 2159.98 | 213.59 | 0.365 | 0.50( 0.50) | 0.99 | 49155.6 | 12000.00 |
| 24 | 1221.69 | 278.84 | 0.329 | 0.50( 0.50) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.45 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 444.41 | 10.57 | 1.759 | 0.50( 0.39) | 0.78 | 360.1 | 940.00 |
| 2 | 444.42 | 10.77 | 1.740 | 0.50( 0.39) | 0.78 | 365.5 | 930.00 |
| 3 | 402.73 | 14.22 | 1.402 | 0.50( 0.41) | 0.81 | 450.0 | 910.00 |
| 4 | 371.68 | 18.99 | 1.173 | 0.50( 0.42) | 0.85 | 551.4 | 920.00 |
| 5 | 368.10 | 19.23 | 1.164 | 0.50( 0.42) | 0.85 | 552.9 | 900.00 |
| 6 | 365.93 | 19.37 | 1.159 | 0.50( 0.42) | 0.85 | 553.8 | 950.00 |

LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9911.48 | 10.57 | 1.759 | 0.50( 0.47) | 0.94 | 2513.9 | 940.00 |
| 2 | 9911.49 | 10.77 | 1.740 | 0.50( 0.47) | 0.94 | 2559.6 | 930.00 |
| 3 | 9880.79 | 13.31 | 1.491 | 0.50( 0.47) | 0.94 | 3140.1 | 800.00 |
| 4 | 9861.92 | 14.22 | 1.402 | 0.50( 0.47) | 0.95 | 3390.4 | 910.00 |
| 5 | 9818.04 | 17.11 | 1.245 | 0.50( 0.48) | 0.96 | 4177.0 | 818.00 |
| 6 | 9573.60 | 18.49 | 1.192 | 0.50( 0.48) | 0.96 | 4544.2 | 810.00 |
| 7 | 9589.26 | 18.99 | 1.173 | 0.50( 0.48) | 0.96 | 4678.8 | 920.00 |
| 8 | 9594.62 | 19.23 | 1.164 | 0.50( 0.48) | 0.96 | 4738.7 | 900.00 |
| 9 | 9597.83 | 19.37 | 1.159 | 0.50( 0.48) | 0.96 | 4774.9 | 950.00 |
| 10 | 9690.75 | 23.50 | 1.033 | 0.50( 0.48) | 0.97 | 5794.9 | 600.00 |
| 11 | 9422.84 | 50.28 | 0.674 | 0.50( 0.49) | 0.98 | 12920.5 | 11801.00 |
| 12 | 9296.51 | 61.48 | 0.610 | 0.50( 0.49) | 0.98 | 16153.0 | 11500.00 |
| 13 | 9208.48 | 67.10 | 0.591 | 0.50( 0.49) | 0.99 | 18088.1 | 11701.00 |
| 14 | 9075.35 | 73.26 | 0.570 | 0.50( 0.49) | 0.99 | 20197.6 | 11000.00 |
| 15 | 8781.27 | 89.44 | 0.515 | 0.50( 0.49) | 0.99 | 27063.1 | 12500.00 |
| 16 | 8590.29 | 95.51 | 0.502 | 0.50( 0.49) | 0.99 | 29932.5 | 10900.00 |
| 17 | 7949.11 | 103.87 | 0.486 | 0.50( 0.50) | 0.99 | 33261.8 | 11130.00 |
| 18 | 7682.29 | 108.36 | 0.478 | 0.50( 0.50) | 0.99 | 34672.6 | 12300.00 |
| 19 | 7283.35 | 114.98 | 0.465 | 0.50( 0.50) | 0.99 | 36934.3 | 11620.00 |
| 20 | 6975.76 | 120.05 | 0.455 | 0.50( 0.50) | 0.99 | 38572.1 | 10600.00 |
| 21 | 6245.69 | 130.14 | 0.443 | 0.50( 0.50) | 0.99 | 41460.0 | 12400.00 |
| 22 | 5410.73 | 140.94 | 0.430 | 0.50( 0.49) | 0.99 | 43766.2 | 12201.00 |
| 23 | 4810.10 | 149.74 | 0.419 | 0.50( 0.49) | 0.99 | 45056.9 | 12111.00 |
| 24 | 4465.04 | 155.02 | 0.413 | 0.50( 0.49) | 0.99 | 45803.3 | 10700.00 |
| 25 | 3903.30 | 164.49 | 0.402 | 0.50( 0.49) | 0.99 | 46979.8 | 12261.00 |
| 26 | 3440.88 | 173.20 | 0.391 | 0.50( 0.49) | 0.99 | 47790.9 | 10200.00 |
| 27 | 2879.90 | 187.72 | 0.379 | 0.50( 0.49) | 0.99 | 49028.8 | 10300.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 28 | 2651.67 | 194.15 | 0.375 | 0.50( 0.49) | 0.99 | 49381.0 | 12010.00 |
| 29 | 2187.41 | 213.59 | 0.365 | 0.50( 0.49) | 0.99 | 49709.4 | 12000.00 |
| 30 | 1246.41 | 278.84 | 0.329 | 0.50( 0.49) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 9911.49 Tc(MIN.) = 10.765
EFFECTIVE AREA(ACRES) = 2559.55 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.45 FEET.

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 10.77
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 0.850 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.10 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.80 | 0.50 | 0.850 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 4.43
EFFECTIVE AREA(ACRES) = 2563.05 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 50383.7 PEAK FLOW RATE(CFS) = 9911.49
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 10.77
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.90 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.50 SUBAREA RUNOFF(CFS) = 9.48
EFFECTIVE AREA(ACRES) = 2571.55 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 50392.2 PEAK FLOW RATE(CFS) = 9911.49

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 10.77
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.70 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 5.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 9.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 20.60 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 46.50 SUBAREA RUNOFF(CFS) = 51.89
EFFECTIVE AREA(ACRES) = 2618.05 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 50438.7 PEAK FLOW RATE(CFS) = 9911.49
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50438.7 TC(MIN.) = 10.77
EFFECTIVE AREA(ACRES) = 2618.05 AREA-AVERAGED Fm(INCH/HR)= 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.940
PEAK FLOW RATE(CFS) = 9911.49

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 9911.48 | 10.57 | 1.759 | 0.50( 0.47) | 0.94 | 2572.4 | 940.00 |
| 2 | 9911.49 | 10.77 | 1.740 | 0.50( 0.47) | 0.94 | 2618.1 | 930.00 |
| 3 | 9880.79 | 13.31 | 1.491 | 0.50( 0.47) | 0.94 | 3198.6 | 800.00 |
| 4 | 9861.92 | 14.22 | 1.402 | 0.50( 0.47) | 0.95 | 3448.9 | 910.00 |
| 5 | 9818.04 | 17.11 | 1.245 | 0.50( 0.48) | 0.96 | 4235.5 | 818.00 |
| 6 | 9573.60 | 18.49 | 1.192 | 0.50( 0.48) | 0.96 | 4602.7 | 810.00 |
| 7 | 9589.26 | 18.99 | 1.173 | 0.50( 0.48) | 0.96 | 4737.3 | 920.00 |
| 8 | 9594.62 | 19.23 | 1.164 | 0.50( 0.48) | 0.96 | 4797.2 | 900.00 |
| 9 | 9597.83 | 19.37 | 1.159 | 0.50( 0.48) | 0.96 | 4833.4 | 950.00 |
| 10 | 9690.75 | 23.50 | 1.033 | 0.50( 0.48) | 0.97 | 5853.4 | 600.00 |
| 11 | 9422.84 | 50.28 | 0.674 | 0.50( 0.49) | 0.98 | 12979.0 | 11801.00 |
| 12 | 9296.51 | 61.48 | 0.610 | 0.50( 0.49) | 0.98 | 16211.5 | 11500.00 |
| 13 | 9208.48 | 67.10 | 0.591 | 0.50( 0.49) | 0.99 | 18146.6 | 11701.00 |
| 14 | 9075.35 | 73.26 | 0.570 | 0.50( 0.49) | 0.99 | 20256.1 | 11000.00 |
| 15 | 8781.27 | 89.44 | 0.515 | 0.50( 0.49) | 0.99 | 27121.6 | 12500.00 |
| 16 | 8590.29 | 95.51 | 0.502 | 0.50( 0.49) | 0.99 | 29991.0 | 10900.00 |
| 17 | 7949.11 | 103.87 | 0.486 | 0.50( 0.50) | 0.99 | 33320.3 | 11130.00 |
| 18 | 7682.29 | 108.36 | 0.478 | 0.50( 0.50) | 0.99 | 34731.1 | 12300.00 |
| 19 | 7283.35 | 114.98 | 0.465 | 0.50( 0.50) | 0.99 | 36992.8 | 11620.00 |
| 20 | 6975.76 | 120.05 | 0.455 | 0.50( 0.50) | 0.99 | 38630.6 | 10600.00 |
| 21 | 6245.69 | 130.14 | 0.443 | 0.50( 0.50) | 0.99 | 41518.5 | 12400.00 |
| 22 | 5410.73 | 140.94 | 0.430 | 0.50( 0.49) | 0.99 | 43824.7 | 12201.00 |
| 23 | 4810.10 | 149.74 | 0.419 | 0.50( 0.49) | 0.99 | 45115.4 | 12111.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 4465.04 | 155.02 | 0.413 | 0.50( 0.49) | 0.99 | 45861.8 | 10700.00 |
| 25 | 3903.30 | 164.49 | 0.402 | 0.50( 0.49) | 0.99 | 47038.3 | 12261.00 |
| 26 | 3440.88 | 173.20 | 0.391 | 0.50( 0.49) | 0.99 | 47849.4 | 10200.00 |
| 27 | 2879.90 | 187.72 | 0.379 | 0.50( 0.49) | 0.99 | 49087.3 | 10300.00 |
| 28 | 2651.67 | 194.15 | 0.375 | 0.50( 0.49) | 0.99 | 49439.5 | 12010.00 |
| 29 | 2187.41 | 213.59 | 0.365 | 0.50( 0.49) | 0.99 | 49767.9 | 12000.00 |
| 30 | 1246.41 | 278.84 | 0.329 | 0.50( 0.49) | 0.99 | 50438.7 | 10100.00 |

==========
==========
END OF RATIONAL METHOD ANALYSIS

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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            Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV FEB 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI05EV27.DAT
  TIME/DATE OF STUDY: 11:11 02/15/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.707
   2)   10.00;  1.797
   3)   15.00;  1.318
   4)   20.00;  1.128
   5)   25.00;  0.984
   6)   30.00;  0.882
   7)   40.00;  0.755
   8)   50.00;  0.672
   9)   60.00;  0.611
  10)   90.00;  0.509
  11)  120.00;  0.450
  12)  180.00;  0.378
  13)  360.00;  0.280
  14) 1200.00;  0.123
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU05EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     9911.51   10.76  0.50( 0.47) 0.94    2618.0     930.00
      2     9818.06   17.11  0.50( 0.48) 0.96    4235.4     818.00
      3     9690.75   23.50  0.50( 0.48) 0.97    5853.4     600.00
      4     9422.84   50.28  0.50( 0.49) 0.98   12979.0   11801.00
      5     9296.50   61.48  0.50( 0.49) 0.98   16211.6   11500.00
      6     9208.48   67.10  0.50( 0.49) 0.98   18146.6   11701.00
      7     9075.35   73.26  0.50( 0.49) 0.99   20256.1   11000.00
      8     8781.27   89.44  0.50( 0.49) 0.99   27121.6   12500.00
      9     8590.29   95.51  0.50( 0.49) 0.99   29991.0   10900.00
     10     7949.11  103.87  0.50( 0.50) 0.99   33320.3   11130.00
     11     7283.35  114.98  0.50( 0.50) 0.99   36992.8   11620.00
     12     6245.69  130.14  0.50( 0.50) 0.99   41518.5   12400.00
     13     5410.73  140.93  0.50( 0.49) 0.99   43824.7   12201.00
     14     4810.10  149.74  0.50( 0.49) 0.99   45115.4   12111.00
     15     3903.30  164.49  0.50( 0.49) 0.99   47038.3   12261.00
     16     3440.88  173.20  0.50( 0.49) 0.99   47849.4   10200.00
     17     2879.90  187.71  0.50( 0.49) 0.99   49087.3   10300.00
     18     2651.67  194.15  0.50( 0.49) 0.99   49439.5   12010.00
     19     2187.41  213.59  0.50( 0.49) 0.99   49767.9   12000.00
     20     1246.41  278.84  0.50( 0.49) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =    50438.7

**************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     9911.51   10.76  0.50( 0.47) 0.94    2618.0     930.00
      2     9818.06   17.11  0.50( 0.48) 0.96    4235.4     818.00
      3     9690.75   23.50  0.50( 0.48) 0.97    5853.4     600.00
      4     9422.84   50.28  0.50( 0.49) 0.98   12979.0   11801.00
      5     9296.50   61.48  0.50( 0.49) 0.98   16211.6   11500.00
      6     9208.48   67.10  0.50( 0.49) 0.98   18146.6   11701.00
      7     9075.35   73.26  0.50( 0.49) 0.99   20256.1   11000.00
      8     8781.27   89.44  0.50( 0.49) 0.99   27121.6   12500.00
      9     8590.29   95.51  0.50( 0.49) 0.99   29991.0   10900.00
     10     7949.11  103.87  0.50( 0.50) 0.99   33320.3   11130.00
     11     7283.35  114.98  0.50( 0.50) 0.99   36992.8   11620.00
     12     6245.69  130.14  0.50( 0.50) 0.99   41518.5   12400.00
     13     5410.73  140.93  0.50( 0.49) 0.99   43824.7   12201.00
```

```
    14     4810.10  149.74  0.50( 0.49) 0.99   45115.4   12111.00
    15     3903.30  164.49  0.50( 0.49) 0.99   47038.3   12261.00
    16     3440.88  173.20  0.50( 0.49) 0.99   47849.4   10200.00
    17     2879.90  187.71  0.50( 0.49) 0.99   49087.3   10300.00
    18     2651.67  194.15  0.50( 0.49) 0.99   49439.5   12010.00
    19     2187.41  213.59  0.50( 0.49) 0.99   49767.9   12000.00
    20     1246.41  278.84  0.50( 0.49) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.50     0.500     -
  USER-DEFINED               -        0.90      0.50     0.850     -
  USER-DEFINED               -        3.40      0.50     0.100     -
  USER-DEFINED               -        3.60      0.50     1.000     -
  USER-DEFINED               -       10.10      0.50     0.850     -
  USER-DEFINED               -       17.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    9930.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.91
  AVERAGE FLOW DEPTH(FEET) =  14.42   TRAVEL TIME(MIN.) =   1.32
  Tc(MIN.) =   12.08
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   37.92
  EFFECTIVE AREA(ACRES) =   2654.06     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =    9911.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 14.42   FLOW VELOCITY(FEET/SEC.) =  15.90
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105862.63 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9911.51   12.08    1.597  0.50( 0.47) 0.94    2654.1     930.00
      2     9818.06   18.43    1.188  0.50( 0.48) 0.96    4271.5     818.00
      3     9690.75   24.83    0.989  0.50( 0.48) 0.97    5889.5     600.00
      4     9422.84   51.62    0.662  0.50( 0.49) 0.98   13015.1   11801.00
      5     9296.50   62.83    0.601  0.50( 0.49) 0.98   16247.7   11500.00
      6     9208.48   68.45    0.582  0.50( 0.49) 0.98   18182.7   11701.00
      7     9075.35   74.61    0.561  0.50( 0.49) 0.99   20292.2   11000.00
      8     8781.27   90.81    0.507  0.50( 0.49) 0.99   27157.7   12500.00
      9     8590.29   96.88    0.495  0.50( 0.49) 0.99   30027.1   10900.00
     10     7949.11  105.27    0.479  0.50( 0.50) 0.99   33356.4   11130.00
```



```
     11     7283.35  116.40    0.457  0.50( 0.50) 0.99   37028.9   11620.00
     12     6245.69  131.62    0.436  0.50( 0.49) 0.99   41554.6   12400.00
     13     5410.73  142.47    0.423  0.50( 0.49) 0.99   43860.8   12201.00
     14     4810.10  151.32    0.412  0.50( 0.49) 0.99   45151.5   12111.00
     15     3903.30  166.16    0.395  0.50( 0.49) 0.99   47074.4   12261.00
     16     3440.88  174.92    0.384  0.50( 0.49) 0.99   47885.5   10200.00
     17     2879.90  189.51    0.373  0.50( 0.49) 0.99   49123.4   10300.00
     18     2651.67  195.99    0.369  0.50( 0.49) 0.99   49475.6   12010.00
     19     2187.41  215.52    0.359  0.50( 0.49) 0.99   49804.0   12000.00
     20     1246.41  281.06    0.323  0.50( 0.49) 0.99   50474.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    9911.51  Tc(MIN.) =   12.08
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.94  EFFECTIVE AREA(ACRES) =    2654.06

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    9911.51
  FLOW VELOCITY(FEET/SEC.) =  14.98   FLOW DEPTH(FEET) =  14.85
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =   12.25
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.28 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     9911.51   12.25    1.582  0.50( 0.47) 0.94    2654.1     930.00
      2     9818.06   18.60    1.181  0.50( 0.48) 0.96    4271.5     818.00
      3     9690.75   25.00    0.984  0.50( 0.48) 0.97    5889.5     600.00
      4     9422.84   51.79    0.661  0.50( 0.49) 0.98   13015.1   11801.00
      5     9296.50   62.99    0.601  0.50( 0.49) 0.98   16247.7   11500.00
      6     9208.48   68.61    0.582  0.50( 0.49) 0.98   18182.7   11701.00
      7     9075.35   74.78    0.561  0.50( 0.49) 0.99   20292.2   11000.00
      8     8781.27   90.98    0.507  0.50( 0.49) 0.99   27157.7   12500.00
      9     8590.29   97.05    0.495  0.50( 0.49) 0.99   30027.1   10900.00
     10     7949.11  105.44    0.479  0.50( 0.50) 0.99   33356.4   11130.00
     11     7283.35  116.58    0.457  0.50( 0.50) 0.99   37028.9   11620.00
     12     6245.69  131.80    0.436  0.50( 0.49) 0.99   41554.6   12400.00
     13     5410.73  142.66    0.423  0.50( 0.49) 0.99   43860.8   12201.00
     14     4810.10  151.51    0.412  0.50( 0.49) 0.99   45151.5   12111.00
     15     3903.30  166.37    0.394  0.50( 0.49) 0.99   47074.4   12261.00
     16     3440.88  175.13    0.384  0.50( 0.49) 0.99   47885.5   10200.00
     17     2879.90  189.74    0.373  0.50( 0.49) 0.99   49123.4   10300.00
     18     2651.67  196.22    0.369  0.50( 0.49) 0.99   49475.6   12010.00
     19     2187.41  215.75    0.359  0.50( 0.49) 0.99   49804.0   12000.00
     20     1246.41  281.34    0.323  0.50( 0.49) 0.99   50474.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    9911.51  Tc(MIN.) =   12.25
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.94  EFFECTIVE AREA(ACRES) =    2654.06
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   12.25
  RAINFALL INTENSITY(INCH/HR) =   1.58
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =    2654.06
  TOTAL STREAM AREA(ACRES) =   50474.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    9911.51

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.422
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        6.56      0.50     1.000    65   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.45
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =      5.45

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.298
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.94      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.96
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   1.60
```



```
  Tc(MIN.) =   15.51
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   19.35
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5          PEAK FLOW RATE(CFS) =      24.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.95   FLOW VELOCITY(FEET/SEC.) =   8.91
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.235
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.73      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.21
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   1.67
  Tc(MIN.) =   17.19
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =    9.74
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2          PEAK FLOW RATE(CFS) =      31.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.01   FLOW VELOCITY(FEET/SEC.) =  10.42
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.170
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      105.64      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.77
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.19
  AVERAGE FLOW DEPTH(FEET) =   1.38   TRAVEL TIME(MIN.) =   1.71
  Tc(MIN.) =   18.90
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =   63.67
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =      92.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.58   FLOW VELOCITY(FEET/SEC.) =  12.32
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      127.13      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     127.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.80
  AVERAGE FLOW DEPTH(FEET) =   1.90   TRAVEL TIME(MIN.) =   1.86
  Tc(MIN.) =   20.75
  SUBAREA AREA(ACRES) =   127.13       SUBAREA RUNOFF(CFS) =   69.34
  EFFECTIVE AREA(ACRES) =    281.00     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      281.0         PEAK FLOW RATE(CFS) =     153.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.03   FLOW VELOCITY(FEET/SEC.) =  12.35
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12720.00 =    5198.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.00 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.) =   20.75
  RAINFALL INTENSITY(INCH/HR) =   1.11
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     281.00
  TOTAL STREAM AREA(ACRES) =     281.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     153.27
```



```
** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1     9911.51   12.25    1.582  0.50( 0.47) 0.94    2654.1     930.00
    1     9818.06   18.60    1.181  0.50( 0.48) 0.96    4271.5     818.00
    1     9690.75   25.00    0.984  0.50( 0.48) 0.97    5889.5     600.00
    1     9422.84   51.79    0.661  0.50( 0.49) 0.98   13015.1   11801.00
    1     9296.50   62.99    0.601  0.50( 0.49) 0.98   16247.7   11500.00
    1     9208.48   68.61    0.582  0.50( 0.49) 0.98   18182.7   11701.00
    1     9075.35   74.78    0.561  0.50( 0.49) 0.99   20292.2   11000.00
    1     8781.27   90.98    0.507  0.50( 0.49) 0.99   27157.7   12500.00
    1     8590.29   97.05    0.495  0.50( 0.49) 0.99   30027.1   10900.00
    1     7949.11  105.44    0.479  0.50( 0.50) 0.99   33356.4   11130.00
    1     7283.35  116.58    0.457  0.50( 0.50) 0.99   37028.9   11620.00
    1     6245.69  131.80    0.436  0.50( 0.49) 0.99   41554.6   12400.00
    1     5410.73  142.66    0.423  0.50( 0.49) 0.99   43860.8   12201.00
    1     4810.10  151.51    0.412  0.50( 0.49) 0.99   45151.5   12111.00
    1     3903.30  166.37    0.394  0.50( 0.49) 0.99   47074.4   12261.00
    1     3440.88  175.13    0.384  0.50( 0.49) 0.99   47885.5   10200.00
    1     2879.90  189.74    0.373  0.50( 0.49) 0.99   49123.4   10300.00
    1     2651.67  196.22    0.369  0.50( 0.49) 0.99   49475.6   12010.00
    1     2187.41  215.75    0.359  0.50( 0.49) 0.99   49804.0   12000.00
    1     1246.41  281.34    0.323  0.50( 0.49) 0.99   50474.8   10100.00
    2      153.27   20.75    1.106  0.50( 0.50) 1.00     281.0   12710.00

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

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1    10064.78   12.25    1.582  0.50( 0.47) 0.94    2819.9     930.00
    2     9971.33   18.60    1.181  0.50( 0.48) 0.96    4523.3     818.00
    3     9928.40   20.75    1.106  0.50( 0.48) 0.96    5098.1   12710.00
    4     9813.12   25.00    0.984  0.50( 0.48) 0.97    6170.5     600.00
    5     9463.53   51.79    0.661  0.50( 0.49) 0.98   13296.1   11801.00
    6     9321.95   62.99    0.601  0.50( 0.49) 0.98   16528.7   11500.00
    7     9229.09   68.61    0.582  0.50( 0.49) 0.98   18463.7   11701.00
    8     9090.66   74.78    0.561  0.50( 0.49) 0.99   20573.2   11000.00
    9     8783.00   90.98    0.507  0.50( 0.49) 0.99   27438.7   12500.00
   10     8590.29   97.05    0.495  0.50( 0.49) 0.99   30308.1   10900.00
   11     7949.11  105.44    0.479  0.50( 0.50) 0.99   33637.4   11130.00
   12     7283.35  116.58    0.457  0.50( 0.50) 0.99   37309.9   11620.00
   13     6245.69  131.80    0.436  0.50( 0.50) 0.99   41835.6   12400.00
   14     5410.73  142.66    0.423  0.50( 0.49) 0.99   44141.8   12201.00
   15     4810.10  151.51    0.412  0.50( 0.49) 0.99   45432.5   12111.00
   16     3903.30  166.37    0.394  0.50( 0.49) 0.99   47355.4   12261.00
   17     3440.87  175.13    0.384  0.50( 0.49) 0.99   48166.5   10200.00
   18     2879.90  189.74    0.373  0.50( 0.49) 0.99   49404.4   10300.00
   19     2651.67  196.22    0.369  0.50( 0.49) 0.99   49756.6   12010.00
   20     2187.41  215.75    0.359  0.50( 0.49) 0.99   50085.0   12000.00
   21     1246.41  281.34    0.323  0.50( 0.49) 0.99   50755.8   10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =   10064.78    Tc(MIN.) =    12.25
EFFECTIVE AREA(ACRES) =    2819.90   AREA-AVERAGED Fm(INCH/HR) =  0.47
AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.94
```

```
  TOTAL AREA(ACRES) =    50755.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    258.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2669.21   CHANNEL SLOPE =  0.0064
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.20      0.50     1.000     -
  USER-DEFINED                -        0.20      0.50     1.000     -
  USER-DEFINED                -        0.20      0.50     1.000     -
  USER-DEFINED                -        0.30      0.50     1.000     -
  USER-DEFINED                -        0.30      0.50     0.100     -
  USER-DEFINED                -        0.50      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   10065.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.70
  AVERAGE FLOW DEPTH(FEET) =  15.11   TRAVEL TIME(MIN.) =   3.03
  Tc(MIN.) =   15.28
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.36
  EFFECTIVE AREA(ACRES) =   2821.60     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    50757.5         PEAK FLOW RATE(CFS) =   10064.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 15.11   FLOW VELOCITY(FEET/SEC.) =  14.70
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.49 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    10064.78   15.28    1.308  0.50( 0.47) 0.94    2821.6     930.00
      2     9971.33   21.63    1.081  0.50( 0.48) 0.96    4525.0     818.00
      3     9928.40   23.79    1.019  0.50( 0.48) 0.96    5099.8   12710.00
      4     9813.12   28.04    0.922  0.50( 0.48) 0.97    6172.2     600.00
      5     9463.53   54.86    0.642  0.50( 0.49) 0.98   13297.8   11801.00
      6     9321.95   66.08    0.590  0.50( 0.49) 0.98   16530.4   11500.00
      7     9229.09   71.71    0.571  0.50( 0.49) 0.98   18465.4   11701.00
      8     9090.66   77.88    0.550  0.50( 0.49) 0.99   20574.9   11000.00
      9     8783.00   94.11    0.501  0.50( 0.49) 0.99   27440.4   12500.00
     10     8590.29  100.20    0.489  0.50( 0.49) 0.99   30309.8   10900.00
     11     7949.11  108.65    0.472  0.50( 0.50) 0.99   33639.1   11130.00
     12     7283.35  119.86    0.450  0.50( 0.50) 0.99   37311.6   11620.00
     13     6245.69  135.21    0.432  0.50( 0.49) 0.99   41837.3   12400.00
     14     5410.73  146.20    0.419  0.50( 0.49) 0.99   44143.5   12201.00
     15     4810.10  155.16    0.408  0.50( 0.49) 0.99   45434.2   12111.00
     16     3903.30  170.20    0.390  0.50( 0.49) 0.99   47357.1   12261.00
```



```
     17     3440.87  179.09    0.379  0.50( 0.49) 0.99   48168.2   10200.00
     18     2879.90  193.88    0.370  0.50( 0.49) 0.99   49406.1   10300.00
     19     2651.67  200.44    0.367  0.50( 0.49) 0.99   49758.3   12010.00
     20     2187.41  220.19    0.356  0.50( 0.49) 0.99   50086.7   12000.00
     21     1246.41  286.44    0.320  0.50( 0.49) 0.99   50757.5   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   10064.78  Tc(MIN.) =   15.28
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.94  EFFECTIVE AREA(ACRES) =    2821.60

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.28
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.50      0.50     0.850     -
  USER-DEFINED                -        0.70      0.50     1.000     -
  USER-DEFINED                -        1.50      0.50     1.000     -
  USER-DEFINED                -        1.40      0.50     0.100     -
  USER-DEFINED                -        2.30      0.50     0.100     -
  USER-DEFINED                -        9.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   12.94
  EFFECTIVE AREA(ACRES) =   2837.30   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =   10064.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.28
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       11.20      0.50     1.000     -
  USER-DEFINED                -       11.40      0.50     1.000     -
  USER-DEFINED                -       11.80      0.50     1.000     -
  USER-DEFINED                -       27.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   45.12
  EFFECTIVE AREA(ACRES) =   2899.40   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =   10064.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
```

```
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3C05EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM        Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      910.51   14.10  0.50( 0.21) 0.42     846.2     410.00
      2      905.48   15.84  0.50( 0.21) 0.42     933.6     420.00
      3      937.09   20.10  0.50( 0.21) 0.42    1133.5     310.00
      4      932.69   21.29  0.50( 0.21) 0.42    1177.1     400.00
      5      897.84   24.06  0.50( 0.21) 0.42    1245.2     430.00
      6      893.06   24.43  0.50( 0.21) 0.42    1254.0     300.00
      7      886.52   24.78  0.50( 0.21) 0.42    1261.5     320.00
      8      722.18   33.58  0.50( 0.22) 0.43    1292.3     390.00
    TOTAL AREA(ACRES) =     1292.3

******************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    10064.78   15.28    1.308  0.50( 0.47) 0.94    2899.4     930.00
      2     9971.33   21.63    1.081  0.50( 0.48) 0.96    4602.8     818.00
      3     9928.40   23.79    1.019  0.50( 0.48) 0.96    5177.6   12710.00
      4     9813.12   28.04    0.922  0.50( 0.48) 0.97    6250.0     600.00
      5     9463.53   54.86    0.642  0.50( 0.49) 0.98   13375.6   11801.00
      6     9321.95   66.08    0.590  0.50( 0.49) 0.98   16608.2   11500.00
      7     9229.09   71.71    0.571  0.50( 0.49) 0.98   18543.2   11701.00
      8     9090.66   77.88    0.550  0.50( 0.49) 0.99   20652.7   11000.00
      9     8783.00   94.11    0.501  0.50( 0.49) 0.99   27518.2   12500.00
     10     8590.29  100.20    0.489  0.50( 0.49) 0.99   30387.6   10900.00
     11     7949.11  108.65    0.472  0.50( 0.50) 0.99   33716.9   11130.00
     12     7283.35  119.86    0.450  0.50( 0.50) 0.99   37389.4   11620.00
     13     6245.69  135.21    0.432  0.50( 0.49) 0.99   41915.1   12400.00
     14     5410.73  146.20    0.419  0.50( 0.49) 0.99   44221.3   12201.00
     15     4810.10  155.16    0.408  0.50( 0.49) 0.99   45512.0   12111.00
     16     3903.30  170.20    0.390  0.50( 0.49) 0.99   47434.9   12261.00
     17     3440.87  179.09    0.379  0.50( 0.49) 0.99   48246.0   10200.00
     18     2879.90  193.88    0.370  0.50( 0.49) 0.99   49483.9   10300.00
     19     2651.67  200.44    0.367  0.50( 0.49) 0.99   49836.1   12010.00
     20     2187.41  220.19    0.356  0.50( 0.49) 0.99   50164.5   12000.00
     21     1246.41  286.44    0.320  0.50( 0.49) 0.99   50835.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.49 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      910.51   14.10    1.404  0.50( 0.21) 0.42     846.2     410.00
      2      905.48   15.84    1.286  0.50( 0.21) 0.42     933.6     420.00
      3      937.09   20.10    1.125  0.50( 0.21) 0.42    1133.5     310.00
      4      932.69   21.29    1.091  0.50( 0.21) 0.42    1177.1     400.00
      5      897.84   24.06    1.011  0.50( 0.21) 0.42    1245.2     430.00
      6      893.06   24.43    1.001  0.50( 0.21) 0.42    1254.0     300.00
```



```
      7      886.52   24.78    0.990  0.50( 0.21) 0.42    1261.5     320.00
      8      722.18   33.58    0.837  0.50( 0.22) 0.43    1292.3     390.00
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE  12720.50 =   13248.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    10975.29   14.10    1.404  0.50( 0.41) 0.82    3522.6     410.00
      2    10971.88   15.28    1.308  0.50( 0.41) 0.82    3804.8     930.00
      3    10962.03   15.84    1.286  0.50( 0.41) 0.82    3983.0     420.00
      4    10930.99   20.10    1.125  0.50( 0.42) 0.84    5324.8     310.00
      5    10909.08   21.29    1.091  0.50( 0.42) 0.85    5687.7     400.00
      6    10899.69   21.63    1.081  0.50( 0.42) 0.85    5788.4     818.00
      7    10829.56   23.79    1.019  0.50( 0.43) 0.86    6416.4   12710.00
      8    10819.09   24.06    1.011  0.50( 0.43) 0.86    6489.4     430.00
      9    10804.29   24.43    1.001  0.50( 0.43) 0.86    6591.4     300.00
     10    10788.03   24.78    0.990  0.50( 0.43) 0.86    6689.2     320.00
     11    10638.71   28.04    0.922  0.50( 0.44) 0.88    7522.9     600.00
     12    10463.16   33.58    0.837  0.50( 0.45) 0.89    9012.6     390.00
     13     9959.80   54.86    0.642  0.50( 0.47) 0.93   14667.9   11801.00
     14     9757.75   66.08    0.590  0.50( 0.47) 0.94   17900.5   11500.00
     15     9642.62   71.71    0.571  0.50( 0.47) 0.95   19835.5   11701.00
     16     9479.78   77.88    0.550  0.50( 0.48) 0.95   21945.0   11000.00
     17     9114.81   94.11    0.501  0.50( 0.48) 0.96   28810.5   12500.00
     18     8913.79  100.20    0.489  0.50( 0.48) 0.97   31679.9   10900.00
     19     8261.62  108.65    0.472  0.50( 0.48) 0.97   35009.2   11130.00
     20     7581.28  119.86    0.450  0.50( 0.49) 0.97   38681.7   11620.00
     21     6531.36  135.21    0.432  0.50( 0.49) 0.97   43207.4   12400.00
     22     5687.67  146.20    0.419  0.50( 0.49) 0.97   45513.6   12201.00
     23     5079.93  155.16    0.408  0.50( 0.49) 0.97   46804.3   12111.00
     24     4161.19  170.20    0.390  0.50( 0.49) 0.97   48727.2   12261.00
     25     3691.70  179.09    0.379  0.50( 0.49) 0.97   49538.3   10200.00
     26     3125.01  193.88    0.370  0.50( 0.49) 0.97   50776.2   10300.00
     27     2894.41  200.44    0.367  0.50( 0.49) 0.97   51128.4   12010.00
     28     2423.04  220.19    0.356  0.50( 0.49) 0.98   51456.8   12000.00
     29     1458.18  286.44    0.320  0.50( 0.49) 0.98   52127.6   10100.00
    TOTAL AREA(ACRES) =     52127.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    10975.29  Tc(MIN.) =   14.101
  EFFECTIVE AREA(ACRES) =   3522.64  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52127.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.49 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12722.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    258.00  DOWNSTREAM(FEET) =    255.00
```

CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.275
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.50 | 0.850 | - |
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 0.100 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10975.86
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.36
AVERAGE FLOW DEPTH(FEET) = 18.80 TRAVEL TIME(MIN.) = 2.04
Tc(MIN.) = 16.14
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 1.14
EFFECTIVE AREA(ACRES) = 3524.04 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52129.0 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 18.80 FLOW VELOCITY(FEET/SEC.) = 10.36
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.49 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 10975.29 | 16.14 | 1.275 | 0.50( 0.41) | 0.82 | 3524.0 | 410.00 |
| 2 | 10971.88 | 17.32 | 1.230 | 0.50( 0.41) | 0.82 | 3806.2 | 930.00 |
| 3 | 10962.03 | 17.88 | 1.209 | 0.50( 0.41) | 0.82 | 3984.4 | 420.00 |
| 4 | 10930.99 | 22.14 | 1.066 | 0.50( 0.42) | 0.84 | 5326.2 | 310.00 |
| 5 | 10909.08 | 23.33 | 1.032 | 0.50( 0.42) | 0.85 | 5689.1 | 400.00 |
| 6 | 10899.69 | 23.68 | 1.022 | 0.50( 0.42) | 0.85 | 5789.8 | 818.00 |
| 7 | 10829.56 | 25.84 | 0.967 | 0.50( 0.43) | 0.86 | 6417.8 | 12710.00 |
| 8 | 10819.09 | 26.11 | 0.961 | 0.50( 0.43) | 0.86 | 6490.8 | 430.00 |
| 9 | 10804.29 | 26.48 | 0.954 | 0.50( 0.43) | 0.86 | 6592.8 | 300.00 |
| 10 | 10788.03 | 26.83 | 0.947 | 0.50( 0.43) | 0.86 | 6690.6 | 320.00 |
| 11 | 10638.71 | 30.10 | 0.881 | 0.50( 0.44) | 0.88 | 7524.3 | 600.00 |
| 12 | 10463.16 | 35.64 | 0.810 | 0.50( 0.45) | 0.89 | 9014.0 | 390.00 |
| 13 | 9959.80 | 56.96 | 0.630 | 0.50( 0.47) | 0.93 | 14669.3 | 11801.00 |
| 14 | 9757.75 | 68.18 | 0.583 | 0.50( 0.47) | 0.94 | 17901.9 | 11500.00 |
| 15 | 9642.62 | 73.82 | 0.564 | 0.50( 0.47) | 0.95 | 19836.9 | 11701.00 |
| 16 | 9479.78 | 80.00 | 0.543 | 0.50( 0.48) | 0.95 | 21946.4 | 11000.00 |
| 17 | 9114.81 | 96.25 | 0.497 | 0.50( 0.48) | 0.96 | 28811.9 | 12500.00 |
| 18 | 8913.79 | 102.35 | 0.485 | 0.50( 0.48) | 0.97 | 31681.3 | 10900.00 |
| 19 | 8261.62 | 110.85 | 0.468 | 0.50( 0.48) | 0.97 | 35010.6 | 11130.00 |
| 20 | 7581.28 | 122.10 | 0.447 | 0.50( 0.49) | 0.97 | 38683.1 | 11620.00 |
| 21 | 6531.36 | 137.54 | 0.429 | 0.50( 0.49) | 0.97 | 43208.8 | 12400.00 |
| 22 | 5687.67 | 148.61 | 0.416 | 0.50( 0.49) | 0.97 | 45515.0 | 12201.00 |
| 23 | 5079.93 | 157.63 | 0.405 | 0.50( 0.49) | 0.97 | 46805.7 | 12111.00 |
| 24 | 4161.19 | 172.81 | 0.387 | 0.50( 0.49) | 0.97 | 48728.6 | 12261.00 |
| 25 | 3691.70 | 181.77 | 0.377 | 0.50( 0.49) | 0.97 | 49539.7 | 10200.00 |
| 26 | 3125.01 | 196.67 | 0.369 | 0.50( 0.49) | 0.97 | 50777.6 | 10300.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | 2894.41 | 203.29 | 0.365 | 0.50( 0.49) | 0.97 | 51129.8 | 12010.00 |
| 28 | 2423.04 | 223.17 | 0.354 | 0.50( 0.49) | 0.98 | 51458.2 | 12000.00 |
| 29 | 1458.18 | 289.82 | 0.318 | 0.50( 0.49) | 0.98 | 52129.0 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 10975.29 Tc(MIN.) = 16.14
AREA-AVERAGED Fm(INCH/HR) = 0.41 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 3524.04

**********
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 16.14
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.275
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.764
SUBAREA AREA(ACRES) = 4.20 SUBAREA RUNOFF(CFS) = 3.37
EFFECTIVE AREA(ACRES) = 3528.24 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52133.2 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 16.14
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.275
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 1.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.70 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 12.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 20.20 SUBAREA RUNOFF(CFS) = 14.08
EFFECTIVE AREA(ACRES) = 3548.44 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52153.4 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

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

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.245
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.50 | 0.50 | 0.850 | - |
| USER-DEFINED | - | 0.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.50 | 0.50 | 0.100 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.690
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10977.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.35
AVERAGE FLOW DEPTH(FEET) = 16.56 TRAVEL TIME(MIN.) = 0.78
Tc(MIN.) = 16.92
SUBAREA AREA(ACRES) = 4.60 SUBAREA RUNOFF(CFS) = 3.72
EFFECTIVE AREA(ACRES) = 3553.04 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52158.0 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 16.56 FLOW VELOCITY(FEET/SEC.) = 13.34
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.49 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 10975.29 | 16.92 | 1.245 | 0.50( 0.41) | 0.82 | 3553.0 | 410.00 |
| 2 | 10971.88 | 18.10 | 1.200 | 0.50( 0.41) | 0.82 | 3835.2 | 930.00 |
| 3 | 10962.03 | 18.66 | 1.179 | 0.50( 0.41) | 0.82 | 4013.4 | 420.00 |
| 4 | 10930.99 | 22.92 | 1.044 | 0.50( 0.42) | 0.84 | 5355.2 | 310.00 |
| 5 | 10909.08 | 24.11 | 1.010 | 0.50( 0.42) | 0.85 | 5718.1 | 400.00 |
| 6 | 10899.69 | 24.46 | 1.000 | 0.50( 0.42) | 0.85 | 5818.8 | 818.00 |
| 7 | 10829.56 | 26.62 | 0.951 | 0.50( 0.43) | 0.86 | 6446.8 | 12710.00 |
| 8 | 10819.09 | 26.89 | 0.945 | 0.50( 0.43) | 0.86 | 6519.8 | 430.00 |
| 9 | 10804.29 | 27.26 | 0.938 | 0.50( 0.43) | 0.86 | 6621.8 | 300.00 |
| 10 | 10788.03 | 27.62 | 0.931 | 0.50( 0.43) | 0.86 | 6719.6 | 320.00 |
| 11 | 10638.71 | 30.89 | 0.871 | 0.50( 0.44) | 0.88 | 7553.3 | 600.00 |
| 12 | 10463.16 | 36.43 | 0.800 | 0.50( 0.45) | 0.89 | 9043.0 | 390.00 |
| 13 | 9959.80 | 57.75 | 0.625 | 0.50( 0.47) | 0.93 | 14698.3 | 11801.00 |
| 14 | 9757.75 | 68.98 | 0.580 | 0.50( 0.47) | 0.94 | 17930.9 | 11500.00 |
| 15 | 9642.62 | 74.62 | 0.561 | 0.50( 0.47) | 0.95 | 19865.9 | 11701.00 |
| 16 | 9479.78 | 80.81 | 0.540 | 0.50( 0.48) | 0.95 | 21975.4 | 11000.00 |
| 17 | 9114.81 | 97.06 | 0.495 | 0.50( 0.48) | 0.96 | 28840.9 | 12500.00 |
| 18 | 8913.79 | 103.18 | 0.483 | 0.50( 0.48) | 0.97 | 31710.3 | 10900.00 |
| 19 | 8261.62 | 111.68 | 0.466 | 0.50( 0.48) | 0.97 | 35039.6 | 11130.00 |
| 20 | 7581.28 | 122.96 | 0.446 | 0.50( 0.49) | 0.97 | 38712.1 | 11620.00 |
| 21 | 6531.36 | 138.42 | 0.428 | 0.50( 0.49) | 0.97 | 43237.8 | 12400.00 |
| 22 | 5687.67 | 149.52 | 0.415 | 0.50( 0.49) | 0.97 | 45544.0 | 12201.00 |
| 23 | 5079.93 | 158.58 | 0.404 | 0.50( 0.49) | 0.97 | 46834.7 | 12111.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 4161.19 | 173.80 | 0.385 | 0.50( 0.49) | 0.97 | 48757.6 | 12261.00 |
| 25 | 3691.70 | 182.80 | 0.376 | 0.50( 0.49) | 0.97 | 49568.7 | 10200.00 |
| 26 | 3125.01 | 197.74 | 0.368 | 0.50( 0.49) | 0.97 | 50806.6 | 10300.00 |
| 27 | 2894.41 | 204.38 | 0.365 | 0.50( 0.49) | 0.97 | 51158.8 | 12010.00 |
| 28 | 2423.04 | 224.31 | 0.354 | 0.50( 0.49) | 0.98 | 51487.2 | 12000.00 |
| 29 | 1458.18 | 291.11 | 0.318 | 0.50( 0.49) | 0.98 | 52158.0 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 10975.29 Tc(MIN.) = 16.92
AREA-AVERAGED Fm(INCH/HR) = 0.41 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 3553.04

FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 16.92
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.245
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 2.50 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 2.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 2.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 5.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 6.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 6.50 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.913
SUBAREA AREA(ACRES) = 26.00 SUBAREA RUNOFF(CFS) = 18.44
EFFECTIVE AREA(ACRES) = 3579.04 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52184.0 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 16.92
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.245
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 6.70 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 12.00 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 20.30 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 39.00 SUBAREA RUNOFF(CFS) = 26.14
EFFECTIVE AREA(ACRES) = 3618.04 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 52223.0 PEAK FLOW RATE(CFS) = 10975.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 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.) =   16.92
  RAINFALL INTENSITY(INCH/HR) =   1.24
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.82
  EFFECTIVE STREAM AREA(ACRES) =    3618.04
  TOTAL STREAM AREA(ACRES) =   52223.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   10975.29

********************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.431
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        6.33      0.50     1.000    65   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.30
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =      5.30

********************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.273
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.62      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.87
  AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   2.36
  Tc(MIN.) =   16.18
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   24.08
```



```
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      28.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   7.80
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.188
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       59.52      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.62
  AVERAGE FLOW DEPTH(FEET) =   1.35   TRAVEL TIME(MIN.) =   2.24
  Tc(MIN.) =   18.42
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =   36.85
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =      62.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.50   FLOW VELOCITY(FEET/SEC.) =   9.24
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.081
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       64.05      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.60
  AVERAGE FLOW DEPTH(FEET) =   1.75   TRAVEL TIME(MIN.) =   3.21
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  Tc(MIN.) =   21.62
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   33.49
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =      86.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.81   FLOW VELOCITY(FEET/SEC.) =   8.80
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.996
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.02      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.61
  AVERAGE FLOW DEPTH(FEET) =   1.70   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   24.58
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   11.61
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =      86.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.66   FLOW VELOCITY(FEET/SEC.) =  10.43
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   24.58
  RAINFALL INTENSITY(INCH/HR) =   1.00
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     190.54
  TOTAL STREAM AREA(ACRES) =     190.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      86.03
```



```
** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1    10975.29   16.92    1.245  0.50( 0.41) 0.82    3618.0     410.00
    1    10971.88   18.10    1.200  0.50( 0.41) 0.82    3900.2     930.00
    1    10962.03   18.66    1.179  0.50( 0.41) 0.82    4078.4     420.00
    1    10930.99   22.92    1.044  0.50( 0.42) 0.84    5420.2     310.00
    1    10909.08   24.11    1.010  0.50( 0.42) 0.85    5783.1     400.00
    1    10899.69   24.46    1.000  0.50( 0.42) 0.85    5883.8     818.00
    1    10829.56   26.62    0.951  0.50( 0.43) 0.86    6511.8   12710.00
    1    10819.09   26.89    0.945  0.50( 0.43) 0.86    6584.8     430.00
    1    10804.29   27.26    0.938  0.50( 0.43) 0.86    6686.8     300.00
    1    10788.03   27.62    0.931  0.50( 0.43) 0.86    6784.6     320.00
    1    10638.71   30.89    0.871  0.50( 0.44) 0.88    7618.3     600.00
    1    10463.16   36.43    0.800  0.50( 0.45) 0.89    9108.0     390.00
    1     9959.80   57.75    0.625  0.50( 0.47) 0.93   14763.3   11801.00
    1     9757.75   68.98    0.580  0.50( 0.47) 0.94   17995.9   11500.00
    1     9642.62   74.62    0.561  0.50( 0.47) 0.95   19930.9   11701.00
    1     9479.78   80.81    0.540  0.50( 0.48) 0.95   22040.4   11000.00
    1     9114.81   97.06    0.495  0.50( 0.48) 0.96   28905.9   12500.00
    1     8913.79  103.18    0.483  0.50( 0.48) 0.97   31775.3   10900.00
    1     8261.62  111.68    0.466  0.50( 0.48) 0.97   35104.6   11130.00
    1     7581.28  122.96    0.446  0.50( 0.49) 0.97   38777.1   11620.00
    1     6531.36  138.42    0.428  0.50( 0.49) 0.97   43302.8   12400.00
    1     5687.67  149.52    0.415  0.50( 0.49) 0.97   45609.0   12201.00
    1     5079.93  158.58    0.404  0.50( 0.49) 0.97   46899.7   12111.00
    1     4161.19  173.80    0.385  0.50( 0.49) 0.97   48822.6   12261.00
    1     3691.70  182.80    0.376  0.50( 0.49) 0.97   49633.7   10200.00
    1     3125.01  197.74    0.368  0.50( 0.49) 0.97   50871.6   10300.00
    1     2894.41  204.38    0.365  0.50( 0.49) 0.97   51223.8   12010.00
    1     2423.04  224.31    0.354  0.50( 0.49) 0.98   51552.2   12000.00
    1     1458.18  291.11    0.318  0.50( 0.49) 0.98   52223.0   10100.00
    2       86.03   24.58    0.996  0.50( 0.50) 1.00     190.5   12730.00

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

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1    11061.32   16.92    1.245  0.50( 0.41) 0.83    3749.2     410.00
    2    11057.91   18.10    1.200  0.50( 0.41) 0.83    4040.5     930.00
    3    11048.06   18.66    1.179  0.50( 0.41) 0.83    4223.0     420.00
    4    11017.02   22.92    1.044  0.50( 0.42) 0.85    5597.9     310.00
    5    10995.11   24.11    1.010  0.50( 0.43) 0.85    5970.0     400.00
    6    10985.72   24.46    1.000  0.50( 0.43) 0.85    6073.4     818.00
    7    10981.78   24.58    0.996  0.50( 0.43) 0.85    6109.6   12730.00
    8    10907.74   26.62    0.951  0.50( 0.43) 0.86    6702.3   12710.00
    9    10896.33   26.89    0.945  0.50( 0.43) 0.86    6775.3     430.00
   10    10880.22   27.26    0.938  0.50( 0.43) 0.86    6877.3     300.00
   11    10862.70   27.62    0.931  0.50( 0.43) 0.87    6975.1     320.00
   12    10702.99   30.89    0.871  0.50( 0.44) 0.88    7808.9     600.00
   13    10515.22   36.43    0.800  0.50( 0.45) 0.90    9298.5     390.00
   14     9981.40   57.75    0.625  0.50( 0.47) 0.93   14953.9   11801.00
   15     9771.67   68.98    0.580  0.50( 0.47) 0.94   18186.4   11500.00
   16     9653.22   74.62    0.561  0.50( 0.47) 0.95   20121.5   11701.00
   17     9486.73   80.81    0.540  0.50( 0.48) 0.95   22230.9   11000.00
   18     9114.81   97.06    0.495  0.50( 0.48) 0.96   29096.5   12500.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | 8913.79 | 103.18 | 0.483 | 0.50( 0.48) | 0.97 | 31965.9 | 10900.00 |
| 20 | 8261.62 | 111.68 | 0.466 | 0.50( 0.48) | 0.97 | 35295.1 | 11130.00 |
| 21 | 7581.28 | 122.96 | 0.446 | 0.50( 0.49) | 0.97 | 38967.6 | 11620.00 |
| 22 | 6531.35 | 138.42 | 0.428 | 0.50( 0.49) | 0.97 | 43493.4 | 12400.00 |
| 23 | 5687.67 | 149.52 | 0.415 | 0.50( 0.49) | 0.97 | 45799.6 | 12201.00 |
| 24 | 5079.93 | 158.58 | 0.404 | 0.50( 0.49) | 0.97 | 47090.2 | 12111.00 |
| 25 | 4161.19 | 173.80 | 0.385 | 0.50( 0.49) | 0.97 | 49013.1 | 12261.00 |
| 26 | 3691.70 | 182.80 | 0.376 | 0.50( 0.49) | 0.97 | 49824.2 | 10200.00 |
| 27 | 3125.01 | 197.74 | 0.368 | 0.50( 0.49) | 0.97 | 51062.2 | 10300.00 |
| 28 | 2894.41 | 204.38 | 0.365 | 0.50( 0.49) | 0.97 | 51414.4 | 12010.00 |
| 29 | 2423.04 | 224.31 | 0.354 | 0.50( 0.49) | 0.98 | 51742.8 | 12000.00 |
| 30 | 1458.18 | 291.11 | 0.318 | 0.50( 0.49) | 0.98 | 52413.5 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 11061.32 Tc(MIN.) = 16.92
EFFECTIVE AREA(ACRES) = 3749.22 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 52413.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.49 FEET.

**********
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1200.00 CHANNEL SLOPE = 0.0101
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.202
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 1.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.20 | 0.50 | 0.850 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.784
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11063.65
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.88
AVERAGE FLOW DEPTH(FEET) = 14.36 TRAVEL TIME(MIN.) = 1.12
Tc(MIN.) = 18.04
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 4.67
EFFECTIVE AREA(ACRES) = 3755.62 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 52419.9 PEAK FLOW RATE(CFS) = 11061.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 14.36 FLOW VELOCITY(FEET/SEC.) = 17.88
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11061.32 | 18.04 | 1.202 | 0.50( 0.41) | 0.83 | 3755.6 | 410.00 |
| 2 | 11057.91 | 19.22 | 1.158 | 0.50( 0.41) | 0.83 | 4046.9 | 930.00 |
| 3 | 11048.06 | 19.78 | 1.136 | 0.50( 0.41) | 0.83 | 4229.4 | 420.00 |
| 4 | 11017.02 | 24.04 | 1.012 | 0.50( 0.42) | 0.85 | 5604.3 | 310.00 |
| 5 | 10995.11 | 25.23 | 0.979 | 0.50( 0.43) | 0.85 | 5976.4 | 400.00 |
| 6 | 10985.72 | 25.58 | 0.972 | 0.50( 0.43) | 0.85 | 6079.8 | 818.00 |
| 7 | 10981.78 | 25.70 | 0.970 | 0.50( 0.43) | 0.85 | 6116.0 | 12730.00 |
| 8 | 10907.74 | 27.75 | 0.928 | 0.50( 0.43) | 0.86 | 6708.7 | 12710.00 |
| 9 | 10896.33 | 28.01 | 0.923 | 0.50( 0.43) | 0.86 | 6781.7 | 430.00 |
| 10 | 10880.22 | 28.38 | 0.915 | 0.50( 0.43) | 0.86 | 6883.7 | 300.00 |
| 11 | 10862.70 | 28.74 | 0.908 | 0.50( 0.43) | 0.86 | 6981.5 | 320.00 |
| 12 | 10702.99 | 32.02 | 0.856 | 0.50( 0.44) | 0.88 | 7815.3 | 600.00 |
| 13 | 10515.22 | 37.57 | 0.786 | 0.50( 0.45) | 0.90 | 9304.9 | 390.00 |
| 14 | 9981.40 | 58.90 | 0.618 | 0.50( 0.47) | 0.93 | 14960.3 | 11801.00 |
| 15 | 9771.67 | 70.14 | 0.577 | 0.50( 0.47) | 0.94 | 18192.8 | 11500.00 |
| 16 | 9653.22 | 75.78 | 0.557 | 0.50( 0.47) | 0.95 | 20127.9 | 11701.00 |
| 17 | 9486.73 | 81.97 | 0.536 | 0.50( 0.48) | 0.95 | 22237.3 | 11000.00 |
| 18 | 9114.81 | 98.24 | 0.493 | 0.50( 0.48) | 0.96 | 29102.9 | 12500.00 |
| 19 | 8913.79 | 104.36 | 0.481 | 0.50( 0.48) | 0.97 | 31972.3 | 10900.00 |
| 20 | 8261.62 | 112.89 | 0.464 | 0.50( 0.48) | 0.97 | 35301.5 | 11130.00 |
| 21 | 7581.28 | 124.19 | 0.445 | 0.50( 0.49) | 0.97 | 38974.0 | 11620.00 |
| 22 | 6531.35 | 139.70 | 0.426 | 0.50( 0.49) | 0.97 | 43499.8 | 12400.00 |
| 23 | 5687.67 | 150.85 | 0.413 | 0.50( 0.49) | 0.97 | 45806.0 | 12201.00 |
| 24 | 5079.93 | 159.94 | 0.402 | 0.50( 0.49) | 0.97 | 47096.6 | 12111.00 |
| 25 | 4161.19 | 175.23 | 0.384 | 0.50( 0.49) | 0.97 | 49019.5 | 12261.00 |
| 26 | 3691.70 | 184.27 | 0.376 | 0.50( 0.49) | 0.97 | 49830.6 | 10200.00 |
| 27 | 3125.01 | 199.27 | 0.368 | 0.50( 0.49) | 0.97 | 51068.6 | 10300.00 |
| 28 | 2894.41 | 205.94 | 0.364 | 0.50( 0.49) | 0.97 | 51420.8 | 12010.00 |
| 29 | 2423.04 | 225.94 | 0.353 | 0.50( 0.49) | 0.98 | 51749.1 | 12000.00 |
| 30 | 1458.18 | 292.97 | 0.316 | 0.50( 0.49) | 0.98 | 52419.9 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 11061.32 Tc(MIN.) = 18.04
AREA-AVERAGED Fm(INCH/HR) = 0.41 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA(ACRES) = 3755.62

**********
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 18.04
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.202
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 8.70 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 10.30 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 14.47
EFFECTIVE AREA(ACRES) = 3778.52 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 52442.8 PEAK FLOW RATE(CFS) = 11061.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==========
END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52442.8 TC(MIN.) = 18.04
EFFECTIVE AREA(ACRES) = 3778.52 AREA-AVERAGED Fm(INCH/HR)= 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.827
PEAK FLOW RATE(CFS) = 11061.32

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11061.32 | 18.04 | 1.202 | 0.50( 0.41) | 0.83 | 3778.5 | 410.00 |
| 2 | 11057.91 | 19.22 | 1.158 | 0.50( 0.41) | 0.83 | 4069.8 | 930.00 |
| 3 | 11048.06 | 19.78 | 1.136 | 0.50( 0.42) | 0.83 | 4252.3 | 420.00 |
| 4 | 11017.02 | 24.04 | 1.012 | 0.50( 0.42) | 0.85 | 5627.2 | 310.00 |
| 5 | 10995.11 | 25.23 | 0.979 | 0.50( 0.43) | 0.85 | 5999.3 | 400.00 |
| 6 | 10985.72 | 25.58 | 0.972 | 0.50( 0.43) | 0.85 | 6102.7 | 818.00 |
| 7 | 10981.78 | 25.70 | 0.970 | 0.50( 0.43) | 0.85 | 6138.9 | 12730.00 |
| 8 | 10907.74 | 27.75 | 0.928 | 0.50( 0.43) | 0.86 | 6731.6 | 12710.00 |
| 9 | 10896.33 | 28.01 | 0.923 | 0.50( 0.43) | 0.86 | 6804.6 | 430.00 |
| 10 | 10880.22 | 28.38 | 0.915 | 0.50( 0.43) | 0.86 | 6906.6 | 300.00 |
| 11 | 10862.70 | 28.74 | 0.908 | 0.50( 0.43) | 0.87 | 7004.4 | 320.00 |
| 12 | 10702.99 | 32.02 | 0.856 | 0.50( 0.44) | 0.88 | 7838.2 | 600.00 |
| 13 | 10515.22 | 37.57 | 0.786 | 0.50( 0.45) | 0.90 | 9327.8 | 390.00 |
| 14 | 9981.40 | 58.90 | 0.618 | 0.50( 0.47) | 0.93 | 14983.2 | 11801.00 |
| 15 | 9771.67 | 70.14 | 0.577 | 0.50( 0.47) | 0.94 | 18215.7 | 11500.00 |
| 16 | 9653.22 | 75.78 | 0.557 | 0.50( 0.47) | 0.95 | 20150.8 | 11701.00 |
| 17 | 9486.73 | 81.97 | 0.536 | 0.50( 0.48) | 0.95 | 22260.2 | 11000.00 |
| 18 | 9114.81 | 98.24 | 0.493 | 0.50( 0.48) | 0.96 | 29125.8 | 12500.00 |
| 19 | 8913.79 | 104.36 | 0.481 | 0.50( 0.48) | 0.97 | 31995.2 | 10900.00 |
| 20 | 8261.62 | 112.89 | 0.464 | 0.50( 0.48) | 0.97 | 35324.4 | 11130.00 |
| 21 | 7581.28 | 124.19 | 0.445 | 0.50( 0.49) | 0.97 | 38996.9 | 11620.00 |
| 22 | 6531.35 | 139.70 | 0.426 | 0.50( 0.49) | 0.97 | 43522.7 | 12400.00 |
| 23 | 5687.67 | 150.85 | 0.413 | 0.50( 0.49) | 0.97 | 45828.9 | 12201.00 |
| 24 | 5079.93 | 159.94 | 0.402 | 0.50( 0.49) | 0.97 | 47119.5 | 12111.00 |
| 25 | 4161.19 | 175.23 | 0.384 | 0.50( 0.49) | 0.97 | 49042.4 | 12261.00 |
| 26 | 3691.70 | 184.27 | 0.376 | 0.50( 0.49) | 0.97 | 49853.5 | 10200.00 |
| 27 | 3125.01 | 199.27 | 0.368 | 0.50( 0.49) | 0.97 | 51091.5 | 10300.00 |
| 28 | 2894.41 | 205.94 | 0.364 | 0.50( 0.49) | 0.97 | 51443.7 | 12010.00 |
| 29 | 2423.04 | 225.94 | 0.353 | 0.50( 0.49) | 0.98 | 51772.0 | 12000.00 |
| 30 | 1458.18 | 292.97 | 0.316 | 0.50( 0.49) | 0.98 | 52442.8 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV FEB 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI05EV28.DAT
  TIME/DATE OF STUDY: 11:11 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.707
   2)   10.00;  1.797
   3)   15.00;  1.318
   4)   20.00;  1.128
   5)   25.00;  0.984
   6)   30.00;  0.882
   7)   40.00;  0.755
   8)   50.00;  0.672
   9)   60.00;  0.611
  10)   90.00;  0.509
  11)  120.00;  0.450
  12)  180.00;  0.378
  13)  360.00;  0.280
  14) 1200.00;  0.123
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV27.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    11061.32   18.04  0.50( 0.41) 0.83    3778.5     410.00
      2    10702.99   32.02  0.50( 0.44) 0.88    7838.2     600.00
      3    10515.22   37.57  0.50( 0.45) 0.90    9327.8     390.00
      4     9981.40   58.90  0.50( 0.47) 0.93   14983.2   11801.00
      5     9771.67   70.14  0.50( 0.47) 0.94   18215.7   11500.00
      6     9653.22   75.78  0.50( 0.47) 0.95   20150.8   11701.00
      7     9486.73   81.97  0.50( 0.48) 0.95   22260.2   11000.00
      8     9114.81   98.24  0.50( 0.48) 0.96   29125.8   12500.00
      9     8913.79  104.36  0.50( 0.48) 0.97   31995.2   10900.00
     10     8261.62  112.89  0.50( 0.48) 0.97   35324.4   11130.00
     11     7581.28  124.19  0.50( 0.49) 0.97   38996.9   11620.00
     12     6531.35  139.70  0.50( 0.49) 0.97   43522.7   12400.00
     13     5687.67  150.85  0.50( 0.49) 0.97   45828.9   12201.00
     14     5079.93  159.94  0.50( 0.49) 0.97   47119.5   12111.00
     15     4161.19  175.23  0.50( 0.49) 0.97   49042.4   12261.00
     16     3691.70  184.27  0.50( 0.49) 0.97   49853.5   10200.00
     17     3125.01  199.27  0.50( 0.49) 0.97   51091.5   10300.00
     18     2894.41  205.94  0.50( 0.49) 0.97   51443.7   12010.00
     19     2423.04  225.94  0.50( 0.49) 0.98   51772.0   12000.00
     20     1458.18  292.97  0.50( 0.49) 0.98   52442.8   10100.00
    TOTAL AREA(ACRES) =    52442.8

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501U.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      366.96   31.71  0.50( 0.49) 0.98    1027.5   50120.00
      2      344.28   33.54  0.50( 0.49) 0.98    1045.7   50150.00
      3      313.44   36.83  0.50( 0.49) 0.98    1063.4   50100.00
    TOTAL AREA(ACRES) =     1063.4

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|
| 1 | 366.96 | 31.71 | 0.50( 0.49) | 0.98 | 1027.5 | 50120.00 |
| 2 | 344.28 | 33.54 | 0.50( 0.49) | 0.98 | 1045.7 | 50150.00 |
| 3 | 313.44 | 36.83 | 0.50( 0.49) | 0.98 | 1063.4 | 50100.00 |

TOTAL AREA(ACRES) = 1063.4

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 11

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>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 366.96 | 31.71 | 0.860 | 0.50( 0.49) | 0.98 | 1027.5 | 50120.00 |
| 2 | 344.28 | 33.54 | 0.837 | 0.50( 0.49) | 0.98 | 1045.7 | 50150.00 |
| 3 | 313.44 | 36.83 | 0.795 | 0.50( 0.49) | 0.98 | 1063.4 | 50100.00 |

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11061.32 | 18.04 | 1.202 | 0.50( 0.41) | 0.83 | 3778.5 | 410.00 |
| 2 | 10702.99 | 32.02 | 0.856 | 0.50( 0.44) | 0.88 | 7838.2 | 600.00 |
| 3 | 10515.22 | 37.57 | 0.786 | 0.50( 0.45) | 0.90 | 9327.8 | 390.00 |
| 4 | 9981.40 | 58.90 | 0.618 | 0.50( 0.47) | 0.93 | 14983.2 | 11801.00 |
| 5 | 9771.67 | 70.14 | 0.577 | 0.50( 0.47) | 0.94 | 18215.7 | 11500.00 |
| 6 | 9653.22 | 75.78 | 0.557 | 0.50( 0.47) | 0.95 | 20150.8 | 11701.00 |
| 7 | 9486.73 | 81.97 | 0.536 | 0.50( 0.48) | 0.95 | 22260.2 | 11000.00 |
| 8 | 9114.81 | 98.24 | 0.493 | 0.50( 0.48) | 0.96 | 29125.8 | 12500.00 |
| 9 | 8913.79 | 104.36 | 0.481 | 0.50( 0.48) | 0.97 | 31995.2 | 10900.00 |
| 10 | 8261.62 | 112.89 | 0.464 | 0.50( 0.48) | 0.97 | 35324.4 | 11130.00 |
| 11 | 7581.28 | 124.19 | 0.445 | 0.50( 0.49) | 0.97 | 38996.9 | 11620.00 |
| 12 | 6531.35 | 139.70 | 0.426 | 0.50( 0.49) | 0.97 | 43522.7 | 12400.00 |
| 13 | 5687.67 | 150.85 | 0.413 | 0.50( 0.49) | 0.97 | 45828.9 | 12201.00 |
| 14 | 5079.93 | 159.94 | 0.402 | 0.50( 0.49) | 0.97 | 47119.5 | 12111.00 |
| 15 | 4161.19 | 175.23 | 0.384 | 0.50( 0.49) | 0.97 | 49042.4 | 12261.00 |
| 16 | 3691.70 | 184.27 | 0.376 | 0.50( 0.49) | 0.97 | 49853.5 | 10200.00 |
| 17 | 3125.01 | 199.27 | 0.368 | 0.50( 0.49) | 0.97 | 51091.5 | 10300.00 |
| 18 | 2894.41 | 205.94 | 0.364 | 0.50( 0.49) | 0.97 | 51443.7 | 12010.00 |
| 19 | 2423.04 | 225.94 | 0.353 | 0.50( 0.49) | 0.98 | 51772.0 | 12000.00 |
| 20 | 1458.18 | 292.97 | 0.316 | 0.50( 0.49) | 0.98 | 52442.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11428.27 | 18.04 | 1.202 | 0.50( 0.42) | 0.85 | 4363.1 | 410.00 |
| 2 | 11077.70 | 31.71 | 0.860 | 0.50( 0.45) | 0.89 | 8777.8 | 50120.00 |
| 3 | 11066.18 | 32.02 | 0.856 | 0.50( 0.45) | 0.89 | 8868.7 | 600.00 |
| 4 | 10995.86 | 33.54 | 0.837 | 0.50( 0.45) | 0.89 | 9291.7 | 50150.00 |
| 5 | 10853.68 | 36.83 | 0.795 | 0.50( 0.45) | 0.90 | 10192.7 | 50100.00 |
| 6 | 10818.98 | 37.57 | 0.786 | 0.50( 0.45) | 0.90 | 10391.2 | 390.00 |
| 7 | 10111.86 | 58.90 | 0.618 | 0.50( 0.47) | 0.94 | 16046.6 | 11801.00 |
| 8 | 9859.71 | 70.14 | 0.577 | 0.50( 0.47) | 0.95 | 19279.1 | 11500.00 |
| 9 | 9721.51 | 75.78 | 0.557 | 0.50( 0.48) | 0.95 | 21214.2 | 11701.00 |
| 10 | 9533.32 | 81.97 | 0.536 | 0.50( 0.48) | 0.95 | 23323.6 | 11000.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 9124.08 | 98.24 | 0.493 | 0.50( 0.48) | 0.96 | 30189.2 | 12500.00 |
| 12 | 8922.84 | 104.36 | 0.481 | 0.50( 0.48) | 0.97 | 33058.6 | 10900.00 |
| 13 | 8270.35 | 112.89 | 0.464 | 0.50( 0.48) | 0.97 | 36387.8 | 11130.00 |
| 14 | 7589.65 | 124.19 | 0.445 | 0.50( 0.49) | 0.97 | 40060.3 | 11620.00 |
| 15 | 6539.37 | 139.70 | 0.426 | 0.50( 0.49) | 0.97 | 44586.1 | 12400.00 |
| 16 | 5695.44 | 150.85 | 0.413 | 0.50( 0.49) | 0.97 | 46892.3 | 12201.00 |
| 17 | 5087.50 | 159.94 | 0.402 | 0.50( 0.49) | 0.97 | 48182.9 | 12111.00 |
| 18 | 4168.40 | 175.23 | 0.384 | 0.50( 0.49) | 0.97 | 50105.8 | 12261.00 |
| 19 | 3698.77 | 184.27 | 0.376 | 0.50( 0.49) | 0.97 | 50916.9 | 10200.00 |
| 20 | 3131.93 | 199.27 | 0.368 | 0.50( 0.49) | 0.97 | 52154.9 | 10300.00 |
| 21 | 2901.26 | 205.94 | 0.364 | 0.50( 0.49) | 0.98 | 52507.1 | 12010.00 |
| 22 | 2429.68 | 225.94 | 0.353 | 0.50( 0.49) | 0.98 | 52835.4 | 12000.00 |
| 23 | 1464.13 | 292.97 | 0.316 | 0.50( 0.49) | 0.98 | 53506.2 | 10100.00 |

TOTAL AREA(ACRES) = 53506.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 11428.27 Tc(MIN.) = 18.041

EFFECTIVE AREA(ACRES) = 4363.09 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89

TOTAL AREA(ACRES) = 53506.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111772.49 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53506.2 TC(MIN.) = 18.04

EFFECTIVE AREA(ACRES) = 4363.09 AREA-AVERAGED Fm(INCH/HR)= 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.848

PEAK FLOW RATE(CFS) = 11428.27

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11428.27 | 18.04 | 1.202 | 0.50( 0.42) | 0.85 | 4363.1 | 410.00 |
| 2 | 11077.70 | 31.71 | 0.860 | 0.50( 0.45) | 0.89 | 8777.8 | 50120.00 |
| 3 | 11066.18 | 32.02 | 0.856 | 0.50( 0.45) | 0.89 | 8868.7 | 600.00 |
| 4 | 10995.86 | 33.54 | 0.837 | 0.50( 0.45) | 0.89 | 9291.7 | 50150.00 |
| 5 | 10853.68 | 36.83 | 0.795 | 0.50( 0.45) | 0.90 | 10192.7 | 50100.00 |
| 6 | 10818.98 | 37.57 | 0.786 | 0.50( 0.45) | 0.90 | 10391.2 | 390.00 |
| 7 | 10111.86 | 58.90 | 0.618 | 0.50( 0.47) | 0.94 | 16046.6 | 11801.00 |
| 8 | 9859.71 | 70.14 | 0.577 | 0.50( 0.47) | 0.95 | 19279.1 | 11500.00 |
| 9 | 9721.51 | 75.78 | 0.557 | 0.50( 0.48) | 0.95 | 21214.2 | 11701.00 |
| 10 | 9533.32 | 81.97 | 0.536 | 0.50( 0.48) | 0.95 | 23323.6 | 11000.00 |
| 11 | 9124.08 | 98.24 | 0.493 | 0.50( 0.48) | 0.96 | 30189.2 | 12500.00 |
| 12 | 8922.84 | 104.36 | 0.481 | 0.50( 0.48) | 0.97 | 33058.6 | 10900.00 |
| 13 | 8270.35 | 112.89 | 0.464 | 0.50( 0.48) | 0.97 | 36387.8 | 11130.00 |
| 14 | 7589.65 | 124.19 | 0.445 | 0.50( 0.49) | 0.97 | 40060.3 | 11620.00 |
| 15 | 6539.37 | 139.70 | 0.426 | 0.50( 0.49) | 0.97 | 44586.1 | 12400.00 |
| 16 | 5695.44 | 150.85 | 0.413 | 0.50( 0.49) | 0.97 | 46892.3 | 12201.00 |
| 17 | 5087.50 | 159.94 | 0.402 | 0.50( 0.49) | 0.97 | 48182.9 | 12111.00 |
| 18 | 4168.40 | 175.23 | 0.384 | 0.50( 0.49) | 0.97 | 50105.8 | 12261.00 |
| 19 | 3698.77 | 184.27 | 0.376 | 0.50( 0.49) | 0.97 | 50916.9 | 10200.00 |
| 20 | 3131.93 | 199.27 | 0.368 | 0.50( 0.49) | 0.97 | 52154.9 | 10300.00 |
| 21 | 2901.26 | 205.94 | 0.364 | 0.50( 0.49) | 0.98 | 52507.1 | 12010.00 |
| 22 | 2429.68 | 225.94 | 0.353 | 0.50( 0.49) | 0.98 | 52835.4 | 12000.00 |
| 23 | 1464.13 | 292.97 | 0.316 | 0.50( 0.49) | 0.98 | 53506.2 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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**************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV FEB 2023 ROKAMOTO                                           *
 **********************************************************************

  FILE NAME: RI05EV29.DAT
  TIME/DATE OF STUDY: 11:11 02/15/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.698
   2)   10.00;  1.793
   3)   15.00;  1.317
   4)   20.00;  1.127
   5)   25.00;  0.982
   6)   30.00;  0.881
   7)   40.00;  0.754
   8)   50.00;  0.672
   9)   60.00;  0.610
  10)   90.00;  0.507
  11)  120.00;  0.449
  12)  180.00;  0.377
  13)  360.00;  0.279
  14) 1200.00;  0.123
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    11428.27   18.04  0.50( 0.42) 0.85    4363.1     410.00
      2    11077.70   31.71  0.50( 0.45) 0.89    8777.8   50120.00
      3    10853.68   36.83  0.50( 0.45) 0.90   10192.7   50100.00
      4    10111.86   58.90  0.50( 0.47) 0.94   16046.6   11801.00
      5     9859.71   70.14  0.50( 0.47) 0.95   19279.1   11500.00
      6     9721.51   75.78  0.50( 0.48) 0.95   21214.2   11701.00
      7     9533.32   81.97  0.50( 0.48) 0.95   23323.6   11000.00
      8     9124.08   98.24  0.50( 0.48) 0.96   30189.2   12500.00
      9     8922.84  104.36  0.50( 0.48) 0.97   33058.6   10900.00
     10     8270.35  112.89  0.50( 0.48) 0.97   36387.8   11130.00
     11     7589.65  124.19  0.50( 0.49) 0.97   40060.3   11620.00
     12     6539.37  139.70  0.50( 0.49) 0.97   44586.1   12400.00
     13     5695.44  150.85  0.50( 0.49) 0.97   46892.3   12201.00
     14     5087.50  159.94  0.50( 0.49) 0.97   48182.9   12111.00
     15     4168.40  175.23  0.50( 0.49) 0.97   50105.8   12261.00
     16     3698.77  184.27  0.50( 0.49) 0.97   50916.9   10200.00
     17     3131.93  199.27  0.50( 0.49) 0.97   52154.9   10300.00
     18     2901.26  205.94  0.50( 0.49) 0.98   52507.1   12010.00
     19     2429.68  225.94  0.50( 0.49) 0.98   52835.4   12000.00
     20     1464.13  292.97  0.50( 0.49) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =    53506.2

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    11428.27   18.04  0.50( 0.42) 0.85    4363.1     410.00
      2    11077.70   31.71  0.50( 0.45) 0.89    8777.8   50120.00
      3    10853.68   36.83  0.50( 0.45) 0.90   10192.7   50100.00
      4    10111.86   58.90  0.50( 0.47) 0.94   16046.6   11801.00
      5     9859.71   70.14  0.50( 0.47) 0.95   19279.1   11500.00
      6     9721.51   75.78  0.50( 0.48) 0.95   21214.2   11701.00
      7     9533.32   81.97  0.50( 0.48) 0.95   23323.6   11000.00
      8     9124.08   98.24  0.50( 0.48) 0.96   30189.2   12500.00
      9     8922.84  104.36  0.50( 0.48) 0.97   33058.6   10900.00
     10     8270.35  112.89  0.50( 0.48) 0.97   36387.8   11130.00
     11     7589.65  124.19  0.50( 0.49) 0.97   40060.3   11620.00
     12     6539.37  139.70  0.50( 0.49) 0.97   44586.1   12400.00
     13     5695.44  150.85  0.50( 0.49) 0.97   46892.3   12201.00
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     14     5087.50  159.94  0.50( 0.49) 0.97   48182.9   12111.00
     15     4168.40  175.23  0.50( 0.49) 0.97   50105.8   12261.00
     16     3698.77  184.27  0.50( 0.49) 0.97   50916.9   10200.00
     17     3131.93  199.27  0.50( 0.49) 0.97   52154.9   10300.00
     18     2901.26  205.94  0.50( 0.49) 0.98   52507.1   12010.00
     19     2429.68  225.94  0.50( 0.49) 0.98   52835.4   12000.00
     20     1464.13  292.97  0.50( 0.49) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   11428.27
  FLOW VELOCITY(FEET/SEC.) =  16.29   FLOW DEPTH(FEET) =  15.29
  TRAVEL TIME(MIN.) =   3.19   Tc(MIN.) =   21.23
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114892.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    11428.27   21.23    1.091  0.50( 0.42) 0.85    4363.1     410.00
      2    11077.70   34.93    0.818  0.50( 0.45) 0.89    8777.8   50120.00
      3    10853.68   40.06    0.753  0.50( 0.45) 0.90   10192.7   50100.00
      4    10111.86   62.19    0.602  0.50( 0.47) 0.94   16046.6   11801.00
      5     9859.71   73.45    0.564  0.50( 0.47) 0.95   19279.1   11500.00
      6     9721.51   79.10    0.544  0.50( 0.48) 0.95   21214.2   11701.00
      7     9533.32   85.31    0.523  0.50( 0.48) 0.95   23323.6   11000.00
      8     9124.08  101.62    0.485  0.50( 0.48) 0.96   30189.2   12500.00
      9     8922.84  107.76    0.473  0.50( 0.48) 0.97   33058.6   10900.00
     10     8270.35  116.35    0.456  0.50( 0.48) 0.97   36387.8   11130.00
     11     7589.65  127.73    0.440  0.50( 0.49) 0.97   40060.3   11620.00
     12     6539.37  143.37    0.421  0.50( 0.49) 0.97   44586.1   12400.00
     13     5695.44  154.65    0.407  0.50( 0.49) 0.97   46892.3   12201.00
     14     5087.50  163.85    0.396  0.50( 0.49) 0.97   48182.9   12111.00
     15     4168.40  179.34    0.378  0.50( 0.49) 0.97   50105.8   12261.00
     16     3698.77  188.50    0.372  0.50( 0.49) 0.97   50916.9   10200.00
     17     3131.93  203.69    0.364  0.50( 0.49) 0.97   52154.9   10300.00
     18     2901.26  210.44    0.360  0.50( 0.49) 0.98   52507.1   12010.00
     19     2429.68  230.64    0.349  0.50( 0.49) 0.98   52835.4   12000.00
     20     1464.13  298.31    0.313  0.50( 0.49) 0.98   53506.2   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   11428.27  Tc(MIN.) =   21.23
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.85  EFFECTIVE AREA(ACRES) =    4363.09
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****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.30      0.50     0.100     -
  USER-DEFINED               -        9.40      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   19.03
  EFFECTIVE AREA(ACRES) =   4386.79   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =   11428.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.50     0.100     -
  USER-DEFINED               -        0.40      0.50     0.500     -
  USER-DEFINED               -        0.50      0.50     0.900     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.70      0.50     0.100     -
  USER-DEFINED               -        0.70      0.50     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.16
  EFFECTIVE AREA(ACRES) =   4389.89   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =   11428.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.50     0.850     -
  USER-DEFINED               -        1.00      0.50     1.000     -
  USER-DEFINED               -        1.40      0.50     1.000     -
  USER-DEFINED               -        1.50      0.50     1.000     -
```

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  USER-DEFINED               -        1.70      0.50     0.100     -
  USER-DEFINED               -        2.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    5.63
  EFFECTIVE AREA(ACRES) =   4399.09   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =   11428.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.60      0.50     1.000     -
  USER-DEFINED               -        3.70      0.50     0.500     -
  USER-DEFINED               -        4.10      0.50     0.500     -
  USER-DEFINED               -        5.40      0.50     0.900     -
  USER-DEFINED               -        6.70      0.50     1.000     -
  USER-DEFINED               -       12.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   20.88
  EFFECTIVE AREA(ACRES) =   4434.59   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =   11428.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.90      0.50     1.000     -
  USER-DEFINED               -       38.60      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   30.00
  EFFECTIVE AREA(ACRES) =   4486.09   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =   11428.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   11428.27
  FLOW VELOCITY(FEET/SEC.) =  16.67   FLOW DEPTH(FEET) =  15.12
  TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =   21.36
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115014.81 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11428.27   21.36    1.088  0.50( 0.42) 0.85    4486.1     410.00
      2    11077.70   35.05    0.817  0.50( 0.44) 0.89    8900.8   50120.00
      3    10853.68   40.19    0.752  0.50( 0.45) 0.90   10315.7   50100.00
      4    10111.86   62.32    0.602  0.50( 0.47) 0.94   16169.6   11801.00
      5     9859.71   73.58    0.563  0.50( 0.47) 0.95   19402.1   11500.00
      6     9721.51   79.23    0.544  0.50( 0.48) 0.95   21337.2   11701.00
      7     9533.32   85.44    0.523  0.50( 0.48) 0.95   23446.6   11000.00
      8     9124.08  101.75    0.484  0.50( 0.48) 0.96   30312.2   12500.00
      9     8922.84  107.89    0.472  0.50( 0.48) 0.97   33181.6   10900.00
     10     8270.35  116.48    0.456  0.50( 0.48) 0.97   36510.8   11130.00
     11     7589.65  127.86    0.440  0.50( 0.49) 0.97   40183.3   11620.00
     12     6539.37  143.51    0.421  0.50( 0.49) 0.97   44709.1   12400.00
     13     5695.44  154.79    0.407  0.50( 0.49) 0.97   47015.3   12201.00
     14     5087.50  164.00    0.396  0.50( 0.49) 0.97   48305.9   12111.00
     15     4168.40  179.50    0.378  0.50( 0.49) 0.97   50228.8   12261.00
     16     3698.77  188.66    0.372  0.50( 0.49) 0.97   51039.9   10200.00
     17     3131.93  203.86    0.364  0.50( 0.49) 0.97   52277.9   10300.00
     18     2901.26  210.61    0.360  0.50( 0.49) 0.97   52630.1   12010.00
     19     2429.68  230.82    0.349  0.50( 0.49) 0.97   52958.4   12000.00
     20     1464.13  298.51    0.312  0.50( 0.49) 0.98   53629.2   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   11428.27  Tc(MIN.) =   21.36
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.85  EFFECTIVE AREA(ACRES) =    4486.09

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XX05.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       23.59   11.88  0.50( 0.46) 0.91      28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11428.27 | 21.36 | 1.088 | 0.50( 0.42) | 0.85 | 4486.1 | 410.00 |
| 2 | 11077.70 | 35.05 | 0.817 | 0.50( 0.44) | 0.89 | 8900.8 | 50120.00 |
| 3 | 10853.68 | 40.19 | 0.752 | 0.50( 0.45) | 0.90 | 10315.7 | 50100.00 |
| 4 | 10111.86 | 62.32 | 0.602 | 0.50( 0.47) | 0.94 | 16169.6 | 11801.00 |
| 5 | 9859.71 | 73.58 | 0.563 | 0.50( 0.47) | 0.95 | 19402.1 | 11500.00 |
| 6 | 9721.51 | 79.23 | 0.544 | 0.50( 0.48) | 0.95 | 21337.2 | 11701.00 |
| 7 | 9533.32 | 85.44 | 0.523 | 0.50( 0.48) | 0.95 | 23446.6 | 11000.00 |
| 8 | 9124.08 | 101.75 | 0.484 | 0.50( 0.48) | 0.96 | 30312.2 | 12500.00 |
| 9 | 8922.84 | 107.89 | 0.472 | 0.50( 0.48) | 0.97 | 33181.6 | 10900.00 |
| 10 | 8270.35 | 116.48 | 0.456 | 0.50( 0.48) | 0.97 | 36510.8 | 11130.00 |
| 11 | 7589.65 | 127.86 | 0.440 | 0.50( 0.49) | 0.97 | 40183.3 | 11620.00 |
| 12 | 6539.37 | 143.51 | 0.421 | 0.50( 0.49) | 0.97 | 44709.1 | 12400.00 |
| 13 | 5695.44 | 154.79 | 0.407 | 0.50( 0.49) | 0.97 | 47015.3 | 12201.00 |
| 14 | 5087.50 | 164.00 | 0.396 | 0.50( 0.49) | 0.97 | 48305.9 | 12111.00 |
| 15 | 4168.40 | 179.50 | 0.378 | 0.50( 0.49) | 0.97 | 50228.8 | 12261.00 |
| 16 | 3698.77 | 188.66 | 0.372 | 0.50( 0.49) | 0.97 | 51039.9 | 10200.00 |
| 17 | 3131.93 | 203.86 | 0.364 | 0.50( 0.49) | 0.97 | 52277.9 | 10300.00 |
| 18 | 2901.26 | 210.61 | 0.360 | 0.50( 0.49) | 0.97 | 52630.1 | 12010.00 |
| 19 | 2429.68 | 230.82 | 0.349 | 0.50( 0.49) | 0.97 | 52958.4 | 12000.00 |
| 20 | 1464.13 | 298.51 | 0.312 | 0.50( 0.49) | 0.98 | 53629.2 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23.59 | 11.88 | 1.614 | 0.50( 0.46) | 0.91 | 28.7 | 50200.00 |

LONGEST FLOWPATH FROM NODE 50200.00 TO NODE 12902.00 = 1426.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11416.38 | 11.88 | 1.614 | 0.50( 0.42) | 0.85 | 2524.0 | 50200.00 |
| 2 | 11441.15 | 21.36 | 1.088 | 0.50( 0.42) | 0.85 | 4514.8 | 410.00 |
| 3 | 11085.06 | 35.05 | 0.817 | 0.50( 0.44) | 0.89 | 8929.5 | 50120.00 |
| 4 | 10859.73 | 40.19 | 0.752 | 0.50( 0.45) | 0.90 | 10344.4 | 50100.00 |
| 5 | 10114.85 | 62.32 | 0.602 | 0.50( 0.47) | 0.94 | 16198.3 | 11801.00 |
| 6 | 9861.92 | 73.58 | 0.563 | 0.50( 0.47) | 0.95 | 19430.8 | 11500.00 |
| 7 | 9723.31 | 79.23 | 0.544 | 0.50( 0.48) | 0.95 | 21365.9 | 11701.00 |
| 8 | 9534.69 | 85.44 | 0.523 | 0.50( 0.48) | 0.95 | 23475.3 | 11000.00 |
| 9 | 9124.96 | 101.75 | 0.484 | 0.50( 0.48) | 0.96 | 30340.9 | 12500.00 |
| 10 | 8923.70 | 107.89 | 0.472 | 0.50( 0.48) | 0.97 | 33210.3 | 10900.00 |
| 11 | 8271.18 | 116.48 | 0.456 | 0.50( 0.48) | 0.97 | 36539.5 | 11130.00 |
| 12 | 7590.45 | 127.86 | 0.440 | 0.50( 0.49) | 0.97 | 40212.0 | 11620.00 |
| 13 | 6540.14 | 143.51 | 0.421 | 0.50( 0.49) | 0.97 | 44737.8 | 12400.00 |
| 14 | 5696.19 | 154.79 | 0.407 | 0.50( 0.49) | 0.97 | 47044.0 | 12201.00 |
| 15 | 5088.22 | 164.00 | 0.396 | 0.50( 0.49) | 0.97 | 48334.6 | 12111.00 |
| 16 | 4169.09 | 179.50 | 0.378 | 0.50( 0.49) | 0.97 | 50257.5 | 12261.00 |
| 17 | 3699.45 | 188.66 | 0.372 | 0.50( 0.49) | 0.97 | 51068.6 | 10200.00 |
| 18 | 3132.59 | 203.86 | 0.364 | 0.50( 0.49) | 0.97 | 52306.6 | 10300.00 |
| 19 | 2901.92 | 210.61 | 0.360 | 0.50( 0.49) | 0.97 | 52658.8 | 12010.00 |
| 20 | 2430.32 | 230.82 | 0.349 | 0.50( 0.49) | 0.97 | 52987.1 | 12000.00 |
| 21 | 1464.70 | 298.51 | 0.312 | 0.50( 0.49) | 0.98 | 53657.9 | 10100.00 |

TOTAL AREA(ACRES) = 53657.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 11441.15 Tc(MIN.) = 21.357



EFFECTIVE AREA(ACRES) = 4514.79 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 53657.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 1 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: E503XX05.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 106.09 | 30.37 | 0.50( 0.49) | 0.99 | 366.4 | 50300.00 |

TOTAL AREA(ACRES) = 366.4

**********
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11416.38 | 11.88 | 1.614 | 0.50( 0.42) | 0.85 | 2524.0 | 50200.00 |
| 2 | 11441.15 | 21.36 | 1.088 | 0.50( 0.42) | 0.85 | 4514.8 | 410.00 |
| 3 | 11085.06 | 35.05 | 0.817 | 0.50( 0.44) | 0.89 | 8929.5 | 50120.00 |
| 4 | 10859.73 | 40.19 | 0.752 | 0.50( 0.45) | 0.90 | 10344.4 | 50100.00 |
| 5 | 10114.85 | 62.32 | 0.602 | 0.50( 0.47) | 0.94 | 16198.3 | 11801.00 |
| 6 | 9861.92 | 73.58 | 0.563 | 0.50( 0.47) | 0.95 | 19430.8 | 11500.00 |
| 7 | 9723.31 | 79.23 | 0.544 | 0.50( 0.48) | 0.95 | 21365.9 | 11701.00 |
| 8 | 9534.69 | 85.44 | 0.523 | 0.50( 0.48) | 0.95 | 23475.3 | 11000.00 |
| 9 | 9124.96 | 101.75 | 0.484 | 0.50( 0.48) | 0.96 | 30340.9 | 12500.00 |
| 10 | 8923.70 | 107.89 | 0.472 | 0.50( 0.48) | 0.97 | 33210.3 | 10900.00 |
| 11 | 8271.18 | 116.48 | 0.456 | 0.50( 0.48) | 0.97 | 36539.5 | 11130.00 |
| 12 | 7590.45 | 127.86 | 0.440 | 0.50( 0.49) | 0.97 | 40212.0 | 11620.00 |
| 13 | 6540.14 | 143.51 | 0.421 | 0.50( 0.49) | 0.97 | 44737.8 | 12400.00 |
| 14 | 5696.19 | 154.79 | 0.407 | 0.50( 0.49) | 0.97 | 47044.0 | 12201.00 |
| 15 | 5088.22 | 164.00 | 0.396 | 0.50( 0.49) | 0.97 | 48334.6 | 12111.00 |
| 16 | 4169.09 | 179.50 | 0.378 | 0.50( 0.49) | 0.97 | 50257.5 | 12261.00 |
| 17 | 3699.45 | 188.66 | 0.372 | 0.50( 0.49) | 0.97 | 51068.6 | 10200.00 |
| 18 | 3132.59 | 203.86 | 0.364 | 0.50( 0.49) | 0.97 | 52306.6 | 10300.00 |
| 19 | 2901.92 | 210.61 | 0.360 | 0.50( 0.49) | 0.97 | 52658.8 | 12010.00 |
| 20 | 2430.32 | 230.82 | 0.349 | 0.50( 0.49) | 0.97 | 52987.1 | 12000.00 |
| 21 | 1464.70 | 298.51 | 0.312 | 0.50( 0.49) | 0.98 | 53657.9 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115014.81 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|

```
      1      106.09   30.37    0.876  0.50( 0.49) 0.99     366.4   50300.00
  LONGEST FLOWPATH FROM NODE  50300.00 TO NODE  12902.00 =    8614.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11522.47   11.88    1.614  0.50( 0.43) 0.85    2667.4   50200.00
      2    11547.24   21.36    1.088  0.50( 0.43) 0.85    4772.5     410.00
      3    11312.98   30.37    0.876  0.50( 0.44) 0.88    7785.5   50300.00
      4    11174.69   35.05    0.817  0.50( 0.45) 0.89    9295.9   50120.00
      5    10931.56   40.19    0.752  0.50( 0.45) 0.90   10710.8   50100.00
      6    10145.07   62.32    0.602  0.50( 0.47) 0.94   16564.7   11801.00
      7     9881.44   73.58    0.563  0.50( 0.47) 0.95   19797.2   11500.00
      8     9737.47   79.23    0.544  0.50( 0.48) 0.95   21732.3   11701.00
      9     9542.95   85.44    0.523  0.50( 0.48) 0.95   23841.7   11000.00
     10     9126.94  101.75    0.484  0.50( 0.48) 0.96   30707.3   12500.00
     11     8925.63  107.89    0.472  0.50( 0.48) 0.97   33576.7   10900.00
     12     8273.05  116.48    0.456  0.50( 0.48) 0.97   36905.9   11130.00
     13     7592.25  127.86    0.440  0.50( 0.49) 0.97   40578.4   11620.00
     14     6541.86  143.51    0.421  0.50( 0.49) 0.97   45104.2   12400.00
     15     5697.85  154.79    0.407  0.50( 0.49) 0.97   47410.4   12201.00
     16     5089.84  164.00    0.396  0.50( 0.49) 0.97   48701.0   12111.00
     17     4170.64  179.50    0.378  0.50( 0.49) 0.97   50623.9   12261.00
     18     3700.97  188.66    0.372  0.50( 0.49) 0.97   51435.0   10200.00
     19     3134.08  203.86    0.364  0.50( 0.49) 0.97   52673.0   10300.00
     20     2903.39  210.61    0.360  0.50( 0.49) 0.97   53025.2   12010.00
     21     2431.75  230.82    0.349  0.50( 0.49) 0.97   53353.5   12000.00
     22     1465.98  298.51    0.312  0.50( 0.49) 0.98   54024.3   10100.00
    TOTAL AREA(ACRES) =     54024.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    11547.24  Tc(MIN.) =   21.357
  EFFECTIVE AREA(ACRES) =   4772.46  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    54024.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115014.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
```



```
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =   11547.24
  FLOW VELOCITY(FEET/SEC.) =   9.62   FLOW DEPTH(FEET) =  20.00
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =   22.91
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115910.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11522.47   13.43    1.466  0.50( 0.43) 0.85    2667.4   50200.00
      2    11547.24   22.91    1.043  0.50( 0.43) 0.85    4772.5     410.00
      3    11312.98   31.95    0.856  0.50( 0.44) 0.88    7785.5   50300.00
      4    11174.69   36.66    0.796  0.50( 0.45) 0.89    9295.9   50120.00
      5    10931.56   41.82    0.739  0.50( 0.45) 0.90   10710.8   50100.00
      6    10145.07   64.09    0.596  0.50( 0.47) 0.94   16564.7   11801.00
      7     9881.44   75.39    0.557  0.50( 0.47) 0.95   19797.2   11500.00
      8     9737.47   81.07    0.538  0.50( 0.48) 0.95   21732.3   11701.00
      9     9542.95   87.32    0.516  0.50( 0.48) 0.95   23841.7   11000.00
     10     9126.94  103.71    0.480  0.50( 0.48) 0.96   30707.3   12500.00
     11     8925.63  109.89    0.469  0.50( 0.48) 0.97   33576.7   10900.00
     12     8273.05  118.53    0.452  0.50( 0.48) 0.97   36905.9   11130.00
     13     7592.25  129.95    0.437  0.50( 0.49) 0.97   40578.4   11620.00
     14     6541.86  145.69    0.418  0.50( 0.49) 0.97   45104.2   12400.00
     15     5697.85  157.04    0.405  0.50( 0.49) 0.97   47410.4   12201.00
     16     5089.84  166.31    0.393  0.50( 0.49) 0.97   48701.0   12111.00
     17     4170.64  181.93    0.376  0.50( 0.49) 0.97   50623.9   12261.00
     18     3700.97  191.17    0.371  0.50( 0.49) 0.97   51435.0   10200.00
     19     3134.08  206.47    0.363  0.50( 0.49) 0.97   52673.0   10300.00
     20     2903.39  213.28    0.359  0.50( 0.49) 0.97   53025.2   12010.00
     21     2431.75  233.61    0.348  0.50( 0.49) 0.97   53353.5   12000.00
     22     1465.98  301.67    0.311  0.50( 0.49) 0.98   54024.3   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   11547.24  Tc(MIN.) =   22.91
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.85  EFFECTIVE AREA(ACRES) =    4772.46

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XX05.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1       35.66   19.29  0.50( 0.48) 0.97      70.5   50400.00
    TOTAL AREA(ACRES) =       70.5

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 11522.47 | 13.43 | 1.466 | 0.50( 0.43) | 0.85 | 2667.4 | 50200.00 |
| 2 | 11547.24 | 22.91 | 1.043 | 0.50( 0.43) | 0.85 | 4772.5 | 410.00 |
| 3 | 11312.98 | 31.95 | 0.856 | 0.50( 0.44) | 0.88 | 7785.5 | 50300.00 |
| 4 | 11174.69 | 36.66 | 0.796 | 0.50( 0.45) | 0.89 | 9295.9 | 50120.00 |
| 5 | 10931.56 | 41.82 | 0.739 | 0.50( 0.45) | 0.90 | 10710.8 | 50100.00 |
| 6 | 10145.07 | 64.09 | 0.596 | 0.50( 0.47) | 0.94 | 16564.7 | 11801.00 |
| 7 | 9881.44 | 75.39 | 0.557 | 0.50( 0.47) | 0.95 | 19797.2 | 11500.00 |
| 8 | 9737.47 | 81.07 | 0.538 | 0.50( 0.48) | 0.95 | 21732.3 | 11701.00 |
| 9 | 9542.95 | 87.32 | 0.516 | 0.50( 0.48) | 0.95 | 23841.7 | 11000.00 |
| 10 | 9126.94 | 103.71 | 0.480 | 0.50( 0.48) | 0.96 | 30707.3 | 12500.00 |
| 11 | 8925.63 | 109.89 | 0.469 | 0.50( 0.48) | 0.97 | 33576.7 | 10900.00 |
| 12 | 8273.05 | 118.53 | 0.452 | 0.50( 0.48) | 0.97 | 36905.9 | 11130.00 |
| 13 | 7592.25 | 129.95 | 0.437 | 0.50( 0.49) | 0.97 | 40578.4 | 11620.00 |
| 14 | 6541.86 | 145.69 | 0.418 | 0.50( 0.49) | 0.97 | 45104.2 | 12400.00 |
| 15 | 5697.85 | 157.04 | 0.405 | 0.50( 0.49) | 0.97 | 47410.4 | 12201.00 |
| 16 | 5089.84 | 166.31 | 0.393 | 0.50( 0.49) | 0.97 | 48701.0 | 12111.00 |
| 17 | 4170.64 | 181.93 | 0.376 | 0.50( 0.49) | 0.97 | 50623.9 | 12261.00 |
| 18 | 3700.97 | 191.17 | 0.371 | 0.50( 0.49) | 0.97 | 51435.0 | 10200.00 |
| 19 | 3134.08 | 206.47 | 0.363 | 0.50( 0.49) | 0.97 | 52673.0 | 10300.00 |
| 20 | 2903.39 | 213.28 | 0.359 | 0.50( 0.49) | 0.97 | 53025.2 | 12010.00 |
| 21 | 2431.75 | 233.61 | 0.348 | 0.50( 0.49) | 0.97 | 53353.5 | 12000.00 |
| 22 | 1465.98 | 301.67 | 0.311 | 0.50( 0.49) | 0.98 | 54024.3 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115910.34 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 35.66 | 19.29 | 1.154 | 0.50( 0.48) | 0.97 | 70.5 | 50400.00 |

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11558.13 | 13.43 | 1.466 | 0.50( 0.43) | 0.86 | 2716.5 | 50200.00 |
| 2 | 11573.43 | 19.29 | 1.154 | 0.50( 0.43) | 0.86 | 4038.5 | 50400.00 |
| 3 | 11576.97 | 22.91 | 1.043 | 0.50( 0.43) | 0.86 | 4843.0 | 410.00 |
| 4 | 11332.80 | 31.95 | 0.856 | 0.50( 0.44) | 0.88 | 7856.0 | 50300.00 |
| 5 | 11191.33 | 36.66 | 0.796 | 0.50( 0.45) | 0.89 | 9366.4 | 50120.00 |
| 6 | 10945.15 | 41.82 | 0.739 | 0.50( 0.45) | 0.90 | 10781.3 | 50100.00 |
| 7 | 10151.04 | 64.09 | 0.596 | 0.50( 0.47) | 0.94 | 16635.2 | 11801.00 |
| 8 | 9885.35 | 75.39 | 0.557 | 0.50( 0.47) | 0.95 | 19867.7 | 11500.00 |
| 9 | 9740.34 | 81.07 | 0.538 | 0.50( 0.48) | 0.95 | 21802.8 | 11701.00 |
| 10 | 9544.68 | 87.32 | 0.516 | 0.50( 0.48) | 0.95 | 23912.2 | 11000.00 |
| 11 | 9127.79 | 103.71 | 0.480 | 0.50( 0.48) | 0.96 | 30777.8 | 12500.00 |
| 12 | 8926.46 | 109.89 | 0.469 | 0.50( 0.48) | 0.97 | 33647.2 | 10900.00 |
| 13 | 8273.84 | 118.53 | 0.452 | 0.50( 0.48) | 0.97 | 36976.4 | 11130.00 |
| 14 | 7593.02 | 129.95 | 0.437 | 0.50( 0.49) | 0.97 | 40648.9 | 11620.00 |
| 15 | 6542.60 | 145.69 | 0.418 | 0.50( 0.49) | 0.97 | 45174.7 | 12400.00 |
| 16 | 5698.56 | 157.04 | 0.405 | 0.50( 0.49) | 0.97 | 47480.9 | 12201.00 |
| 17 | 5090.54 | 166.31 | 0.393 | 0.50( 0.49) | 0.97 | 48771.5 | 12111.00 |
| 18 | 4171.30 | 181.93 | 0.376 | 0.50( 0.49) | 0.97 | 50694.4 | 12261.00 |
| 19 | 3701.63 | 191.17 | 0.371 | 0.50( 0.49) | 0.97 | 51505.5 | 10200.00 |
| 20 | 3134.72 | 206.47 | 0.363 | 0.50( 0.49) | 0.97 | 52743.5 | 10300.00 |
| 21 | 2904.02 | 213.28 | 0.359 | 0.50( 0.49) | 0.97 | 53095.7 | 12010.00 |
| 22 | 2432.36 | 233.61 | 0.348 | 0.50( 0.49) | 0.97 | 53424.0 | 12000.00 |
| 23 | 1466.53 | 301.67 | 0.311 | 0.50( 0.49) | 0.98 | 54094.8 | 10100.00 |

TOTAL AREA(ACRES) = 54094.8



COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 11576.97 Tc(MIN.) = 22.908
EFFECTIVE AREA(ACRES) = 4842.96 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 54094.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115910.34 FEET.

**********
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
ALLOWABLE DEPTH).
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA(CFS) = 11576.97
FLOW VELOCITY(FEET/SEC.) = 9.65 FLOW DEPTH(FEET) = 20.00
TRAVEL TIME(MIN.) = 1.33 Tc(MIN.) = 24.23
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116677.91 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11558.13 | 14.76 | 1.340 | 0.50( 0.43) | 0.86 | 2716.5 | 50200.00 |
| 2 | 11573.43 | 20.61 | 1.109 | 0.50( 0.43) | 0.86 | 4038.5 | 50400.00 |
| 3 | 11576.97 | 24.23 | 1.004 | 0.50( 0.43) | 0.86 | 4843.0 | 410.00 |
| 4 | 11332.80 | 33.31 | 0.839 | 0.50( 0.44) | 0.88 | 7856.0 | 50300.00 |
| 5 | 11191.33 | 38.03 | 0.779 | 0.50( 0.45) | 0.89 | 9366.4 | 50120.00 |
| 6 | 10945.15 | 43.23 | 0.728 | 0.50( 0.45) | 0.90 | 10781.3 | 50100.00 |
| 7 | 10151.04 | 65.60 | 0.591 | 0.50( 0.47) | 0.94 | 16635.2 | 11801.00 |
| 8 | 9885.35 | 76.94 | 0.552 | 0.50( 0.47) | 0.95 | 19867.7 | 11500.00 |
| 9 | 9740.34 | 82.65 | 0.532 | 0.50( 0.48) | 0.95 | 21802.8 | 11701.00 |
| 10 | 9544.68 | 88.92 | 0.511 | 0.50( 0.48) | 0.95 | 23912.2 | 11000.00 |
| 11 | 9127.79 | 105.32 | 0.477 | 0.50( 0.48) | 0.96 | 30777.8 | 12500.00 |
| 12 | 8926.46 | 111.52 | 0.465 | 0.50( 0.48) | 0.97 | 33647.2 | 10900.00 |
| 13 | 8273.84 | 120.19 | 0.449 | 0.50( 0.48) | 0.97 | 36976.4 | 11130.00 |
| 14 | 7593.02 | 131.65 | 0.435 | 0.50( 0.49) | 0.97 | 40648.9 | 11620.00 |
| 15 | 6542.60 | 147.44 | 0.416 | 0.50( 0.49) | 0.97 | 45174.7 | 12400.00 |
| 16 | 5698.56 | 158.86 | 0.402 | 0.50( 0.49) | 0.97 | 47480.9 | 12201.00 |
| 17 | 5090.54 | 168.18 | 0.391 | 0.50( 0.49) | 0.97 | 48771.5 | 12111.00 |
| 18 | 4171.30 | 183.89 | 0.375 | 0.50( 0.49) | 0.97 | 50694.4 | 12261.00 |
| 19 | 3701.63 | 193.20 | 0.370 | 0.50( 0.49) | 0.97 | 51505.5 | 10200.00 |
| 20 | 3134.72 | 208.58 | 0.361 | 0.50( 0.49) | 0.97 | 52743.5 | 10300.00 |

```
    21     2904.02  215.43    0.358  0.50( 0.49) 0.97   53095.7   12010.00
    22     2432.36  235.86    0.347  0.50( 0.49) 0.97   53424.0   12000.00
    23     1466.53  304.22    0.309  0.50( 0.49) 0.98   54094.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   11576.97  Tc(MIN.) =   24.23
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.86  EFFECTIVE AREA(ACRES) =    4842.96

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3B05EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      169.26   19.04  0.50( 0.22) 0.43     198.6     203.00
      2      167.62   21.45  0.50( 0.21) 0.43     213.7     210.00
    TOTAL AREA(ACRES) =      213.7

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11558.13   14.76    1.340  0.50( 0.43) 0.86    2716.5   50200.00
      2    11573.43   20.61    1.109  0.50( 0.43) 0.86    4038.5   50400.00
      3    11576.97   24.23    1.004  0.50( 0.43) 0.86    4843.0     410.00
      4    11332.80   33.31    0.839  0.50( 0.44) 0.88    7856.0   50300.00
      5    11191.33   38.03    0.779  0.50( 0.45) 0.89    9366.4   50120.00
      6    10945.15   43.23    0.728  0.50( 0.45) 0.90   10781.3   50100.00
      7    10151.04   65.60    0.591  0.50( 0.47) 0.94   16635.2   11801.00
      8     9885.35   76.94    0.552  0.50( 0.47) 0.95   19867.7   11500.00
      9     9740.34   82.65    0.532  0.50( 0.48) 0.95   21802.8   11701.00
     10     9544.68   88.92    0.511  0.50( 0.48) 0.95   23912.2   11000.00
     11     9127.79  105.32    0.477  0.50( 0.48) 0.96   30777.8   12500.00
     12     8926.46  111.52    0.465  0.50( 0.48) 0.97   33647.2   10900.00
     13     8273.84  120.19    0.449  0.50( 0.48) 0.97   36976.4   11130.00
     14     7593.02  131.65    0.435  0.50( 0.49) 0.97   40648.9   11620.00
     15     6542.60  147.44    0.416  0.50( 0.49) 0.97   45174.7   12400.00
     16     5698.56  158.86    0.402  0.50( 0.49) 0.97   47480.9   12201.00
     17     5090.54  168.18    0.391  0.50( 0.49) 0.97   48771.5   12111.00
     18     4171.30  183.89    0.375  0.50( 0.49) 0.97   50694.4   12261.00
     19     3701.63  193.20    0.370  0.50( 0.49) 0.97   51505.5   10200.00
     20     3134.72  208.58    0.361  0.50( 0.49) 0.97   52743.5   10300.00
     21     2904.02  215.43    0.358  0.50( 0.49) 0.97   53095.7   12010.00
     22     2432.36  235.86    0.347  0.50( 0.49) 0.97   53424.0   12000.00
     23     1466.53  304.22    0.309  0.50( 0.49) 0.98   54094.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116677.91 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```



```
      1      169.26   19.04    1.163  0.50( 0.22) 0.43     198.6     203.00
      2      167.62   21.45    1.085  0.50( 0.21) 0.43     213.7     210.00
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE  12904.00 =    7986.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11713.76   14.76    1.340  0.50( 0.42) 0.83    2870.4   50200.00
      2    11738.58   19.04    1.163  0.50( 0.42) 0.83    3882.4     203.00
      3    11741.63   20.61    1.109  0.50( 0.42) 0.83    4246.9   50400.00
      4    11741.88   21.45    1.085  0.50( 0.42) 0.84    4438.5     210.00
      5    11729.08   24.23    1.004  0.50( 0.42) 0.84    5056.7     410.00
      6    11453.13   33.31    0.839  0.50( 0.43) 0.87    8069.7   50300.00
      7    11300.13   38.03    0.779  0.50( 0.44) 0.88    9580.1   50120.00
      8    11044.04   43.23    0.728  0.50( 0.45) 0.90   10995.0   50100.00
      9    10223.64   65.60    0.591  0.50( 0.47) 0.93   16848.9   11801.00
     10     9950.45   76.94    0.552  0.50( 0.47) 0.94   20081.4   11500.00
     11     9801.68   82.65    0.532  0.50( 0.47) 0.95   22016.5   11701.00
     12     9601.88   88.92    0.511  0.50( 0.48) 0.95   24125.9   11000.00
     13     9180.45  105.32    0.477  0.50( 0.48) 0.96   30991.5   12500.00
     14     8977.79  111.52    0.465  0.50( 0.48) 0.96   33860.9   10900.00
     15     8323.34  120.19    0.449  0.50( 0.48) 0.97   37190.1   11130.00
     16     7641.00  131.65    0.435  0.50( 0.48) 0.97   40862.6   11620.00
     17     6588.50  147.44    0.416  0.50( 0.49) 0.97   45388.4   12400.00
     18     5742.95  158.86    0.402  0.50( 0.49) 0.97   47694.6   12201.00
     19     5133.68  168.18    0.391  0.50( 0.49) 0.97   48985.2   12111.00
     20     4212.65  183.89    0.375  0.50( 0.49) 0.97   50908.1   12261.00
     21     3742.42  193.20    0.370  0.50( 0.49) 0.97   51719.2   10200.00
     22     3174.59  208.58    0.361  0.50( 0.49) 0.97   52957.2   10300.00
     23     2943.48  215.43    0.358  0.50( 0.49) 0.97   53309.4   12010.00
     24     2470.59  235.86    0.347  0.50( 0.49) 0.97   53637.7   12000.00
     25     1500.65  304.22    0.309  0.50( 0.49) 0.97   54308.5   10100.00
    TOTAL AREA(ACRES) =     54308.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    11741.88  Tc(MIN.) =   21.452
  EFFECTIVE AREA(ACRES) =   4438.55  AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54308.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116677.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.45
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.085
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     0.900     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        1.20      0.50     0.100     -
  USER-DEFINED               -        1.50      0.50     0.100     -
  USER-DEFINED               -        3.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641
SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 4.68
EFFECTIVE AREA(ACRES) = 4445.35 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 54315.3 PEAK FLOW RATE(CFS) = 11741.88
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 21.45
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.085
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 15.10 | 0.50 | 0.850 | - |
| USER-DEFINED | - | 20.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.941
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 21.38
EFFECTIVE AREA(ACRES) = 4484.05 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 54354.0 PEAK FLOW RATE(CFS) = 11741.88
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 54354.0 TC(MIN.) = 21.45
EFFECTIVE AREA(ACRES) = 4484.05 AREA-AVERAGED Fm(INCH/HR)= 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.836
PEAK FLOW RATE(CFS) = 11741.88

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11713.76 | 14.76 | 1.340 | 0.50( 0.42) | 0.83 | 2915.9 | 50200.00 |
| 2 | 11738.58 | 19.04 | 1.163 | 0.50( 0.42) | 0.84 | 3927.9 | 203.00 |
| 3 | 11741.63 | 20.61 | 1.109 | 0.50( 0.42) | 0.84 | 4292.4 | 50400.00 |
| 4 | 11741.88 | 21.45 | 1.085 | 0.50( 0.42) | 0.84 | 4484.0 | 210.00 |
| 5 | 11729.08 | 24.23 | 1.004 | 0.50( 0.42) | 0.84 | 5102.2 | 410.00 |
| 6 | 11453.13 | 33.31 | 0.839 | 0.50( 0.43) | 0.87 | 8115.2 | 50300.00 |
| 7 | 11300.13 | 38.03 | 0.779 | 0.50( 0.44) | 0.88 | 9625.6 | 50120.00 |
| 8 | 11044.04 | 43.23 | 0.728 | 0.50( 0.45) | 0.90 | 11040.5 | 50100.00 |
| 9 | 10223.64 | 65.60 | 0.591 | 0.50( 0.47) | 0.93 | 16894.4 | 11801.00 |
| 10 | 9950.45 | 76.94 | 0.552 | 0.50( 0.47) | 0.94 | 20126.9 | 11500.00 |
| 11 | 9801.68 | 82.65 | 0.532 | 0.50( 0.47) | 0.95 | 22062.0 | 11701.00 |
| 12 | 9601.88 | 88.92 | 0.511 | 0.50( 0.47) | 0.95 | 24171.4 | 11000.00 |
| 13 | 9180.45 | 105.32 | 0.477 | 0.50( 0.48) | 0.96 | 31037.0 | 12500.00 |
| 14 | 8977.79 | 111.52 | 0.465 | 0.50( 0.48) | 0.96 | 33906.4 | 10900.00 |
| 15 | 8323.34 | 120.19 | 0.449 | 0.50( 0.48) | 0.97 | 37235.6 | 11130.00 |
| 16 | 7641.00 | 131.65 | 0.435 | 0.50( 0.48) | 0.97 | 40908.1 | 11620.00 |
| 17 | 6588.50 | 147.44 | 0.416 | 0.50( 0.49) | 0.97 | 45433.9 | 12400.00 |
| 18 | 5742.95 | 158.86 | 0.402 | 0.50( 0.49) | 0.97 | 47740.1 | 12201.00 |
| 19 | 5133.68 | 168.18 | 0.391 | 0.50( 0.49) | 0.97 | 49030.7 | 12111.00 |
| 20 | 4212.65 | 183.89 | 0.375 | 0.50( 0.49) | 0.97 | 50953.6 | 12261.00 |
| 21 | 3742.42 | 193.20 | 0.370 | 0.50( 0.49) | 0.97 | 51764.7 | 10200.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 3174.59 | 208.58 | 0.361 | 0.50( 0.49) | 0.97 | 53002.7 | 10300.00 |
| 23 | 2943.48 | 215.43 | 0.358 | 0.50( 0.49) | 0.97 | 53354.9 | 12010.00 |
| 24 | 2470.59 | 235.86 | 0.347 | 0.50( 0.49) | 0.97 | 53683.2 | 12000.00 |
| 25 | 1500.65 | 304.22 | 0.309 | 0.50( 0.49) | 0.97 | 54354.0 | 10100.00 |

==========
==========
END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV FEB 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI05EV33.DAT
  TIME/DATE OF STUDY: 11:11 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.642
   2)   10.00;  1.762
   3)   15.00;  1.304
   4)   20.00;  1.115
   5)   25.00;  0.974
   6)   30.00;  0.875
   7)   40.00;  0.748
   8)   50.00;  0.665
   9)   60.00;  0.603
  10)   90.00;  0.500
  11)  120.00;  0.441
  12)  180.00;  0.369
  13)  360.00;  0.272
  14) 1200.00;  0.119
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X05.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      769.71   39.09  0.50( 0.41) 0.81    2485.9   13100.00
      2      520.73   70.06  0.50( 0.40) 0.81    3771.2   13000.00
      3      475.69   73.98  0.50( 0.40) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X05.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      284.60   41.45  0.50( 0.41) 0.83    1124.1   13200.00
      2      281.25   41.90  0.50( 0.41) 0.83    1127.6   13210.00
    TOTAL AREA(ACRES) =     1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      284.60   41.45  0.50( 0.41) 0.83    1124.1   13200.00
      2      281.25   41.90  0.50( 0.41) 0.83    1127.6   13210.00
    TOTAL AREA(ACRES) =      1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      284.60   41.45    0.736  0.50( 0.41) 0.83    1124.1   13200.00
      2      281.25   41.90    0.732  0.50( 0.41) 0.83    1127.6   13210.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1       769.71   39.09    0.760  0.50( 0.41) 0.81    2485.9   13100.00
     2       520.73   70.06    0.568  0.50( 0.40) 0.81    3771.2   13000.00
     3       475.69   73.98    0.555  0.50( 0.40) 0.81    3796.8   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      1054.32   39.09    0.760  0.50( 0.41) 0.82    3546.1   13100.00
     2      1035.40   41.45    0.736  0.50( 0.41) 0.82    3707.6   13200.00
     3      1028.41   41.90    0.732  0.50( 0.41) 0.82    3729.9   13210.00
     4       657.26   70.06    0.568  0.50( 0.41) 0.81    4898.8   13000.00
     5       600.32   73.98    0.555  0.50( 0.41) 0.81    4924.4   13010.00
   TOTAL AREA(ACRES) =      4924.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1054.32  Tc(MIN.) =   39.093
 EFFECTIVE AREA(ACRES) =   3546.13  AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     4924.4
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.720
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.40      0.50     0.100     -
 USER-DEFINED               -       15.60      0.50     1.000     -
 USER-DEFINED               -        0.10      0.50     0.600     -
 USER-DEFINED               -        5.30      0.50     1.000     -
 USER-DEFINED               -        0.20      0.50     1.000     -
 USER-DEFINED               -       22.60      0.50     0.100     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
```



```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1063.66
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.97
 AVERAGE FLOW DEPTH(FEET) =   5.96   TRAVEL TIME(MIN.) =   4.23
 Tc(MIN.) =   43.33
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   18.70
 EFFECTIVE AREA(ACRES) =   3591.33     AREA-AVERAGED Fm(INCH/HR) =   0.41
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.81
 TOTAL AREA(ACRES) =     4969.6          PEAK FLOW RATE(CFS) =    1054.32
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.95   FLOW VELOCITY(FEET/SEC.) =   9.94
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      1054.32   43.33    0.720  0.50( 0.41) 0.81    3591.3   13100.00
     2      1035.40   45.70    0.701  0.50( 0.41) 0.81    3752.8   13200.00
     3      1028.41   46.16    0.697  0.50( 0.41) 0.81    3775.1   13210.00
     4       657.26   74.82    0.552  0.50( 0.41) 0.81    4944.0   13000.00
     5       600.32   78.87    0.538  0.50( 0.40) 0.81    4969.6   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1054.32  Tc(MIN.) =   43.33
 AREA-AVERAGED Fm(INCH/HR) =  0.41  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.81  EFFECTIVE AREA(ACRES) =    3591.33

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   43.33
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.720
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.00      0.50     1.000     -
 USER-DEFINED               -        0.50      0.50     1.000     -
 USER-DEFINED               -        7.40      0.50     0.100     -
 USER-DEFINED               -        4.70      0.50     1.000     -
 USER-DEFINED               -        2.90      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =    6.27
 EFFECTIVE AREA(ACRES) =   3607.83   AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    1054.32
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   43.33
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.720
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.30      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     0.100     -
  USER-DEFINED               -        5.30      0.50     1.000     -
  USER-DEFINED               -        0.30      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    1.65
  EFFECTIVE AREA(ACRES) =   3615.73   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    1054.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.33
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.30      0.50     1.000     -
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        1.10      0.50     1.000     -
  USER-DEFINED               -        6.90      0.50     1.000     -
  USER-DEFINED               -        7.90      0.50     1.000     -
  USER-DEFINED               -        1.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =    4.36
  EFFECTIVE AREA(ACRES) =   3637.73   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    1054.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.33
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -       14.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =    2.97
  EFFECTIVE AREA(ACRES) =   3652.73   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
```



```
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    1054.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  2.001
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        0.50      0.50     1.000    65    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               -        0.30      0.50     1.000    65    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               -        0.30      0.50     1.000    65    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.49
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      1.49

****************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        0.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.46
  AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   0.41
  Tc(MIN.) =    9.05
```

```
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    1.67
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       3.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOW VELOCITY(FEET/SEC.) =   5.92
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.815
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        1.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.25
  AVERAGE FLOW DEPTH(FEET) =   0.53   TRAVEL TIME(MIN.) =   0.64
  Tc(MIN.) =    9.70
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    2.72
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =       5.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   5.46
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.10      0.50     1.000     -
  USER-DEFINED               -        2.50      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.00
  AVERAGE FLOW DEPTH(FEET) =   0.71   TRAVEL TIME(MIN.) =   1.07
  Tc(MIN.) =   10.77
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    3.86
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =       8.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.75   FLOW VELOCITY(FEET/SEC.) =   5.24
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.610
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        3.00      0.50     1.000     -
  USER-DEFINED               -        2.10      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.39
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   0.89
  Tc(MIN.) =   11.66
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    6.39
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      14.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   5.68
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.526
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        2.80      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        2.60      0.50     1.000     -
  USER-DEFINED               -        4.10      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   0.92
  Tc(MIN.) =   12.58
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =    9.97
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      23.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   6.47
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.365
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        1.90      0.50     1.000     -
  USER-DEFINED               -        1.50      0.50     1.000     -
  USER-DEFINED               -        8.20      0.50     1.000     -
  USER-DEFINED               -        2.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.87
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   1.76
  Tc(MIN.) =   14.34
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   11.75
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      31.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.32   FLOW VELOCITY(FEET/SEC.) =   6.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.288
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        6.50      0.50     1.000     -
  USER-DEFINED               -        1.30      0.50     1.000     -
  USER-DEFINED               -        1.10      0.50     1.000     -
  USER-DEFINED               -        5.50      0.50     1.000     -
  USER-DEFINED               -        3.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.83
  AVERAGE FLOW DEPTH(FEET) =   1.48   TRAVEL TIME(MIN.) =   1.08
  Tc(MIN.) =   15.41
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   12.98
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =      41.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.53   FLOW VELOCITY(FEET/SEC.) =   5.96
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.239
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.70      0.50     1.000     -
  USER-DEFINED               -        2.20      0.50     1.000     -
  USER-DEFINED               -        3.10      0.50     1.000     -
  USER-DEFINED               -        0.90      0.50     1.000     -
  USER-DEFINED               -        7.40      0.50     1.000     -
  USER-DEFINED               -        0.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.63
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.59
  AVERAGE FLOW DEPTH(FEET) =   1.54   TRAVEL TIME(MIN.) =   1.32
  Tc(MIN.) =   16.73
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =    9.70
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =      48.85

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   6.68
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.73
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.239
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.40      0.50     1.000     -
  USER-DEFINED               -        8.90      0.50     1.000     -
  USER-DEFINED               -        1.90      0.50     1.000     -
  USER-DEFINED               -        9.20      0.50     1.000     -
  USER-DEFINED               -        1.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   21.80
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =      70.64

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.111
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     0.900     -
  USER-DEFINED               -        1.30      0.50     1.000     -
  USER-DEFINED               -        4.00      0.50     1.000     -
  USER-DEFINED               -        1.50      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.94
```



```
  AVERAGE FLOW DEPTH(FEET) =   1.87   TRAVEL TIME(MIN.) =   3.41
  Tc(MIN.) =   20.14
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =    4.57
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =      70.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.85   FLOW VELOCITY(FEET/SEC.) =   6.89
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.14
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.111
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.50     1.000     -
  USER-DEFINED               -        9.60      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     0.900     -
  USER-DEFINED               -        6.20      0.50     1.000     -
  USER-DEFINED               -        3.90      0.50     1.000     -
  USER-DEFINED               -        1.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   12.00
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =      75.01

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.970
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.90      0.50     1.000     -
  USER-DEFINED               -        1.50      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     0.900     -
  USER-DEFINED               -        2.50      0.50     1.000     -
  USER-DEFINED               -        5.30      0.50     1.000     -
  USER-DEFINED               -        3.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.85
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.07
  AVERAGE FLOW DEPTH(FEET) =   2.08   TRAVEL TIME(MIN.) =   5.07
  Tc(MIN.) =   25.21
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =    7.68
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =      75.01
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.04   FLOW VELOCITY(FEET/SEC.) =   6.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       75.01   25.21    0.970  0.50( 0.50) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1054.32   43.33    0.720  0.50( 0.41) 0.81    3652.7   13100.00
      2     1035.40   45.70    0.701  0.50( 0.41) 0.81    3814.2   13200.00
      3     1028.41   46.16    0.697  0.50( 0.41) 0.81    3836.5   13210.00
      4      660.41   74.82    0.552  0.50( 0.41) 0.81    5005.4   13000.00
      5      601.45   78.87    0.538  0.50( 0.41) 0.81    5031.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1129.32   25.21    0.970  0.50( 0.41) 0.83    2279.7   31100.00
      2     1089.51   43.33    0.720  0.50( 0.41) 0.82    3807.2   13100.00
      3     1067.44   45.70    0.701  0.50( 0.41) 0.82    3968.7   13200.00
      4     1059.85   46.16    0.697  0.50( 0.41) 0.82    3991.0   13210.00
      5      668.75   74.82    0.552  0.50( 0.41) 0.82    5159.9   13000.00
      6      607.57   78.87    0.538  0.50( 0.41) 0.82    5185.5   13010.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1129.32  Tc(MIN.) =   25.209
  EFFECTIVE AREA(ACRES) =   2279.72  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```



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****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        1.20      0.50     1.000     -
  USER-DEFINED                -        0.60      0.50     1.000     -
  USER-DEFINED                -        0.90      0.50     1.000     -
  USER-DEFINED                -        4.80      0.50     1.000     -
  USER-DEFINED                -        1.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1131.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.76
  AVERAGE FLOW DEPTH(FEET) =   7.47   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   28.02
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    3.50
  EFFECTIVE AREA(ACRES) =   2289.12     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.46   FLOW VELOCITY(FEET/SEC.) =   6.76
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13302.00 =   35800.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1129.32   28.02    0.914  0.50( 0.41) 0.83    2289.1   31100.00
      2     1089.51   46.17    0.697  0.50( 0.41) 0.82    3816.6   13100.00
      3     1067.44   48.55    0.677  0.50( 0.41) 0.82    3978.1   13200.00
      4     1059.85   49.02    0.673  0.50( 0.41) 0.82    4000.4   13210.00
      5      668.75   78.03    0.541  0.50( 0.41) 0.82    5169.3   13000.00
      6      607.57   82.15    0.527  0.50( 0.41) 0.82    5194.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1129.32  Tc(MIN.) =   28.02
  AREA-AVERAGED Fm(INCH/HR) =  0.41  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    2289.12

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.02
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.80      0.50     1.000     -
  USER-DEFINED               -        2.60      0.50     1.000     -
  USER-DEFINED               -        1.10      0.50     0.100     -
  USER-DEFINED               -        3.50      0.50     0.900     -
  USER-DEFINED               -        6.90      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   11.07
  EFFECTIVE AREA(ACRES) =   2317.22   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.02
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     0.100     -
  USER-DEFINED               -        2.40      0.50     0.900     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.30
  EFFECTIVE AREA(ACRES) =   2320.32   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.02
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        2.60      0.50     1.000     -
  USER-DEFINED               -        3.10      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -       13.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =    7.53
  EFFECTIVE AREA(ACRES) =   2340.52   AREA-AVERAGED Fm(INCH/HR) =  0.41
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.02
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.60      0.50     1.000     -
  USER-DEFINED               -        2.40      0.50     1.000     -
  USER-DEFINED               -       22.60      0.50     1.000     -
  USER-DEFINED               -       11.60      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     0.200     -
  USER-DEFINED               -        4.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   28.61
  EFFECTIVE AREA(ACRES) =   2416.92   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.02
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.60      0.50     1.000     -
  USER-DEFINED               -       46.40      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     0.200     -
  USER-DEFINED               -       60.70      0.50     1.000     -
  USER-DEFINED               -        5.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   42.73
  EFFECTIVE AREA(ACRES) =   2531.52   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
```

CHANNEL LENGTH THRU SUBAREA(FEET) = 2193.96 CHANNEL SLOPE = 0.0091
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 1129.32
FLOW VELOCITY(FEET/SEC.) = 7.84 FLOW DEPTH(FEET) = 6.93
TRAVEL TIME(MIN.) = 4.67 Tc(MIN.) = 32.69
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1129.32 | 32.69 | 0.841 | 0.50( 0.42) | 0.84 | 2531.5 | 31100.00 |
| 2 | 1089.51 | 50.88 | 0.660 | 0.50( 0.42) | 0.83 | 4059.0 | 13100.00 |
| 3 | 1067.44 | 53.29 | 0.645 | 0.50( 0.42) | 0.83 | 4220.5 | 13200.00 |
| 4 | 1059.85 | 53.76 | 0.642 | 0.50( 0.42) | 0.83 | 4242.8 | 13210.00 |
| 5 | 668.75 | 83.35 | 0.523 | 0.50( 0.41) | 0.82 | 5411.7 | 13000.00 |
| 6 | 607.57 | 87.59 | 0.508 | 0.50( 0.41) | 0.82 | 5437.3 | 13010.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1129.32 Tc(MIN.) = 32.69
AREA-AVERAGED Fm(INCH/HR) = 0.42 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 2531.52

****************************************************************************
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 32.69
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.40 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 2.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 2.20 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 2.90
EFFECTIVE AREA(ACRES) = 2539.12 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 32.69
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.40 | 0.50 | 1.000 | - |



| | | | | | |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.60 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 4.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 6.00
EFFECTIVE AREA(ACRES) = 2553.92 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 32.69
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 6.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.70 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 7.54
EFFECTIVE AREA(ACRES) = 2578.52 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 32.69
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.80 | 0.50 | 0.900 | - |
| USER-DEFINED | - | 1.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 31.90 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 10.98
EFFECTIVE AREA(ACRES) = 2613.82 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************

```
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   32.69
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.841
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.70      0.50     0.100     -
 USER-DEFINED               -        0.30      0.50     1.000     -
 USER-DEFINED               -        2.60      0.50     0.900     -
 USER-DEFINED               -        5.50      0.50     1.000     -
 USER-DEFINED               -        0.20      0.50     1.000     -
 USER-DEFINED               -        0.20      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
 SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    4.03
 EFFECTIVE AREA(ACRES) =   2624.32   AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    1129.32
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   32.69
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.841
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.30      0.50     0.900     -
 USER-DEFINED               -        0.30      0.50     1.000     -
 USER-DEFINED               -        0.20      0.50     0.100     -
 USER-DEFINED               -        0.30      0.50     1.000     -
 USER-DEFINED               -        6.50      0.50     0.900     -
 USER-DEFINED               -        3.00      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
 SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    3.99
 EFFECTIVE AREA(ACRES) =   2635.92   AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    1129.32
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.810
```



```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.20      0.50     1.000     -
 USER-DEFINED               -        0.50      0.50     1.000     -
 USER-DEFINED               -        1.10      0.50     1.000     -
 USER-DEFINED               -        0.30      0.50     1.000     -
 USER-DEFINED               -        1.10      0.50     1.000     -
 USER-DEFINED               -        3.50      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1130.26
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.44
 AVERAGE FLOW DEPTH(FEET) =   7.65   TRAVEL TIME(MIN.) =   2.39
 Tc(MIN.) =   35.08
 SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    1.87
 EFFECTIVE AREA(ACRES) =   2642.62     AREA-AVERAGED Fm(INCH/HR) =   0.42
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.85
 TOTAL AREA(ACRES) =     5548.4          PEAK FLOW RATE(CFS) =    1129.32
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.64   FLOW VELOCITY(FEET/SEC.) =   6.45
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1     1129.32   35.08    0.810  0.50( 0.42) 0.85    2642.6   31100.00
     2     1089.51   53.29    0.645  0.50( 0.42) 0.83    4170.1   13100.00
     3     1067.44   55.71    0.630  0.50( 0.42) 0.83    4331.6   13200.00
     4     1059.85   56.19    0.627  0.50( 0.42) 0.83    4353.9   13210.00
     5      668.75   86.08    0.513  0.50( 0.41) 0.83    5522.8   13000.00
     6      607.57   90.39    0.499  0.50( 0.41) 0.83    5548.4   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1129.32  Tc(MIN.) =   35.08
 AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.85  EFFECTIVE AREA(ACRES) =    2642.62

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   35.08
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.810
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.40      0.50     1.000     -
 USER-DEFINED               -        4.80      0.50     1.000     -
 USER-DEFINED               -        0.90      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    1.98
 EFFECTIVE AREA(ACRES) =   2649.72   AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    1129.32
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.810
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.80      0.50     1.000     -
  USER-DEFINED               -        1.70      0.50     1.000     -
  USER-DEFINED               -        9.40      0.50     1.000     -
  USER-DEFINED               -        1.20      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     0.900     -
  USER-DEFINED               -        2.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =    6.37
  EFFECTIVE AREA(ACRES) =   2672.52   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.810
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.30      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     0.900     -
  USER-DEFINED               -        2.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    0.96
  EFFECTIVE AREA(ACRES) =   2675.92   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
```



```
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.741
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.70      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        2.20      0.50     1.000     -
  USER-DEFINED               -        4.20      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1130.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.64
  AVERAGE FLOW DEPTH(FEET) =   6.60   TRAVEL TIME(MIN.) =   5.72
  Tc(MIN.) =   40.80
  SUBAREA AREA(ACRES) =     9.20       SUBAREA RUNOFF(CFS) =    2.00
  EFFECTIVE AREA(ACRES) =   2685.12     AREA-AVERAGED Fm(INCH/HR) =   0.42
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.85
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.60   FLOW VELOCITY(FEET/SEC.) =   8.64
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     1129.32   40.80    0.741  0.50( 0.42) 0.85    2685.1   31100.00
      2     1089.51   59.06    0.609  0.50( 0.42) 0.84    4212.6   13100.00
      3     1067.44   61.52    0.598  0.50( 0.42) 0.83    4374.1   13200.00
      4     1059.85   62.01    0.596  0.50( 0.42) 0.83    4396.4   13210.00
      5      668.75   92.60    0.495  0.50( 0.41) 0.83    5565.3   13000.00
      6      607.57   97.06    0.486  0.50( 0.41) 0.83    5590.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1129.32  Tc(MIN.) =   40.80
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.85  EFFECTIVE AREA(ACRES) =    2685.12

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.80
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.741
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.10      0.50     1.000     -
  USER-DEFINED               -        2.30      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        6.90      0.50     1.000     -
  USER-DEFINED               -        0.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =    3.95
```

EFFECTIVE AREA(ACRES) = 2703.32 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 40.80
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 18.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 26.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.90 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 3.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934
SUBAREA AREA(ACRES) = 53.20 SUBAREA RUNOFF(CFS) = 13.13
EFFECTIVE AREA(ACRES) = 2756.52 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 40.80
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 1.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 14.00 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 4.30 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 5.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 2.70 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860
SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 7.73
EFFECTIVE AREA(ACRES) = 2784.12 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========



MAINLINE Tc(MIN.) = 40.80
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 3.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 6.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 7.50 | 0.50 | 0.900 | - |
| USER-DEFINED | - | 5.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.90 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971
SUBAREA AREA(ACRES) = 25.70 SUBAREA RUNOFF(CFS) = 5.91
EFFECTIVE AREA(ACRES) = 2809.82 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5715.6 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 40.80
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 2.00 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 3.70 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 2.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 2.60 | 0.50 | 0.900 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807
SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 3.25
EFFECTIVE AREA(ACRES) = 2820.52 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5726.3 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 40.80
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.50 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 8.20 | 0.50 | 0.900 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906
SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 2.26

```
  EFFECTIVE AREA(ACRES) =   2829.22   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    1129.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A05EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)    NODE
      1      448.39   14.96  0.50( 0.22) 0.43     429.7     120.00
      2      443.05   15.30  0.50( 0.21) 0.43     435.1     110.00
      3      375.74   23.09  0.50( 0.21) 0.42     501.8     100.00
      4      332.86   27.58  0.50( 0.22) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     1129.32   40.80    0.741  0.50( 0.43) 0.85    2829.2   31100.00
      2     1089.51   59.06    0.609  0.50( 0.42) 0.84    4356.7   13100.00
      3     1067.44   61.52    0.598  0.50( 0.42) 0.84    4518.2   13200.00
      4     1059.85   62.01    0.596  0.50( 0.42) 0.84    4540.5   13210.00
      5      668.75   92.60    0.495  0.50( 0.42) 0.83    5709.4   13000.00
      6      607.57   97.06    0.486  0.50( 0.42) 0.83    5735.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1      448.39   14.96    1.308  0.50( 0.22) 0.43     429.7     120.00
      2      443.05   15.30    1.293  0.50( 0.21) 0.43     435.1     110.00
      3      375.74   23.09    1.028  0.50( 0.21) 0.42     501.8     100.00
      4      332.86   27.58    0.923  0.50( 0.22) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     1577.71   14.96    1.308  0.50( 0.36) 0.73    1466.7     120.00
      2     1572.37   15.30    1.293  0.50( 0.36) 0.73    1496.0     110.00
      3     1505.06   23.09    1.028  0.50( 0.38) 0.75    2102.9     100.00
      4     1462.18   27.58    0.923  0.50( 0.38) 0.76    2422.8     150.00
      5     1376.60   40.80    0.741  0.50( 0.39) 0.79    3339.4   31100.00
      6     1274.30   59.06    0.609  0.50( 0.40) 0.80    4866.9   13100.00
      7     1247.04   61.52    0.598  0.50( 0.40) 0.80    5028.4   13200.00
      8     1238.65   62.01    0.596  0.50( 0.40) 0.80    5050.7   13210.00
      9      800.92   92.60    0.495  0.50( 0.40) 0.80    6219.6   13000.00
```



```
     10      737.39   97.06    0.486  0.50( 0.40) 0.80    6245.2   13010.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1577.71  Tc(MIN.) =   14.955
  EFFECTIVE AREA(ACRES) =   1466.72  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.40      0.50     1.000     -
  USER-DEFINED                -        9.20      0.50     1.000     -
  USER-DEFINED                -        1.00      0.50     1.000     -
  USER-DEFINED                -        1.30      0.50     1.000     -
  USER-DEFINED                -        2.40      0.50     1.000     -
  USER-DEFINED                -        4.10      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1582.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.47
  AVERAGE FLOW DEPTH(FEET) =   7.10   TRAVEL TIME(MIN.) =   7.02
  Tc(MIN.) =   21.97
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =    9.26
  EFFECTIVE AREA(ACRES) =   1485.12     AREA-AVERAGED Fm(INCH/HR) =   0.37
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.73
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.09   FLOW VELOCITY(FEET/SEC.) =  10.46
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     1577.71   21.97    1.059  0.50( 0.37) 0.73    1485.1     120.00
      2     1572.37   22.32    1.050  0.50( 0.37) 0.73    1514.4     110.00
      3     1505.06   30.19    0.873  0.50( 0.38) 0.75    2121.3     100.00
```

```
      4     1462.18   34.73    0.815  0.50( 0.38) 0.77    2441.2     150.00
      5     1376.60   48.07    0.681  0.50( 0.39) 0.79    3357.8   31100.00
      6     1274.30   66.46    0.581  0.50( 0.40) 0.80    4885.3   13100.00
      7     1247.04   68.96    0.572  0.50( 0.40) 0.80    5046.8   13200.00
      8     1238.65   69.46    0.571  0.50( 0.40) 0.80    5069.1   13210.00
      9      800.92  100.91    0.479  0.50( 0.40) 0.80    6238.0   13000.00
     10      737.39  105.55    0.469  0.50( 0.40) 0.80    6263.6   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1577.71  Tc(MIN.) =   21.97
  AREA-AVERAGED Fm(INCH/HR) =  0.37  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.73  EFFECTIVE AREA(ACRES) =    1485.12

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       19.20      0.50     1.000     -
  USER-DEFINED               -       20.90      0.50     1.000     -
  USER-DEFINED               -        4.10      0.50     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        4.30      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   24.96
  EFFECTIVE AREA(ACRES) =   1534.72   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.40
  EFFECTIVE AREA(ACRES) =   1535.52   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     0.850     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.40      0.50     0.850     -
  USER-DEFINED               -        0.40      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.69
  EFFECTIVE AREA(ACRES) =   1536.82   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.80      0.50     0.900     -
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        1.00      0.50     1.000     -
  USER-DEFINED               -        1.10      0.50     1.000     -
  USER-DEFINED               -        1.10      0.50     0.100     -
  USER-DEFINED               -        2.80      0.50     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    4.43
  EFFECTIVE AREA(ACRES) =   1544.42   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.50      0.50     0.100     -
  USER-DEFINED               -        5.00      0.50     1.000     -
  USER-DEFINED               -        6.70      0.50     0.900     -
```

```
  USER-DEFINED               -        7.80      0.50     1.000     -
  USER-DEFINED               -       10.80      0.50     1.000     -
  USER-DEFINED               -       13.80      0.50     0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   31.26
  EFFECTIVE AREA(ACRES) =   1592.02   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.97
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       21.54      0.50     1.000     -
  USER-DEFINED                -       36.64      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   29.28
  EFFECTIVE AREA(ACRES) =   1650.20   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1577.71
  FLOW VELOCITY(FEET/SEC.) =  10.66   FLOW DEPTH(FEET) =   7.02
  TRAVEL TIME(MIN.) =   2.41   Tc(MIN.) =   24.39
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1577.71   24.39    0.991  0.50( 0.37) 0.75    1650.2     120.00
      2     1572.37   24.73    0.982  0.50( 0.37) 0.75    1679.5     110.00
      3     1505.06   32.63    0.842  0.50( 0.38) 0.76    2286.4     100.00
      4     1462.18   37.19    0.784  0.50( 0.39) 0.77    2606.2     150.00
      5     1376.60   50.56    0.662  0.50( 0.40) 0.79    3522.9   31100.00
      6     1274.30   69.01    0.572  0.50( 0.40) 0.80    5050.4   13100.00
      7     1247.04   71.52    0.563  0.50( 0.40) 0.80    5211.9   13200.00
      8     1238.65   72.03    0.562  0.50( 0.40) 0.80    5234.2   13210.00
      9      800.92  103.77    0.473  0.50( 0.40) 0.80    6403.1   13000.00
```



```
     10      737.39  108.47    0.464  0.50( 0.40) 0.80    6428.7   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1577.71  Tc(MIN.) =   24.39
  AREA-AVERAGED Fm(INCH/HR) =  0.37  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.75  EFFECTIVE AREA(ACRES) =    1650.20

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.39
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.20      0.50     0.100     -
  USER-DEFINED                -        0.10      0.50     1.000     -
  USER-DEFINED                -        0.20      0.50     1.000     -
  USER-DEFINED                -        3.70      0.50     1.000     -
  USER-DEFINED                -        0.30      0.50     0.100     -
  USER-DEFINED                -        3.20      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    3.61
  EFFECTIVE AREA(ACRES) =   1657.90   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.39
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        3.60      0.50     1.000     -
  USER-DEFINED                -        1.90      0.50     1.000     -
  USER-DEFINED                -        0.60      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    2.70
  EFFECTIVE AREA(ACRES) =   1664.00   AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
```

CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 1577.71
FLOW VELOCITY(FEET/SEC.) = 8.36 FLOW DEPTH(FEET) = 7.93
TRAVEL TIME(MIN.) = 1.85 Tc(MIN.) = 26.23
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1577.71 | 26.23 | 0.950 | 0.50( 0.38) | 0.75 | 1664.0 | 120.00 |
| 2 | 1572.37 | 26.58 | 0.943 | 0.50( 0.38) | 0.75 | 1693.3 | 110.00 |
| 3 | 1505.06 | 34.50 | 0.818 | 0.50( 0.38) | 0.76 | 2300.2 | 100.00 |
| 4 | 1462.18 | 39.07 | 0.760 | 0.50( 0.39) | 0.77 | 2620.0 | 150.00 |
| 5 | 1376.60 | 52.47 | 0.650 | 0.50( 0.40) | 0.79 | 3536.7 | 31100.00 |
| 6 | 1274.30 | 70.95 | 0.565 | 0.50( 0.40) | 0.80 | 5064.2 | 13100.00 |
| 7 | 1247.04 | 73.48 | 0.557 | 0.50( 0.40) | 0.80 | 5225.7 | 13200.00 |
| 8 | 1238.65 | 73.99 | 0.555 | 0.50( 0.40) | 0.80 | 5248.0 | 13210.00 |
| 9 | 800.92 | 105.96 | 0.469 | 0.50( 0.40) | 0.80 | 6416.9 | 13000.00 |
| 10 | 737.39 | 110.70 | 0.459 | 0.50( 0.40) | 0.80 | 6442.5 | 13010.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1577.71 Tc(MIN.) = 26.23
AREA-AVERAGED Fm(INCH/HR) = 0.38 AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.75 EFFECTIVE AREA(ACRES) = 1664.00

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 26.23
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.950
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 5.00 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.20 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 0.10 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.90 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697
SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 5.14
EFFECTIVE AREA(ACRES) = 1673.50 AREA-AVERAGED Fm(INCH/HR) = 0.37
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.75
TOTAL AREA(ACRES) = 6452.0 PEAK FLOW RATE(CFS) = 1577.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 26.23
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.950
SUBAREA LOSS RATE DATA(AMC II):



| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.30 | 0.50 | 0.200 | - |
| USER-DEFINED | - | 0.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 1.00 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 41.90 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 7.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 25.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498
SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 47.66
EFFECTIVE AREA(ACRES) = 1749.10 AREA-AVERAGED Fm(INCH/HR) = 0.37
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74
TOTAL AREA(ACRES) = 6527.6 PEAK FLOW RATE(CFS) = 1577.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 26.23
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.950
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.10 | 0.50 | 0.850 | - |
| USER-DEFINED | - | 0.90 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 0.600 | - |
| USER-DEFINED | - | 13.20 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.50 | 0.50 | 0.200 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966
SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 6.55
EFFECTIVE AREA(ACRES) = 1764.70 AREA-AVERAGED Fm(INCH/HR) = 0.37
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74
TOTAL AREA(ACRES) = 6543.2 PEAK FLOW RATE(CFS) = 1577.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 26.23
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.950
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 33.90 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 17.60 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 16.80 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.60 | 0.50 | 0.200 | - |
| USER-DEFINED | - | 1.50 | 0.50 | 0.400 | - |
| USER-DEFINED | - | 10.00 | 0.50 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603

```
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   46.88
  EFFECTIVE AREA(ACRES) =   1845.10   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.50     0.600     -
  USER-DEFINED               -        0.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.46
  EFFECTIVE AREA(ACRES) =   1846.10   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.30      0.50     1.000     -
  USER-DEFINED               -        0.80      0.50     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        0.20      0.50     1.000     -
  USER-DEFINED               -        0.30      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    0.85
  EFFECTIVE AREA(ACRES) =   1848.20   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.23
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.20      0.50     1.000     -
  USER-DEFINED               -        0.50      0.50     1.000     -
  USER-DEFINED               -        1.70      0.50     0.850     -
  USER-DEFINED               -        7.20      0.50     1.000     -
  USER-DEFINED               -        1.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    4.81
  EFFECTIVE AREA(ACRES) =   1859.80   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    1577.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    11713.76   14.76  0.50( 0.42) 0.83    2915.9   50200.00
      2    11741.88   21.45  0.50( 0.42) 0.84    4484.0     210.00
      3    11453.13   33.31  0.50( 0.43) 0.87    8115.2   50300.00
      4    11044.04   43.23  0.50( 0.45) 0.90   11040.5   50100.00
      5    10223.64   65.60  0.50( 0.47) 0.93   16894.4   11801.00
      6     9950.45   76.94  0.50( 0.47) 0.94   20126.9   11500.00
      7     9601.88   88.92  0.50( 0.47) 0.95   24171.4   11000.00
      8     9180.45  105.32  0.50( 0.48) 0.96   31037.0   12500.00
      9     8977.79  111.52  0.50( 0.48) 0.96   33906.4   10900.00
     10     8323.34  120.19  0.50( 0.48) 0.97   37235.6   11130.00
     11     7641.00  131.65  0.50( 0.48) 0.97   40908.1   11620.00
     12     6588.50  147.44  0.50( 0.49) 0.97   45433.9   12400.00
     13     5742.95  158.86  0.50( 0.49) 0.97   47740.1   12201.00
     14     5133.68  168.18  0.50( 0.49) 0.97   49030.7   12111.00
     15     4212.65  183.89  0.50( 0.49) 0.97   50953.6   12261.00
     16     3742.42  193.20  0.50( 0.49) 0.97   51764.7   10200.00
     17     3174.59  208.58  0.50( 0.49) 0.97   53002.7   10300.00
     18     2943.48  215.43  0.50( 0.49) 0.97   53354.9   12010.00
     19     2470.59  235.86  0.50( 0.49) 0.97   53683.2   12000.00
     20     1500.65  304.22  0.50( 0.49) 0.97   54354.0   10100.00
    TOTAL AREA(ACRES) =    54354.0

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 11713.76 | 14.76 | 0.50( 0.42) | 0.83 | 2915.9 | 50200.00 |
| 2 | 11741.88 | 21.45 | 0.50( 0.42) | 0.84 | 4484.0 | 210.00 |
| 3 | 11453.13 | 33.31 | 0.50( 0.43) | 0.87 | 8115.2 | 50300.00 |
| 4 | 11044.04 | 43.23 | 0.50( 0.45) | 0.90 | 11040.5 | 50100.00 |
| 5 | 10223.64 | 65.60 | 0.50( 0.47) | 0.93 | 16894.4 | 11801.00 |
| 6 | 9950.45 | 76.94 | 0.50( 0.47) | 0.94 | 20126.9 | 11500.00 |
| 7 | 9601.88 | 88.92 | 0.50( 0.47) | 0.95 | 24171.4 | 11000.00 |
| 8 | 9180.45 | 105.32 | 0.50( 0.48) | 0.96 | 31037.0 | 12500.00 |
| 9 | 8977.79 | 111.52 | 0.50( 0.48) | 0.96 | 33906.4 | 10900.00 |
| 10 | 8323.34 | 120.19 | 0.50( 0.48) | 0.97 | 37235.6 | 11130.00 |
| 11 | 7641.00 | 131.65 | 0.50( 0.48) | 0.97 | 40908.1 | 11620.00 |
| 12 | 6588.50 | 147.44 | 0.50( 0.49) | 0.97 | 45433.9 | 12400.00 |
| 13 | 5742.95 | 158.86 | 0.50( 0.49) | 0.97 | 47740.1 | 12201.00 |
| 14 | 5133.68 | 168.18 | 0.50( 0.49) | 0.97 | 49030.7 | 12111.00 |
| 15 | 4212.65 | 183.89 | 0.50( 0.49) | 0.97 | 50953.6 | 12261.00 |
| 16 | 3742.42 | 193.20 | 0.50( 0.49) | 0.97 | 51764.7 | 10200.00 |
| 17 | 3174.59 | 208.58 | 0.50( 0.49) | 0.97 | 53002.7 | 10300.00 |
| 18 | 2943.48 | 215.43 | 0.50( 0.49) | 0.97 | 53354.9 | 12010.00 |
| 19 | 2470.59 | 235.86 | 0.50( 0.49) | 0.97 | 53683.2 | 12000.00 |
| 20 | 1500.65 | 304.22 | 0.50( 0.49) | 0.97 | 54354.0 | 10100.00 |

TOTAL AREA(ACRES) = 54354.0

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FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 51

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

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

==========

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
ALLOWABLE DEPTH).
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA(CFS) = 11741.88

FLOW VELOCITY(FEET/SEC.) = 9.78 FLOW DEPTH(FEET) = 20.00

TRAVEL TIME(MIN.) = 2.37 Tc(MIN.) = 23.82

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118067.44 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11713.76 | 17.13 | 1.223 | 0.50( 0.42) | 0.83 | 2915.9 | 50200.00 |
| 2 | 11741.88 | 23.82 | 1.007 | 0.50( 0.42) | 0.84 | 4484.0 | 210.00 |
| 3 | 11453.13 | 35.73 | 0.802 | 0.50( 0.43) | 0.87 | 8115.2 | 50300.00 |
| 4 | 11044.04 | 45.74 | 0.700 | 0.50( 0.45) | 0.90 | 11040.5 | 50100.00 |
| 5 | 10223.64 | 68.32 | 0.574 | 0.50( 0.47) | 0.93 | 16894.4 | 11801.00 |
| 6 | 9950.45 | 79.74 | 0.535 | 0.50( 0.47) | 0.94 | 20126.9 | 11500.00 |
| 7 | 9601.88 | 91.81 | 0.496 | 0.50( 0.47) | 0.95 | 24171.4 | 11000.00 |
| 8 | 9180.45 | 108.35 | 0.464 | 0.50( 0.48) | 0.96 | 31037.0 | 12500.00 |
| 9 | 8977.79 | 114.61 | 0.452 | 0.50( 0.48) | 0.96 | 33906.4 | 10900.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 8323.34 | 123.53 | 0.437 | 0.50( 0.48) | 0.97 | 37235.6 | 11130.00 |
| 11 | 7641.00 | 135.29 | 0.423 | 0.50( 0.48) | 0.97 | 40908.1 | 11620.00 |
| 12 | 6588.50 | 151.41 | 0.403 | 0.50( 0.49) | 0.97 | 45433.9 | 12400.00 |
| 13 | 5742.95 | 162.97 | 0.389 | 0.50( 0.49) | 0.97 | 47740.1 | 12201.00 |
| 14 | 5133.68 | 172.41 | 0.378 | 0.50( 0.49) | 0.97 | 49030.7 | 12111.00 |
| 15 | 4212.65 | 188.33 | 0.365 | 0.50( 0.49) | 0.97 | 50953.6 | 12261.00 |
| 16 | 3742.42 | 197.77 | 0.359 | 0.50( 0.49) | 0.97 | 51764.7 | 10200.00 |
| 17 | 3174.59 | 213.34 | 0.351 | 0.50( 0.49) | 0.97 | 53002.7 | 10300.00 |
| 18 | 2943.48 | 220.28 | 0.347 | 0.50( 0.49) | 0.97 | 53354.9 | 12010.00 |
| 19 | 2470.59 | 240.93 | 0.336 | 0.50( 0.49) | 0.97 | 53683.2 | 12000.00 |
| 20 | 1500.65 | 309.97 | 0.299 | 0.50( 0.49) | 0.97 | 54354.0 | 10100.00 |

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 11741.88 Tc(MIN.) = 23.82

AREA-AVERAGED Fm(INCH/HR) = 0.42 AREA-AVERAGED Fp(INCH/HR) = 0.50

AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 4484.05

**********

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11713.76 | 17.13 | 1.223 | 0.50( 0.42) | 0.83 | 2915.9 | 50200.00 |
| 2 | 11741.88 | 23.82 | 1.007 | 0.50( 0.42) | 0.84 | 4484.0 | 210.00 |
| 3 | 11453.13 | 35.73 | 0.802 | 0.50( 0.43) | 0.87 | 8115.2 | 50300.00 |
| 4 | 11044.04 | 45.74 | 0.700 | 0.50( 0.45) | 0.90 | 11040.5 | 50100.00 |
| 5 | 10223.64 | 68.32 | 0.574 | 0.50( 0.47) | 0.93 | 16894.4 | 11801.00 |
| 6 | 9950.45 | 79.74 | 0.535 | 0.50( 0.47) | 0.94 | 20126.9 | 11500.00 |
| 7 | 9601.88 | 91.81 | 0.496 | 0.50( 0.47) | 0.95 | 24171.4 | 11000.00 |
| 8 | 9180.45 | 108.35 | 0.464 | 0.50( 0.48) | 0.96 | 31037.0 | 12500.00 |
| 9 | 8977.79 | 114.61 | 0.452 | 0.50( 0.48) | 0.96 | 33906.4 | 10900.00 |
| 10 | 8323.34 | 123.53 | 0.437 | 0.50( 0.48) | 0.97 | 37235.6 | 11130.00 |
| 11 | 7641.00 | 135.29 | 0.423 | 0.50( 0.48) | 0.97 | 40908.1 | 11620.00 |
| 12 | 6588.50 | 151.41 | 0.403 | 0.50( 0.49) | 0.97 | 45433.9 | 12400.00 |
| 13 | 5742.95 | 162.97 | 0.389 | 0.50( 0.49) | 0.97 | 47740.1 | 12201.00 |
| 14 | 5133.68 | 172.41 | 0.378 | 0.50( 0.49) | 0.97 | 49030.7 | 12111.00 |
| 15 | 4212.65 | 188.33 | 0.365 | 0.50( 0.49) | 0.97 | 50953.6 | 12261.00 |
| 16 | 3742.42 | 197.77 | 0.359 | 0.50( 0.49) | 0.97 | 51764.7 | 10200.00 |
| 17 | 3174.59 | 213.34 | 0.351 | 0.50( 0.49) | 0.97 | 53002.7 | 10300.00 |
| 18 | 2943.48 | 220.28 | 0.347 | 0.50( 0.49) | 0.97 | 53354.9 | 12010.00 |
| 19 | 2470.59 | 240.93 | 0.336 | 0.50( 0.49) | 0.97 | 53683.2 | 12000.00 |
| 20 | 1500.65 | 309.97 | 0.299 | 0.50( 0.49) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118067.44 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1577.71 | 26.23 | 0.950 | 0.50( 0.37) | 0.74 | 1859.8 | 120.00 |
| 2 | 1572.37 | 26.58 | 0.943 | 0.50( 0.37) | 0.74 | 1889.1 | 110.00 |
| 3 | 1505.06 | 34.50 | 0.818 | 0.50( 0.38) | 0.75 | 2496.0 | 100.00 |
| 4 | 1462.18 | 39.07 | 0.760 | 0.50( 0.38) | 0.76 | 2815.8 | 150.00 |
| 5 | 1376.60 | 52.47 | 0.650 | 0.50( 0.39) | 0.79 | 3732.5 | 31100.00 |
| 6 | 1274.30 | 70.95 | 0.565 | 0.50( 0.40) | 0.79 | 5260.0 | 13100.00 |
| 7 | 1247.04 | 73.48 | 0.557 | 0.50( 0.40) | 0.79 | 5421.5 | 13200.00 |
| 8 | 1238.65 | 73.99 | 0.555 | 0.50( 0.40) | 0.79 | 5443.8 | 13210.00 |

```
      9      800.92  105.96    0.469  0.50( 0.40) 0.80    6612.7   13000.00
     10      737.39  110.70    0.459  0.50( 0.40) 0.80    6638.3   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13308.00 =   48763.78 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13229.62   17.13    1.223  0.50( 0.40) 0.81    4130.7   50200.00
      2    13316.68   23.82    1.007  0.50( 0.40) 0.81    6172.8     210.00
      3    13261.11   26.23    0.950  0.50( 0.41) 0.81    7079.3     120.00
      4    13247.34   26.58    0.943  0.50( 0.41) 0.82    7214.5     110.00
      5    12988.13   34.50    0.818  0.50( 0.42) 0.84   10234.8     100.00
      6    12946.62   35.73    0.802  0.50( 0.42) 0.84   10697.6   50300.00
      7    12778.86   39.07    0.760  0.50( 0.43) 0.85   11906.8     150.00
      8    12463.62   45.74    0.700  0.50( 0.43) 0.87   14312.7   50100.00
      9    12176.03   52.47    0.650  0.50( 0.44) 0.88   16518.4   31100.00
     10    11512.55   68.32    0.574  0.50( 0.45) 0.90   21936.3   11801.00
     11    11434.81   70.95    0.565  0.50( 0.45) 0.90   22901.4   13100.00
     12    11347.17   73.48    0.557  0.50( 0.45) 0.90   23777.3   13200.00
     13    11326.62   73.99    0.555  0.50( 0.45) 0.90   23943.5   13210.00
     14    11110.40   79.74    0.535  0.50( 0.45) 0.91   25780.8   11500.00
     15    10596.47   91.81    0.496  0.50( 0.46) 0.92   30266.9   11000.00
     16    10042.36  105.96    0.469  0.50( 0.46) 0.93   36656.0   13000.00
     17     9949.32  108.35    0.464  0.50( 0.47) 0.93   37662.6   12500.00
     18     9841.75  110.70    0.459  0.50( 0.47) 0.93   38752.6   13010.00
     19     9702.83  114.61    0.452  0.50( 0.47) 0.94   40544.7   10900.00
     20     9024.59  123.53    0.437  0.50( 0.47) 0.94   43873.9   11130.00
     21     8319.59  135.29    0.423  0.50( 0.47) 0.94   47546.4   11620.00
     22     7236.01  151.41    0.403  0.50( 0.47) 0.95   52072.2   12400.00
     23     6368.19  162.97    0.389  0.50( 0.47) 0.95   54378.4   12201.00
     24     5740.75  172.41    0.378  0.50( 0.48) 0.95   55669.0   12111.00
     25     4797.88  188.33    0.365  0.50( 0.48) 0.95   57591.9   12261.00
     26     4319.48  197.77    0.359  0.50( 0.48) 0.95   58403.0   10200.00
     27     3738.18  213.34    0.351  0.50( 0.48) 0.95   59641.0   10300.00
     28     3501.06  220.28    0.347  0.50( 0.48) 0.95   59993.2   12010.00
     29     3010.31  240.93    0.336  0.50( 0.48) 0.95   60321.5   12000.00
     30     1980.64  309.97    0.299  0.50( 0.48) 0.95   60992.3   10100.00
    TOTAL AREA(ACRES) =     60992.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    13316.68  Tc(MIN.) =   23.819
  EFFECTIVE AREA(ACRES) =   6172.77  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    60992.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118067.44 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    60992.3  TC(MIN.) =     23.82
  EFFECTIVE AREA(ACRES) =   6172.77  AREA-AVERAGED Fm(INCH/HR)=  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap = 0.809
  PEAK FLOW RATE(CFS)   =   13316.68

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13229.62   17.13    1.223  0.50( 0.40) 0.81    4130.7   50200.00
      2    13316.68   23.82    1.007  0.50( 0.40) 0.81    6172.8     210.00
      3    13261.11   26.23    0.950  0.50( 0.41) 0.81    7079.3     120.00
```



```
      4    13247.34   26.58    0.943  0.50( 0.41) 0.82    7214.5     110.00
      5    12988.13   34.50    0.818  0.50( 0.42) 0.84   10234.8     100.00
      6    12946.62   35.73    0.802  0.50( 0.42) 0.84   10697.6   50300.00
      7    12778.86   39.07    0.760  0.50( 0.43) 0.85   11906.8     150.00
      8    12463.62   45.74    0.700  0.50( 0.43) 0.87   14312.7   50100.00
      9    12176.03   52.47    0.650  0.50( 0.44) 0.88   16518.4   31100.00
     10    11512.55   68.32    0.574  0.50( 0.45) 0.90   21936.3   11801.00
     11    11434.81   70.95    0.565  0.50( 0.45) 0.90   22901.4   13100.00
     12    11347.17   73.48    0.557  0.50( 0.45) 0.90   23777.3   13200.00
     13    11326.62   73.99    0.555  0.50( 0.45) 0.90   23943.5   13210.00
     14    11110.40   79.74    0.535  0.50( 0.45) 0.91   25780.8   11500.00
     15    10596.47   91.81    0.496  0.50( 0.46) 0.92   30266.9   11000.00
     16    10042.36  105.96    0.469  0.50( 0.46) 0.93   36656.0   13000.00
     17     9949.32  108.35    0.464  0.50( 0.47) 0.93   37662.6   12500.00
     18     9841.75  110.70    0.459  0.50( 0.47) 0.93   38752.6   13010.00
     19     9702.83  114.61    0.452  0.50( 0.47) 0.94   40544.7   10900.00
     20     9024.59  123.53    0.437  0.50( 0.47) 0.94   43873.9   11130.00
     21     8319.59  135.29    0.423  0.50( 0.47) 0.94   47546.4   11620.00
     22     7236.01  151.41    0.403  0.50( 0.47) 0.95   52072.2   12400.00
     23     6368.19  162.97    0.389  0.50( 0.47) 0.95   54378.4   12201.00
     24     5740.75  172.41    0.378  0.50( 0.48) 0.95   55669.0   12111.00
     25     4797.88  188.33    0.365  0.50( 0.48) 0.95   57591.9   12261.00
     26     4319.48  197.77    0.359  0.50( 0.48) 0.95   58403.0   10200.00
     27     3738.18  213.34    0.351  0.50( 0.48) 0.95   59641.0   10300.00
     28     3501.06  220.28    0.347  0.50( 0.48) 0.95   59993.2   12010.00
     29     3010.31  240.93    0.336  0.50( 0.48) 0.95   60321.5   12000.00
     30     1980.64  309.97    0.299  0.50( 0.48) 0.95   60992.3   10100.00
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 5-YR EV AUG 2023 ROKAMOTO                                            *
 ***********************************************************************

  FILE NAME: RI05EV34.DAT
  TIME/DATE OF STUDY: 14:52 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.630
   2)   10.00;  1.755
   3)   15.00;  1.301
   4)   20.00;  1.113
   5)   25.00;  0.972
   6)   30.00;  0.874
   7)   40.00;  0.746
   8)   50.00;  0.664
   9)   60.00;  0.602
  10)   90.00;  0.498
  11)  120.00;  0.439
  12)  180.00;  0.368
  13)  360.00;  0.270
  14) 1200.00;  0.118
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: ri05ev33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    13229.62   17.13  0.50( 0.40) 0.81    4130.7   50200.00
      2    13316.68   23.82  0.50( 0.40) 0.81    6172.8     210.00
      3    12988.13   34.50  0.50( 0.42) 0.84   10234.8     100.00
      4    12463.62   45.74  0.50( 0.43) 0.87   14312.7   50100.00
      5    12176.03   52.47  0.50( 0.44) 0.88   16518.4   31100.00
      6    11512.55   68.32  0.50( 0.45) 0.90   21936.3   11801.00
      7    11110.40   79.74  0.50( 0.45) 0.91   25780.8   11500.00
      8    10596.47   91.81  0.50( 0.46) 0.92   30266.9   11000.00
      9    10042.36  105.96  0.50( 0.46) 0.93   36656.0   13000.00
     10     9024.59  123.53  0.50( 0.47) 0.94   43873.9   11130.00
     11     8319.59  135.29  0.50( 0.47) 0.94   47546.4   11620.00
     12     7236.01  151.41  0.50( 0.47) 0.95   52072.2   12400.00
     13     6368.19  162.97  0.50( 0.47) 0.95   54378.4   12201.00
     14     5740.75  172.41  0.50( 0.48) 0.95   55669.0   12111.00
     15     4797.88  188.33  0.50( 0.48) 0.95   57591.9   12261.00
     16     4319.48  197.77  0.50( 0.48) 0.95   58403.0   10200.00
     17     3738.18  213.34  0.50( 0.48) 0.95   59641.0   10300.00
     18     3501.06  220.28  0.50( 0.48) 0.95   59993.2   12010.00
     19     3010.31  240.93  0.50( 0.48) 0.95   60321.5   12000.00
     20     1980.64  309.97  0.50( 0.48) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

******************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    13229.62   17.13  0.50( 0.40) 0.81    4130.7   50200.00
      2    13316.68   23.82  0.50( 0.40) 0.81    6172.8     210.00
      3    12988.13   34.50  0.50( 0.42) 0.84   10234.8     100.00
      4    12463.62   45.74  0.50( 0.43) 0.87   14312.7   50100.00
      5    12176.03   52.47  0.50( 0.44) 0.88   16518.4   31100.00
      6    11512.55   68.32  0.50( 0.45) 0.90   21936.3   11801.00
      7    11110.40   79.74  0.50( 0.45) 0.91   25780.8   11500.00
      8    10596.47   91.81  0.50( 0.46) 0.92   30266.9   11000.00
      9    10042.36  105.96  0.50( 0.46) 0.93   36656.0   13000.00
     10     9024.59  123.53  0.50( 0.47) 0.94   43873.9   11130.00
     11     8319.59  135.29  0.50( 0.47) 0.94   47546.4   11620.00
     12     7236.01  151.41  0.50( 0.47) 0.95   52072.2   12400.00
     13     6368.19  162.97  0.50( 0.47) 0.95   54378.4   12201.00
```

```
     14     5740.75  172.41  0.50( 0.48) 0.95   55669.0   12111.00
     15     4797.88  188.33  0.50( 0.48) 0.95   57591.9   12261.00
     16     4319.48  197.77  0.50( 0.48) 0.95   58403.0   10200.00
     17     3738.18  213.34  0.50( 0.48) 0.95   59641.0   10300.00
     18     3501.06  220.28  0.50( 0.48) 0.95   59993.2   12010.00
     19     3010.31  240.93  0.50( 0.48) 0.95   60321.5   12000.00
     20     1980.64  309.97  0.50( 0.48) 0.95   60992.3   10100.00
    TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   13316.68
  FLOW VELOCITY(FEET/SEC.) =  14.19   FLOW DEPTH(FEET) =  17.69
  TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =   24.55
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505U.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       72.00   23.45  0.50( 0.49) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13229.62   17.87    1.193  0.50( 0.40) 0.81    4130.7   50200.00
      2    13316.68   24.55    0.985  0.50( 0.40) 0.81    6172.8     210.00
      3    12988.13   35.23    0.807  0.50( 0.42) 0.84   10234.8     100.00
      4    12463.62   46.49    0.693  0.50( 0.43) 0.87   14312.7   50100.00
      5    12176.03   53.22    0.644  0.50( 0.44) 0.88   16518.4   31100.00
      6    11512.55   69.07    0.571  0.50( 0.45) 0.90   21936.3   11801.00
      7    11110.40   80.50    0.531  0.50( 0.45) 0.91   25780.8   11500.00
      8    10596.47   92.59    0.493  0.50( 0.46) 0.92   30266.9   11000.00
      9    10042.36  106.74    0.465  0.50( 0.46) 0.93   36656.0   13000.00
     10     9024.59  124.33    0.434  0.50( 0.47) 0.94   43873.9   11130.00
     11     8319.59  136.11    0.420  0.50( 0.47) 0.94   47546.4   11620.00
     12     7236.01  152.27    0.401  0.50( 0.47) 0.95   52072.2   12400.00
     13     6368.19  163.85    0.387  0.50( 0.47) 0.95   54378.4   12201.00
```



```
     14     5740.75  173.31    0.376  0.50( 0.48) 0.95   55669.0   12111.00
     15     4797.88  189.28    0.363  0.50( 0.48) 0.95   57591.9   12261.00
     16     4319.48  198.74    0.358  0.50( 0.48) 0.95   58403.0   10200.00
     17     3738.18  214.35    0.349  0.50( 0.48) 0.95   59641.0   10300.00
     18     3501.06  221.31    0.346  0.50( 0.48) 0.95   59993.2   12010.00
     19     3010.31  241.99    0.334  0.50( 0.48) 0.95   60321.5   12000.00
     20     1980.64  311.15    0.297  0.50( 0.48) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       72.00   23.45    1.016  0.50( 0.49) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13301.62   17.87    1.193  0.50( 0.41) 0.81    4247.4   50200.00
      2    13374.36   23.45    1.016  0.50( 0.41) 0.81    5989.9   50500.00
      3    13384.41   24.55    0.985  0.50( 0.41) 0.81    6326.0     210.00
      4    13031.36   35.23    0.807  0.50( 0.42) 0.84   10388.0     100.00
      5    12491.12   46.49    0.693  0.50( 0.43) 0.87   14465.9   50100.00
      6    12196.80   53.22    0.644  0.50( 0.44) 0.88   16671.6   31100.00
      7    11523.19   69.07    0.571  0.50( 0.45) 0.90   22089.4   11801.00
      8    11115.58   80.50    0.531  0.50( 0.45) 0.91   25934.0   11500.00
      9    10597.39   92.59    0.493  0.50( 0.46) 0.92   30420.1   11000.00
     10    10043.23  106.74    0.465  0.50( 0.46) 0.93   36809.2   13000.00
     11     9025.40  124.33    0.434  0.50( 0.47) 0.94   44027.1   11130.00
     12     8320.38  136.11    0.420  0.50( 0.47) 0.94   47699.6   11620.00
     13     7236.76  152.27    0.401  0.50( 0.47) 0.95   52225.4   12400.00
     14     6368.92  163.85    0.387  0.50( 0.47) 0.95   54531.6   12201.00
     15     5741.46  173.31    0.376  0.50( 0.48) 0.95   55822.2   12111.00
     16     4798.56  189.28    0.363  0.50( 0.48) 0.95   57745.1   12261.00
     17     4320.16  198.74    0.358  0.50( 0.48) 0.95   58556.2   10200.00
     18     3738.83  214.35    0.349  0.50( 0.48) 0.95   59794.1   10300.00
     19     3501.71  221.31    0.346  0.50( 0.48) 0.95   60146.3   12010.00
     20     3010.94  241.99    0.334  0.50( 0.48) 0.95   60474.7   12000.00
     21     1981.20  311.15    0.297  0.50( 0.48) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    13384.41  Tc(MIN.) =   24.551
  EFFECTIVE AREA(ACRES) =   6325.95  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118690.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =   13384.41
  FLOW VELOCITY(FEET/SEC.) =  14.47   FLOW DEPTH(FEET) =  17.56
  TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =   25.01
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610506U.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       27.99   19.62  0.50( 0.50) 1.00      49.6   50600.00
    TOTAL AREA(ACRES) =       49.6

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13301.62   18.32    1.176  0.50( 0.41) 0.81    4247.4   50200.00
      2    13374.36   23.91    1.003  0.50( 0.41) 0.81    5989.9   50500.00
      3    13384.41   25.01    0.972  0.50( 0.41) 0.81    6326.0     210.00
      4    13031.36   35.69    0.801  0.50( 0.42) 0.84   10388.0     100.00
      5    12491.12   46.95    0.689  0.50( 0.43) 0.87   14465.9   50100.00
      6    12196.80   53.69    0.641  0.50( 0.44) 0.88   16671.6   31100.00
      7    11523.19   69.55    0.569  0.50( 0.45) 0.90   22089.4   11801.00
      8    11115.58   80.98    0.529  0.50( 0.45) 0.91   25934.0   11500.00
      9    10597.39   93.07    0.492  0.50( 0.46) 0.92   30420.1   11000.00
     10    10043.23  107.23    0.464  0.50( 0.46) 0.93   36809.2   13000.00
     11     9025.40  124.83    0.433  0.50( 0.47) 0.94   44027.1   11130.00
     12     8320.38  136.62    0.419  0.50( 0.47) 0.94   47699.6   11620.00
     13     7236.76  152.80    0.400  0.50( 0.47) 0.95   52225.4   12400.00
     14     6368.92  164.40    0.386  0.50( 0.47) 0.95   54531.6   12201.00
     15     5741.46  173.87    0.375  0.50( 0.48) 0.95   55822.2   12111.00
     16     4798.56  189.87    0.363  0.50( 0.48) 0.95   57745.1   12261.00
     17     4320.16  199.34    0.357  0.50( 0.48) 0.95   58556.2   10200.00
     18     3738.83  214.97    0.349  0.50( 0.48) 0.95   59794.1   10300.00
     19     3501.71  221.94    0.345  0.50( 0.48) 0.95   60146.3   12010.00
     20     3010.94  242.65    0.334  0.50( 0.48) 0.95   60474.7   12000.00
     21     1981.20  311.88    0.296  0.50( 0.48) 0.95   61145.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       27.99   19.62    1.127  0.50( 0.50) 1.00      49.6   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```



```
      1    13329.61   18.32    1.176  0.50( 0.41) 0.81    4293.7   50200.00
      2    13346.57   19.62    1.127  0.50( 0.41) 0.81    4703.3   50600.00
      3    13396.80   23.91    1.003  0.50( 0.41) 0.81    6039.5   50500.00
      4    13405.46   25.01    0.972  0.50( 0.41) 0.81    6375.5     210.00
      5    13044.80   35.69    0.801  0.50( 0.42) 0.84   10437.6     100.00
      6    12499.55   46.95    0.689  0.50( 0.43) 0.87   14515.4   50100.00
      7    12203.09   53.69    0.641  0.50( 0.44) 0.88   16721.2   31100.00
      8    11526.25   69.55    0.569  0.50( 0.45) 0.90   22139.0   11801.00
      9    11116.87   80.98    0.529  0.50( 0.45) 0.91   25983.6   11500.00
     10    10597.39   93.07    0.492  0.50( 0.46) 0.92   30469.7   11000.00
     11    10043.23  107.23    0.464  0.50( 0.46) 0.93   36858.8   13000.00
     12     9025.40  124.83    0.433  0.50( 0.47) 0.94   44076.7   11130.00
     13     8320.38  136.62    0.419  0.50( 0.47) 0.94   47749.2   11620.00
     14     7236.76  152.80    0.400  0.50( 0.47) 0.95   52274.9   12400.00
     15     6368.92  164.40    0.386  0.50( 0.47) 0.95   54581.1   12201.00
     16     5741.46  173.87    0.375  0.50( 0.48) 0.95   55871.8   12111.00
     17     4798.56  189.87    0.363  0.50( 0.48) 0.95   57794.7   12261.00
     18     4320.16  199.34    0.357  0.50( 0.48) 0.95   58605.8   10200.00
     19     3738.83  214.97    0.349  0.50( 0.48) 0.95   59843.7   10300.00
     20     3501.71  221.94    0.345  0.50( 0.48) 0.95   60195.9   12010.00
     21     3010.94  242.65    0.334  0.50( 0.48) 0.95   60524.3   12000.00
     22     1981.20  311.88    0.296  0.50( 0.48) 0.95   61195.1   10100.00
   TOTAL AREA(ACRES) =     61195.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    13405.46  Tc(MIN.) =   25.006
  EFFECTIVE AREA(ACRES) =   6375.54  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    61195.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119085.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1601.97   CHANNEL SLOPE =  0.0075
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   13405.46
  FLOW VELOCITY(FEET/SEC.) =  16.77   FLOW DEPTH(FEET) =  16.32
  TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =   26.60
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120687.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.60
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.941
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.20      0.50     1.000     -
  USER-DEFINED                -        4.00      0.50     1.000     -
```

```
  USER-DEFINED               -        2.00      0.50     1.000     -
  USER-DEFINED               -        9.70      0.50     1.000     -
  USER-DEFINED               -        2.60      0.50     1.000     -
  USER-DEFINED               -        1.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =    8.05
  EFFECTIVE AREA(ACRES) =   6395.84   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    61215.4       PEAK FLOW RATE(CFS) =   13405.46
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.60
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.941
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.50      0.50     1.000     -
  USER-DEFINED               -        7.20      0.50     1.000     -
  USER-DEFINED               -        5.80      0.50     1.000     -
  USER-DEFINED               -        0.10      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =    6.58
  EFFECTIVE AREA(ACRES) =   6412.44   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    61232.0       PEAK FLOW RATE(CFS) =   13405.46
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P05EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      324.09   10.46  0.50( 0.18) 0.37     230.2     429.00
      2      338.93   12.25  0.50( 0.18) 0.37     269.4     425.00
      3      340.01   12.46  0.50( 0.18) 0.37     274.1     400.00
      4      343.88   14.30  0.50( 0.19) 0.37     315.0     300.00
      5      364.37   20.67  0.50( 0.19) 0.37     439.8     210.00
      6      360.20   22.34  0.50( 0.19) 0.37     459.0     410.00
      7      355.69   24.05  0.50( 0.18) 0.37     478.3     200.00
      8      351.99   24.89  0.50( 0.18) 0.37     487.0     230.00
      9      344.00   26.01  0.50( 0.18) 0.37     491.2     220.50
```



```
    TOTAL AREA(ACRES) =      491.2

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13329.61   19.92    1.116  0.50( 0.41) 0.81    4330.6   50200.00
      2    13346.57   21.22    1.079  0.50( 0.41) 0.81    4740.2   50600.00
      3    13396.80   25.50    0.962  0.50( 0.41) 0.82    6076.4   50500.00
      4    13405.46   26.60    0.941  0.50( 0.41) 0.82    6412.4     210.00
      5    13044.80   37.29    0.781  0.50( 0.42) 0.84   10474.5     100.00
      6    12499.55   48.57    0.676  0.50( 0.44) 0.87   14552.3   50100.00
      7    12203.09   55.32    0.631  0.50( 0.44) 0.88   16758.1   31100.00
      8    11526.25   71.20    0.563  0.50( 0.45) 0.90   22175.9   11801.00
      9    11116.87   82.65    0.523  0.50( 0.45) 0.91   26020.5   11500.00
     10    10597.39   94.76    0.489  0.50( 0.46) 0.92   30506.6   11000.00
     11    10043.23  108.94    0.461  0.50( 0.46) 0.93   36895.7   13000.00
     12     9025.40  126.59    0.431  0.50( 0.47) 0.94   44113.6   11130.00
     13     8320.38  138.41    0.417  0.50( 0.47) 0.94   47786.1   11620.00
     14     7236.76  154.65    0.398  0.50( 0.47) 0.95   52311.9   12400.00
     15     6368.92  166.32    0.384  0.50( 0.47) 0.95   54618.0   12201.00
     16     5741.46  175.84    0.373  0.50( 0.48) 0.95   55908.7   12111.00
     17     4798.56  191.92    0.362  0.50( 0.48) 0.95   57831.6   12261.00
     18     4320.16  201.45    0.356  0.50( 0.48) 0.95   58642.7   10200.00
     19     3738.83  217.16    0.348  0.50( 0.48) 0.95   59880.6   10300.00
     20     3501.71  224.17    0.344  0.50( 0.48) 0.95   60232.8   12010.00
     21     3010.94  244.96    0.333  0.50( 0.48) 0.95   60561.2   12000.00
     22     1981.20  314.45    0.295  0.50( 0.48) 0.95   61232.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120687.78 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      324.09   10.46    1.713  0.50( 0.18) 0.37     230.2     429.00
      2      338.93   12.25    1.551  0.50( 0.18) 0.37     269.4     425.00
      3      340.01   12.46    1.532  0.50( 0.18) 0.37     274.1     400.00
      4      343.88   14.30    1.364  0.50( 0.19) 0.37     315.0     300.00
      5      364.37   20.67    1.094  0.50( 0.19) 0.37     439.8     210.00
      6      360.20   22.34    1.047  0.50( 0.19) 0.37     459.0     410.00
      7      355.69   24.05    0.999  0.50( 0.18) 0.37     478.3     200.00
      8      351.99   24.89    0.975  0.50( 0.18) 0.37     487.0     230.00
      9      344.00   26.01    0.952  0.50( 0.18) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13220.73   10.46    1.713  0.50( 0.39) 0.77    2504.0     429.00
      2    13563.62   12.25    1.551  0.50( 0.39) 0.77    2932.5     425.00
      3    13567.16   12.46    1.532  0.50( 0.39) 0.77    2982.8     400.00
      4    13267.36   14.30    1.364  0.50( 0.39) 0.77    3425.1     300.00
      5    13691.56   19.92    1.116  0.50( 0.39) 0.77    4755.6   50200.00
      6    13703.82   20.67    1.094  0.50( 0.39) 0.78    5007.8     210.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 | 13709.58 | 21.22 | 1.079 | 0.50( 0.39) | 0.78 | 5186.3 | 50600.00 |
| 8 | 13719.96 | 22.34 | 1.047 | 0.50( 0.39) | 0.78 | 5549.9 | 410.00 |
| 9 | 13735.54 | 24.05 | 0.999 | 0.50( 0.39) | 0.78 | 6104.0 | 200.00 |
| 10 | 13741.60 | 24.89 | 0.975 | 0.50( 0.39) | 0.78 | 6372.2 | 230.00 |
| 11 | 13744.45 | 25.50 | 0.962 | 0.50( 0.39) | 0.78 | 6565.7 | 50500.00 |
| 12 | 13744.86 | 26.01 | 0.952 | 0.50( 0.39) | 0.78 | 6725.1 | 220.50 |
| 13 | 13744.33 | 26.60 | 0.941 | 0.50( 0.39) | 0.78 | 6903.6 | 210.00 |
| 14 | 13312.06 | 37.29 | 0.781 | 0.50( 0.41) | 0.82 | 10965.7 | 100.00 |
| 15 | 12719.86 | 48.57 | 0.676 | 0.50( 0.43) | 0.85 | 15043.5 | 50100.00 |
| 16 | 12403.41 | 55.32 | 0.631 | 0.50( 0.43) | 0.87 | 17249.3 | 31100.00 |
| 17 | 11696.21 | 71.20 | 0.563 | 0.50( 0.44) | 0.89 | 22667.1 | 11801.00 |
| 18 | 11269.07 | 82.65 | 0.523 | 0.50( 0.45) | 0.90 | 26511.7 | 11500.00 |
| 19 | 10735.89 | 94.76 | 0.489 | 0.50( 0.46) | 0.91 | 30997.8 | 11000.00 |
| 20 | 10173.82 | 108.94 | 0.461 | 0.50( 0.46) | 0.92 | 37386.9 | 13000.00 |
| 21 | 9147.62 | 126.59 | 0.431 | 0.50( 0.47) | 0.93 | 44604.8 | 11130.00 |
| 22 | 8438.63 | 138.41 | 0.417 | 0.50( 0.47) | 0.94 | 48277.3 | 11620.00 |
| 23 | 7349.57 | 154.65 | 0.398 | 0.50( 0.47) | 0.94 | 52803.1 | 12400.00 |
| 24 | 6477.81 | 166.32 | 0.384 | 0.50( 0.47) | 0.94 | 55109.2 | 12201.00 |
| 25 | 5847.16 | 175.84 | 0.373 | 0.50( 0.47) | 0.95 | 56399.9 | 12111.00 |
| 26 | 4901.03 | 191.92 | 0.362 | 0.50( 0.47) | 0.95 | 58322.8 | 12261.00 |
| 27 | 4421.15 | 201.45 | 0.356 | 0.50( 0.47) | 0.95 | 59133.9 | 10200.00 |
| 28 | 3837.40 | 217.16 | 0.348 | 0.50( 0.47) | 0.95 | 60371.8 | 10300.00 |
| 29 | 3599.20 | 224.17 | 0.344 | 0.50( 0.47) | 0.95 | 60724.0 | 12010.00 |
| 30 | 3105.22 | 244.96 | 0.333 | 0.50( 0.47) | 0.95 | 61052.4 | 12000.00 |
| 31 | 2064.75 | 314.45 | 0.295 | 0.50( 0.47) | 0.95 | 61723.2 | 10100.00 |

TOTAL AREA(ACRES) = 61723.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 13744.86 Tc(MIN.) = 26.014
EFFECTIVE AREA(ACRES) = 6725.06 AREA-AVERAGED Fm(INCH/HR) = 0.39
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 61723.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120687.78 FEET.

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.898
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 7.00 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 3.30 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.40 | 0.50 | 0.100 | - |
| USER-DEFINED | - | 1.40 | 0.50 | 1.000 | - |
| USER-DEFINED | - | 0.30 | 0.50 | 0.100 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13747.22
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.81
AVERAGE FLOW DEPTH(FEET) = 17.59 TRAVEL TIME(MIN.) = 2.77



Tc(MIN.) = 28.78
SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 4.72
EFFECTIVE AREA(ACRES) = 6737.46 AREA-AVERAGED Fm(INCH/HR) = 0.39
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.78
TOTAL AREA(ACRES) = 61735.6 PEAK FLOW RATE(CFS) = 13744.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 17.58 FLOW VELOCITY(FEET/SEC.) = 14.82
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123146.14 FEET.

**********
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0610507U.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 107.76 | 23.93 | 0.50( 0.50) | 0.99 | 236.8 | 50700.00 |

TOTAL AREA(ACRES) = 236.8

**********
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13220.73 | 13.25 | 1.460 | 0.50( 0.39) | 0.77 | 2516.4 | 429.00 |
| 2 | 13563.62 | 15.02 | 1.300 | 0.50( 0.39) | 0.77 | 2944.9 | 425.00 |
| 3 | 13567.16 | 15.23 | 1.292 | 0.50( 0.39) | 0.77 | 2995.2 | 400.00 |
| 4 | 13267.36 | 17.09 | 1.222 | 0.50( 0.39) | 0.77 | 3437.5 | 300.00 |
| 5 | 13691.56 | 22.68 | 1.037 | 0.50( 0.39) | 0.78 | 4768.0 | 50200.00 |
| 6 | 13703.82 | 23.44 | 1.016 | 0.50( 0.39) | 0.78 | 5020.2 | 210.00 |
| 7 | 13709.58 | 23.98 | 1.001 | 0.50( 0.39) | 0.78 | 5198.7 | 50600.00 |
| 8 | 13719.96 | 25.11 | 0.970 | 0.50( 0.39) | 0.78 | 5562.3 | 410.00 |
| 9 | 13735.54 | 26.82 | 0.936 | 0.50( 0.39) | 0.78 | 6116.4 | 200.00 |
| 10 | 13741.60 | 27.65 | 0.920 | 0.50( 0.39) | 0.78 | 6384.6 | 230.00 |
| 11 | 13744.45 | 28.26 | 0.908 | 0.50( 0.39) | 0.78 | 6578.1 | 50500.00 |
| 12 | 13744.86 | 28.78 | 0.898 | 0.50( 0.39) | 0.78 | 6737.5 | 220.50 |
| 13 | 13744.33 | 29.36 | 0.886 | 0.50( 0.39) | 0.78 | 6916.0 | 210.00 |
| 14 | 13312.06 | 40.08 | 0.745 | 0.50( 0.41) | 0.82 | 10978.1 | 100.00 |
| 15 | 12719.86 | 51.39 | 0.655 | 0.50( 0.43) | 0.85 | 15055.9 | 50100.00 |
| 16 | 12403.41 | 58.15 | 0.613 | 0.50( 0.43) | 0.87 | 17261.7 | 31100.00 |
| 17 | 11696.21 | 74.08 | 0.553 | 0.50( 0.44) | 0.89 | 22679.5 | 11801.00 |
| 18 | 11269.07 | 85.55 | 0.513 | 0.50( 0.45) | 0.90 | 26524.1 | 11500.00 |
| 19 | 10735.89 | 97.70 | 0.483 | 0.50( 0.46) | 0.91 | 31010.2 | 11000.00 |
| 20 | 10173.82 | 111.93 | 0.455 | 0.50( 0.46) | 0.92 | 37399.3 | 13000.00 |

```
   21     9147.62  129.65    0.428  0.50( 0.47) 0.93   44617.2   11130.00
   22     8438.63  141.54    0.414  0.50( 0.47) 0.94   48289.7   11620.00
   23     7349.57  157.89    0.394  0.50( 0.47) 0.94   52815.4   12400.00
   24     6477.81  169.65    0.380  0.50( 0.47) 0.94   55121.6   12201.00
   25     5847.16  179.26    0.369  0.50( 0.47) 0.95   56412.3   12111.00
   26     4901.03  195.50    0.360  0.50( 0.47) 0.95   58335.2   12261.00
   27     4421.15  205.12    0.354  0.50( 0.47) 0.95   59146.3   10200.00
   28     3837.40  220.97    0.346  0.50( 0.47) 0.95   60384.2   10300.00
   29     3599.20  228.04    0.342  0.50( 0.47) 0.95   60736.4   12010.00
   30     3105.22  248.97    0.330  0.50( 0.47) 0.95   61064.8   12000.00
   31     2064.75  318.89    0.292  0.50( 0.47) 0.95   61735.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123146.14 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      107.76   23.93    1.002  0.50( 0.50) 0.99     236.8   50700.00
LONGEST FLOWPATH FROM NODE  50700.00 TO NODE  13408.00 =    7903.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    13328.49   13.25    1.460  0.50( 0.39) 0.79    2647.5     429.00
    2    13671.13   15.02    1.300  0.50( 0.39) 0.78    3093.6     425.00
    3    13674.92   15.23    1.292  0.50( 0.39) 0.78    3145.9     400.00
    4    13375.12   17.09    1.222  0.50( 0.39) 0.78    3606.7     300.00
    5    13799.32   22.68    1.037  0.50( 0.39) 0.78    4992.5   50200.00
    6    13811.57   23.44    1.016  0.50( 0.39) 0.79    5252.2     210.00
    7    13816.74   23.93    1.002  0.50( 0.39) 0.79    5417.2   50700.00
    8    13817.00   23.98    1.001  0.50( 0.39) 0.79    5435.4   50600.00
    9    13820.82   25.11    0.970  0.50( 0.39) 0.79    5799.1     410.00
   10    13829.26   26.82    0.936  0.50( 0.39) 0.79    6353.2     200.00
   11    13831.85   27.65    0.920  0.50( 0.39) 0.79    6621.4     230.00
   12    13832.13   28.26    0.908  0.50( 0.39) 0.79    6814.9   50500.00
   13    13830.39   28.78    0.898  0.50( 0.40) 0.79    6974.2     220.50
   14    13827.43   29.36    0.886  0.50( 0.40) 0.79    7152.8     210.00
   15    13365.07   40.08    0.745  0.50( 0.41) 0.82   11214.9     100.00
   16    12753.72   51.39    0.655  0.50( 0.43) 0.86   15292.7   50100.00
   17    12428.32   58.15    0.613  0.50( 0.43) 0.87   17498.5   31100.00
   18    11708.28   74.08    0.553  0.50( 0.44) 0.89   22916.3   11801.00
   19    11272.67   85.55    0.513  0.50( 0.45) 0.90   26760.9   11500.00
   20    10736.65   97.70    0.483  0.50( 0.46) 0.91   31247.0   11000.00
   21    10174.53  111.93    0.455  0.50( 0.46) 0.92   37636.1   13000.00
   22     9148.29  129.65    0.428  0.50( 0.47) 0.93   44854.0   11130.00
   23     8439.28  141.54    0.414  0.50( 0.47) 0.94   48526.5   11620.00
   24     7350.18  157.89    0.394  0.50( 0.47) 0.94   53052.2   12400.00
   25     6478.41  169.65    0.380  0.50( 0.47) 0.94   55358.4   12201.00
   26     5847.73  179.26    0.369  0.50( 0.47) 0.95   56649.1   12111.00
   27     4901.59  195.50    0.360  0.50( 0.47) 0.95   58572.0   12261.00
   28     4421.70  205.12    0.354  0.50( 0.47) 0.95   59383.1   10200.00
   29     3837.94  220.97    0.346  0.50( 0.47) 0.95   60621.0   10300.00
   30     3599.73  228.04    0.342  0.50( 0.47) 0.95   60973.2   12010.00
   31     3105.74  248.97    0.330  0.50( 0.47) 0.95   61301.6   12000.00
   32     2065.21  318.89    0.292  0.50( 0.47) 0.95   61972.4   10100.00
  TOTAL AREA(ACRES) =     61972.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    13832.13  Tc(MIN.) =   28.264
```



```
  EFFECTIVE AREA(ACRES) =   6814.89  AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    61972.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123146.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13410.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    182.00  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =   952.73   CHANNEL SLOPE =  0.0034
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.883
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.40      0.50     1.000     -
  USER-DEFINED               -        2.90      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   13832.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.63
  AVERAGE FLOW DEPTH(FEET) =  19.11   TRAVEL TIME(MIN.) =   1.26
  Tc(MIN.) =   29.52
  SUBAREA AREA(ACRES) =     3.30       SUBAREA RUNOFF(CFS) =    1.14
  EFFECTIVE AREA(ACRES) =   6818.19     AREA-AVERAGED Fm(INCH/HR) =   0.39
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =    61975.7         PEAK FLOW RATE(CFS) =   13832.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 19.10   FLOW VELOCITY(FEET/SEC.) =  12.64
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124098.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc       Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      716.94   33.96  0.50( 0.45) 0.90    1392.8     110.00
      2      712.41   36.72  0.50( 0.45) 0.90    1540.3     100.00
      3      702.91   38.48  0.50( 0.45) 0.90    1624.0     100.00
      4      658.46   42.79  0.50( 0.45) 0.91    1804.5     130.00
      5      539.47   61.06  0.50( 0.46) 0.93    2545.6   20100.00
      6      464.24   68.52  0.50( 0.46) 0.93    2700.4   13600.00
```

| | | | | | | |
|---|---|---|---|---|---|---|
| 7 | 180.59 | 136.49 | 0.50( 0.47) | 0.93 | 3777.9 | 13510.00 |
| 8 | 122.83 | 163.10 | 0.50( 0.47) | 0.93 | 3859.7 | 13500.00 |

TOTAL AREA(ACRES) = 3859.7

**********

FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13328.49 | 14.52 | 1.345 | 0.50( 0.39) | 0.79 | 2650.8 | 429.00 |
| 2 | 13671.13 | 16.28 | 1.253 | 0.50( 0.39) | 0.78 | 3096.9 | 425.00 |
| 3 | 13674.92 | 16.49 | 1.245 | 0.50( 0.39) | 0.78 | 3149.2 | 400.00 |
| 4 | 13375.12 | 18.36 | 1.175 | 0.50( 0.39) | 0.78 | 3610.0 | 300.00 |
| 5 | 13799.32 | 23.94 | 1.002 | 0.50( 0.39) | 0.79 | 4995.8 | 50200.00 |
| 6 | 13811.57 | 24.70 | 0.981 | 0.50( 0.39) | 0.79 | 5255.5 | 210.00 |
| 7 | 13816.74 | 25.19 | 0.968 | 0.50( 0.39) | 0.79 | 5420.5 | 50700.00 |
| 8 | 13817.00 | 25.24 | 0.967 | 0.50( 0.39) | 0.79 | 5438.7 | 50600.00 |
| 9 | 13820.82 | 26.37 | 0.945 | 0.50( 0.39) | 0.79 | 5802.4 | 410.00 |
| 10 | 13829.26 | 28.08 | 0.912 | 0.50( 0.39) | 0.79 | 6356.5 | 200.00 |
| 11 | 13831.85 | 28.91 | 0.895 | 0.50( 0.39) | 0.79 | 6624.7 | 230.00 |
| 12 | 13832.13 | 29.52 | 0.883 | 0.50( 0.39) | 0.79 | 6818.2 | 50500.00 |
| 13 | 13830.39 | 30.04 | 0.874 | 0.50( 0.40) | 0.79 | 6977.5 | 220.50 |
| 14 | 13827.43 | 30.62 | 0.866 | 0.50( 0.40) | 0.79 | 7156.1 | 210.00 |
| 15 | 13365.07 | 41.35 | 0.735 | 0.50( 0.41) | 0.82 | 11218.2 | 100.00 |
| 16 | 12753.72 | 52.67 | 0.647 | 0.50( 0.43) | 0.86 | 15296.0 | 50100.00 |
| 17 | 12428.32 | 59.44 | 0.605 | 0.50( 0.43) | 0.87 | 17501.8 | 31100.00 |
| 18 | 11708.28 | 75.39 | 0.549 | 0.50( 0.44) | 0.89 | 22919.6 | 11801.00 |
| 19 | 11272.67 | 86.88 | 0.509 | 0.50( 0.45) | 0.90 | 26764.2 | 11500.00 |
| 20 | 10736.65 | 99.04 | 0.480 | 0.50( 0.46) | 0.91 | 31250.3 | 11000.00 |
| 21 | 10174.53 | 113.28 | 0.452 | 0.50( 0.46) | 0.92 | 37639.4 | 13000.00 |
| 22 | 9148.29 | 131.05 | 0.426 | 0.50( 0.47) | 0.93 | 44857.3 | 11130.00 |
| 23 | 8439.28 | 142.96 | 0.412 | 0.50( 0.47) | 0.94 | 48529.8 | 11620.00 |
| 24 | 7350.18 | 159.36 | 0.392 | 0.50( 0.47) | 0.94 | 53055.5 | 12400.00 |
| 25 | 6478.41 | 171.17 | 0.378 | 0.50( 0.47) | 0.94 | 55361.7 | 12201.00 |
| 26 | 5847.73 | 180.82 | 0.368 | 0.50( 0.47) | 0.95 | 56652.4 | 12111.00 |
| 27 | 4901.59 | 197.13 | 0.359 | 0.50( 0.47) | 0.95 | 58575.3 | 12261.00 |
| 28 | 4421.70 | 206.80 | 0.353 | 0.50( 0.47) | 0.95 | 59386.4 | 10200.00 |
| 29 | 3837.94 | 222.70 | 0.345 | 0.50( 0.47) | 0.95 | 60624.3 | 10300.00 |
| 30 | 3599.73 | 229.80 | 0.341 | 0.50( 0.47) | 0.95 | 60976.5 | 12010.00 |
| 31 | 3105.74 | 250.80 | 0.329 | 0.50( 0.47) | 0.95 | 61304.9 | 12000.00 |
| 32 | 2065.21 | 320.92 | 0.291 | 0.50( 0.47) | 0.95 | 61975.7 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124098.87 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 716.94 | 33.96 | 0.823 | 0.50( 0.45) | 0.90 | 1392.8 | 110.00 |
| 2 | 712.41 | 36.72 | 0.788 | 0.50( 0.45) | 0.90 | 1540.3 | 100.00 |
| 3 | 702.91 | 38.48 | 0.765 | 0.50( 0.45) | 0.90 | 1624.0 | 100.00 |
| 4 | 658.46 | 42.79 | 0.723 | 0.50( 0.45) | 0.91 | 1804.5 | 130.00 |
| 5 | 539.47 | 61.06 | 0.598 | 0.50( 0.46) | 0.93 | 2545.6 | 20100.00 |
| 6 | 464.24 | 68.52 | 0.572 | 0.50( 0.46) | 0.93 | 2700.4 | 13600.00 |
| 7 | 180.59 | 136.49 | 0.419 | 0.50( 0.47) | 0.93 | 3777.9 | 13510.00 |
| 8 | 122.83 | 163.10 | 0.388 | 0.50( 0.47) | 0.93 | 3859.7 | 13500.00 |



LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14045.43 | 14.52 | 1.345 | 0.50( 0.40) | 0.81 | 3246.1 | 429.00 |
| 2 | 14388.07 | 16.28 | 1.253 | 0.50( 0.40) | 0.81 | 3764.6 | 425.00 |
| 3 | 14391.86 | 16.49 | 1.245 | 0.50( 0.40) | 0.81 | 3825.5 | 400.00 |
| 4 | 14092.06 | 18.36 | 1.175 | 0.50( 0.40) | 0.80 | 4362.9 | 300.00 |
| 5 | 14516.26 | 23.94 | 1.002 | 0.50( 0.40) | 0.80 | 5977.6 | 50200.00 |
| 6 | 14528.52 | 24.70 | 0.981 | 0.50( 0.40) | 0.80 | 6268.2 | 210.00 |
| 7 | 14533.69 | 25.19 | 0.968 | 0.50( 0.40) | 0.80 | 6453.2 | 50700.00 |
| 8 | 14533.94 | 25.24 | 0.967 | 0.50( 0.40) | 0.80 | 6473.8 | 50600.00 |
| 9 | 14537.77 | 26.37 | 0.945 | 0.50( 0.40) | 0.80 | 6883.6 | 410.00 |
| 10 | 14546.20 | 28.08 | 0.912 | 0.50( 0.40) | 0.81 | 7507.8 | 200.00 |
| 11 | 14548.79 | 28.91 | 0.895 | 0.50( 0.40) | 0.81 | 7810.2 | 230.00 |
| 12 | 14549.08 | 29.52 | 0.883 | 0.50( 0.40) | 0.81 | 8028.8 | 50500.00 |
| 13 | 14547.33 | 30.04 | 0.874 | 0.50( 0.40) | 0.81 | 8209.2 | 220.50 |
| 14 | 14544.37 | 30.62 | 0.866 | 0.50( 0.40) | 0.81 | 8411.8 | 210.00 |
| 15 | 14400.30 | 33.96 | 0.823 | 0.50( 0.41) | 0.82 | 9814.6 | 110.00 |
| 16 | 14276.89 | 36.72 | 0.788 | 0.50( 0.41) | 0.82 | 11006.6 | 100.00 |
| 17 | 14191.64 | 38.48 | 0.765 | 0.50( 0.41) | 0.83 | 11755.8 | 100.00 |
| 18 | 14038.41 | 41.35 | 0.735 | 0.50( 0.42) | 0.83 | 12962.3 | 100.00 |
| 19 | 13945.56 | 42.79 | 0.723 | 0.50( 0.42) | 0.84 | 13542.7 | 130.00 |
| 20 | 13347.83 | 52.67 | 0.647 | 0.50( 0.43) | 0.86 | 17501.3 | 50100.00 |
| 21 | 12978.30 | 59.44 | 0.605 | 0.50( 0.44) | 0.87 | 19981.9 | 31100.00 |
| 22 | 12894.90 | 61.06 | 0.598 | 0.50( 0.44) | 0.88 | 20595.8 | 20100.00 |
| 23 | 12482.92 | 68.52 | 0.572 | 0.50( 0.44) | 0.89 | 23284.4 | 13600.00 |
| 24 | 12143.84 | 75.39 | 0.549 | 0.50( 0.45) | 0.89 | 25728.9 | 11801.00 |
| 25 | 11660.30 | 86.88 | 0.509 | 0.50( 0.45) | 0.90 | 29755.6 | 11500.00 |
| 26 | 11073.53 | 99.04 | 0.480 | 0.50( 0.46) | 0.91 | 34434.4 | 11000.00 |
| 27 | 10451.97 | 113.28 | 0.452 | 0.50( 0.46) | 0.92 | 41049.4 | 13000.00 |
| 28 | 9351.60 | 131.05 | 0.426 | 0.50( 0.47) | 0.93 | 48548.9 | 11130.00 |
| 29 | 9004.78 | 136.49 | 0.419 | 0.50( 0.47) | 0.94 | 50313.9 | 13510.00 |
| 30 | 8605.82 | 142.96 | 0.412 | 0.50( 0.47) | 0.94 | 52327.6 | 11620.00 |
| 31 | 7481.13 | 159.36 | 0.392 | 0.50( 0.47) | 0.94 | 56903.7 | 12400.00 |
| 32 | 7197.26 | 163.10 | 0.388 | 0.50( 0.47) | 0.94 | 57644.7 | 13500.00 |
| 33 | 6598.21 | 171.17 | 0.378 | 0.50( 0.47) | 0.94 | 59221.4 | 12201.00 |
| 34 | 5964.09 | 180.82 | 0.368 | 0.50( 0.47) | 0.94 | 60512.0 | 12111.00 |
| 35 | 5015.13 | 197.13 | 0.359 | 0.50( 0.47) | 0.95 | 62434.9 | 12261.00 |
| 36 | 4533.58 | 206.80 | 0.353 | 0.50( 0.47) | 0.95 | 63246.1 | 10200.00 |
| 37 | 3947.08 | 222.70 | 0.345 | 0.50( 0.47) | 0.95 | 64484.0 | 10300.00 |
| 38 | 3707.65 | 229.80 | 0.341 | 0.50( 0.47) | 0.95 | 64836.2 | 12010.00 |
| 39 | 3210.03 | 250.80 | 0.329 | 0.50( 0.47) | 0.95 | 65164.6 | 12000.00 |
| 40 | 2157.42 | 320.92 | 0.291 | 0.50( 0.47) | 0.95 | 65835.4 | 10100.00 |

TOTAL AREA(ACRES) = 65835.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14549.08 Tc(MIN.) = 29.522

EFFECTIVE AREA(ACRES) = 8028.76 AREA-AVERAGED Fm(INCH/HR) = 0.40

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81

TOTAL AREA(ACRES) = 65835.4

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124098.87 FEET.

**********

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 51

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

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   14549.08
  FLOW VELOCITY(FEET/SEC.) =  19.47   FLOW DEPTH(FEET) =  15.78
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   29.67
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124268.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101F.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       85.74   49.56  0.50( 0.49) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14045.43   14.66    1.332  0.50( 0.40) 0.81    3246.1     429.00
      2    14388.07   16.43    1.247  0.50( 0.40) 0.81    3764.6     425.00
      3    14391.86   16.64    1.239  0.50( 0.40) 0.81    3825.5     400.00
      4    14092.06   18.51    1.169  0.50( 0.40) 0.80    4362.9     300.00
      5    14516.26   24.09    0.998  0.50( 0.40) 0.80    5977.6   50200.00
      6    14528.52   24.84    0.976  0.50( 0.40) 0.80    6268.2     210.00
      7    14533.69   25.33    0.966  0.50( 0.40) 0.80    6453.2   50700.00
      8    14533.94   25.39    0.964  0.50( 0.40) 0.80    6473.8   50600.00
      9    14537.77   26.51    0.942  0.50( 0.40) 0.80    6883.6     410.00
     10    14546.20   28.22    0.909  0.50( 0.40) 0.81    7507.8     200.00
     11    14548.79   29.05    0.893  0.50( 0.40) 0.81    7810.2     230.00
     12    14549.08   29.67    0.881  0.50( 0.40) 0.81    8028.8   50500.00
     13    14547.33   30.18    0.872  0.50( 0.40) 0.81    8209.2     220.50
     14    14544.37   30.77    0.864  0.50( 0.40) 0.81    8411.8     210.00
     15    14400.30   34.11    0.821  0.50( 0.41) 0.82    9814.6     110.00
     16    14276.89   36.87    0.786  0.50( 0.41) 0.82   11006.6     100.00
     17    14191.64   38.63    0.764  0.50( 0.41) 0.83   11755.8     100.00
     18    14038.41   41.50    0.734  0.50( 0.42) 0.83   12962.3     100.00
     19    13945.56   42.94    0.722  0.50( 0.42) 0.84   13542.7     130.00
     20    13347.83   52.82    0.647  0.50( 0.43) 0.86   17501.3   50100.00
```



```
     21    12978.30   59.59    0.605  0.50( 0.44) 0.87   19981.9   31100.00
     22    12894.90   61.21    0.598  0.50( 0.44) 0.88   20595.8   20100.00
     23    12482.92   68.67    0.572  0.50( 0.44) 0.89   23284.4   13600.00
     24    12143.84   75.54    0.548  0.50( 0.45) 0.89   25728.9   11801.00
     25    11660.30   87.03    0.508  0.50( 0.45) 0.90   29755.6   11500.00
     26    11073.53   99.19    0.480  0.50( 0.46) 0.91   34434.4   11000.00
     27    10451.97  113.44    0.452  0.50( 0.46) 0.92   41049.4   13000.00
     28     9351.60  131.21    0.426  0.50( 0.47) 0.93   48548.9   11130.00
     29     9004.78  136.66    0.419  0.50( 0.47) 0.94   50313.9   13510.00
     30     8605.82  143.13    0.412  0.50( 0.47) 0.94   52327.6   11620.00
     31     7481.13  159.53    0.392  0.50( 0.47) 0.94   56903.7   12400.00
     32     7197.26  163.27    0.388  0.50( 0.47) 0.94   57644.7   13500.00
     33     6598.21  171.35    0.378  0.50( 0.47) 0.94   59221.4   12201.00
     34     5964.09  181.00    0.367  0.50( 0.47) 0.94   60512.0   12111.00
     35     5015.13  197.32    0.359  0.50( 0.47) 0.95   62434.9   12261.00
     36     4533.58  206.99    0.353  0.50( 0.47) 0.95   63246.1   10200.00
     37     3947.08  222.90    0.345  0.50( 0.47) 0.95   64484.0   10300.00
     38     3707.65  230.00    0.341  0.50( 0.47) 0.95   64836.2   12010.00
     39     3210.03  251.01    0.329  0.50( 0.47) 0.95   65164.6   12000.00
     40     2157.42  321.15    0.291  0.50( 0.47) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124268.65 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       85.74   49.56    0.668  0.50( 0.49) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14131.17   14.66    1.332  0.50( 0.41) 0.82    3421.0     429.00
    2    14473.81   16.43    1.247  0.50( 0.41) 0.81    3960.5     425.00
    3    14477.60   16.64    1.239  0.50( 0.41) 0.81    4023.9     400.00
    4    14177.80   18.51    1.169  0.50( 0.41) 0.81    4583.6     300.00
    5    14602.00   24.09    0.998  0.50( 0.41) 0.81    6264.8   50200.00
    6    14614.25   24.84    0.976  0.50( 0.41) 0.81    6564.4     210.00
    7    14619.42   25.33    0.966  0.50( 0.41) 0.81    6755.3   50700.00
    8    14619.68   25.39    0.964  0.50( 0.41) 0.81    6776.6   50600.00
    9    14623.50   26.51    0.942  0.50( 0.41) 0.81    7199.7     410.00
   10    14631.94   28.22    0.909  0.50( 0.41) 0.81    7844.3     200.00
   11    14634.53   29.05    0.893  0.50( 0.41) 0.81    8156.6     230.00
   12    14634.81   29.67    0.881  0.50( 0.41) 0.81    8382.5   50500.00
   13    14633.07   30.18    0.872  0.50( 0.41) 0.81    8569.1     220.50
   14    14630.11   30.77    0.864  0.50( 0.41) 0.81    8778.7     210.00
   15    14486.04   34.11    0.821  0.50( 0.41) 0.82   10221.4     110.00
   16    14362.63   36.87    0.786  0.50( 0.41) 0.83   11446.2     100.00
   17    14277.38   38.63    0.764  0.50( 0.42) 0.83   12216.4     100.00
   18    14124.14   41.50    0.734  0.50( 0.42) 0.84   13457.1     100.00
   19    14031.30   42.94    0.722  0.50( 0.42) 0.84   14054.8     130.00
   20    13630.62   49.56    0.668  0.50( 0.43) 0.86   16787.3   10100.00
   21    13423.28   52.82    0.647  0.50( 0.43) 0.87   18092.3   50100.00
   22    13033.23   59.59    0.605  0.50( 0.44) 0.88   20572.9   31100.00
   23    12946.56   61.21    0.598  0.50( 0.44) 0.88   21186.8   20100.00
   24    12521.95   68.67    0.572  0.50( 0.44) 0.89   23875.4   13600.00
   25    12171.24   75.54    0.548  0.50( 0.45) 0.90   26319.9   11801.00
   26    11668.25   87.03    0.508  0.50( 0.45) 0.90   30346.6   11500.00
   27    11077.36   99.19    0.480  0.50( 0.46) 0.91   35025.4   11000.00
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     28    10455.59  113.44    0.452  0.50( 0.46) 0.92   41640.4   13000.00
     29     9355.00  131.21    0.426  0.50( 0.47) 0.93   49139.9   11130.00
     30     9008.14  136.66    0.419  0.50( 0.47) 0.94   50904.9   13510.00
     31     8609.11  143.13    0.412  0.50( 0.47) 0.94   52918.6   11620.00
     32     7484.26  159.53    0.392  0.50( 0.47) 0.94   57494.7   12400.00
     33     7200.36  163.27    0.388  0.50( 0.47) 0.94   58235.7   13500.00
     34     6601.24  171.35    0.378  0.50( 0.47) 0.94   59812.4   12201.00
     35     5967.03  181.00    0.367  0.50( 0.47) 0.94   61103.0   12111.00
     36     5018.00  197.32    0.359  0.50( 0.47) 0.95   63025.9   12261.00
     37     4536.41  206.99    0.353  0.50( 0.47) 0.95   63837.1   10200.00
     38     3949.83  222.90    0.345  0.50( 0.47) 0.95   65075.0   10300.00
     39     3710.37  230.00    0.341  0.50( 0.47) 0.95   65427.2   12010.00
     40     3212.66  251.01    0.329  0.50( 0.47) 0.95   65755.6   12000.00
     41     2159.75  321.15    0.291  0.50( 0.47) 0.95   66426.4   10100.00
    TOTAL AREA(ACRES) =     66426.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    14634.81  Tc(MIN.) =   29.667
  EFFECTIVE AREA(ACRES) =   8382.52  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    66426.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124268.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13700.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    176.93  DOWNSTREAM(FEET) =    170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.10   CHANNEL SLOPE =  0.0266
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   14634.81
  FLOW VELOCITY(FEET/SEC.) =  27.60   FLOW DEPTH(FEET) =  13.30
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =   29.82
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124528.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610508U.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       59.14   24.23  0.50( 0.49) 0.99     131.3   50800.00
    TOTAL AREA(ACRES) =      131.3

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  11
```



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----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14131.17   14.82    1.317  0.50( 0.41) 0.82    3421.0     429.00
      2    14473.81   16.59    1.241  0.50( 0.41) 0.81    3960.5     425.00
      3    14477.60   16.79    1.234  0.50( 0.41) 0.81    4023.9     400.00
      4    14177.80   18.67    1.163  0.50( 0.41) 0.81    4583.6     300.00
      5    14602.00   24.24    0.993  0.50( 0.41) 0.81    6264.8   50200.00
      6    14614.25   25.00    0.972  0.50( 0.41) 0.81    6564.4     210.00
      7    14619.42   25.49    0.962  0.50( 0.41) 0.81    6755.3   50700.00
      8    14619.68   25.54    0.961  0.50( 0.41) 0.81    6776.6   50600.00
      9    14623.50   26.67    0.939  0.50( 0.41) 0.81    7199.7     410.00
     10    14631.94   28.38    0.906  0.50( 0.41) 0.81    7844.3     200.00
     11    14634.53   29.21    0.889  0.50( 0.41) 0.81    8156.6     230.00
     12    14634.81   29.82    0.877  0.50( 0.41) 0.81    8382.5   50500.00
     13    14633.07   30.34    0.870  0.50( 0.41) 0.81    8569.1     220.50
     14    14630.11   30.92    0.862  0.50( 0.41) 0.81    8778.7     210.00
     15    14486.04   34.27    0.819  0.50( 0.41) 0.82   10221.4     110.00
     16    14362.63   37.03    0.784  0.50( 0.41) 0.83   11446.2     100.00
     17    14277.38   38.78    0.762  0.50( 0.42) 0.83   12216.4     100.00
     18    14124.14   41.66    0.732  0.50( 0.42) 0.84   13457.1     100.00
     19    14031.30   43.10    0.721  0.50( 0.42) 0.84   14054.8     130.00
     20    13630.62   49.72    0.666  0.50( 0.43) 0.86   16787.3   10100.00
     21    13423.28   52.98    0.646  0.50( 0.43) 0.87   18092.3   50100.00
     22    13033.23   59.76    0.604  0.50( 0.44) 0.88   20572.9   31100.00
     23    12946.56   61.37    0.597  0.50( 0.44) 0.88   21186.8   20100.00
     24    12521.95   68.83    0.571  0.50( 0.44) 0.89   23875.4   13600.00
     25    12171.24   75.71    0.548  0.50( 0.45) 0.90   26319.9   11801.00
     26    11668.25   87.20    0.508  0.50( 0.45) 0.90   30346.6   11500.00
     27    11077.36   99.36    0.480  0.50( 0.46) 0.91   35025.4   11000.00
     28    10455.59  113.61    0.452  0.50( 0.46) 0.92   41640.4   13000.00
     29     9355.00  131.39    0.426  0.50( 0.47) 0.93   49139.9   11130.00
     30     9008.14  136.83    0.419  0.50( 0.47) 0.94   50904.9   13510.00
     31     8609.11  143.31    0.411  0.50( 0.47) 0.94   52918.6   11620.00
     32     7484.26  159.72    0.392  0.50( 0.47) 0.94   57494.7   12400.00
     33     7200.36  163.46    0.388  0.50( 0.47) 0.94   58235.7   13500.00
     34     6601.24  171.54    0.378  0.50( 0.47) 0.94   59812.4   12201.00
     35     5967.03  181.20    0.367  0.50( 0.47) 0.94   61103.0   12111.00
     36     5018.00  197.53    0.358  0.50( 0.47) 0.95   63025.9   12261.00
     37     4536.41  207.20    0.353  0.50( 0.47) 0.95   63837.1   10200.00
     38     3949.83  223.12    0.345  0.50( 0.47) 0.95   65075.0   10300.00
     39     3710.37  230.22    0.341  0.50( 0.47) 0.95   65427.2   12010.00
     40     3212.66  251.24    0.329  0.50( 0.47) 0.95   65755.6   12000.00
     41     2159.75  321.40    0.291  0.50( 0.47) 0.95   66426.4   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124528.75 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       59.14   24.23    0.994  0.50( 0.49) 0.99     131.3   50800.00
  LONGEST FLOWPATH FROM NODE  50800.00 TO NODE  13700.00 =    5946.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14190.31 | 14.82 | 1.317 | 0.50( 0.41) | 0.82 | 3501.3 | 429.00 |
| 2 | 14532.95 | 16.59 | 1.241 | 0.50( 0.41) | 0.82 | 4050.3 | 425.00 |
| 3 | 14536.74 | 16.79 | 1.234 | 0.50( 0.41) | 0.82 | 4114.9 | 400.00 |
| 4 | 14236.94 | 18.67 | 1.163 | 0.50( 0.41) | 0.82 | 4684.7 | 300.00 |
| 5 | 14660.10 | 24.23 | 0.994 | 0.50( 0.41) | 0.82 | 6392.0 | 50800.00 |
| 6 | 14661.09 | 24.24 | 0.993 | 0.50( 0.41) | 0.82 | 6396.1 | 50200.00 |
| 7 | 14670.83 | 25.00 | 0.972 | 0.50( 0.41) | 0.82 | 6695.7 | 210.00 |
| 8 | 14674.86 | 25.49 | 0.962 | 0.50( 0.41) | 0.82 | 6886.6 | 50700.00 |
| 9 | 14674.99 | 25.54 | 0.961 | 0.50( 0.41) | 0.82 | 6907.8 | 50600.00 |
| 10 | 14676.20 | 26.67 | 0.939 | 0.50( 0.41) | 0.82 | 7331.0 | 410.00 |
| 11 | 14680.67 | 28.38 | 0.906 | 0.50( 0.41) | 0.82 | 7975.6 | 200.00 |
| 12 | 14681.33 | 29.21 | 0.889 | 0.50( 0.41) | 0.82 | 8287.9 | 230.00 |
| 13 | 14680.19 | 29.82 | 0.877 | 0.50( 0.41) | 0.82 | 8513.8 | 50500.00 |
| 14 | 14677.52 | 30.34 | 0.870 | 0.50( 0.41) | 0.82 | 8700.4 | 220.50 |
| 15 | 14673.67 | 30.92 | 0.862 | 0.50( 0.41) | 0.82 | 8909.9 | 210.00 |
| 16 | 14524.53 | 34.27 | 0.819 | 0.50( 0.41) | 0.82 | 10352.6 | 110.00 |
| 17 | 14396.94 | 37.03 | 0.784 | 0.50( 0.42) | 0.83 | 11577.5 | 100.00 |
| 18 | 14309.02 | 38.78 | 0.762 | 0.50( 0.42) | 0.83 | 12347.7 | 100.00 |
| 19 | 14152.34 | 41.66 | 0.732 | 0.50( 0.42) | 0.84 | 13588.3 | 100.00 |
| 20 | 14058.09 | 43.10 | 0.721 | 0.50( 0.42) | 0.84 | 14186.0 | 130.00 |
| 21 | 13650.98 | 49.72 | 0.666 | 0.50( 0.43) | 0.86 | 16918.5 | 10100.00 |
| 22 | 13441.18 | 52.98 | 0.646 | 0.50( 0.43) | 0.87 | 18223.6 | 50100.00 |
| 23 | 13046.15 | 59.76 | 0.604 | 0.50( 0.44) | 0.88 | 20704.2 | 31100.00 |
| 24 | 12958.74 | 61.37 | 0.597 | 0.50( 0.44) | 0.88 | 21318.1 | 20100.00 |
| 25 | 12531.07 | 68.83 | 0.571 | 0.50( 0.44) | 0.89 | 24006.7 | 13600.00 |
| 26 | 12177.53 | 75.71 | 0.548 | 0.50( 0.45) | 0.90 | 26451.2 | 11801.00 |
| 27 | 11669.83 | 87.20 | 0.508 | 0.50( 0.45) | 0.90 | 30477.8 | 11500.00 |
| 28 | 11078.02 | 99.36 | 0.480 | 0.50( 0.46) | 0.91 | 35156.7 | 11000.00 |
| 29 | 10456.20 | 113.61 | 0.452 | 0.50( 0.46) | 0.92 | 41771.6 | 13000.00 |
| 30 | 9355.58 | 131.39 | 0.426 | 0.50( 0.47) | 0.94 | 49271.1 | 11130.00 |
| 31 | 9008.71 | 136.83 | 0.419 | 0.50( 0.47) | 0.94 | 51036.2 | 13510.00 |
| 32 | 8609.67 | 143.31 | 0.411 | 0.50( 0.47) | 0.94 | 53049.8 | 11620.00 |
| 33 | 7484.80 | 159.72 | 0.392 | 0.50( 0.47) | 0.94 | 57626.0 | 12400.00 |
| 34 | 7200.89 | 163.46 | 0.388 | 0.50( 0.47) | 0.94 | 58367.0 | 13500.00 |
| 35 | 6601.75 | 171.54 | 0.378 | 0.50( 0.47) | 0.94 | 59943.7 | 12201.00 |
| 36 | 5967.53 | 181.20 | 0.367 | 0.50( 0.47) | 0.95 | 61234.3 | 12111.00 |
| 37 | 5018.49 | 197.53 | 0.358 | 0.50( 0.47) | 0.95 | 63157.2 | 12261.00 |
| 38 | 4536.89 | 207.20 | 0.353 | 0.50( 0.47) | 0.95 | 63968.3 | 10200.00 |
| 39 | 3950.30 | 223.12 | 0.345 | 0.50( 0.47) | 0.95 | 65206.3 | 10300.00 |
| 40 | 3710.84 | 230.22 | 0.341 | 0.50( 0.47) | 0.95 | 65558.5 | 12010.00 |
| 41 | 3213.11 | 251.24 | 0.329 | 0.50( 0.47) | 0.95 | 65886.8 | 12000.00 |
| 42 | 2160.15 | 321.40 | 0.291 | 0.50( 0.47) | 0.95 | 66557.6 | 10100.00 |

TOTAL AREA(ACRES) = 66557.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 14681.33 Tc(MIN.) = 29.211
EFFECTIVE AREA(ACRES) = 8287.87 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 66557.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124528.75 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66557.6 TC(MIN.) = 29.21
EFFECTIVE AREA(ACRES) = 8287.87 AREA-AVERAGED Fm(INCH/HR)= 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.816
PEAK FLOW RATE(CFS) = 14681.33



** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 14190.31 | 14.82 | 1.317 | 0.50( 0.41) | | 0.82 | 3501.3 | 429.00 |
| 2 | 14532.95 | 16.59 | 1.241 | 0.50( 0.41) | | 0.82 | 4050.3 | 425.00 |
| 3 | 14536.74 | 16.79 | 1.234 | 0.50( 0.41) | | 0.82 | 4114.9 | 400.00 |
| 4 | 14236.94 | 18.67 | 1.163 | 0.50( 0.41) | | 0.82 | 4684.7 | 300.00 |
| 5 | 14660.10 | 24.23 | 0.994 | 0.50( 0.41) | | 0.82 | 6392.0 | 50800.00 |
| 6 | 14661.09 | 24.24 | 0.993 | 0.50( 0.41) | | 0.82 | 6396.1 | 50200.00 |
| 7 | 14670.83 | 25.00 | 0.972 | 0.50( 0.41) | | 0.82 | 6695.7 | 210.00 |
| 8 | 14674.86 | 25.49 | 0.962 | 0.50( 0.41) | | 0.82 | 6886.6 | 50700.00 |
| 9 | 14674.99 | 25.54 | 0.961 | 0.50( 0.41) | | 0.82 | 6907.8 | 50600.00 |
| 10 | 14676.20 | 26.67 | 0.939 | 0.50( 0.41) | | 0.82 | 7331.0 | 410.00 |
| 11 | 14680.67 | 28.38 | 0.906 | 0.50( 0.41) | | 0.82 | 7975.6 | 200.00 |
| 12 | 14681.33 | 29.21 | 0.889 | 0.50( 0.41) | | 0.82 | 8287.9 | 230.00 |
| 13 | 14680.19 | 29.82 | 0.877 | 0.50( 0.41) | | 0.82 | 8513.8 | 50500.00 |
| 14 | 14677.52 | 30.34 | 0.870 | 0.50( 0.41) | | 0.82 | 8700.4 | 220.50 |
| 15 | 14673.67 | 30.92 | 0.862 | 0.50( 0.41) | | 0.82 | 8909.9 | 210.00 |
| 16 | 14524.53 | 34.27 | 0.819 | 0.50( 0.41) | | 0.82 | 10352.6 | 110.00 |
| 17 | 14396.94 | 37.03 | 0.784 | 0.50( 0.42) | | 0.83 | 11577.5 | 100.00 |
| 18 | 14309.02 | 38.78 | 0.762 | 0.50( 0.42) | | 0.83 | 12347.7 | 100.00 |
| 19 | 14152.34 | 41.66 | 0.732 | 0.50( 0.42) | | 0.84 | 13588.3 | 100.00 |
| 20 | 14058.09 | 43.10 | 0.721 | 0.50( 0.42) | | 0.84 | 14186.0 | 130.00 |
| 21 | 13650.98 | 49.72 | 0.666 | 0.50( 0.43) | | 0.86 | 16918.5 | 10100.00 |
| 22 | 13441.18 | 52.98 | 0.646 | 0.50( 0.43) | | 0.87 | 18223.6 | 50100.00 |
| 23 | 13046.15 | 59.76 | 0.604 | 0.50( 0.44) | | 0.88 | 20704.2 | 31100.00 |
| 24 | 12958.74 | 61.37 | 0.597 | 0.50( 0.44) | | 0.88 | 21318.1 | 20100.00 |
| 25 | 12531.07 | 68.83 | 0.571 | 0.50( 0.44) | | 0.89 | 24006.7 | 13600.00 |
| 26 | 12177.53 | 75.71 | 0.548 | 0.50( 0.45) | | 0.90 | 26451.2 | 11801.00 |
| 27 | 11669.83 | 87.20 | 0.508 | 0.50( 0.45) | | 0.90 | 30477.8 | 11500.00 |
| 28 | 11078.02 | 99.36 | 0.480 | 0.50( 0.46) | | 0.91 | 35156.7 | 11000.00 |
| 29 | 10456.20 | 113.61 | 0.452 | 0.50( 0.46) | | 0.92 | 41771.6 | 13000.00 |
| 30 | 9355.58 | 131.39 | 0.426 | 0.50( 0.47) | | 0.94 | 49271.1 | 11130.00 |
| 31 | 9008.71 | 136.83 | 0.419 | 0.50( 0.47) | | 0.94 | 51036.2 | 13510.00 |
| 32 | 8609.67 | 143.31 | 0.411 | 0.50( 0.47) | | 0.94 | 53049.8 | 11620.00 |
| 33 | 7484.80 | 159.72 | 0.392 | 0.50( 0.47) | | 0.94 | 57626.0 | 12400.00 |
| 34 | 7200.89 | 163.46 | 0.388 | 0.50( 0.47) | | 0.94 | 58367.0 | 13500.00 |
| 35 | 6601.75 | 171.54 | 0.378 | 0.50( 0.47) | | 0.94 | 59943.7 | 12201.00 |
| 36 | 5967.53 | 181.20 | 0.367 | 0.50( 0.47) | | 0.95 | 61234.3 | 12111.00 |
| 37 | 5018.49 | 197.53 | 0.358 | 0.50( 0.47) | | 0.95 | 63157.2 | 12261.00 |
| 38 | 4536.89 | 207.20 | 0.353 | 0.50( 0.47) | | 0.95 | 63968.3 | 10200.00 |
| 39 | 3950.30 | 223.12 | 0.345 | 0.50( 0.47) | | 0.95 | 65206.3 | 10300.00 |
| 40 | 3710.84 | 230.22 | 0.341 | 0.50( 0.47) | | 0.95 | 65558.5 | 12010.00 |
| 41 | 3213.11 | 251.24 | 0.329 | 0.50( 0.47) | | 0.95 | 65886.8 | 12000.00 |
| 42 | 2160.15 | 321.40 | 0.291 | 0.50( 0.47) | | 0.95 | 66557.6 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 5-YR EV DEC 2022 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI05EV36.DAT
  TIME/DATE OF STUDY: 10:24 12/08/2022
================================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
================================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.604
   2)   10.00;  1.741
   3)   15.00;  1.296
   4)   20.00;  1.108
   5)   25.00;  0.968
   6)   30.00;  0.871
   7)   40.00;  0.743
   8)   50.00;  0.660
   9)   60.00;  0.599
  10)   90.00;  0.495
  11)  120.00;  0.435
  12)  180.00;  0.364
  13)  360.00;  0.267
  14) 1200.00;  0.116
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.652
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.50     1.000    56   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.52
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      3.52

****************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.79
  AVERAGE FLOW DEPTH(FEET) =   0.78   TRAVEL TIME(MIN.) =   1.84
  Tc(MIN.) =   12.83
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =    6.63
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =       9.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.88   FLOW VELOCITY(FEET/SEC.) =   4.15
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

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

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 FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
 CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.267
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.32      0.50     1.000     -
 USER-DEFINED               -        4.70      0.50     1.000     -
 USER-DEFINED               -       25.05      0.50     1.000     -
 USER-DEFINED               -        0.45      0.50     1.000     -
 USER-DEFINED               -        0.44      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.41
 AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   2.94
 Tc(MIN.) =   15.77
 SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   21.37
 EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.50
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      28.85

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   4.81
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.03      0.50     1.000     -
 USER-DEFINED               -        2.51      0.50     1.000     -
 USER-DEFINED               -        1.52      0.50     1.000     -
 USER-DEFINED               -       12.30      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.98
 AVERAGE FLOW DEPTH(FEET) =   1.54   TRAVEL TIME(MIN.) =   3.97
 Tc(MIN.) =   19.74
 SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   12.98
```



```
 EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.50
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =      36.22

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.55   FLOW VELOCITY(FEET/SEC.) =   5.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
 CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.029
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       10.22      0.50     1.000     -
 USER-DEFINED               -        4.19      0.50     1.000     -
 USER-DEFINED               -        0.07      0.50     1.000     -
 USER-DEFINED               -        1.11      0.50     1.000     -
 USER-DEFINED               -        5.56      0.50     1.000     -
 USER-DEFINED               -        0.09      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.64
 AVERAGE FLOW DEPTH(FEET) =   1.72   TRAVEL TIME(MIN.) =   3.09
 Tc(MIN.) =   22.83
 SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   10.10
 EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.50
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =      41.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.72   FLOW VELOCITY(FEET/SEC.) =   4.63
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: S35X05.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)    NODE
```

```
     1      100.55   73.18  0.50( 0.47) 0.95    1498.1   13510.00
     2       54.12   90.88  0.50( 0.47) 0.94    1579.8   13500.00
   TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      100.55   73.18  0.50( 0.47) 0.95    1498.1   13510.00
      2       54.12   90.88  0.50( 0.47) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.538
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.50     1.000     -
  USER-DEFINED               -        2.36      0.50     1.000     -
  USER-DEFINED               -        0.60      0.50     1.000     -
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        2.22      0.50     1.000     -
  USER-DEFINED               -        3.42      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.63
  AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   4.51
  Tc(MIN.) =   77.69
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =    0.89
  EFFECTIVE AREA(ACRES) =   1524.58     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3         PEAK FLOW RATE(CFS) =     100.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.10   FLOW VELOCITY(FEET/SEC.) =   7.64
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      100.55   77.69    0.538  0.50( 0.47) 0.95    1524.6   13510.00
      2       54.12   96.14    0.483  0.50( 0.47) 0.95    1606.3   13500.00
```



```
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     100.55  Tc(MIN.) =   77.69
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1524.58

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   77.69
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.538
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.44      0.50     1.000     -
  USER-DEFINED               -        0.01      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    0.05
  EFFECTIVE AREA(ACRES) =   1526.03   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =     100.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      100.55   77.69    0.538  0.50( 0.47) 0.95    1526.0   13510.00
      2       54.12   96.14    0.483  0.50( 0.47) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       41.10   22.83    1.029  0.50( 0.50) 1.00      86.4   13600.00
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      141.65   22.83    1.029  0.50( 0.48) 0.96     534.9   13600.00
      2      103.47   77.69    0.538  0.50( 0.48) 0.95    1612.4   13510.00
      3       54.12   96.14    0.483  0.50( 0.47) 0.95    1694.2   13500.00
    TOTAL AREA(ACRES) =      1694.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      141.65  Tc(MIN.) =   22.831
  EFFECTIVE AREA(ACRES) =    534.86  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1694.2
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.39      0.50     1.000     -
  USER-DEFINED               -       16.30      0.50     1.000     -
  USER-DEFINED               -        4.08      0.50     1.000     -
  USER-DEFINED               -       12.36      0.50     1.000     -
  USER-DEFINED               -       11.23      0.50     1.000     -
  USER-DEFINED               -        5.16      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     152.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.31
  AVERAGE FLOW DEPTH(FEET) =   2.48   TRAVEL TIME(MIN.) =   2.78
  Tc(MIN.) =   25.61
  SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   22.37
  EFFECTIVE AREA(ACRES) =    589.38     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =     252.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.99   FLOW VELOCITY(FEET/SEC.) =   9.42
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      252.29   25.61    0.956  0.50( 0.48) 0.96     589.4   13600.00
      2      103.47   80.76    0.527  0.50( 0.48) 0.95    1667.0   13510.00
      3       54.12   99.73    0.476  0.50( 0.48) 0.95    1748.7   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     252.29  Tc(MIN.) =   25.61
  AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =     589.38

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.61
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.93      0.50     1.000     -
```



```
  USER-DEFINED               -        0.45      0.50     1.000     -
  USER-DEFINED               -        3.98      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   23.95
  EFFECTIVE AREA(ACRES) =    647.74   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =     276.24

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P201XX05.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       73.57   19.49  0.50( 0.43) 0.85     133.8   20100.00
    TOTAL AREA(ACRES) =      133.8

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      276.24   25.61    0.956  0.50( 0.48) 0.96     647.7   13600.00
      2      103.47   80.76    0.527  0.50( 0.48) 0.95    1725.3   13510.00
      3       54.12   99.73    0.476  0.50( 0.48) 0.95    1807.1   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       73.57   19.49    1.127  0.50( 0.43) 0.85     133.8   20100.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      349.80   19.49    1.127  0.50( 0.47) 0.94     626.8   20100.00
      2      331.83   25.61    0.956  0.50( 0.47) 0.95     781.5   13600.00
      3      113.95   80.76    0.527  0.50( 0.47) 0.95    1859.1   13510.00
      4       61.40   99.73    0.476  0.50( 0.47) 0.94    1940.9   13500.00
    TOTAL AREA(ACRES) =      1940.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      349.80  Tc(MIN.) =   19.493
  EFFECTIVE AREA(ACRES) =    626.82  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     1940.9
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

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

```
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.946
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.50     1.000     -
 USER-DEFINED               -        0.01      0.50     1.000     -
 USER-DEFINED               -        1.56      0.50     1.000     -
 USER-DEFINED               -       10.45      0.50     1.000     -
 USER-DEFINED               -       44.94      0.50     1.000     -
 USER-DEFINED               -        9.66      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     363.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.53
 AVERAGE FLOW DEPTH(FEET) =   4.01   TRAVEL TIME(MIN.) =   6.63
 Tc(MIN.) =   26.12
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   27.13
 EFFECTIVE AREA(ACRES) =    694.40     AREA-AVERAGED Fm(INCH/HR) =   0.47
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =     349.80
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.95   FLOW VELOCITY(FEET/SEC.) =   7.45
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      349.80   26.12    0.946  0.50( 0.47) 0.95     694.4   20100.00
     2      331.83   32.35    0.841  0.50( 0.48) 0.95     849.1   13600.00
     3      113.95   89.62    0.496  0.50( 0.47) 0.95    1926.7   13510.00
     4       61.40  110.05    0.455  0.50( 0.47) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     349.80  Tc(MIN.) =   26.12
 AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =     694.40

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   26.12
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.946
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.50     1.000     -
```



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 USER-DEFINED               -       20.39      0.50     1.000     -
 USER-DEFINED               -        7.02      0.50     1.000     -
 USER-DEFINED               -       12.58      0.50     1.000     -
 USER-DEFINED               -       42.49      0.50     1.000     -
 USER-DEFINED               -        5.73      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   42.04
 EFFECTIVE AREA(ACRES) =    799.10   AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =     349.80
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   26.12
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.946
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.50     1.000     -
 USER-DEFINED               -        6.25      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    3.22
 EFFECTIVE AREA(ACRES) =    807.13   AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =     349.80
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.837
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.67      0.50     1.000     -
 USER-DEFINED               -       24.24      0.50     1.000     -
 USER-DEFINED               -        1.34      0.50     1.000     -
 USER-DEFINED               -       74.98      0.50     1.000     -
 USER-DEFINED               -      101.12      0.50     1.000     -
 USER-DEFINED               -       16.90      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     383.14
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.21
 AVERAGE FLOW DEPTH(FEET) =   4.21   TRAVEL TIME(MIN.) =   6.50
```

```
  Tc(MIN.) =   32.62
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =   66.54
  EFFECTIVE AREA(ACRES) =   1026.38     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =     349.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.07   FLOW VELOCITY(FEET/SEC.) =   7.04
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      349.80   32.62    0.837  0.50( 0.48) 0.96    1026.4   20100.00
      2      331.83   38.97    0.756  0.50( 0.48) 0.96    1181.1   13600.00
      3      113.95   98.44    0.478  0.50( 0.48) 0.96    2258.7   13510.00
      4       61.40  120.33    0.435  0.50( 0.48) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     349.80  Tc(MIN.) =   32.62
  AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    1026.38

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   32.62
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.837
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.50     1.000     -
  USER-DEFINED               -       10.02      0.50     1.000     -
  USER-DEFINED               -        4.45      0.50     1.000     -
  USER-DEFINED               -      179.37      0.50     1.000     -
  USER-DEFINED               -       11.47      0.50     1.000     -
  USER-DEFINED               -        0.17      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =   65.39
  EFFECTIVE AREA(ACRES) =   1241.81   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2555.8       PEAK FLOW RATE(CFS) =     393.60

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   32.62
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.837
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.50     0.850     -
  USER-DEFINED               -        5.14      0.50     1.000     -
```



```
  USER-DEFINED               -       11.22      0.50     1.000     -
  USER-DEFINED               -        0.33      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =    5.08
  EFFECTIVE AREA(ACRES) =   1258.53   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =     398.68

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        2.17      0.50     1.000     -
  USER-DEFINED               -        9.19      0.50     1.000     -
  USER-DEFINED               -       67.57      0.50     1.000     -
  USER-DEFINED               -       35.19      0.50     1.000     -
  USER-DEFINED               -       30.67      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     415.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.88
  AVERAGE FLOW DEPTH(FEET) =   4.19   TRAVEL TIME(MIN.) =   6.16
  Tc(MIN.) =   38.79
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =   33.71
  EFFECTIVE AREA(ACRES) =   1403.54     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =     398.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.13   FLOW VELOCITY(FEET/SEC.) =   7.79
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      398.68   38.79    0.759  0.50( 0.49) 0.97    1403.5   20100.00
      2      344.80   45.37    0.698  0.50( 0.49) 0.97    1558.3   13600.00
      3      113.95  106.96    0.461  0.50( 0.48) 0.96    2635.8   13510.00
      4       61.40  130.28    0.423  0.50( 0.48) 0.96    2717.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     398.68  Tc(MIN.) =   38.79
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1403.54

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

```
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   38.79
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.759
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.89      0.50     1.000     -
 USER-DEFINED               -       20.65      0.50     1.000     -
 USER-DEFINED               -        2.69      0.50     1.000     -
 USER-DEFINED               -        8.45      0.50     1.000     -
 USER-DEFINED               -       96.93      0.50     1.000     -
 USER-DEFINED               -       13.19      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =   33.20
 EFFECTIVE AREA(ACRES) =   1546.34   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =     398.68
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   38.79
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.759
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       42.54      0.50     1.000     -
 USER-DEFINED               -       16.96      0.50     1.000     -
 USER-DEFINED               -       80.60      0.50     1.000     -
 USER-DEFINED               -        1.56      0.50     1.000     -
 USER-DEFINED               -        2.00      0.50     1.000     -
 USER-DEFINED               -        3.11      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =   34.12
 EFFECTIVE AREA(ACRES) =   1693.11   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     3007.1       PEAK FLOW RATE(CFS) =     410.34

********************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  51
--------------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
 SUBAREA LOSS RATE DATA(AMC  II):
```



```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.89      0.50     1.000     -
 USER-DEFINED               -       23.73      0.50     1.000     -
 USER-DEFINED               -        0.27      0.50     1.000     -
 USER-DEFINED               -       19.87      0.50     1.000     -
 USER-DEFINED               -        6.40      0.50     1.000     -
 USER-DEFINED               -        3.14      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     415.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.14
 AVERAGE FLOW DEPTH(FEET) =   3.90   TRAVEL TIME(MIN.) =   2.90
 Tc(MIN.) =   41.69
 SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   11.18
 EFFECTIVE AREA(ACRES) =   1747.41     AREA-AVERAGED Fm(INCH/HR) =   0.49
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =     3061.4         PEAK FLOW RATE(CFS) =     410.34
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.88   FLOW VELOCITY(FEET/SEC.) =   9.09
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1      410.34   41.69    0.729  0.50( 0.49) 0.98    1747.4   20100.00
     2      348.87   48.40    0.673  0.50( 0.49) 0.98    1902.1   13600.00
     3      113.95  110.98    0.453  0.50( 0.48) 0.97    2979.7   13510.00
     4       61.40  134.97    0.417  0.50( 0.48) 0.96    3061.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     410.34  Tc(MIN.) =   41.69
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1747.41

********************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   41.69
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.67      0.50     1.000     -
 USER-DEFINED               -        9.52      0.50     1.000     -
 USER-DEFINED               -        0.71      0.50     1.000     -
 USER-DEFINED               -        0.22      0.50     1.000     -
 USER-DEFINED               -       39.42      0.50     1.000     -
 USER-DEFINED               -        0.62      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   10.53
 EFFECTIVE AREA(ACRES) =   1798.57   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =     410.34
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   41.69
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.11      0.50     1.000     -
  USER-DEFINED                -        0.77      0.50     1.000     -
  USER-DEFINED                -        0.22      0.50     1.000     -
  USER-DEFINED                -        2.69      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    0.78
  EFFECTIVE AREA(ACRES) =   1802.36   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =     410.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P05EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      233.64   16.39  0.50( 0.18) 0.36     170.4     110.00
      2      231.85   19.13  0.50( 0.19) 0.37     201.2     100.00
      3      223.62   20.82  0.50( 0.19) 0.38     212.8     100.00
      4      190.12   24.85  0.50( 0.20) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  43.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.64
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     410.34
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   42.20
```



```
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      410.34   42.20    0.725  0.50( 0.49) 0.98    1802.4   20100.00
      2      348.87   48.93    0.669  0.50( 0.49) 0.98    1957.1   13600.00
      3      113.95  111.68    0.452  0.50( 0.48) 0.97    3034.7   13510.00
      4       61.40  135.77    0.416  0.50( 0.48) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      233.64   16.39    1.244  0.50( 0.18) 0.36     170.4     110.00
      2      231.85   19.13    1.141  0.50( 0.19) 0.37     201.2     100.00
      3      223.62   20.82    1.085  0.50( 0.19) 0.38     212.8     100.00
      4      190.12   24.85    0.972  0.50( 0.20) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      643.98   16.39    1.244  0.50( 0.43) 0.86     870.6     110.00
      2      642.18   19.13    1.141  0.50( 0.43) 0.86    1018.1     100.00
      3      633.96   20.82    1.085  0.50( 0.43) 0.86    1101.9     100.00
      4      600.45   24.85    0.972  0.50( 0.44) 0.88    1282.3     130.00
      5      539.47   42.20    0.725  0.50( 0.46) 0.92    2023.5   20100.00
      6      464.24   48.93    0.669  0.50( 0.46) 0.92    2178.2   13600.00
      7      180.59  111.68    0.452  0.50( 0.46) 0.93    3255.8   13510.00
      8      122.83  135.77    0.416  0.50( 0.46) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      643.98  Tc(MIN.) =   16.395
  EFFECTIVE AREA(ACRES) =    870.58  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.39
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        1.11      0.50     1.000     -
  USER-DEFINED                -        0.44      0.50     1.000     -
```

```
  USER-DEFINED               -        1.49      0.50     1.000     -
  USER-DEFINED               -        1.70      0.50     1.000     -
  USER-DEFINED               -        1.09      0.50     1.000     -
  USER-DEFINED               -       18.57      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   16.32
  EFFECTIVE AREA(ACRES) =    894.98   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =     654.34

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      654.34   16.39    1.244  0.50( 0.43) 0.86     895.0     110.00
      2      665.60   19.13    1.141  0.50( 0.43) 0.86    1042.5     100.00
      3      660.79   20.82    1.085  0.50( 0.43) 0.87    1126.3     100.00
      4      624.56   24.85    0.972  0.50( 0.44) 0.88    1306.7     130.00
      5      539.47   42.20    0.725  0.50( 0.46) 0.92    2047.9   20100.00
      6      464.24   48.93    0.669  0.50( 0.46) 0.92    2202.6   13600.00
      7      180.59  111.68    0.452  0.50( 0.47) 0.93    3280.2   13510.00
      8      122.83  135.77    0.416  0.50( 0.46) 0.93    3361.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     665.60  Tc(MIN.) =   19.13
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.86  EFFECTIVE AREA(ACRES) =    1042.49

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.13
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.141
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.39      0.50     1.000     -
  USER-DEFINED               -        2.30      0.50     1.000     -
  USER-DEFINED               -        5.19      0.50     1.000     -
  USER-DEFINED               -       28.71      0.50     1.000     -
  USER-DEFINED               -        0.17      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   28.11
  EFFECTIVE AREA(ACRES) =   1091.25   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =     693.71

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
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  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        9.23      0.50     1.000     -
  USER-DEFINED               -        0.54      0.50     1.000     -
  USER-DEFINED               -        5.66      0.50     1.000     -
  USER-DEFINED               -        3.66      0.50     1.000     -
  USER-DEFINED               -        0.67      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     698.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.91
  AVERAGE FLOW DEPTH(FEET) =   5.43   TRAVEL TIME(MIN.) =   1.97
  Tc(MIN.) =   21.10
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   10.38
  EFFECTIVE AREA(ACRES) =   1111.23     AREA-AVERAGED Fm(INCH/HR) =   0.44
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.87
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =     693.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.41   FLOW VELOCITY(FEET/SEC.) =   7.89
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      686.97   18.37    1.169  0.50( 0.44) 0.87     963.7     110.00
      2      693.71   21.10    1.077  0.50( 0.44) 0.87    1111.2     100.00
      3      686.46   22.79    1.030  0.50( 0.44) 0.87    1195.0     100.00
      4      645.28   26.85    0.932  0.50( 0.44) 0.89    1375.5     130.00
      5      539.47   44.30    0.707  0.50( 0.46) 0.92    2116.6   20100.00
      6      464.24   51.11    0.653  0.50( 0.46) 0.92    2271.3   13600.00
      7      180.59  114.44    0.446  0.50( 0.47) 0.93    3348.9   13510.00
      8      122.83  138.81    0.413  0.50( 0.47) 0.93    3430.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     693.71  Tc(MIN.) =   21.10
  AREA-AVERAGED Fm(INCH/HR) =  0.44  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.87  EFFECTIVE AREA(ACRES) =    1111.23

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.10
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.56      0.50     1.000     -
  USER-DEFINED               -        9.40      0.50     1.000     -
  USER-DEFINED               -        2.76      0.50     1.000     -
  USER-DEFINED               -       17.38      0.50     1.000     -
  USER-DEFINED               -        2.46      0.50     1.000     -
```

```
  USER-DEFINED               -        5.56      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   20.32
  EFFECTIVE AREA(ACRES) =   1150.35   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =     693.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.10
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.65      0.50     1.000     -
  USER-DEFINED               -        1.70      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    1.22
  EFFECTIVE AREA(ACRES) =   1152.70   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =     693.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.10
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.29      0.50     1.000     -
  USER-DEFINED               -       31.25      0.50     1.000     -
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        6.26      0.50     1.000     -
  USER-DEFINED               -        0.07      0.50     1.000     -
  USER-DEFINED               -        0.22      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   22.49
  EFFECTIVE AREA(ACRES) =   1196.01   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =     693.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.10
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.50     0.850     -
  USER-DEFINED               -        3.06      0.50     0.850     -
  USER-DEFINED               -       17.76      0.50     0.500     -
  USER-DEFINED               -        7.31      0.50     0.500     -
  USER-DEFINED               -        0.34      0.50     1.000     -
  USER-DEFINED               -        8.22      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   26.36
  EFFECTIVE AREA(ACRES) =   1235.17   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =     712.14

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1      716.62   18.37    1.169  0.50( 0.44) 0.87    1087.7     110.00
      2      712.14   21.10    1.077  0.50( 0.44) 0.87    1235.2     100.00
      3      702.65   22.79    1.030  0.50( 0.44) 0.88    1318.9     100.00
      4      658.25   26.85    0.932  0.50( 0.44) 0.89    1499.4     130.00
      5      539.47   44.30    0.707  0.50( 0.46) 0.92    2240.5   20100.00
      6      464.24   51.11    0.653  0.50( 0.46) 0.92    2395.3   13600.00
      7      180.59  114.44    0.446  0.50( 0.47) 0.93    3472.8   13510.00
      8      122.83  138.81    0.413  0.50( 0.46) 0.93    3554.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     716.62  Tc(MIN.) =   18.37
  AREA-AVERAGED Fm(INCH/HR) =  0.44  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.87  EFFECTIVE AREA(ACRES) =    1087.66

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.37
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.169
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.32
  EFFECTIVE AREA(ACRES) =   1088.19   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =     716.94
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        5.28      0.50     1.000     -
  USER-DEFINED               -        0.52      0.50     1.000     -
  USER-DEFINED               -        3.61      0.50     1.000     -
  USER-DEFINED               -        0.67      0.50     1.000     -
  USER-DEFINED               -        1.37      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     719.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.66
  AVERAGE FLOW DEPTH(FEET) =   5.26   TRAVEL TIME(MIN.) =   5.50
  Tc(MIN.) =   23.87
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =    5.25
  EFFECTIVE AREA(ACRES) =   1099.86     AREA-AVERAGED Fm(INCH/HR) =   0.44
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.88
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.25   FLOW VELOCITY(FEET/SEC.) =   8.66
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      716.94   23.87    1.000  0.50( 0.44) 0.88    1099.9     110.00
      2      712.41   26.60    0.937  0.50( 0.44) 0.87    1247.4     100.00
      3      702.91   28.32    0.904  0.50( 0.44) 0.88    1331.1     100.00
      4      658.46   32.47    0.839  0.50( 0.44) 0.89    1511.6     130.00
      5      539.47   50.21    0.659  0.50( 0.46) 0.92    2252.7   20100.00
      6      464.24   57.24    0.616  0.50( 0.46) 0.92    2407.5   13600.00
      7      180.59  122.22    0.432  0.50( 0.47) 0.93    3485.0   13510.00
      8      122.83  147.37    0.403  0.50( 0.46) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     716.94  Tc(MIN.) =   23.87
  AREA-AVERAGED Fm(INCH/HR) =  0.44  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.88  EFFECTIVE AREA(ACRES) =    1099.86

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.87
```



```
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.50     1.000     -
  USER-DEFINED               -       23.04      0.50     1.000     -
  USER-DEFINED               -        1.18      0.50     1.000     -
  USER-DEFINED               -        1.56      0.50     1.000     -
  USER-DEFINED               -       53.20      0.50     1.000     -
  USER-DEFINED               -        2.08      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   39.53
  EFFECTIVE AREA(ACRES) =   1187.82   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.87
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.50     1.000     -
  USER-DEFINED               -        0.18      0.50     1.000     -
  USER-DEFINED               -        0.38      0.50     1.000     -
  USER-DEFINED               -        0.22      0.50     1.000     -
  USER-DEFINED               -        7.73      0.50     1.000     -
  USER-DEFINED               -        4.37      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =    5.79
  EFFECTIVE AREA(ACRES) =   1200.71   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.87
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.57      0.50     1.000     -
  USER-DEFINED               -        1.97      0.50     1.000     -
  USER-DEFINED               -        1.00      0.50     1.000     -
  USER-DEFINED               -        2.98      0.50     1.000     -
  USER-DEFINED               -        2.39      0.50     1.000     -
  USER-DEFINED               -        1.67      0.50     1.000     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =    5.65
  EFFECTIVE AREA(ACRES) =   1213.29   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.87
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.44      0.50     1.000     -
  USER-DEFINED               -        2.65      0.50     0.850     -
  USER-DEFINED               -        1.16      0.50     0.850     -
  USER-DEFINED               -        0.47      0.50     0.500     -
  USER-DEFINED               -        0.25      0.50     0.500     -
  USER-DEFINED               -       20.24      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   11.75
  EFFECTIVE AREA(ACRES) =   1238.50   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.87
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.50     1.000     -
  USER-DEFINED               -        6.75      0.50     1.000     -
  USER-DEFINED               -        0.02      0.50     1.000     -
  USER-DEFINED               -        0.93      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =    6.64
  EFFECTIVE AREA(ACRES) =   1253.28   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.49      0.50     1.000     -
  USER-DEFINED               -       13.31      0.50     1.000     -
  USER-DEFINED               -        0.87      0.50     1.000     -
  USER-DEFINED               -       20.26      0.50     1.000     -
  USER-DEFINED               -        1.21      0.50     1.000     -
  USER-DEFINED               -        0.05      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     724.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.08
  AVERAGE FLOW DEPTH(FEET) =   5.47   TRAVEL TIME(MIN.) =   5.21
  Tc(MIN.) =   29.08
  SUBAREA AREA(ACRES) =    44.19      SUBAREA RUNOFF(CFS) =   15.46
  EFFECTIVE AREA(ACRES) =   1297.47    AREA-AVERAGED Fm(INCH/HR) =   0.45
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.89
  TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.45   FLOW VELOCITY(FEET/SEC.) =   8.05
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      716.94   29.08    0.889  0.50( 0.45) 0.89    1297.5     110.00
      2      712.41   31.82    0.848  0.50( 0.45) 0.89    1445.0     100.00
      3      702.91   33.57    0.825  0.50( 0.45) 0.89    1528.8     100.00
      4      658.46   37.80    0.771  0.50( 0.45) 0.90    1709.2     130.00
      5      539.47   55.82    0.625  0.50( 0.46) 0.92    2450.3   20100.00
      6      464.24   63.07    0.588  0.50( 0.46) 0.93    2605.1   13600.00
      7      180.59  129.59    0.424  0.50( 0.47) 0.93    3682.6   13510.00
      8      122.83  155.49    0.393  0.50( 0.47) 0.93    3764.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     716.94  Tc(MIN.) =   29.08
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.89  EFFECTIVE AREA(ACRES) =    1297.47

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -       12.56      0.50     1.000     -
  USER-DEFINED               -        0.81      0.50     1.000     -
  USER-DEFINED               -        0.01      0.50     1.000     -
  USER-DEFINED               -        1.11      0.50     1.000     -
  USER-DEFINED               -        0.59      0.50     1.000     -
  USER-DEFINED               -        3.04      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =    6.34
  EFFECTIVE AREA(ACRES) =   1315.59   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     0.400     -
  USER-DEFINED               -        1.30      0.50     0.850     -
  USER-DEFINED               -        0.10      0.50     0.400     -
  USER-DEFINED               -        1.70      0.50     0.850     -
  USER-DEFINED               -        0.10      0.50     0.850     -
  USER-DEFINED               -        2.90      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    2.63
  EFFECTIVE AREA(ACRES) =   1321.79   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.10      0.50     0.500     -
  USER-DEFINED               -        0.10      0.50     0.350     -
  USER-DEFINED               -        6.90      0.50     0.850     -
  USER-DEFINED               -        0.40      0.50     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    3.17
  EFFECTIVE AREA(ACRES) =   1329.29   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =     716.94
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.55      0.50     1.000     -
  USER-DEFINED               -        0.01      0.50     1.000     -
  USER-DEFINED               -        1.35      0.50     1.000     -
  USER-DEFINED               -        0.44      0.50     1.000     -
  USER-DEFINED               -        0.67      0.50     1.000     -
  USER-DEFINED               -        1.06      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    2.13
  EFFECTIVE AREA(ACRES) =   1335.37   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.08
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.16      0.50     1.000     -
  USER-DEFINED               -        2.45      0.50     1.000     -
  USER-DEFINED               -        6.15      0.50     1.000     -
  USER-DEFINED               -        1.34      0.50     1.000     -
  USER-DEFINED               -       18.46      0.50     1.000     -
  USER-DEFINED               -        4.13      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   12.13
  EFFECTIVE AREA(ACRES) =   1370.06   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =     716.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

```
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   29.08
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.69      0.50     1.000     -
 USER-DEFINED               -        0.73      0.50     1.000     -
 USER-DEFINED               -        0.41      0.50     1.000     -
 USER-DEFINED               -        1.37      0.50     1.000     -
 USER-DEFINED               -        3.11      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =    5.01
 EFFECTIVE AREA(ACRES) =   1384.37   AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.90
 TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =     716.94
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
 CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     716.94
 FLOW VELOCITY(FEET/SEC.) =  13.20   FLOW DEPTH(FEET) =   4.25
 TRAVEL TIME(MIN.) =   0.36   Tc(MIN.) =   29.45
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      716.94   29.45    0.882  0.50( 0.45) 0.90    1384.4     110.00
     2      712.41   32.19    0.843  0.50( 0.45) 0.90    1531.9     100.00
     3      702.91   33.93    0.821  0.50( 0.45) 0.90    1615.7     100.00
     4      658.46   38.17    0.766  0.50( 0.45) 0.90    1796.1     130.00
     5      539.47   56.21    0.622  0.50( 0.46) 0.93    2537.2   20100.00
     6      464.24   63.47    0.587  0.50( 0.46) 0.93    2692.0   13600.00
     7      180.59  130.11    0.423  0.50( 0.47) 0.93    3769.5   13510.00
     8      122.83  156.06    0.392  0.50( 0.47) 0.93    3851.3   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     716.94  Tc(MIN.) =   29.45
 AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.90  EFFECTIVE AREA(ACRES) =    1384.37

****************************************************************************
 FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.820
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.23      0.50     1.000     -
 USER-DEFINED               -        1.52      0.50     1.000     -
 USER-DEFINED               -        0.06      0.50     1.000     -
 USER-DEFINED               -        0.13      0.50     1.000     -
 USER-DEFINED               -        6.45      0.50     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     718.15
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.80
 AVERAGE FLOW DEPTH(FEET) =   5.93   TRAVEL TIME(MIN.) =   4.52
 Tc(MIN.) =   33.96
 SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    2.42
 EFFECTIVE AREA(ACRES) =   1392.76     AREA-AVERAGED Fm(INCH/HR) =   0.45
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.90
 TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =     716.94
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.93   FLOW VELOCITY(FEET/SEC.) =   6.79
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      716.94   33.96    0.820  0.50( 0.45) 0.90    1392.8     110.00
     2      712.41   36.72    0.785  0.50( 0.45) 0.90    1540.3     100.00
     3      702.91   38.48    0.762  0.50( 0.45) 0.90    1624.0     100.00
     4      658.46   42.79    0.720  0.50( 0.45) 0.91    1804.5     130.00
     5      539.47   61.06    0.595  0.50( 0.46) 0.93    2545.6   20100.00
     6      464.24   68.52    0.569  0.50( 0.46) 0.93    2700.4   13600.00
     7      180.59  136.49    0.415  0.50( 0.47) 0.93    3777.9   13510.00
     8      122.83  163.10    0.384  0.50( 0.47) 0.93    3859.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     716.94  Tc(MIN.) =   33.96
 AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.50
 AREA-AVERAGED Ap =  0.90  EFFECTIVE AREA(ACRES) =    1392.76
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =     3859.7  TC(MIN.) =     33.96
 EFFECTIVE AREA(ACRES) =   1392.76  AREA-AVERAGED Fm(INCH/HR)=  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap = 0.899
 PEAK FLOW RATE(CFS)   =     716.94

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      716.94   33.96    0.820  0.50( 0.45) 0.90    1392.8     110.00
     2      712.41   36.72    0.785  0.50( 0.45) 0.90    1540.3     100.00
     3      702.91   38.48    0.762  0.50( 0.45) 0.90    1624.0     100.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 658.46 | 42.79 | 0.720 | 0.50( 0.45) | 0.91 | 1804.5 | 130.00 |
| 5 | 539.47 | 61.06 | 0.595 | 0.50( 0.46) | 0.93 | 2545.6 | 20100.00 |
| 6 | 464.24 | 68.52 | 0.569 | 0.50( 0.46) | 0.93 | 2700.4 | 13600.00 |
| 7 | 180.59 | 136.49 | 0.415 | 0.50( 0.47) | 0.93 | 3777.9 | 13510.00 |
| 8 | 122.83 | 163.10 | 0.384 | 0.50( 0.47) | 0.93 | 3859.7 | 13500.00 |

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                            *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                 *
* 5-YR EV AUG 2023 ROKAMOTO                                              *
 ***********************************************************************

  FILE NAME: RI05EV37.DAT
  TIME/DATE OF STUDY: 14:52 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.596
   2)   10.00;  1.737
   3)   15.00;  1.294
   4)   20.00;  1.106
   5)   25.00;  0.966
   6)   30.00;  0.870
   7)   40.00;  0.742
   8)   50.00;  0.660
   9)   60.00;  0.598
  10)   90.00;  0.494
  11)  120.00;  0.434
  12)  180.00;  0.363
  13)  360.00;  0.266
  14) 1200.00;  0.116
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14536.74   16.79  0.50( 0.41) 0.82    4114.9     400.00
      2    14681.33   29.21  0.50( 0.41) 0.82    8287.9     230.00
      3    14152.34   41.66  0.50( 0.42) 0.84   13588.3     100.00
      4    13650.98   49.72  0.50( 0.43) 0.86   16918.5   10100.00
      5    13046.15   59.76  0.50( 0.44) 0.88   20704.2   31100.00
      6    12531.07   68.83  0.50( 0.44) 0.89   24006.7   13600.00
      7    11669.83   87.20  0.50( 0.45) 0.90   30477.8   11500.00
      8    11078.02   99.36  0.50( 0.46) 0.91   35156.7   11000.00
      9    10456.20  113.61  0.50( 0.46) 0.92   41771.6   13000.00
     10     9355.58  131.39  0.50( 0.47) 0.94   49271.1   11130.00
     11     8609.67  143.31  0.50( 0.47) 0.94   53049.8   11620.00
     12     7484.80  159.72  0.50( 0.47) 0.94   57626.0   12400.00
     13     6601.75  171.54  0.50( 0.47) 0.94   59943.7   12201.00
     14     5967.53  181.20  0.50( 0.47) 0.95   61234.3   12111.00
     15     5018.49  197.53  0.50( 0.47) 0.95   63157.2   12261.00
     16     4536.89  207.20  0.50( 0.47) 0.95   63968.3   10200.00
     17     3950.30  223.12  0.50( 0.47) 0.95   65206.3   10300.00
     18     3710.84  230.22  0.50( 0.47) 0.95   65558.5   12010.00
     19     3213.11  251.24  0.50( 0.47) 0.95   65886.8   12000.00
     20     2160.15  321.40  0.50( 0.47) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14536.74   16.79  0.50( 0.41) 0.82    4114.9     400.00
      2    14681.33   29.21  0.50( 0.41) 0.82    8287.9     230.00
      3    14152.34   41.66  0.50( 0.42) 0.84   13588.3     100.00
      4    13650.98   49.72  0.50( 0.43) 0.86   16918.5   10100.00
      5    13046.15   59.76  0.50( 0.44) 0.88   20704.2   31100.00
      6    12531.07   68.83  0.50( 0.44) 0.89   24006.7   13600.00
      7    11669.83   87.20  0.50( 0.45) 0.90   30477.8   11500.00
      8    11078.02   99.36  0.50( 0.46) 0.91   35156.7   11000.00
      9    10456.20  113.61  0.50( 0.46) 0.92   41771.6   13000.00
     10     9355.58  131.39  0.50( 0.47) 0.94   49271.1   11130.00
     11     8609.67  143.31  0.50( 0.47) 0.94   53049.8   11620.00
     12     7484.80  159.72  0.50( 0.47) 0.94   57626.0   12400.00
     13     6601.75  171.54  0.50( 0.47) 0.94   59943.7   12201.00
```

```
     14     5967.53  181.20  0.50( 0.47) 0.95   61234.3   12111.00
     15     5018.49  197.53  0.50( 0.47) 0.95   63157.2   12261.00
     16     4536.89  207.20  0.50( 0.47) 0.95   63968.3   10200.00
     17     3950.30  223.12  0.50( 0.47) 0.95   65206.3   10300.00
     18     3710.84  230.22  0.50( 0.47) 0.95   65558.5   12010.00
     19     3213.11  251.24  0.50( 0.47) 0.95   65886.8   12000.00
     20     2160.15  321.40  0.50( 0.47) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =   14681.33
  FLOW VELOCITY(FEET/SEC.) =  12.23   FLOW DEPTH(FEET) =  20.00
  TRAVEL TIME(MIN.) =   2.58   Tc(MIN.) =   31.79
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126420.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102F.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      108.74   17.82  0.50( 0.48) 0.96     196.1   10230.00
      2       89.60   26.01  0.50( 0.48) 0.95     235.1   10250.00
      3       84.70   27.80  0.50( 0.48) 0.95     241.6   10200.00
      4       70.42   32.34  0.50( 0.48) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```



```
** MAIN STREAM CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14536.74   19.40    1.129  0.50( 0.41) 0.82    4114.9     400.00
    2    14681.33   31.79    0.847  0.50( 0.41) 0.82    8287.9     230.00
    3    14152.34   44.33    0.707  0.50( 0.42) 0.84   13588.3     100.00
    4    13650.98   52.49    0.645  0.50( 0.43) 0.86   16918.5   10100.00
    5    13046.15   62.66    0.589  0.50( 0.44) 0.88   20704.2   31100.00
    6    12531.07   71.77    0.557  0.50( 0.44) 0.89   24006.7   13600.00
    7    11669.83   90.19    0.494  0.50( 0.45) 0.90   30477.8   11500.00
    8    11078.02  102.40    0.469  0.50( 0.46) 0.91   35156.7   11000.00
    9    10456.20  116.69    0.441  0.50( 0.46) 0.92   41771.6   13000.00
   10     9355.58  134.55    0.417  0.50( 0.47) 0.94   49271.1   11130.00
   11     8609.67  146.54    0.403  0.50( 0.47) 0.94   53049.8   11620.00
   12     7484.80  163.06    0.383  0.50( 0.47) 0.94   57626.0   12400.00
   13     6601.75  174.99    0.369  0.50( 0.47) 0.94   59943.7   12201.00
   14     5967.53  184.74    0.360  0.50( 0.47) 0.95   61234.3   12111.00
   15     5018.49  201.22    0.352  0.50( 0.47) 0.95   63157.2   12261.00
   16     4536.89  210.99    0.346  0.50( 0.47) 0.95   63968.3   10200.00
   17     3950.30  227.05    0.338  0.50( 0.47) 0.95   65206.3   10300.00
   18     3710.84  234.21    0.334  0.50( 0.47) 0.95   65558.5   12010.00
   19     3213.11  255.38    0.322  0.50( 0.47) 0.95   65886.8   12000.00
   20     2160.15  325.97    0.284  0.50( 0.47) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126420.58 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      108.74   17.82    1.188  0.50( 0.48) 0.96     196.1   10230.00
    2       89.60   26.01    0.947  0.50( 0.48) 0.95     235.1   10250.00
    3       84.70   27.80    0.912  0.50( 0.48) 0.95     241.6   10200.00
    4       70.42   32.34    0.840  0.50( 0.48) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14564.34   17.82    1.188  0.50( 0.41) 0.82    3976.8   10230.00
    2    14641.80   19.40    1.129  0.50( 0.41) 0.82    4318.4     400.00
    3    14703.56   26.01    0.947  0.50( 0.41) 0.82    6578.6   10250.00
    4    14719.51   27.80    0.912  0.50( 0.41) 0.82    7187.0   10200.00
    5    14753.50   31.79    0.847  0.50( 0.41) 0.82    8533.5     230.00
    6    14728.30   32.34    0.840  0.50( 0.41) 0.82    8769.1   10220.00
    7    14196.86   44.33    0.707  0.50( 0.42) 0.84   13834.6     100.00
    8    13683.47   52.49    0.645  0.50( 0.43) 0.86   17164.8   10100.00
    9    13067.83   62.66    0.589  0.50( 0.44) 0.88   20950.5   31100.00
   10    12546.61   71.77    0.557  0.50( 0.44) 0.89   24253.0   13600.00
   11    11674.25   90.19    0.494  0.50( 0.45) 0.91   30724.1   11500.00
   12    11082.22  102.40    0.469  0.50( 0.46) 0.91   35403.0   11000.00
   13    10460.15  116.69    0.441  0.50( 0.46) 0.92   42017.9   13000.00
   14     9359.32  134.55    0.417  0.50( 0.47) 0.94   49517.4   11130.00
   15     8613.29  146.54    0.403  0.50( 0.47) 0.94   53296.1   11620.00
   16     7488.23  163.06    0.383  0.50( 0.47) 0.94   57872.3   12400.00
   17     6605.06  174.99    0.369  0.50( 0.47) 0.94   60189.9   12201.00
   18     5970.76  184.74    0.360  0.50( 0.47) 0.95   61480.6   12111.00
   19     5021.64  201.22    0.352  0.50( 0.47) 0.95   63403.5   12261.00
   20     4540.00  210.99    0.346  0.50( 0.47) 0.95   64214.6   10200.00
   21     3953.33  227.05    0.338  0.50( 0.47) 0.95   65452.5   10300.00
```

```
     22     3713.83  234.21    0.334  0.50( 0.47) 0.95   65804.7   12010.00
     23     3216.00  255.38    0.322  0.50( 0.47) 0.95   66133.1   12000.00
     24     2162.70  325.97    0.284  0.50( 0.47) 0.95   66803.9   10100.00
    TOTAL AREA(ACRES) =     66803.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    14753.50  Tc(MIN.) =   31.788
  EFFECTIVE AREA(ACRES) =   8533.55  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126420.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =   14753.50
  FLOW VELOCITY(FEET/SEC.) =  12.29   FLOW DEPTH(FEET) =  20.00
  TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =   34.59
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128488.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103F.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      252.52   21.48  0.50( 0.38) 0.76     404.4   10300.00
      2      251.96   21.77  0.50( 0.38) 0.76     408.5   10380.00
      3      235.57   25.33  0.50( 0.38) 0.76     442.2   10320.00
      4      219.91   27.75  0.50( 0.38) 0.76     453.9   10360.00
      5      202.40   30.24  0.50( 0.38) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14564.34   20.66    1.087  0.50( 0.41) 0.82    3976.8   10230.00
      2    14641.80   22.22    1.044  0.50( 0.41) 0.82    4318.4     400.00
      3    14703.56   28.83    0.893  0.50( 0.41) 0.82    6578.6   10250.00
      4    14719.51   30.61    0.862  0.50( 0.41) 0.82    7187.0   10200.00
      5    14753.50   34.59    0.811  0.50( 0.41) 0.82    8533.5     230.00
      6    14728.30   35.15    0.804  0.50( 0.41) 0.82    8769.1   10220.00
      7    14196.86   47.24    0.683  0.50( 0.42) 0.84   13834.6     100.00
      8    13683.47   55.52    0.626  0.50( 0.43) 0.86   17164.8   10100.00
      9    13067.83   65.82    0.578  0.50( 0.44) 0.88   20950.5   31100.00
     10    12546.61   75.07    0.546  0.50( 0.44) 0.89   24253.0   13600.00
     11    11674.25   93.57    0.487  0.50( 0.45) 0.91   30724.1   11500.00
     12    11082.22  105.83    0.462  0.50( 0.46) 0.91   35403.0   11000.00
     13    10460.15  120.17    0.434  0.50( 0.46) 0.92   42017.9   13000.00
     14     9359.32  138.13    0.413  0.50( 0.47) 0.94   49517.4   11130.00
     15     8613.29  150.19    0.398  0.50( 0.47) 0.94   53296.1   11620.00
     16     7488.23  166.84    0.379  0.50( 0.47) 0.94   57872.3   12400.00
     17     6605.06  178.90    0.364  0.50( 0.47) 0.94   60189.9   12201.00
     18     5970.76  188.74    0.358  0.50( 0.47) 0.95   61480.6   12111.00
     19     5021.64  205.40    0.349  0.50( 0.47) 0.95   63403.5   12261.00
     20     4540.00  215.28    0.344  0.50( 0.47) 0.95   64214.6   10200.00
     21     3953.33  231.48    0.335  0.50( 0.47) 0.95   65452.5   10300.00
     22     3713.83  238.72    0.331  0.50( 0.47) 0.95   65804.7   12010.00
     23     3216.00  260.05    0.320  0.50( 0.47) 0.95   66133.1   12000.00
     24     2162.70  331.13    0.282  0.50( 0.47) 0.95   66803.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128488.12 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      252.52   21.48    1.065  0.50( 0.38) 0.76     404.4   10300.00
      2      251.96   21.77    1.057  0.50( 0.38) 0.76     408.5   10380.00
      3      235.57   25.33    0.960  0.50( 0.38) 0.76     442.2   10320.00
      4      219.91   27.75    0.913  0.50( 0.38) 0.76     453.9   10360.00
      5      202.40   30.24    0.867  0.50( 0.38) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14815.35   20.66    1.087  0.50( 0.41) 0.82    4365.8   10230.00
      2    14857.44   21.48    1.065  0.50( 0.41) 0.82    4560.2   10300.00
      3    14871.09   21.77    1.057  0.50( 0.41) 0.82    4626.9   10380.00
      4    14891.67   22.22    1.044  0.50( 0.41) 0.82    4731.2     400.00
      5    14906.47   25.33    0.960  0.50( 0.41) 0.82    5825.3   10320.00
      6    14913.40   27.75    0.913  0.50( 0.41) 0.82    6664.1   10360.00
      7    14915.89   28.83    0.893  0.50( 0.41) 0.82    7035.4   10250.00
      8    14918.57   30.24    0.867  0.50( 0.41) 0.82    7520.4   10340.00
      9    14919.92   30.61    0.862  0.50( 0.41) 0.82    7647.8   10200.00
     10    14932.64   34.59    0.811  0.50( 0.41) 0.82    8994.3     230.00
     11    14904.44   35.15    0.804  0.50( 0.41) 0.82    9229.9   10220.00
     12    14322.32   47.24    0.683  0.50( 0.42) 0.84   14295.4     100.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13 | 13785.23 | 55.52 | 0.626 | 0.50( 0.43) | 0.86 | 17625.6 | 10100.00 |
| 14 | 13149.56 | 65.82 | 0.578 | 0.50( 0.44) | 0.88 | 21411.3 | 31100.00 |
| 15 | 12614.97 | 75.07 | 0.546 | 0.50( 0.44) | 0.89 | 24713.8 | 13600.00 |
| 16 | 11722.27 | 93.57 | 0.487 | 0.50( 0.45) | 0.90 | 31184.9 | 11500.00 |
| 17 | 11127.83 | 105.83 | 0.462 | 0.50( 0.46) | 0.91 | 35863.8 | 11000.00 |
| 18 | 10502.94 | 120.17 | 0.434 | 0.50( 0.46) | 0.92 | 42478.7 | 13000.00 |
| 19 | 9400.01 | 138.13 | 0.413 | 0.50( 0.47) | 0.93 | 49978.2 | 11130.00 |
| 20 | 8652.57 | 150.19 | 0.398 | 0.50( 0.47) | 0.94 | 53756.9 | 11620.00 |
| 21 | 7525.58 | 166.84 | 0.379 | 0.50( 0.47) | 0.94 | 58333.1 | 12400.00 |
| 22 | 6641.00 | 178.90 | 0.364 | 0.50( 0.47) | 0.94 | 60650.7 | 12201.00 |
| 23 | 6006.10 | 188.74 | 0.358 | 0.50( 0.47) | 0.94 | 61941.4 | 12111.00 |
| 24 | 5056.10 | 205.40 | 0.349 | 0.50( 0.47) | 0.94 | 63864.3 | 12261.00 |
| 25 | 4573.93 | 215.28 | 0.344 | 0.50( 0.47) | 0.95 | 64675.4 | 10200.00 |
| 26 | 3986.40 | 231.48 | 0.335 | 0.50( 0.47) | 0.95 | 65913.3 | 10300.00 |
| 27 | 3746.52 | 238.72 | 0.331 | 0.50( 0.47) | 0.95 | 66265.5 | 12010.00 |
| 28 | 3247.55 | 260.05 | 0.320 | 0.50( 0.47) | 0.95 | 66593.9 | 12000.00 |
| 29 | 2190.47 | 331.13 | 0.282 | 0.50( 0.47) | 0.95 | 67264.7 | 10100.00 |

TOTAL AREA(ACRES) = 67264.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 14932.64 Tc(MIN.) = 34.590
EFFECTIVE AREA(ACRES) = 8994.35 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 67264.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128488.12 FEET.

**********
FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 51
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 161.03 DOWNSTREAM(FEET) = 141.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 364.08 CHANNEL SLOPE = 0.0550
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 14932.64
FLOW VELOCITY(FEET/SEC.) = 36.41 FLOW DEPTH(FEET) = 11.69
TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 34.76
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128852.20 FEET.

**********
FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506104F.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 22.86 | 23.27 | 0.50( 0.40) | 0.80 | 44.3 | 10400.00 |

TOTAL AREA(ACRES) = 44.3



**********
FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14815.35 | 20.83 | 1.083 | 0.50( 0.41) | 0.82 | 4365.8 | 10230.00 |
| 2 | 14857.44 | 21.65 | 1.060 | 0.50( 0.41) | 0.82 | 4560.2 | 10300.00 |
| 3 | 14871.09 | 21.93 | 1.052 | 0.50( 0.41) | 0.82 | 4626.9 | 10380.00 |
| 4 | 14891.67 | 22.39 | 1.039 | 0.50( 0.41) | 0.82 | 4731.2 | 400.00 |
| 5 | 14906.47 | 25.50 | 0.956 | 0.50( 0.41) | 0.82 | 5825.3 | 10320.00 |
| 6 | 14913.40 | 27.92 | 0.910 | 0.50( 0.41) | 0.82 | 6664.1 | 10360.00 |
| 7 | 14915.89 | 28.99 | 0.889 | 0.50( 0.41) | 0.82 | 7035.4 | 10250.00 |
| 8 | 14918.57 | 30.40 | 0.865 | 0.50( 0.41) | 0.82 | 7520.4 | 10340.00 |
| 9 | 14919.92 | 30.78 | 0.860 | 0.50( 0.41) | 0.82 | 7647.8 | 10200.00 |
| 10 | 14932.64 | 34.76 | 0.809 | 0.50( 0.41) | 0.82 | 8994.3 | 230.00 |
| 11 | 14904.44 | 35.32 | 0.802 | 0.50( 0.41) | 0.82 | 9229.9 | 10220.00 |
| 12 | 14322.32 | 47.41 | 0.681 | 0.50( 0.42) | 0.84 | 14295.4 | 100.00 |
| 13 | 13785.23 | 55.69 | 0.625 | 0.50( 0.43) | 0.86 | 17625.6 | 10100.00 |
| 14 | 13149.56 | 65.99 | 0.577 | 0.50( 0.44) | 0.88 | 21411.3 | 31100.00 |
| 15 | 12614.97 | 75.24 | 0.545 | 0.50( 0.44) | 0.89 | 24713.8 | 13600.00 |
| 16 | 11722.27 | 93.75 | 0.486 | 0.50( 0.45) | 0.90 | 31184.9 | 11500.00 |
| 17 | 11127.83 | 106.00 | 0.462 | 0.50( 0.46) | 0.91 | 35863.8 | 11000.00 |
| 18 | 10502.94 | 120.35 | 0.434 | 0.50( 0.46) | 0.92 | 42478.7 | 13000.00 |
| 19 | 9400.01 | 138.31 | 0.412 | 0.50( 0.47) | 0.93 | 49978.2 | 11130.00 |
| 20 | 8652.57 | 150.38 | 0.398 | 0.50( 0.47) | 0.94 | 53756.9 | 11620.00 |
| 21 | 7525.58 | 167.04 | 0.378 | 0.50( 0.47) | 0.94 | 58333.1 | 12400.00 |
| 22 | 6641.00 | 179.10 | 0.364 | 0.50( 0.47) | 0.94 | 60650.7 | 12201.00 |
| 23 | 6006.10 | 188.95 | 0.358 | 0.50( 0.47) | 0.94 | 61941.4 | 12111.00 |
| 24 | 5056.10 | 205.62 | 0.349 | 0.50( 0.47) | 0.94 | 63864.3 | 12261.00 |
| 25 | 4573.93 | 215.50 | 0.344 | 0.50( 0.47) | 0.95 | 64675.4 | 10200.00 |
| 26 | 3986.40 | 231.72 | 0.335 | 0.50( 0.47) | 0.95 | 65913.3 | 10300.00 |
| 27 | 3746.52 | 238.95 | 0.331 | 0.50( 0.47) | 0.95 | 66265.5 | 12010.00 |
| 28 | 3247.55 | 260.29 | 0.320 | 0.50( 0.47) | 0.95 | 66593.9 | 12000.00 |
| 29 | 2190.47 | 331.40 | 0.281 | 0.50( 0.47) | 0.95 | 67264.7 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128852.20 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22.86 | 23.27 | 1.014 | 0.50( 0.40) | 0.80 | 44.3 | 10400.00 |

LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 = 6237.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14838.09 | 20.83 | 1.083 | 0.50( 0.41) | 0.82 | 4405.5 | 10230.00 |
| 2 | 14880.28 | 21.65 | 1.060 | 0.50( 0.41) | 0.82 | 4601.4 | 10300.00 |
| 3 | 14893.96 | 21.93 | 1.052 | 0.50( 0.41) | 0.82 | 4668.7 | 10380.00 |
| 4 | 14914.53 | 22.39 | 1.039 | 0.50( 0.41) | 0.82 | 4773.8 | 400.00 |
| 5 | 14918.75 | 23.27 | 1.014 | 0.50( 0.41) | 0.82 | 5086.9 | 10400.00 |
| 6 | 14927.18 | 25.50 | 0.956 | 0.50( 0.41) | 0.82 | 5869.6 | 10320.00 |
| 7 | 14932.38 | 27.92 | 0.910 | 0.50( 0.41) | 0.82 | 6708.4 | 10360.00 |
| 8 | 14934.10 | 28.99 | 0.889 | 0.50( 0.41) | 0.82 | 7079.7 | 10250.00 |

```
      9    14935.88   30.40    0.865  0.50( 0.41) 0.82    7564.7   10340.00
     10    14937.04   30.78    0.860  0.50( 0.41) 0.82    7692.1   10200.00
     11    14947.88   34.76    0.809  0.50( 0.41) 0.82    9038.6     230.00
     12    14919.41   35.32    0.802  0.50( 0.41) 0.82    9274.2   10220.00
     13    14332.80   47.41    0.681  0.50( 0.42) 0.84   14339.7     100.00
     14    13793.61   55.69    0.625  0.50( 0.43) 0.86   17669.9   10100.00
     15    13156.17   65.99    0.577  0.50( 0.44) 0.88   21455.6   31100.00
     16    12620.39   75.24    0.545  0.50( 0.44) 0.89   24758.1   13600.00
     17    11725.92   93.75    0.486  0.50( 0.45) 0.90   31229.2   11500.00
     18    11131.29  106.00    0.462  0.50( 0.46) 0.91   35908.1   11000.00
     19    10506.19  120.35    0.434  0.50( 0.46) 0.92   42523.0   13000.00
     20     9403.10  138.31    0.412  0.50( 0.47) 0.93   50022.5   11130.00
     21     8655.55  150.38    0.398  0.50( 0.47) 0.94   53801.2   11620.00
     22     7528.41  167.04    0.378  0.50( 0.47) 0.94   58377.4   12400.00
     23     6643.73  179.10    0.364  0.50( 0.47) 0.94   60695.0   12201.00
     24     6008.79  188.95    0.358  0.50( 0.47) 0.94   61985.7   12111.00
     25     5058.71  205.62    0.349  0.50( 0.47) 0.94   63908.6   12261.00
     26     4576.50  215.50    0.344  0.50( 0.47) 0.95   64719.7   10200.00
     27     3988.91  231.72    0.335  0.50( 0.47) 0.95   65957.6   10300.00
     28     3749.00  238.95    0.331  0.50( 0.47) 0.95   66309.8   12010.00
     29     3249.95  260.29    0.320  0.50( 0.47) 0.95   66638.2   12000.00
     30     2192.58  331.40    0.281  0.50( 0.47) 0.95   67309.0   10100.00
   TOTAL AREA(ACRES) =     67309.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    14947.88  Tc(MIN.) =   34.757
  EFFECTIVE AREA(ACRES) =   9038.65  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    67309.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128852.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13802.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    141.00  DOWNSTREAM(FEET) =    135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1533.41   CHANNEL SLOPE =  0.0039
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   14947.88
  FLOW VELOCITY(FEET/SEC.) =  13.52   FLOW DEPTH(FEET) =  19.20
  TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   36.65
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130385.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506105M.DNA
```



```
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)    NODE
      1      119.37   16.20  0.50( 0.45) 0.90     187.4   10520.00
      2       91.55   39.09  0.50( 0.46) 0.93     403.6   10500.00
    TOTAL AREA(ACRES) =      403.6

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    14838.09   22.72    1.030  0.50( 0.41) 0.82    4405.5   10230.00
      2    14880.28   23.54    1.007  0.50( 0.41) 0.82    4601.4   10300.00
      3    14893.96   23.82    0.999  0.50( 0.41) 0.82    4668.7   10380.00
      4    14914.53   24.28    0.986  0.50( 0.41) 0.82    4773.8     400.00
      5    14918.75   25.17    0.963  0.50( 0.41) 0.82    5086.9   10400.00
      6    14927.18   27.39    0.920  0.50( 0.41) 0.82    5869.6   10320.00
      7    14932.38   29.81    0.874  0.50( 0.41) 0.82    6708.4   10360.00
      8    14934.10   30.88    0.859  0.50( 0.41) 0.82    7079.7   10250.00
      9    14935.88   32.30    0.841  0.50( 0.41) 0.82    7564.7   10340.00
     10    14937.04   32.67    0.836  0.50( 0.41) 0.82    7692.1   10200.00
     11    14947.88   36.65    0.785  0.50( 0.41) 0.82    9038.6     230.00
     12    14919.41   37.21    0.778  0.50( 0.41) 0.82    9274.2   10220.00
     13    14332.80   49.32    0.666  0.50( 0.42) 0.84   14339.7     100.00
     14    13793.61   57.62    0.613  0.50( 0.43) 0.86   17669.9   10100.00
     15    13156.17   67.95    0.570  0.50( 0.44) 0.88   21455.6   31100.00
     16    12620.39   77.21    0.538  0.50( 0.44) 0.89   24758.1   13600.00
     17    11725.92   95.76    0.482  0.50( 0.45) 0.90   31229.2   11500.00
     18    11131.29  108.04    0.458  0.50( 0.46) 0.91   35908.1   11000.00
     19    10506.19  122.42    0.431  0.50( 0.46) 0.92   42523.0   13000.00
     20     9403.10  140.44    0.410  0.50( 0.47) 0.93   50022.5   11130.00
     21     8655.55  152.55    0.395  0.50( 0.47) 0.94   53801.2   11620.00
     22     7528.41  169.29    0.376  0.50( 0.47) 0.94   58377.4   12400.00
     23     6643.73  181.42    0.362  0.50( 0.47) 0.94   60695.0   12201.00
     24     6008.79  191.33    0.357  0.50( 0.47) 0.94   61985.7   12111.00
     25     5058.71  208.10    0.348  0.50( 0.47) 0.94   63908.6   12261.00
     26     4576.50  218.05    0.342  0.50( 0.47) 0.95   64719.7   10200.00
     27     3988.91  234.35    0.334  0.50( 0.47) 0.95   65957.6   10300.00
     28     3749.00  241.62    0.330  0.50( 0.47) 0.95   66309.8   12010.00
     29     3249.95  263.06    0.318  0.50( 0.47) 0.95   66638.2   12000.00
     30     2192.58  334.45    0.280  0.50( 0.47) 0.95   67309.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130385.60 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1      119.37   16.20    1.249  0.50( 0.45) 0.90     187.4   10520.00
      2       91.55   39.09    0.754  0.50( 0.46) 0.93     403.6   10500.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  13802.00 =   12187.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
```

```
      1    14434.17   16.20    1.249  0.50( 0.41) 0.82    3327.4   10520.00
      2    14949.53   22.72    1.030  0.50( 0.41) 0.82    4654.5   10230.00
      3    14990.73   23.54    1.007  0.50( 0.41) 0.82    4858.2   10300.00
      4    15004.05   23.82    0.999  0.50( 0.41) 0.82    4928.2   10380.00
      5    15024.08   24.28    0.986  0.50( 0.41) 0.82    5037.6     400.00
      6    15027.21   25.17    0.963  0.50( 0.41) 0.82    5359.1   10400.00
      7    15032.94   27.39    0.920  0.50( 0.41) 0.82    6162.8   10320.00
      8    15035.21   29.81    0.874  0.50( 0.41) 0.82    7024.4   10360.00
      9    15035.62   30.88    0.859  0.50( 0.41) 0.82    7405.9   10250.00
     10    15035.68   32.30    0.841  0.50( 0.41) 0.82    7904.2   10340.00
     11    15036.39   32.67    0.836  0.50( 0.41) 0.82    8035.1   10200.00
     12    15042.39   36.65    0.785  0.50( 0.41) 0.82    9419.2     230.00
     13    15013.24   37.21    0.778  0.50( 0.41) 0.82    9660.1   10220.00
     14    14920.12   39.09    0.754  0.50( 0.41) 0.83   10462.2   10500.00
     15    14396.54   49.32    0.666  0.50( 0.42) 0.84   14743.3     100.00
     16    13840.68   57.62    0.613  0.50( 0.43) 0.86   18073.5   10100.00
     17    13189.89   67.95    0.570  0.50( 0.44) 0.88   21859.2   31100.00
     18    12643.96   77.21    0.538  0.50( 0.44) 0.89   25161.7   13600.00
     19    11737.06   95.76    0.482  0.50( 0.45) 0.90   31632.8   11500.00
     20    11141.86  108.04    0.458  0.50( 0.46) 0.91   36311.7   11000.00
     21    10516.14  122.42    0.431  0.50( 0.46) 0.92   42926.6   13000.00
     22     9412.56  140.44    0.410  0.50( 0.47) 0.93   50426.1   11130.00
     23     8664.68  152.55    0.395  0.50( 0.47) 0.94   54204.8   11620.00
     24     7537.08  169.29    0.376  0.50( 0.47) 0.94   58781.0   12400.00
     25     6652.09  181.42    0.362  0.50( 0.47) 0.94   61098.6   12201.00
     26     6017.02  191.33    0.357  0.50( 0.47) 0.94   62389.3   12111.00
     27     5066.74  208.10    0.348  0.50( 0.47) 0.94   64312.2   12261.00
     28     4584.41  218.05    0.342  0.50( 0.47) 0.95   65123.3   10200.00
     29     3996.61  234.35    0.334  0.50( 0.47) 0.95   66361.2   10300.00
     30     3756.61  241.62    0.330  0.50( 0.47) 0.95   66713.4   12010.00
     31     3257.30  263.06    0.318  0.50( 0.47) 0.95   67041.8   12000.00
     32     2199.03  334.45    0.280  0.50( 0.47) 0.95   67712.6   10100.00
   TOTAL AREA(ACRES) =     67712.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    15042.39  Tc(MIN.) =   36.648
  EFFECTIVE AREA(ACRES) =   9419.24  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    67712.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130385.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    135.00  DOWNSTREAM(FEET) =    134.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.23   CHANNEL SLOPE =  0.0000
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =   15042.39
  FLOW VELOCITY(FEET/SEC.) =  12.54   FLOW DEPTH(FEET) =  20.00
  TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =   36.92
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13803.00 =  130592.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.92
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.781
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       48.80      0.50      0.800     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA AREA(ACRES) =   48.80      SUBAREA RUNOFF(CFS) =   16.74
  EFFECTIVE AREA(ACRES) =   9468.04   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    67761.4       PEAK FLOW RATE(CFS) =   15042.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506106f.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       23.96   18.98  0.50( 0.34) 0.67      36.9   10600.00
    TOTAL AREA(ACRES) =       36.9

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14434.17   16.48    1.238  0.50( 0.41) 0.82    3376.2   10520.00
      2    14949.53   23.00    1.022  0.50( 0.41) 0.82    4703.3   10230.00
      3    14990.73   23.82    0.999  0.50( 0.41) 0.82    4907.0   10300.00
      4    15004.05   24.10    0.991  0.50( 0.41) 0.82    4977.0   10380.00
      5    15024.08   24.56    0.978  0.50( 0.41) 0.82    5086.4     400.00
      6    15027.21   25.44    0.958  0.50( 0.41) 0.82    5407.9   10400.00
      7    15032.94   27.67    0.915  0.50( 0.41) 0.82    6211.6   10320.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | 15035.21 | 30.08 | 0.869 | 0.50( 0.41) | 0.82 | 7073.2 | 10360.00 |
| 9 | 15035.62 | 31.16 | 0.855 | 0.50( 0.41) | 0.82 | 7454.7 | 10250.00 |
| 10 | 15035.68 | 32.57 | 0.837 | 0.50( 0.41) | 0.82 | 7953.0 | 10340.00 |
| 11 | 15036.39 | 32.95 | 0.832 | 0.50( 0.41) | 0.82 | 8083.9 | 10200.00 |
| 12 | 15042.39 | 36.92 | 0.781 | 0.50( 0.41) | 0.82 | 9468.0 | 230.00 |
| 13 | 15013.24 | 37.49 | 0.774 | 0.50( 0.41) | 0.82 | 9708.9 | 10220.00 |
| 14 | 14920.12 | 39.36 | 0.750 | 0.50( 0.41) | 0.83 | 10511.0 | 10500.00 |
| 15 | 14396.54 | 49.61 | 0.663 | 0.50( 0.42) | 0.84 | 14792.1 | 100.00 |
| 16 | 13840.68 | 57.92 | 0.611 | 0.50( 0.43) | 0.86 | 18122.3 | 10100.00 |
| 17 | 13189.89 | 68.26 | 0.569 | 0.50( 0.44) | 0.88 | 21908.0 | 31100.00 |
| 18 | 12643.96 | 77.54 | 0.537 | 0.50( 0.44) | 0.89 | 25210.5 | 13600.00 |
| 19 | 11737.06 | 96.11 | 0.482 | 0.50( 0.45) | 0.90 | 31681.6 | 11500.00 |
| 20 | 11141.86 | 108.41 | 0.457 | 0.50( 0.46) | 0.91 | 36360.5 | 11000.00 |
| 21 | 10516.14 | 122.81 | 0.431 | 0.50( 0.46) | 0.92 | 42975.4 | 13000.00 |
| 22 | 9412.56 | 140.88 | 0.409 | 0.50( 0.47) | 0.93 | 50474.9 | 11130.00 |
| 23 | 8664.68 | 153.03 | 0.395 | 0.50( 0.47) | 0.94 | 54253.6 | 11620.00 |
| 24 | 7537.08 | 169.84 | 0.375 | 0.50( 0.47) | 0.94 | 58829.8 | 12400.00 |
| 25 | 6652.09 | 182.04 | 0.362 | 0.50( 0.47) | 0.94 | 61147.4 | 12201.00 |
| 26 | 6017.02 | 192.02 | 0.357 | 0.50( 0.47) | 0.94 | 62438.1 | 12111.00 |
| 27 | 5066.74 | 208.92 | 0.347 | 0.50( 0.47) | 0.94 | 64361.0 | 12261.00 |
| 28 | 4584.41 | 218.95 | 0.342 | 0.50( 0.47) | 0.95 | 65172.1 | 10200.00 |
| 29 | 3996.61 | 235.39 | 0.333 | 0.50( 0.47) | 0.95 | 66410.0 | 10300.00 |
| 30 | 3756.61 | 242.73 | 0.329 | 0.50( 0.47) | 0.95 | 66762.2 | 12010.00 |
| 31 | 3257.30 | 264.34 | 0.318 | 0.50( 0.47) | 0.95 | 67090.6 | 12000.00 |
| 32 | 2199.03 | 336.34 | 0.279 | 0.50( 0.47) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130592.83 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23.96 | 18.98 | 1.144 | 0.50( 0.34) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14457.39 | 16.48 | 1.238 | 0.50( 0.41) | 0.82 | 3408.3 | 10520.00 |
| 2 | 14655.87 | 18.98 | 1.144 | 0.50( 0.41) | 0.82 | 3922.3 | 10600.00 |
| 3 | 14969.87 | 23.00 | 1.022 | 0.50( 0.41) | 0.82 | 4740.2 | 10230.00 |
| 4 | 15010.39 | 23.82 | 0.999 | 0.50( 0.41) | 0.82 | 4943.9 | 10300.00 |
| 5 | 15023.48 | 24.10 | 0.991 | 0.50( 0.41) | 0.82 | 5013.9 | 10380.00 |
| 6 | 15043.13 | 24.56 | 0.978 | 0.50( 0.41) | 0.82 | 5123.3 | 400.00 |
| 7 | 15045.64 | 25.44 | 0.958 | 0.50( 0.41) | 0.82 | 5444.8 | 10400.00 |
| 8 | 15050.11 | 27.67 | 0.915 | 0.50( 0.41) | 0.82 | 6248.5 | 10320.00 |
| 9 | 15051.02 | 30.08 | 0.869 | 0.50( 0.41) | 0.82 | 7110.1 | 10360.00 |
| 10 | 15051.02 | 31.16 | 0.855 | 0.50( 0.41) | 0.82 | 7491.6 | 10250.00 |
| 11 | 15050.54 | 32.57 | 0.837 | 0.50( 0.41) | 0.82 | 7989.9 | 10340.00 |
| 12 | 15051.11 | 32.95 | 0.832 | 0.50( 0.41) | 0.82 | 8120.8 | 10200.00 |
| 13 | 15055.60 | 36.92 | 0.781 | 0.50( 0.41) | 0.82 | 9504.9 | 230.00 |
| 14 | 15026.25 | 37.49 | 0.774 | 0.50( 0.41) | 0.82 | 9745.8 | 10220.00 |
| 15 | 14932.41 | 39.36 | 0.750 | 0.50( 0.41) | 0.82 | 10547.9 | 10500.00 |
| 16 | 14406.25 | 49.61 | 0.663 | 0.50( 0.42) | 0.84 | 14829.0 | 100.00 |
| 17 | 13848.85 | 57.92 | 0.611 | 0.50( 0.43) | 0.86 | 18159.2 | 10100.00 |
| 18 | 13196.83 | 68.26 | 0.569 | 0.50( 0.44) | 0.88 | 21944.9 | 31100.00 |
| 19 | 12649.95 | 77.54 | 0.537 | 0.50( 0.44) | 0.89 | 25247.4 | 13600.00 |
| 20 | 11741.76 | 96.11 | 0.482 | 0.50( 0.45) | 0.90 | 31718.5 | 11500.00 |
| 21 | 11146.33 | 108.41 | 0.457 | 0.50( 0.46) | 0.91 | 36397.4 | 11000.00 |
| 22 | 10520.35 | 122.81 | 0.431 | 0.50( 0.46) | 0.92 | 43012.3 | 13000.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 23 | 9416.56 | 140.88 | 0.409 | 0.50( 0.47) | 0.93 | 50511.8 | 11130.00 |
| 24 | 8668.54 | 153.03 | 0.395 | 0.50( 0.47) | 0.94 | 54290.5 | 11620.00 |
| 25 | 7540.75 | 169.84 | 0.375 | 0.50( 0.47) | 0.94 | 58866.7 | 12400.00 |
| 26 | 6655.62 | 182.04 | 0.362 | 0.50( 0.47) | 0.94 | 61184.3 | 12201.00 |
| 27 | 6020.51 | 192.02 | 0.357 | 0.50( 0.47) | 0.94 | 62475.0 | 12111.00 |
| 28 | 5070.14 | 208.92 | 0.347 | 0.50( 0.47) | 0.94 | 64397.9 | 12261.00 |
| 29 | 4587.75 | 218.95 | 0.342 | 0.50( 0.47) | 0.94 | 65209.0 | 10200.00 |
| 30 | 3999.87 | 235.39 | 0.333 | 0.50( 0.47) | 0.95 | 66446.9 | 10300.00 |
| 31 | 3759.83 | 242.73 | 0.329 | 0.50( 0.47) | 0.95 | 66799.1 | 12010.00 |
| 32 | 3260.40 | 264.34 | 0.318 | 0.50( 0.47) | 0.95 | 67127.5 | 12000.00 |
| 33 | 2201.76 | 336.34 | 0.279 | 0.50( 0.47) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 15055.60 Tc(MIN.) = 36.924
EFFECTIVE AREA(ACRES) = 9504.94 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130592.83 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 36.92
EFFECTIVE AREA(ACRES) = 9504.94 AREA-AVERAGED Fm(INCH/HR)= 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.821
PEAK FLOW RATE(CFS) = 15055.60

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14457.39 | 16.48 | 1.238 | 0.50( 0.41) | 0.82 | 3408.3 | 10520.00 |
| 2 | 14655.87 | 18.98 | 1.144 | 0.50( 0.41) | 0.82 | 3922.3 | 10600.00 |
| 3 | 14969.87 | 23.00 | 1.022 | 0.50( 0.41) | 0.82 | 4740.2 | 10230.00 |
| 4 | 15010.39 | 23.82 | 0.999 | 0.50( 0.41) | 0.82 | 4943.9 | 10300.00 |
| 5 | 15023.48 | 24.10 | 0.991 | 0.50( 0.41) | 0.82 | 5013.9 | 10380.00 |
| 6 | 15043.13 | 24.56 | 0.978 | 0.50( 0.41) | 0.82 | 5123.3 | 400.00 |
| 7 | 15045.64 | 25.44 | 0.958 | 0.50( 0.41) | 0.82 | 5444.8 | 10400.00 |
| 8 | 15050.11 | 27.67 | 0.915 | 0.50( 0.41) | 0.82 | 6248.5 | 10320.00 |
| 9 | 15051.02 | 30.08 | 0.869 | 0.50( 0.41) | 0.82 | 7110.1 | 10360.00 |
| 10 | 15051.02 | 31.16 | 0.855 | 0.50( 0.41) | 0.82 | 7491.6 | 10250.00 |
| 11 | 15050.54 | 32.57 | 0.837 | 0.50( 0.41) | 0.82 | 7989.9 | 10340.00 |
| 12 | 15051.11 | 32.95 | 0.832 | 0.50( 0.41) | 0.82 | 8120.8 | 10200.00 |
| 13 | 15055.60 | 36.92 | 0.781 | 0.50( 0.41) | 0.82 | 9504.9 | 230.00 |
| 14 | 15026.25 | 37.49 | 0.774 | 0.50( 0.41) | 0.82 | 9745.8 | 10220.00 |
| 15 | 14932.41 | 39.36 | 0.750 | 0.50( 0.41) | 0.82 | 10547.9 | 10500.00 |
| 16 | 14406.25 | 49.61 | 0.663 | 0.50( 0.42) | 0.84 | 14829.0 | 100.00 |
| 17 | 13848.85 | 57.92 | 0.611 | 0.50( 0.43) | 0.86 | 18159.2 | 10100.00 |
| 18 | 13196.83 | 68.26 | 0.569 | 0.50( 0.44) | 0.88 | 21944.9 | 31100.00 |
| 19 | 12649.95 | 77.54 | 0.537 | 0.50( 0.44) | 0.89 | 25247.4 | 13600.00 |
| 20 | 11741.76 | 96.11 | 0.482 | 0.50( 0.45) | 0.90 | 31718.5 | 11500.00 |
| 21 | 11146.33 | 108.41 | 0.457 | 0.50( 0.46) | 0.91 | 36397.4 | 11000.00 |
| 22 | 10520.35 | 122.81 | 0.431 | 0.50( 0.46) | 0.92 | 43012.3 | 13000.00 |
| 23 | 9416.56 | 140.88 | 0.409 | 0.50( 0.47) | 0.93 | 50511.8 | 11130.00 |
| 24 | 8668.54 | 153.03 | 0.395 | 0.50( 0.47) | 0.94 | 54290.5 | 11620.00 |
| 25 | 7540.75 | 169.84 | 0.375 | 0.50( 0.47) | 0.94 | 58866.7 | 12400.00 |
| 26 | 6655.62 | 182.04 | 0.362 | 0.50( 0.47) | 0.94 | 61184.3 | 12201.00 |
| 27 | 6020.51 | 192.02 | 0.357 | 0.50( 0.47) | 0.94 | 62475.0 | 12111.00 |
| 28 | 5070.14 | 208.92 | 0.347 | 0.50( 0.47) | 0.94 | 64397.9 | 12261.00 |
| 29 | 4587.75 | 218.95 | 0.342 | 0.50( 0.47) | 0.94 | 65209.0 | 10200.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 30 | 3999.87 | 235.39 | 0.333 | 0.50( 0.47) | 0.95 | 66446.9 | 10300.00 |
| 31 | 3759.83 | 242.73 | 0.329 | 0.50( 0.47) | 0.95 | 66799.1 | 12010.00 |
| 32 | 3260.40 | 264.34 | 0.318 | 0.50( 0.47) | 0.95 | 67127.5 | 12000.00 |
| 33 | 2201.76 | 336.34 | 0.279 | 0.50( 0.47) | 0.95 | 67798.3 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                            *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                 *
* 5-YR EV AUG 2023 ROKAMOTO                                              *
 ***********************************************************************

  FILE NAME: RI05EV38.DAT
  TIME/DATE OF STUDY: 14:52 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.589
   2)   10.00;  1.733
   3)   15.00;  1.292
   4)   20.00;  1.105
   5)   25.00;  0.965
   6)   30.00;  0.869
   7)   40.00;  0.741
   8)   50.00;  0.659
   9)   60.00;  0.597
  10)   90.00;  0.493
  11)  120.00;  0.433
  12)  180.00;  0.362
  13)  360.00;  0.265
  14) 1200.00;  0.115
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI05EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14655.87   18.98  0.50( 0.41) 0.82    3922.3   10600.00
      2    15050.11   27.67  0.50( 0.41) 0.82    6248.5   10320.00
      3    15055.60   36.92  0.50( 0.41) 0.82    9504.9     230.00
      4    14406.25   49.61  0.50( 0.42) 0.84   14829.0     100.00
      5    13848.85   57.92  0.50( 0.43) 0.86   18159.2   10100.00
      6    13196.83   68.26  0.50( 0.44) 0.88   21944.9   31100.00
      7    12649.95   77.54  0.50( 0.44) 0.89   25247.4   13600.00
      8    11741.76   96.11  0.50( 0.45) 0.90   31718.5   11500.00
      9    11146.33  108.41  0.50( 0.46) 0.91   36397.4   11000.00
     10    10520.35  122.81  0.50( 0.46) 0.92   43012.3   13000.00
     11     9416.56  140.88  0.50( 0.47) 0.93   50511.8   11130.00
     12     8668.54  153.03  0.50( 0.47) 0.94   54290.5   11620.00
     13     7540.75  169.84  0.50( 0.47) 0.94   58866.7   12400.00
     14     6655.62  182.04  0.50( 0.47) 0.94   61184.3   12201.00
     15     6020.51  192.02  0.50( 0.47) 0.94   62475.0   12111.00
     16     5070.14  208.92  0.50( 0.47) 0.94   64397.9   12261.00
     17     4587.75  218.95  0.50( 0.47) 0.94   65209.0   10200.00
     18     3999.87  235.39  0.50( 0.47) 0.95   66446.9   10300.00
     19     3260.40  264.34  0.50( 0.47) 0.95   67127.5   12000.00
     20     2201.76  336.34  0.50( 0.47) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

******************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14655.87   18.98  0.50( 0.41) 0.82    3922.3   10600.00
      2    15050.11   27.67  0.50( 0.41) 0.82    6248.5   10320.00
      3    15055.60   36.92  0.50( 0.41) 0.82    9504.9     230.00
      4    14406.25   49.61  0.50( 0.42) 0.84   14829.0     100.00
      5    13848.85   57.92  0.50( 0.43) 0.86   18159.2   10100.00
      6    13196.83   68.26  0.50( 0.44) 0.88   21944.9   31100.00
      7    12649.95   77.54  0.50( 0.44) 0.89   25247.4   13600.00
      8    11741.76   96.11  0.50( 0.45) 0.90   31718.5   11500.00
      9    11146.33  108.41  0.50( 0.46) 0.91   36397.4   11000.00
     10    10520.35  122.81  0.50( 0.46) 0.92   43012.3   13000.00
     11     9416.56  140.88  0.50( 0.47) 0.93   50511.8   11130.00
     12     8668.54  153.03  0.50( 0.47) 0.94   54290.5   11620.00
     13     7540.75  169.84  0.50( 0.47) 0.94   58866.7   12400.00
```

```
    14     6655.62  182.04  0.50( 0.47) 0.94   61184.3   12201.00
    15     6020.51  192.02  0.50( 0.47) 0.94   62475.0   12111.00
    16     5070.14  208.92  0.50( 0.47) 0.94   64397.9   12261.00
    17     4587.75  218.95  0.50( 0.47) 0.94   65209.0   10200.00
    18     3999.87  235.39  0.50( 0.47) 0.95   66446.9   10300.00
    19     3260.40  264.34  0.50( 0.47) 0.95   67127.5   12000.00
    20     2201.76  336.34  0.50( 0.47) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =     67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.765
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.50     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15059.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.55
  AVERAGE FLOW DEPTH(FEET) =  20.00   TRAVEL TIME(MIN.) =   1.23
  Tc(MIN.) =   38.15
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =    7.72
  EFFECTIVE AREA(ACRES) =   9536.38     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =   15055.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.


  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 20.00   FLOW VELOCITY(FEET/SEC.) =  12.55

  ==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131519.73 FEET.

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



```
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =   38.15
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.82
  EFFECTIVE STREAM AREA(ACRES) =    9536.38
  TOTAL STREAM AREA(ACRES) =   67829.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   15055.60

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.531
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.50     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.18
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =      5.18

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.93
  AVERAGE FLOW DEPTH(FEET) =   0.78   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =   14.25
```

```
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   11.42
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4         PEAK FLOW RATE(CFS) =      15.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   6.51
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.13
  AVERAGE FLOW DEPTH(FEET) =   1.32   TRAVEL TIME(MIN.) =   2.75
  Tc(MIN.) =   17.00
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   11.88
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      25.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.39   FLOW VELOCITY(FEET/SEC.) =   4.30
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.091
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.50     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.12
```



```
  AVERAGE FLOW DEPTH(FEET) =   1.35   TRAVEL TIME(MIN.) =   3.49
  Tc(MIN.) =   20.49
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   16.61
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =      37.24

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   6.27
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.98
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.24
  PIPE TRAVEL TIME(MIN.) =   2.37    Tc(MIN.) =   22.86
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   22.86
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.025
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.50     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64      SUBAREA RUNOFF(CFS) =   55.70
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3       PEAK FLOW RATE(CFS) =      88.96

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   22.86
  RAINFALL INTENSITY(INCH/HR) =   1.03
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.73
```

EFFECTIVE STREAM AREA(ACRES) = 150.29
TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 88.96

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14655.87 | 20.25 | 1.098 | 0.50( 0.41) | 0.82 | 3953.8 | 10600.00 |
| 1 | 15050.11 | 28.90 | 0.890 | 0.50( 0.41) | 0.82 | 6279.9 | 10320.00 |
| 1 | 15055.60 | 38.15 | 0.765 | 0.50( 0.41) | 0.82 | 9536.4 | 230.00 |
| 1 | 14406.25 | 50.90 | 0.653 | 0.50( 0.42) | 0.84 | 14860.4 | 100.00 |
| 1 | 13848.85 | 59.25 | 0.602 | 0.50( 0.43) | 0.86 | 18190.6 | 10100.00 |
| 1 | 13196.83 | 69.66 | 0.563 | 0.50( 0.44) | 0.88 | 21976.3 | 31100.00 |
| 1 | 12649.95 | 79.01 | 0.531 | 0.50( 0.44) | 0.89 | 25278.8 | 13600.00 |
| 1 | 11741.76 | 97.69 | 0.478 | 0.50( 0.45) | 0.90 | 31749.9 | 11500.00 |
| 1 | 11146.33 | 110.08 | 0.453 | 0.50( 0.46) | 0.91 | 36428.8 | 11000.00 |
| 1 | 10520.35 | 124.57 | 0.428 | 0.50( 0.46) | 0.92 | 43043.7 | 13000.00 |
| 1 | 9416.56 | 142.85 | 0.406 | 0.50( 0.47) | 0.93 | 50543.2 | 11130.00 |
| 1 | 8668.54 | 155.16 | 0.391 | 0.50( 0.47) | 0.94 | 54321.9 | 11620.00 |
| 1 | 7540.75 | 172.04 | 0.371 | 0.50( 0.47) | 0.94 | 58898.1 | 12400.00 |
| 1 | 6655.62 | 184.32 | 0.360 | 0.50( 0.47) | 0.94 | 61215.8 | 12201.00 |
| 1 | 6020.51 | 194.35 | 0.354 | 0.50( 0.47) | 0.94 | 62506.4 | 12111.00 |
| 1 | 5070.14 | 211.35 | 0.345 | 0.50( 0.47) | 0.94 | 64429.3 | 12261.00 |
| 1 | 4587.75 | 221.45 | 0.340 | 0.50( 0.47) | 0.94 | 65240.4 | 10200.00 |
| 1 | 3999.87 | 237.97 | 0.331 | 0.50( 0.47) | 0.95 | 66478.4 | 10300.00 |
| 1 | 3260.40 | 267.06 | 0.315 | 0.50( 0.47) | 0.95 | 67158.9 | 12000.00 |
| 1 | 2201.76 | 339.34 | 0.276 | 0.50( 0.47) | 0.95 | 67829.7 | 10100.00 |
| 2 | 88.96 | 22.86 | 1.025 | 0.50( 0.37) | 0.73 | 150.3 | 13810.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14743.42 | 20.25 | 1.098 | 0.50( 0.41) | 0.82 | 4086.9 | 10600.00 |
| 2 | 14863.73 | 22.86 | 1.025 | 0.50( 0.41) | 0.82 | 4805.6 | 13810.00 |
| 3 | 15120.82 | 28.90 | 0.890 | 0.50( 0.41) | 0.82 | 6430.2 | 10320.00 |
| 4 | 15109.34 | 38.15 | 0.765 | 0.50( 0.41) | 0.82 | 9686.7 | 230.00 |
| 5 | 14444.95 | 50.90 | 0.653 | 0.50( 0.42) | 0.84 | 15010.7 | 100.00 |
| 6 | 13880.54 | 59.25 | 0.602 | 0.50( 0.43) | 0.86 | 18340.9 | 10100.00 |
| 7 | 13223.36 | 69.66 | 0.563 | 0.50( 0.44) | 0.88 | 22126.6 | 31100.00 |
| 8 | 12672.10 | 79.01 | 0.531 | 0.50( 0.44) | 0.89 | 25429.1 | 13600.00 |
| 9 | 11758.92 | 97.69 | 0.478 | 0.50( 0.45) | 0.90 | 31900.2 | 11500.00 |
| 10 | 11162.60 | 110.08 | 0.453 | 0.50( 0.46) | 0.91 | 36579.1 | 11000.00 |
| 11 | 10535.71 | 124.57 | 0.428 | 0.50( 0.46) | 0.92 | 43194.0 | 13000.00 |
| 12 | 9431.15 | 142.85 | 0.406 | 0.50( 0.47) | 0.93 | 50693.5 | 11130.00 |
| 13 | 8682.60 | 155.16 | 0.391 | 0.50( 0.47) | 0.94 | 54472.2 | 11620.00 |
| 14 | 7554.09 | 172.04 | 0.371 | 0.50( 0.47) | 0.94 | 59048.4 | 12400.00 |
| 15 | 6668.54 | 184.32 | 0.360 | 0.50( 0.47) | 0.94 | 61366.1 | 12201.00 |
| 16 | 6033.24 | 194.35 | 0.354 | 0.50( 0.47) | 0.94 | 62656.7 | 12111.00 |
| 17 | 5082.54 | 211.35 | 0.345 | 0.50( 0.47) | 0.94 | 64579.6 | 12261.00 |
| 18 | 4599.95 | 221.45 | 0.340 | 0.50( 0.47) | 0.94 | 65390.7 | 10200.00 |
| 19 | 4011.75 | 237.97 | 0.331 | 0.50( 0.47) | 0.95 | 66628.6 | 10300.00 |
| 20 | 3271.72 | 267.06 | 0.315 | 0.50( 0.47) | 0.95 | 67309.2 | 12000.00 |
| 21 | 2211.68 | 339.34 | 0.276 | 0.50( 0.47) | 0.95 | 67980.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:



PEAK FLOW RATE(CFS) = 15120.82 Tc(MIN.) = 28.90
EFFECTIVE AREA(ACRES) = 6430.23 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 67980.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131519.73 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
ALLOWABLE DEPTH).
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.862
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 31.60 | 0.50 | 0.683 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15128.22
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.61
AVERAGE FLOW DEPTH(FEET) = 20.00 TRAVEL TIME(MIN.) = 1.67
Tc(MIN.) = 30.57
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 14.79
EFFECTIVE AREA(ACRES) = 6461.83 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 68011.6 PEAK FLOW RATE(CFS) = 15120.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
ALLOWABLE DEPTH).
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 20.00 FLOW VELOCITY(FEET/SEC.) = 12.60

==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132781.08 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

```
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   30.57
  RAINFALL INTENSITY(INCH/HR) =   0.86
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.82
  EFFECTIVE STREAM AREA(ACRES) =    6461.83
  TOTAL STREAM AREA(ACRES) =   68011.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   15120.82

****************************************************************************
  FLOW PROCESS FROM NODE  13830.00 TO NODE  13831.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        5.06      0.50     1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.06
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =      4.06

****************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       32.57      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.07
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   3.54
  Tc(MIN.) =   17.39
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   20.58
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
```



```
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      23.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   5.77
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.044
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       32.23      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.56
  AVERAGE FLOW DEPTH(FEET) =   1.27   TRAVEL TIME(MIN.) =   4.79
  Tc(MIN.) =   22.18
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   15.77
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =      34.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.31   FLOW VELOCITY(FEET/SEC.) =   6.67
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.974
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       27.51      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.31
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   2.49
  Tc(MIN.) =   24.67
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   11.73
```

```
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =      41.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   6.36
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.885
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.09
  AVERAGE FLOW DEPTH(FEET) =   1.78   TRAVEL TIME(MIN.) =   4.51
  Tc(MIN.) =   29.18
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =   32.60
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =      66.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.87   FLOW VELOCITY(FEET/SEC.) =   6.29
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.77
  AVERAGE FLOW DEPTH(FEET) =   2.40   TRAVEL TIME(MIN.) =   4.90
```



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  Tc(MIN.) =   34.08
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =   66.45
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     121.04

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.58   FLOW VELOCITY(FEET/SEC.) =   6.05
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.50     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.39
  AVERAGE FLOW DEPTH(FEET) =   2.92   TRAVEL TIME(MIN.) =   7.82
  Tc(MIN.) =   41.90
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =   34.58
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     121.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.78   FLOW VELOCITY(FEET/SEC.) =   5.21
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.71
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     121.04
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =   42.75
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.75
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.718
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.97      0.50     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    2.19
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     121.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 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.) =   42.75
  RAINFALL INTENSITY(INCH/HR) =   0.72
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     121.04

  ** CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14743.42   21.94    1.051  0.50( 0.41) 0.82    4118.5   10600.00
      1    14863.73   24.54    0.978  0.50( 0.41) 0.82    4837.2   13810.00
      1    15120.82   30.57    0.862  0.50( 0.41) 0.82    6461.8   10320.00
      1    15109.34   39.82    0.743  0.50( 0.41) 0.82    9718.3     230.00
      1    14444.95   52.59    0.643  0.50( 0.42) 0.84   15042.3     100.00
      1    13880.54   60.97    0.594  0.50( 0.43) 0.86   18372.5   10100.00
      1    13223.36   71.40    0.557  0.50( 0.44) 0.88   22158.2   31100.00
      1    12672.10   80.76    0.525  0.50( 0.44) 0.89   25460.7   13600.00
      1    11758.92   99.48    0.474  0.50( 0.45) 0.90   31931.8   11500.00
      1    11162.60  111.89    0.449  0.50( 0.46) 0.91   36610.7   11000.00
      1    10535.71  126.41    0.425  0.50( 0.46) 0.92   43225.6   13000.00
      1     9431.15  144.73    0.404  0.50( 0.47) 0.93   50725.1   11130.00
      1     8682.60  157.09    0.389  0.50( 0.47) 0.94   54503.8   11620.00
      1     7554.09  174.04    0.369  0.50( 0.47) 0.94   59080.0   12400.00
      1     6668.54  186.38    0.359  0.50( 0.47) 0.94   61397.7   12201.00
      1     6033.24  196.46    0.353  0.50( 0.47) 0.94   62688.3   12111.00
      1     5082.54  213.56    0.344  0.50( 0.47) 0.94   64611.2   12261.00
      1     4599.95  223.71    0.338  0.50( 0.47) 0.94   65422.3   10200.00
      1     4011.75  240.31    0.329  0.50( 0.47) 0.95   66660.2   10300.00
      1     3271.72  269.52    0.314  0.50( 0.47) 0.95   67340.8   12000.00
      1     2211.68  342.05    0.275  0.50( 0.47) 0.95   68011.6   10100.00
```



```
      2     121.04   42.75    0.718  0.50( 0.48) 0.97     565.5   13830.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14864.46   21.94    1.051  0.50( 0.41) 0.83    4408.7   10600.00
      2    14984.77   24.54    0.978  0.50( 0.41) 0.83    5161.9   13810.00
      3    15241.86   30.57    0.862  0.50( 0.41) 0.83    6866.2   10320.00
      4    15230.38   39.82    0.743  0.50( 0.41) 0.83   10245.1     230.00
      5    15078.31   42.75    0.718  0.50( 0.42) 0.83   11502.4   13830.00
      6    14527.01   52.59    0.643  0.50( 0.42) 0.85   15607.8     100.00
      7    13937.16   60.97    0.594  0.50( 0.43) 0.86   18938.0   10100.00
      8    13261.32   71.40    0.557  0.50( 0.44) 0.88   22723.7   31100.00
      9    12693.32   80.76    0.525  0.50( 0.44) 0.89   26026.2   13600.00
     10    11766.89   99.48    0.474  0.50( 0.45) 0.90   32497.3   11500.00
     11    11170.15  111.89    0.449  0.50( 0.46) 0.91   37176.2   11000.00
     12    10542.86  126.41    0.425  0.50( 0.46) 0.92   43791.1   13000.00
     13     9437.93  144.73    0.404  0.50( 0.47) 0.93   51290.6   11130.00
     14     8689.14  157.09    0.389  0.50( 0.47) 0.94   55069.3   11620.00
     15     7560.29  174.04    0.369  0.50( 0.47) 0.94   59645.5   12400.00
     16     6674.57  186.38    0.359  0.50( 0.47) 0.94   61963.2   12201.00
     17     6039.17  196.46    0.353  0.50( 0.47) 0.94   63253.8   12111.00
     18     5088.32  213.56    0.344  0.50( 0.47) 0.94   65176.7   12261.00
     19     4605.64  223.71    0.338  0.50( 0.47) 0.94   65987.8   10200.00
     20     4017.29  240.31    0.329  0.50( 0.47) 0.95   67225.8   10300.00
     21     3276.99  269.52    0.314  0.50( 0.47) 0.95   67906.3   12000.00
     22     2216.30  342.05    0.275  0.50( 0.47) 0.95   68577.1   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   15241.86    Tc(MIN.) =    30.57
  EFFECTIVE AREA(ACRES) =    6866.20   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =    68577.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132781.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.852
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.61      0.50     0.975     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15242.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.41
  AVERAGE FLOW DEPTH(FEET) =  18.78   TRAVEL TIME(MIN.) =   0.76
```

```
  Tc(MIN.) =   31.32
  SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    2.17
  EFFECTIVE AREA(ACRES) =   6872.81     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =    68583.7         PEAK FLOW RATE(CFS) =   15241.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 18.78   FLOW VELOCITY(FEET/SEC.) =  14.41
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133435.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   31.32
  RAINFALL INTENSITY(INCH/HR) =   0.85
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.83
  EFFECTIVE STREAM AREA(ACRES) =    6872.81
  TOTAL STREAM AREA(ACRES) =   68583.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   15241.86

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.50     1.000    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.65
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =      4.65

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



```
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.428
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.42
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   1.33
  Tc(MIN.) =   13.46
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    3.36
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =       7.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   4.59
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.272
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.15
  AVERAGE FLOW DEPTH(FEET) =   0.90   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =   15.52
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =    4.98
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      11.22

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =   4.27
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.56
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   1.62
  Tc(MIN.) =   17.14
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =    4.33
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      14.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   4.65
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.07
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   3.16
  Tc(MIN.) =   20.31
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =    9.74
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      22.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.19   FLOW VELOCITY(FEET/SEC.) =   5.21
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.977
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.50     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.81
  AVERAGE FLOW DEPTH(FEET) =   1.48   TRAVEL TIME(MIN.) =   4.26
  Tc(MIN.) =   24.57
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   18.75
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =      36.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   4.99
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.60
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      36.37
  PIPE TRAVEL TIME(MIN.) =   2.57    Tc(MIN.) =   27.13
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   27.13
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.924
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.50     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   22.29
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =      54.85
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 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.) =   27.13
  RAINFALL INTENSITY(INCH/HR) =   0.92
  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      54.85

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14864.46   22.70    1.029  0.50( 0.41) 0.83    4415.3   10600.00
      1    14984.77   25.30    0.959  0.50( 0.41) 0.83    5168.5   13810.00
      1    15241.86   31.32    0.852  0.50( 0.41) 0.83    6872.8   10320.00
      1    15230.38   40.58    0.736  0.50( 0.41) 0.83   10251.7     230.00
      1    15078.31   43.51    0.712  0.50( 0.42) 0.83   11509.0   13830.00
      1    14527.01   53.36    0.638  0.50( 0.42) 0.85   15614.4     100.00
      1    13937.16   61.74    0.591  0.50( 0.43) 0.86   18944.6   10100.00
      1    13261.32   72.18    0.555  0.50( 0.44) 0.88   22730.3   31100.00
      1    12693.32   81.55    0.522  0.50( 0.44) 0.89   26032.8   13600.00
      1    11766.89  100.29    0.472  0.50( 0.45) 0.90   32503.9   11500.00
      1    11170.15  112.70    0.448  0.50( 0.46) 0.91   37182.8   11000.00
      1    10542.86  127.24    0.424  0.50( 0.46) 0.92   43797.7   13000.00
      1     9437.93  145.59    0.403  0.50( 0.47) 0.93   51297.2   11130.00
      1     8689.14  157.96    0.388  0.50( 0.47) 0.94   55075.9   11620.00
      1     7560.29  174.94    0.368  0.50( 0.47) 0.94   59652.1   12400.00
      1     6674.57  187.31    0.358  0.50( 0.47) 0.94   61969.8   12201.00
      1     6039.17  197.42    0.353  0.50( 0.47) 0.94   63260.4   12111.00
      1     5088.32  214.55    0.343  0.50( 0.47) 0.94   65183.3   12261.00
      1     4605.64  224.73    0.338  0.50( 0.47) 0.94   65994.4   10200.00
      1     4017.29  241.37    0.329  0.50( 0.47) 0.95   67232.4   10300.00
      1     3276.99  270.63    0.313  0.50( 0.47) 0.95   67912.9   12000.00
      1     2216.30  343.28    0.274  0.50( 0.47) 0.95   68583.7   10100.00
      2       54.85   27.13    0.924  0.50( 0.43) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14919.31   22.70    1.029  0.50( 0.41) 0.83    4518.4   10600.00
      2    15039.55   25.30    0.959  0.50( 0.41) 0.83    5283.4   13810.00
      3    15117.69   27.13    0.924  0.50( 0.41) 0.83    5809.3   13850.00
      4    15288.72   31.32    0.852  0.50( 0.41) 0.83    6996.0   10320.00
      5    15264.39   40.58    0.736  0.50( 0.41) 0.83   10374.9     230.00
      6    15109.67   43.51    0.712  0.50( 0.42) 0.83   11632.2   13830.00
      7    14550.14   53.36    0.638  0.50( 0.42) 0.85   15737.7     100.00
```



```
      8    13955.06   61.74    0.591  0.50( 0.43) 0.86   19067.8   10100.00
      9    13275.21   72.18    0.555  0.50( 0.44) 0.88   22853.5   31100.00
     10    12703.60   81.55    0.522  0.50( 0.44) 0.89   26156.0   13600.00
     11    11774.29  100.29    0.472  0.50( 0.45) 0.90   32627.2   11500.00
     12    11177.16  112.70    0.448  0.50( 0.46) 0.91   37306.0   11000.00
     13    10549.51  127.24    0.424  0.50( 0.46) 0.92   43921.0   13000.00
     14     9444.24  145.59    0.403  0.50( 0.47) 0.93   51420.5   11130.00
     15     8695.22  157.96    0.388  0.50( 0.47) 0.94   55199.2   11620.00
     16     7566.06  174.94    0.368  0.50( 0.47) 0.94   59775.3   12400.00
     17     6680.18  187.31    0.358  0.50( 0.47) 0.94   62093.0   12201.00
     18     6044.69  197.42    0.353  0.50( 0.47) 0.94   63383.6   12111.00
     19     5093.70  214.55    0.343  0.50( 0.47) 0.94   65306.5   12261.00
     20     4610.94  224.73    0.338  0.50( 0.47) 0.94   66117.7   10200.00
     21     4022.45  241.37    0.329  0.50( 0.47) 0.95   67355.6   10300.00
     22     3281.90  270.63    0.313  0.50( 0.47) 0.95   68036.1   12000.00
     23     2220.59  343.28    0.274  0.50( 0.47) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   15288.72    Tc(MIN.) =    31.32
  EFFECTIVE AREA(ACRES) =    6996.03   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133435.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15289.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.74
  AVERAGE FLOW DEPTH(FEET) =  14.97   TRAVEL TIME(MIN.) =   0.45
  Tc(MIN.) =   31.77
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    1.52
  EFFECTIVE AREA(ACRES) =   7000.92     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =    68711.8         PEAK FLOW RATE(CFS) =   15288.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 14.97   FLOW VELOCITY(FEET/SEC.) =  22.74
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134046.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   31.77
  RAINFALL INTENSITY(INCH/HR) =   0.85
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.83
  EFFECTIVE STREAM AREA(ACRES) =    7000.92
  TOTAL STREAM AREA(ACRES) =   68711.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   15288.72

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.50     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.04
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =      5.04

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.151
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.49
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   3.07
  Tc(MIN.) =   18.78
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =    7.62
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.50
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      11.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   4.86
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.060   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.037
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.50     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.79
  AVERAGE FLOW DEPTH(FEET) =   1.19   TRAVEL TIME(MIN.) =   3.65
  Tc(MIN.) =   22.43
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   17.08
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.48
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      26.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.32   FLOW VELOCITY(FEET/SEC.) =   5.13
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.941
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.50     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.66
  AVERAGE FLOW DEPTH(FEET) =   1.30   TRAVEL TIME(MIN.) =   3.80
  Tc(MIN.) =   26.23
```

```
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   13.68
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =      36.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.33   FLOW VELOCITY(FEET/SEC.) =   6.78
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.873
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.50     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.74
  AVERAGE FLOW DEPTH(FEET) =   2.45   TRAVEL TIME(MIN.) =   3.54
  Tc(MIN.) =   29.77
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =   27.07
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.47
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =      57.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.60   FLOW VELOCITY(FEET/SEC.) =   2.85
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  21.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.53
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      57.91
  PIPE TRAVEL TIME(MIN.) =   2.29    Tc(MIN.) =   32.05
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   32.05
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.90      0.50     0.743     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
  SUBAREA AREA(ACRES) =   34.90       SUBAREA RUNOFF(CFS) =   14.80
  EFFECTIVE AREA(ACRES) =    192.83   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =      192.8        PEAK FLOW RATE(CFS) =      68.34

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.05
  RAINFALL INTENSITY(INCH/HR) =   0.84
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =     192.83
  TOTAL STREAM AREA(ACRES) =     192.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      68.34

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14919.31   23.15    1.017  0.50( 0.42) 0.83    4523.3   10600.00
      1    15039.55   25.75    0.951  0.50( 0.41) 0.83    5288.3   13810.00
      1    15117.69   27.58    0.915  0.50( 0.41) 0.83    5814.2   13850.00
      1    15288.72   31.77    0.846  0.50( 0.41) 0.83    7000.9   10320.00
      1    15264.39   41.03    0.733  0.50( 0.41) 0.83   10379.8     230.00
      1    15109.67   43.95    0.709  0.50( 0.42) 0.83   11637.1   13830.00
      1    14550.14   53.81    0.635  0.50( 0.42) 0.85   15742.6     100.00
      1    13955.06   62.20    0.589  0.50( 0.43) 0.86   19072.7   10100.00
      1    13275.21   72.65    0.553  0.50( 0.44) 0.88   22858.4   31100.00
      1    12703.60   82.02    0.521  0.50( 0.44) 0.89   26160.9   13600.00
      1    11774.29  100.77    0.471  0.50( 0.45) 0.90   32632.1   11500.00
      1    11177.16  113.19    0.447  0.50( 0.46) 0.91   37310.9   11000.00
      1    10549.51  127.73    0.424  0.50( 0.46) 0.92   43925.8   13000.00
      1     9444.24  146.09    0.402  0.50( 0.47) 0.93   51425.3   11130.00
      1     8695.22  158.47    0.387  0.50( 0.47) 0.94   55204.1   11620.00
      1     7566.06  175.47    0.367  0.50( 0.47) 0.94   59780.2   12400.00
      1     6680.18  187.86    0.358  0.50( 0.47) 0.94   62097.9   12201.00
      1     6044.69  197.98    0.352  0.50( 0.47) 0.94   63388.5   12111.00
      1     5093.70  215.14    0.343  0.50( 0.47) 0.94   65311.4   12261.00
      1     4610.94  225.33    0.338  0.50( 0.47) 0.94   66122.5   10200.00
      1     4022.45  241.99    0.329  0.50( 0.47) 0.95   67360.5   10300.00
      1     3281.90  271.29    0.313  0.50( 0.47) 0.95   68041.0   12000.00
      1     2220.59  344.00    0.274  0.50( 0.47) 0.95   68711.8   10100.00
```

```
    2       68.34   32.05    0.843  0.50( 0.45) 0.90     192.8   13870.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14987.64   23.15    1.017  0.50( 0.42) 0.83    4662.6   10600.00
      2    15107.88   25.75    0.951  0.50( 0.42) 0.83    5443.2   13810.00
      3    15186.02   27.58    0.915  0.50( 0.42) 0.83    5980.1   13850.00
      4    15357.05   31.77    0.846  0.50( 0.42) 0.83    7192.0   10320.00
      5    15356.31   32.05    0.843  0.50( 0.42) 0.83    7297.1   13870.00
      6    15313.61   41.03    0.733  0.50( 0.41) 0.83   10572.7     230.00
      7    15154.72   43.95    0.709  0.50( 0.42) 0.83   11829.9   13830.00
      8    14582.50   53.81    0.635  0.50( 0.42) 0.85   15935.4     100.00
      9    13979.44   62.20    0.589  0.50( 0.43) 0.86   19265.6   10100.00
     10    13293.29   72.65    0.553  0.50( 0.44) 0.88   23051.2   31100.00
     11    12716.05   82.02    0.521  0.50( 0.44) 0.89   26353.7   13600.00
     12    11782.68  100.77    0.471  0.50( 0.45) 0.90   32824.9   11500.00
     13    11185.10  113.19    0.447  0.50( 0.46) 0.91   37503.8   11000.00
     14    10557.05  127.73    0.424  0.50( 0.46) 0.92   44118.7   13000.00
     15     9451.39  146.09    0.402  0.50( 0.47) 0.93   51618.2   11130.00
     16     8702.11  158.47    0.387  0.50( 0.47) 0.94   55396.9   11620.00
     17     7572.59  175.47    0.367  0.50( 0.47) 0.94   59973.0   12400.00
     18     6686.54  187.86    0.358  0.50( 0.47) 0.94   62290.7   12201.00
     19     6050.96  197.98    0.352  0.50( 0.47) 0.94   63581.3   12111.00
     20     5099.80  215.14    0.343  0.50( 0.47) 0.94   65504.2   12261.00
     21     4616.94  225.33    0.338  0.50( 0.47) 0.94   66315.4   10200.00
     22     4028.29  241.99    0.329  0.50( 0.47) 0.95   67553.3   10300.00
     23     3287.46  271.29    0.313  0.50( 0.47) 0.95   68233.9   12000.00
     24     2225.45  344.00    0.274  0.50( 0.47) 0.95   68904.7   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   15357.05    Tc(MIN.) =    31.77
  EFFECTIVE AREA(ACRES) =    7192.05   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =    68904.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134046.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    120.57  DOWNSTREAM(FEET) =    119.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1190.21   CHANNEL SLOPE =  0.0007
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.827
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      117.69      0.50     0.724     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.724
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15381.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.82
  AVERAGE FLOW DEPTH(FEET) =  20.00   TRAVEL TIME(MIN.) =   1.55
  Tc(MIN.) =   33.32
  SUBAREA AREA(ACRES) =   117.69       SUBAREA RUNOFF(CFS) =   49.19
  EFFECTIVE AREA(ACRES) =   7309.74     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =    69022.4          PEAK FLOW RATE(CFS) =   15357.05
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.


  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 20.00   FLOW VELOCITY(FEET/SEC.) =  12.80

  ==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135236.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 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.) =   33.32
  RAINFALL INTENSITY(INCH/HR) =   0.83
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.83
  EFFECTIVE STREAM AREA(ACRES) =    7309.74
  TOTAL STREAM AREA(ACRES) =   69022.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   15357.05

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  2.251
```

```
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                 -        3.03      0.50     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =      4.83
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =      4.83

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  2.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.12      0.50     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.13
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   1.41
  Tc(MIN.) =    8.39
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   11.08
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =      15.24

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.95   FLOW VELOCITY(FEET/SEC.) =   5.64
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.749
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       12.50      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.29
```



```
  AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =    9.91
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   14.05
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      26.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   7.62
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.552
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       15.87      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.59
  AVERAGE FLOW DEPTH(FEET) =   1.23   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   12.06
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   15.02
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      37.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.27   FLOW VELOCITY(FEET/SEC.) =   7.74
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.330
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       28.41      0.50     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.60
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   2.51
  Tc(MIN.) =   14.57
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   21.42
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =      51.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.49   FLOW VELOCITY(FEET/SEC.) =   7.66
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  18.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.75
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      51.05
  PIPE TRAVEL TIME(MIN.) =   2.30    Tc(MIN.) =   16.87
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.87
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.50     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =    9.52
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =      53.96

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   16.87
  RAINFALL INTENSITY(INCH/HR) =   1.22
  AREA-AVERAGED Fm(INCH/HR) =  0.47
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.50
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      53.96

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    14987.64   24.73    0.972  0.50( 0.41) 0.83    4780.3   10600.00
      1    15107.88   27.32    0.920  0.50( 0.41) 0.83    5560.9   13810.00
      1    15186.02   29.14    0.885  0.50( 0.41) 0.83    6097.8   13850.00
      1    15357.05   33.32    0.827  0.50( 0.41) 0.83    7309.7   10320.00
      1    15356.31   33.60    0.823  0.50( 0.41) 0.83    7414.8   13870.00
      1    15313.61   42.58    0.720  0.50( 0.41) 0.83   10690.3     230.00
      1    15154.72   45.52    0.696  0.50( 0.42) 0.83   11947.6   13830.00
      1    14582.50   55.44    0.625  0.50( 0.42) 0.85   16053.1     100.00
      1    13979.44   63.90    0.583  0.50( 0.43) 0.86   19383.2   10100.00
      1    13293.29   74.44    0.547  0.50( 0.44) 0.88   23168.9   31100.00
      1    12716.05   83.89    0.514  0.50( 0.44) 0.89   26471.4   13600.00
      1    11782.68  102.78    0.467  0.50( 0.45) 0.90   32942.6   11500.00
      1    11185.10  115.32    0.442  0.50( 0.46) 0.91   37621.4   11000.00
      1    10557.05  129.98    0.421  0.50( 0.46) 0.92   44236.4   13000.00
      1     9451.39  148.61    0.399  0.50( 0.47) 0.93   51735.9   11130.00
      1     8702.11  161.21    0.384  0.50( 0.47) 0.94   55514.6   11620.00
      1     7572.59  178.62    0.364  0.50( 0.47) 0.94   60090.7   12400.00
      1     6686.54  191.22    0.356  0.50( 0.47) 0.94   62408.4   12201.00
      1     6050.96  201.43    0.350  0.50( 0.47) 0.94   63699.0   12111.00
      1     5099.80  218.75    0.341  0.50( 0.47) 0.94   65621.9   12261.00
      1     4616.94  229.03    0.336  0.50( 0.47) 0.94   66433.1   10200.00
      1     4028.29  245.81    0.327  0.50( 0.47) 0.94   67671.0   10300.00
      1     3287.46  275.31    0.311  0.50( 0.47) 0.95   68351.6   12000.00
      1     2225.45  348.43    0.271  0.50( 0.47) 0.95   69022.4   10100.00
      2       53.96   16.87    1.222  0.50( 0.47) 0.94      79.6   13889.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    14851.04   16.87    1.222  0.50( 0.42) 0.83    3339.6   13889.00
      2    15023.71   24.73    0.972  0.50( 0.42) 0.83    4859.9   10600.00
      3    15140.22   27.32    0.920  0.50( 0.42) 0.83    5640.6   13810.00
      4    15215.85   29.14    0.885  0.50( 0.42) 0.83    6177.4   13850.00
      5    15382.66   33.32    0.827  0.50( 0.42) 0.83    7389.4   10320.00
      6    15381.66   33.60    0.823  0.50( 0.42) 0.83    7494.4   13870.00
      7    15331.58   42.58    0.720  0.50( 0.41) 0.83   10770.0     230.00
      8    15170.96   45.52    0.696  0.50( 0.42) 0.83   12027.2   13830.00
      9    14593.68   55.44    0.625  0.50( 0.42) 0.85   16132.7     100.00
     10    13987.63   63.90    0.583  0.50( 0.43) 0.86   19462.9   10100.00
     11    13298.87   74.44    0.547  0.50( 0.44) 0.88   23248.5   31100.00
     12    12719.27   83.89    0.514  0.50( 0.44) 0.89   26551.1   13600.00
     13    11784.76  102.78    0.467  0.50( 0.45) 0.90   33022.2   11500.00
     14    11187.07  115.32    0.442  0.50( 0.46) 0.91   37701.1   11000.00
     15    10558.92  129.98    0.421  0.50( 0.46) 0.92   44316.0   13000.00
     16     9453.17  148.61    0.399  0.50( 0.47) 0.93   51815.5   11130.00
     17     8703.82  161.21    0.384  0.50( 0.47) 0.94   55594.2   11620.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | 7574.21 | 178.62 | 0.364 | 0.50( 0.47) | 0.94 | 60170.3 | 12400.00 |
| 19 | 6688.13 | 191.22 | 0.356 | 0.50( 0.47) | 0.94 | 62488.0 | 12201.00 |
| 20 | 6052.52 | 201.43 | 0.350 | 0.50( 0.47) | 0.94 | 63778.7 | 12111.00 |
| 21 | 5101.31 | 218.75 | 0.341 | 0.50( 0.47) | 0.94 | 65701.6 | 12261.00 |
| 22 | 4618.43 | 229.03 | 0.336 | 0.50( 0.47) | 0.94 | 66512.7 | 10200.00 |
| 23 | 4029.74 | 245.81 | 0.327 | 0.50( 0.47) | 0.94 | 67750.6 | 10300.00 |
| 24 | 3288.84 | 275.31 | 0.311 | 0.50( 0.47) | 0.95 | 68431.2 | 12000.00 |
| 25 | 2226.66 | 348.43 | 0.271 | 0.50( 0.47) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 15382.66 Tc(MIN.) = 33.32
EFFECTIVE AREA(ACRES) = 7389.36 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135236.48 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 33.32
EFFECTIVE AREA(ACRES) = 7389.36 AREA-AVERAGED Fm(INCH/HR)= 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.830
PEAK FLOW RATE(CFS) = 15382.66

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14851.04 | 16.87 | 1.222 | 0.50( 0.42) | 0.83 | 3339.6 | 13889.00 |
| 2 | 15023.71 | 24.73 | 0.972 | 0.50( 0.42) | 0.83 | 4859.9 | 10600.00 |
| 3 | 15140.22 | 27.32 | 0.920 | 0.50( 0.42) | 0.83 | 5640.6 | 13810.00 |
| 4 | 15215.85 | 29.14 | 0.885 | 0.50( 0.42) | 0.83 | 6177.4 | 13850.00 |
| 5 | 15382.66 | 33.32 | 0.827 | 0.50( 0.42) | 0.83 | 7389.4 | 10320.00 |
| 6 | 15381.66 | 33.60 | 0.823 | 0.50( 0.42) | 0.83 | 7494.4 | 13870.00 |
| 7 | 15331.58 | 42.58 | 0.720 | 0.50( 0.41) | 0.83 | 10770.0 | 230.00 |
| 8 | 15170.96 | 45.52 | 0.696 | 0.50( 0.42) | 0.83 | 12027.2 | 13830.00 |
| 9 | 14593.68 | 55.44 | 0.625 | 0.50( 0.42) | 0.85 | 16132.7 | 100.00 |
| 10 | 13987.63 | 63.90 | 0.583 | 0.50( 0.43) | 0.86 | 19462.9 | 10100.00 |
| 11 | 13298.87 | 74.44 | 0.547 | 0.50( 0.44) | 0.88 | 23248.5 | 31100.00 |
| 12 | 12719.27 | 83.89 | 0.514 | 0.50( 0.44) | 0.89 | 26551.1 | 13600.00 |
| 13 | 11784.76 | 102.78 | 0.467 | 0.50( 0.45) | 0.90 | 33022.2 | 11500.00 |
| 14 | 11187.07 | 115.32 | 0.442 | 0.50( 0.46) | 0.91 | 37701.1 | 11000.00 |
| 15 | 10558.92 | 129.98 | 0.421 | 0.50( 0.46) | 0.92 | 44316.0 | 13000.00 |
| 16 | 9453.17 | 148.61 | 0.399 | 0.50( 0.47) | 0.93 | 51815.5 | 11130.00 |
| 17 | 8703.82 | 161.21 | 0.384 | 0.50( 0.47) | 0.94 | 55594.2 | 11620.00 |
| 18 | 7574.21 | 178.62 | 0.364 | 0.50( 0.47) | 0.94 | 60170.3 | 12400.00 |
| 19 | 6688.13 | 191.22 | 0.356 | 0.50( 0.47) | 0.94 | 62488.0 | 12201.00 |
| 20 | 6052.52 | 201.43 | 0.350 | 0.50( 0.47) | 0.94 | 63778.7 | 12111.00 |
| 21 | 5101.31 | 218.75 | 0.341 | 0.50( 0.47) | 0.94 | 65701.6 | 12261.00 |
| 22 | 4618.43 | 229.03 | 0.336 | 0.50( 0.47) | 0.94 | 66512.7 | 10200.00 |
| 23 | 4029.74 | 245.81 | 0.327 | 0.50( 0.47) | 0.94 | 67750.6 | 10300.00 |
| 24 | 3288.84 | 275.31 | 0.311 | 0.50( 0.47) | 0.95 | 68431.2 | 12000.00 |
| 25 | 2226.66 | 348.43 | 0.271 | 0.50( 0.47) | 0.95 | 69102.0 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

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******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 5-YR EV AUG 2023 ROKAMOTO                                             *
 ************************************************************************

  FILE NAME: RI05EV39.DAT
  TIME/DATE OF STUDY: 14:52 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  2.586
   2)   10.00;  1.731
   3)   15.00;  1.292
   4)   20.00;  1.104
   5)   25.00;  0.965
   6)   30.00;  0.869
   7)   40.00;  0.741
   8)   50.00;  0.658
   9)   60.00;  0.596
  10)   90.00;  0.493
  11)  120.00;  0.433
  12)  180.00;  0.362
  13)  360.00;  0.264
  14) 1200.00;  0.115
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.656
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.50     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.16
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      4.16

******************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.509
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.45
  AVERAGE FLOW DEPTH(FEET) =   0.64   TRAVEL TIME(MIN.) =   1.67
  Tc(MIN.) =   12.53
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =    7.69
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5          PEAK FLOW RATE(CFS) =      11.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   7.09
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

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

```
 FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  20.00
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.392
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       23.85      0.50     0.982     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.40
 AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   1.33
 Tc(MIN.) =   13.86
 SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   19.34
 EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.49
 AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.99
 TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      29.35

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   9.14
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
 FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.74
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.35
 PIPE TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =   14.92
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   14.92
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.299
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       21.29      0.50     0.996     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
```



```
 SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   15.34
 EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =      41.63

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
 FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  17.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.17
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      41.63
 PIPE TRAVEL TIME(MIN.) =   2.69    Tc(MIN.) =   17.61
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   17.61
 *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  1.194
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       43.53      0.50     0.649     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
 SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   34.06
 EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =      70.25

****************************************************************************
 FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: RI05EV38.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1    14851.04   16.87  0.50( 0.42) 0.83    3339.6   13889.00
     2    15382.66   33.32  0.50( 0.42) 0.83    7389.4   10320.00
     3    15331.58   42.58  0.50( 0.41) 0.83   10770.0     230.00
     4    14593.68   55.44  0.50( 0.42) 0.85   16132.7     100.00
```

```
      5    13987.63   63.90  0.50( 0.43) 0.86   19462.9   10100.00
      6    13298.87   74.44  0.50( 0.44) 0.88   23248.5   31100.00
      7    12719.27   83.89  0.50( 0.44) 0.89   26551.1   13600.00
      8    11784.76  102.78  0.50( 0.45) 0.90   33022.2   11500.00
      9    11187.07  115.32  0.50( 0.46) 0.91   37701.1   11000.00
     10    10558.92  129.98  0.50( 0.46) 0.92   44316.0   13000.00
     11     9453.17  148.61  0.50( 0.47) 0.93   51815.5   11130.00
     12     8703.82  161.21  0.50( 0.47) 0.94   55594.2   11620.00
     13     7574.21  178.62  0.50( 0.47) 0.94   60170.3   12400.00
     14     6688.13  191.22  0.50( 0.47) 0.94   62488.0   12201.00
     15     6052.52  201.43  0.50( 0.47) 0.94   63778.7   12111.00
     16     5101.31  218.75  0.50( 0.47) 0.94   65701.6   12261.00
     17     4618.43  229.03  0.50( 0.47) 0.94   66512.7   10200.00
     18     4029.74  245.81  0.50( 0.47) 0.94   67750.6   10300.00
     19     3288.84  275.31  0.50( 0.47) 0.95   68431.2   12000.00
     20     2226.66  348.43  0.50( 0.47) 0.95   69102.0   10100.00
    TOTAL AREA(ACRES) =    69102.0

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14851.04   16.87  0.50( 0.42) 0.83    3339.6   13889.00
      2    15382.66   33.32  0.50( 0.42) 0.83    7389.4   10320.00
      3    15331.58   42.58  0.50( 0.41) 0.83   10770.0     230.00
      4    14593.68   55.44  0.50( 0.42) 0.85   16132.7     100.00
      5    13987.63   63.90  0.50( 0.43) 0.86   19462.9   10100.00
      6    13298.87   74.44  0.50( 0.44) 0.88   23248.5   31100.00
      7    12719.27   83.89  0.50( 0.44) 0.89   26551.1   13600.00
      8    11784.76  102.78  0.50( 0.45) 0.90   33022.2   11500.00
      9    11187.07  115.32  0.50( 0.46) 0.91   37701.1   11000.00
     10    10558.92  129.98  0.50( 0.46) 0.92   44316.0   13000.00
     11     9453.17  148.61  0.50( 0.47) 0.93   51815.5   11130.00
     12     8703.82  161.21  0.50( 0.47) 0.94   55594.2   11620.00
     13     7574.21  178.62  0.50( 0.47) 0.94   60170.3   12400.00
     14     6688.13  191.22  0.50( 0.47) 0.94   62488.0   12201.00
     15     6052.52  201.43  0.50( 0.47) 0.94   63778.7   12111.00
     16     5101.31  218.75  0.50( 0.47) 0.94   65701.6   12261.00
     17     4618.43  229.03  0.50( 0.47) 0.94   66512.7   10200.00
     18     4029.74  245.81  0.50( 0.47) 0.94   67750.6   10300.00
     19     3288.84  275.31  0.50( 0.47) 0.95   68431.2   12000.00
     20     2226.66  348.43  0.50( 0.47) 0.95   69102.0   10100.00
    TOTAL AREA(ACRES) =     69102.0

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13920.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    119.70  DOWNSTREAM(FEET) =    118.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1376.26   CHANNEL SLOPE =  0.0012
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



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  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.804
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       96.09      0.50     0.535     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.535
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15405.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.84
  AVERAGE FLOW DEPTH(FEET) =  20.00   TRAVEL TIME(MIN.) =   1.79
  Tc(MIN.) =   35.11
  SUBAREA AREA(ACRES) =    96.09       SUBAREA RUNOFF(CFS) =   46.36
  EFFECTIVE AREA(ACRES) =   7485.45     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =    69198.1         PEAK FLOW RATE(CFS) =   15382.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.


  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 20.00   FLOW VELOCITY(FEET/SEC.) =  12.82

  ==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136612.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14851.04   18.72    1.152  0.50( 0.41) 0.82    3435.7   13889.00
      2    15382.66   35.11    0.804  0.50( 0.41) 0.83    7485.4   10320.00
      3    15331.58   44.37    0.705  0.50( 0.41) 0.83   10866.1     230.00
      4    14593.68   57.33    0.613  0.50( 0.42) 0.84   16228.8     100.00
      5    13987.63   65.87    0.576  0.50( 0.43) 0.86   19559.0   10100.00
      6    13298.87   76.50    0.539  0.50( 0.44) 0.88   23344.6   31100.00
      7    12719.27   86.05    0.507  0.50( 0.44) 0.89   26647.1   13600.00
      8    11784.76  105.12    0.463  0.50( 0.45) 0.90   33118.3   11500.00
      9    11187.07  117.77    0.437  0.50( 0.46) 0.91   37797.2   11000.00
     10    10558.92  132.59    0.418  0.50( 0.46) 0.92   44412.1   13000.00
```

```
    11     9453.17  151.52    0.396  0.50( 0.47) 0.93   51911.6   11130.00
    12     8703.82  164.20    0.381  0.50( 0.47) 0.94   55690.3   11620.00
    13     7574.21  181.71    0.361  0.50( 0.47) 0.94   60266.4   12400.00
    14     6688.13  194.42    0.354  0.50( 0.47) 0.94   62584.1   12201.00
    15     6052.52  204.71    0.349  0.50( 0.47) 0.94   63874.8   12111.00
    16     5101.31  222.17    0.339  0.50( 0.47) 0.94   65797.6   12261.00
    17     4618.43  232.53    0.333  0.50( 0.47) 0.94   66608.8   10200.00
    18     4029.74  249.44    0.324  0.50( 0.47) 0.94   67846.7   10300.00
    19     3288.84  279.13    0.308  0.50( 0.47) 0.94   68527.3   12000.00
    20     2226.66  352.64    0.268  0.50( 0.47) 0.95   69198.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136612.75 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       70.25   17.61    1.194  0.50( 0.42) 0.84     101.1   13900.00
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14828.36   17.61    1.194  0.50( 0.41) 0.82    3333.6   13900.00
      2    14917.50   18.72    1.152  0.50( 0.41) 0.82    3536.9   13889.00
      3    15417.39   35.11    0.804  0.50( 0.41) 0.83    7586.6   10320.00
      4    15357.30   44.37    0.705  0.50( 0.41) 0.83   10967.2     230.00
      5    14611.02   57.33    0.613  0.50( 0.42) 0.84   16329.9     100.00
      6    14001.62   65.87    0.576  0.50( 0.43) 0.86   19660.1   10100.00
      7    13309.54   76.50    0.539  0.50( 0.44) 0.88   23445.8   31100.00
      8    12726.96   86.05    0.507  0.50( 0.44) 0.89   26748.3   13600.00
      9    11791.33  105.12    0.463  0.50( 0.45) 0.90   33219.4   11500.00
     10    11193.29  117.77    0.437  0.50( 0.46) 0.91   37898.3   11000.00
     11    10564.87  132.59    0.418  0.50( 0.46) 0.92   44513.2   13000.00
     12     9458.79  151.52    0.396  0.50( 0.47) 0.93   52012.7   11130.00
     13     8709.23  164.20    0.381  0.50( 0.47) 0.94   55791.4   11620.00
     14     7579.34  181.71    0.361  0.50( 0.47) 0.94   60367.6   12400.00
     15     6693.16  194.42    0.354  0.50( 0.47) 0.94   62685.3   12201.00
     16     6057.47  204.71    0.349  0.50( 0.47) 0.94   63975.9   12111.00
     17     5106.13  222.17    0.339  0.50( 0.47) 0.94   65898.8   12261.00
     18     4623.17  232.53    0.333  0.50( 0.47) 0.94   66709.9   10200.00
     19     4034.35  249.44    0.324  0.50( 0.47) 0.94   67947.8   10300.00
     20     3293.22  279.13    0.308  0.50( 0.47) 0.94   68628.4   12000.00
     21     2230.47  352.64    0.268  0.50( 0.47) 0.95   69299.2   10100.00
    TOTAL AREA(ACRES) =     69299.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    15417.39  Tc(MIN.) =   35.105
  EFFECTIVE AREA(ACRES) =   7586.59  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    69299.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136612.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.800
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.30      0.50     0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15445.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.91
  AVERAGE FLOW DEPTH(FEET) =  16.96   TRAVEL TIME(MIN.) =   0.31
  Tc(MIN.) =   35.42
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   56.87
  EFFECTIVE AREA(ACRES) =   7720.89     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =   15417.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 16.94   FLOW VELOCITY(FEET/SEC.) =  17.90
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136948.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  20.00
  *   5 YEAR RAINFALL INTENSITY(INCH/HR) =  0.785
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       96.27      0.50     0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   15435.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.04
  AVERAGE FLOW DEPTH(FEET) =  16.02   TRAVEL TIME(MIN.) =   1.16
  Tc(MIN.) =   36.58
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   36.66
  EFFECTIVE AREA(ACRES) =   7817.16     AREA-AVERAGED Fm(INCH/HR) =   0.41
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =   15417.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 16.02   FLOW VELOCITY(FEET/SEC.) =  20.03
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138344.27 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    69529.8  TC(MIN.) =     36.58
  EFFECTIVE AREA(ACRES) =   7817.16  AREA-AVERAGED Fm(INCH/HR)=  0.41
```

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.823
PEAK FLOW RATE(CFS) = 15417.39

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14828.36 | 19.10 | 1.138 | 0.50( 0.41) | 0.82 | 3564.1 | 13900.00 |
| 2 | 14917.50 | 20.20 | 1.098 | 0.50( 0.41) | 0.82 | 3767.4 | 13889.00 |
| 3 | 15417.39 | 36.58 | 0.785 | 0.50( 0.41) | 0.82 | 7817.2 | 10320.00 |
| 4 | 15357.30 | 45.85 | 0.692 | 0.50( 0.41) | 0.82 | 11197.8 | 230.00 |
| 5 | 14611.02 | 58.82 | 0.603 | 0.50( 0.42) | 0.84 | 16560.5 | 100.00 |
| 6 | 14001.62 | 67.38 | 0.571 | 0.50( 0.43) | 0.86 | 19890.7 | 10100.00 |
| 7 | 13309.54 | 78.03 | 0.534 | 0.50( 0.44) | 0.87 | 23676.3 | 31100.00 |
| 8 | 12726.96 | 87.60 | 0.501 | 0.50( 0.44) | 0.88 | 26978.9 | 13600.00 |
| 9 | 11791.33 | 106.69 | 0.460 | 0.50( 0.45) | 0.90 | 33450.0 | 11500.00 |
| 10 | 11193.29 | 119.37 | 0.434 | 0.50( 0.45) | 0.91 | 38128.9 | 11000.00 |
| 11 | 10564.87 | 134.21 | 0.416 | 0.50( 0.46) | 0.92 | 44743.8 | 13000.00 |
| 12 | 9458.79 | 153.18 | 0.394 | 0.50( 0.47) | 0.93 | 52243.3 | 11130.00 |
| 13 | 8709.23 | 165.90 | 0.379 | 0.50( 0.47) | 0.93 | 56022.0 | 11620.00 |
| 14 | 7579.34 | 183.47 | 0.360 | 0.50( 0.47) | 0.94 | 60598.1 | 12400.00 |
| 15 | 6693.16 | 196.24 | 0.353 | 0.50( 0.47) | 0.94 | 62915.8 | 12201.00 |
| 16 | 6057.47 | 206.57 | 0.348 | 0.50( 0.47) | 0.94 | 64206.5 | 12111.00 |
| 17 | 5106.13 | 224.11 | 0.338 | 0.50( 0.47) | 0.94 | 66129.4 | 12261.00 |
| 18 | 4623.17 | 234.52 | 0.332 | 0.50( 0.47) | 0.94 | 66940.5 | 10200.00 |
| 19 | 4034.35 | 251.50 | 0.323 | 0.50( 0.47) | 0.94 | 68178.4 | 10300.00 |
| 20 | 3293.22 | 281.29 | 0.307 | 0.50( 0.47) | 0.94 | 68859.0 | 12000.00 |
| 21 | 2230.47 | 355.03 | 0.267 | 0.50( 0.47) | 0.94 | 69529.8 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
                    5 Hutton Centre Drive, Suite 500
                         Santa Ana, CA 92707


 ************************* DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP                                *
* REGIONAL WATERSHED S19- FREE DRAINING - PHASE CONDITION NO PA5       *
* 10-YR RM EV APRIL 2019 FKAZI                                         *
 ************************************************************************

  FILE NAME: RI10EV19.DAT
  TIME/DATE OF STUDY: 09:34 04/03/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.927
   2)   10.00;  2.601
   3)   15.00;  1.897
   4)   20.00;  1.624
   5)   25.00;  1.415
   6)   30.00;  1.266
   7)   40.00;  1.086
   8)   50.00;  0.968
   9)   60.00;  0.881
  10)   90.00;  0.734
  11)  120.00;  0.652
  12)  180.00;  0.549
  13)  360.00;  0.408
  14) 1200.00;  0.180
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.343
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      4.44
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      4.44

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.467
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.95
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   3.75
  Tc(MIN.) =   10.95
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   16.50
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0         PEAK FLOW RATE(CFS) =      19.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   3.41
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.95   TRAVEL TIME(MIN.) =   3.81
  Tc(MIN.) =   14.76
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   51.49
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      66.34
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   4.59
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.38
  AVERAGE FLOW DEPTH(FEET) =   1.77   TRAVEL TIME(MIN.) =   4.42
```



```
  Tc(MIN.) =   19.18
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   29.40
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =      85.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.82   FLOW VELOCITY(FEET/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.411
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     120.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.39
  AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   5.95
  Tc(MIN.) =   25.13
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =   69.26
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     138.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.81   FLOW VELOCITY(FEET/SEC.) =   5.65
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.44
```

```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.16
  AVERAGE FLOW DEPTH(FEET) =   1.42   TRAVEL TIME(MIN.) =   3.50
  Tc(MIN.) =   28.63
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   57.22
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     183.12
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.49   FLOW VELOCITY(FEET/SEC.) =   9.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.235
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     218.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.46
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   3.09
  Tc(MIN.) =   31.73
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =   71.42
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     241.62
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =  13.93
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.142
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     317.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.84
  AVERAGE FLOW DEPTH(FEET) =   2.07   TRAVEL TIME(MIN.) =   5.18
  Tc(MIN.) =   36.91
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  151.06
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     368.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.25   FLOW VELOCITY(FEET/SEC.) =  11.33
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 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.) =   36.91
  RAINFALL INTENSITY(INCH/HR) =   1.14
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     368.78

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.293
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.21
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      6.21

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.79
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   1.75
  Tc(MIN.) =   13.93
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =    9.11
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      14.55
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.23
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   6.42
  Tc(MIN.) =   20.35
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   63.98
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =      74.88
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   5.71
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.96
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.470
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     109.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.77
  AVERAGE FLOW DEPTH(FEET) =   0.94   TRAVEL TIME(MIN.) =   3.34
  Tc(MIN.) =   23.69
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =   68.57
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     135.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =  10.48
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.374
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     173.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.52
 AVERAGE FLOW DEPTH(FEET) =   1.31   TRAVEL TIME(MIN.) =   2.67
 Tc(MIN.) =   26.37
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =   75.92
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     200.34
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.42

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.42   FLOW VELOCITY(FEET/SEC.) =  11.02
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.267
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     231.03
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.84
 AVERAGE FLOW DEPTH(FEET) =   1.89   TRAVEL TIME(MIN.) =   3.60
 Tc(MIN.) =   29.97
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   61.34
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     241.68
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.94   FLOW VELOCITY(FEET/SEC.) =   8.97
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.93
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.221
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     337.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.78
 AVERAGE FLOW DEPTH(FEET) =   1.91   TRAVEL TIME(MIN.) =   2.54
 Tc(MIN.) =   32.50
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  192.47
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     422.64
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.16

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.16   FLOW VELOCITY(FEET/SEC.) =  13.65
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.77
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     465.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.83
  AVERAGE FLOW DEPTH(FEET) =   2.76   TRAVEL TIME(MIN.) =   3.95
  Tc(MIN.) =   36.45
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =   84.77
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     474.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.80   FLOW VELOCITY(FEET/SEC.) =  10.90
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 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.) =   36.45
  RAINFALL INTENSITY(INCH/HR) =   1.15
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     474.83

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      368.78   36.91    1.142  0.30( 0.30) 0.98     484.1   11900.00
      2      474.83   36.45    1.150  0.30( 0.30) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      842.56   36.45    1.150  0.30( 0.30) 0.99    1098.7   11910.00
      2      838.95   36.91    1.142  0.30( 0.30) 0.99    1104.8   11900.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     842.56    Tc(MIN.) =    36.45
  EFFECTIVE AREA(ACRES) =    1098.72   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.104
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     881.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.29
  AVERAGE FLOW DEPTH(FEET) =   4.83   TRAVEL TIME(MIN.) =   2.54
  Tc(MIN.) =   38.99
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =   77.79
  EFFECTIVE AREA(ACRES) =   1206.19     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =     875.11
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.81   FLOW VELOCITY(FEET/SEC.) =   9.27
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.062
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     993.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.30
  AVERAGE FLOW DEPTH(FEET) =   4.88   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =   42.04
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  236.08
  EFFECTIVE AREA(ACRES) =   1550.46     AREA-AVERAGED Fm(INCH/HR) =   0.30
```

```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1065.30
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.05   FLOW VELOCITY(FEET/SEC.) =  10.48
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1117.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.59
  AVERAGE FLOW DEPTH(FEET) =   5.18   TRAVEL TIME(MIN.) =   4.50
  Tc(MIN.) =   46.55
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  105.37
  EFFECTIVE AREA(ACRES) =   1715.64     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1096.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.13   FLOW VELOCITY(FEET/SEC.) =  10.55
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.973
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1227.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.25
  AVERAGE FLOW DEPTH(FEET) =   5.63   TRAVEL TIME(MIN.) =   3.00
  Tc(MIN.) =   49.54
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  262.88
  EFFECTIVE AREA(ACRES) =   2149.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    1304.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.80   FLOW VELOCITY(FEET/SEC.) =  10.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.933
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1380.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.29
  AVERAGE FLOW DEPTH(FEET) =   6.06   TRAVEL TIME(MIN.) =   4.46
  Tc(MIN.) =   54.01
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  151.26
  EFFECTIVE AREA(ACRES) =   2414.79     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    1378.20
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.06   FLOW VELOCITY(FEET/SEC.) =  10.28
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.900
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1404.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.54
  AVERAGE FLOW DEPTH(FEET) =   6.91   TRAVEL TIME(MIN.) =   3.75
  Tc(MIN.) =   57.76
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   52.68
  EFFECTIVE AREA(ACRES) =   2512.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    1378.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.85

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.85   FLOW VELOCITY(FEET/SEC.) =   8.50
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.874
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1392.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.84
  AVERAGE FLOW DEPTH(FEET) =   6.28   TRAVEL TIME(MIN.) =   3.68
  Tc(MIN.) =   61.44
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   27.81
  EFFECTIVE AREA(ACRES) =   2566.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    1378.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.25   FLOW VELOCITY(FEET/SEC.) =   9.81
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
================================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      539.61   27.74  0.30( 0.30) 1.00     625.8   40130.00
      2      534.97   29.62  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1378.20   61.44    0.874  0.30( 0.30) 1.00    2566.1   11910.00
      2     1372.61   61.93    0.872  0.30( 0.30) 1.00    2572.1   11900.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      539.61   27.74    1.333  0.30( 0.30) 1.00     625.8   40130.00
      2      534.97   29.62    1.277  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1659.11   27.74    1.333  0.30( 0.30) 1.00    1784.4   40130.00
      2     1665.58   29.62    1.277  0.30( 0.30) 1.00    1891.2   40100.00
      3     1692.35   61.44    0.874  0.30( 0.30) 1.00    3220.3   11910.00
      4     1685.45   61.93    0.872  0.30( 0.30) 1.00    3226.4   11900.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1692.35  Tc(MIN.) =   61.439
```

```
  EFFECTIVE AREA(ACRES) =   3220.28  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89
  CHANNEL FLOW THRU SUBAREA(CFS) =    1692.35
  FLOW VELOCITY(FEET/SEC.) =   8.32   FLOW DEPTH(FEET) =   7.89
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   63.42
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    4.27
  EFFECTIVE AREA(ACRES) =   3228.68   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.25
  EFFECTIVE AREA(ACRES) =   3229.18   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.02
  EFFECTIVE AREA(ACRES) =   3231.18   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
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 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.860
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1712.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.79
 AVERAGE FLOW DEPTH(FEET) =   6.38   TRAVEL TIME(MIN.) =   0.92
 Tc(MIN.) =   64.33
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   39.64
 EFFECTIVE AREA(ACRES) =   3309.19     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.34

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  6.34   FLOW VELOCITY(FEET/SEC.) =  11.76
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.33
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.860
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    0.86
 EFFECTIVE AREA(ACRES) =   3310.89   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
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 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.17
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1694.48
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.88
 AVERAGE FLOW DEPTH(FEET) =   8.17   TRAVEL TIME(MIN.) =   2.80
 Tc(MIN.) =   67.13
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    4.26
 EFFECTIVE AREA(ACRES) =   3319.07     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.16

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.16   FLOW VELOCITY(FEET/SEC.) =   7.88
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   67.13
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    1.23
 EFFECTIVE AREA(ACRES) =   3321.57   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
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>>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X10.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 11616.90 | 44.00 | 0.30( 0.30) | 1.00 | 7599.6 | 11801.00 |
| 2 | 12892.03 | 58.27 | 0.30( 0.30) | 1.00 | 10804.1 | 11530.00 |
| 3 | 13438.67 | 64.50 | 0.30( 0.30) | 1.00 | 12758.4 | 11701.00 |
| 4 | 13628.71 | 66.49 | 0.30( 0.30) | 1.00 | 13434.8 | 11000.00 |
| 5 | 15265.02 | 77.21 | 0.30( 0.30) | 1.00 | 18437.6 | 11330.00 |
| 6 | 15528.32 | 79.96 | 0.30( 0.30) | 1.00 | 19719.4 | 10800.00 |
| 7 | 15902.78 | 82.44 | 0.30( 0.30) | 1.00 | 21039.3 | 11300.00 |
| 8 | 16140.10 | 85.75 | 0.30( 0.30) | 1.00 | 22434.4 | 10630.00 |
| 9 | 15918.65 | 96.09 | 0.30( 0.30) | 1.00 | 25763.3 | 11620.00 |
| 10 | 15868.02 | 97.88 | 0.30( 0.30) | 1.00 | 26303.3 | 11600.00 |
| 11 | 15636.46 | 103.56 | 0.30( 0.30) | 1.00 | 27777.9 | 11111.00 |
| 12 | 15531.21 | 106.40 | 0.30( 0.30) | 1.00 | 28370.9 | 10500.00 |
| 13 | 15352.00 | 110.70 | 0.30( 0.30) | 1.00 | 29161.8 | 10710.00 |
| 14 | 15201.33 | 113.32 | 0.30( 0.30) | 1.00 | 29547.2 | 10410.00 |
| 15 | 14857.39 | 118.86 | 0.30( 0.30) | 1.00 | 30260.6 | 10700.00 |
| 16 | 14446.26 | 125.40 | 0.30( 0.30) | 1.00 | 31040.6 | 10400.00 |
| 17 | 14178.55 | 129.18 | 0.30( 0.30) | 1.00 | 31414.4 | 10200.00 |
| 18 | 13775.63 | 136.31 | 0.30( 0.30) | 1.00 | 32035.9 | 10320.00 |
| 19 | 13411.70 | 140.89 | 0.30( 0.30) | 1.00 | 32196.8 | 10210.00 |
| 20 | 11422.66 | 173.20 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

TOTAL AREA(ACRES) = 32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: S25X10.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 4457.80 | 74.17 | 0.30( 0.30) | 0.99 | 6215.9 | 12500.00 |
| 2 | 4830.00 | 89.61 | 0.30( 0.30) | 0.99 | 8185.8 | 12300.00 |
| 3 | 4886.59 | 91.31 | 0.30( 0.30) | 0.99 | 8494.7 | 12330.00 |
| 4 | 4976.75 | 94.56 | 0.30( 0.30) | 0.98 | 9045.8 | 12410.00 |
| 5 | 5066.75 | 99.26 | 0.30( 0.29) | 0.98 | 9767.7 | 12400.00 |
| 6 | 5124.87 | 104.67 | 0.30( 0.29) | 0.98 | 10457.3 | 12211.00 |
| 7 | 5154.35 | 109.58 | 0.30( 0.29) | 0.98 | 11071.5 | 12201.00 |
| 8 | 5066.62 | 114.70 | 0.30( 0.29) | 0.98 | 11560.6 | 12111.00 |
| 9 | 5049.30 | 118.21 | 0.30( 0.29) | 0.98 | 11939.4 | 12231.00 |
| 10 | 5009.12 | 121.09 | 0.30( 0.29) | 0.98 | 12207.1 | 12101.10 |
| 11 | 4983.48 | 122.44 | 0.30( 0.29) | 0.98 | 12317.7 | 12261.00 |
| 12 | 4583.59 | 136.43 | 0.30( 0.29) | 0.98 | 13120.1 | 12010.00 |
| 13 | 4254.50 | 145.50 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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



MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 4457.80 | 74.17 | 0.30( 0.30) | 0.99 | 6215.9 | 12500.00 |
| 2 | 4830.00 | 89.61 | 0.30( 0.30) | 0.99 | 8185.8 | 12300.00 |
| 3 | 4886.59 | 91.31 | 0.30( 0.30) | 0.99 | 8494.7 | 12330.00 |
| 4 | 4976.75 | 94.56 | 0.30( 0.30) | 0.98 | 9045.8 | 12410.00 |
| 5 | 5066.75 | 99.26 | 0.30( 0.29) | 0.98 | 9767.7 | 12400.00 |
| 6 | 5124.87 | 104.67 | 0.30( 0.29) | 0.98 | 10457.3 | 12211.00 |
| 7 | 5154.35 | 109.58 | 0.30( 0.29) | 0.98 | 11071.5 | 12201.00 |
| 8 | 5066.62 | 114.70 | 0.30( 0.29) | 0.98 | 11560.6 | 12111.00 |
| 9 | 5049.30 | 118.21 | 0.30( 0.29) | 0.98 | 11939.4 | 12231.00 |
| 10 | 5009.12 | 121.09 | 0.30( 0.29) | 0.98 | 12207.1 | 12101.10 |
| 11 | 4983.48 | 122.44 | 0.30( 0.29) | 0.98 | 12317.7 | 12261.00 |
| 12 | 4583.59 | 136.43 | 0.30( 0.29) | 0.98 | 13120.1 | 12010.00 |
| 13 | 4254.50 | 145.50 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 4457.80 | 74.17 | 0.812 | 0.30( 0.30) | 0.99 | 6215.9 | 12500.00 |
| 2 | 4830.00 | 89.61 | 0.736 | 0.30( 0.30) | 0.99 | 8185.8 | 12300.00 |
| 3 | 4886.59 | 91.31 | 0.730 | 0.30( 0.30) | 0.99 | 8494.7 | 12330.00 |
| 4 | 4976.75 | 94.56 | 0.722 | 0.30( 0.30) | 0.98 | 9045.8 | 12410.00 |
| 5 | 5066.75 | 99.26 | 0.709 | 0.30( 0.29) | 0.98 | 9767.7 | 12400.00 |
| 6 | 5124.87 | 104.67 | 0.694 | 0.30( 0.29) | 0.98 | 10457.3 | 12211.00 |
| 7 | 5154.35 | 109.58 | 0.680 | 0.30( 0.29) | 0.98 | 11071.5 | 12201.00 |
| 8 | 5066.62 | 114.70 | 0.666 | 0.30( 0.29) | 0.98 | 11560.6 | 12111.00 |
| 9 | 5049.30 | 118.21 | 0.657 | 0.30( 0.29) | 0.98 | 11939.4 | 12231.00 |
| 10 | 5009.12 | 121.09 | 0.650 | 0.30( 0.29) | 0.98 | 12207.1 | 12101.10 |
| 11 | 4983.48 | 122.44 | 0.648 | 0.30( 0.29) | 0.98 | 12317.7 | 12261.00 |
| 12 | 4583.59 | 136.43 | 0.624 | 0.30( 0.29) | 0.98 | 13120.1 | 12010.00 |
| 13 | 4254.50 | 145.50 | 0.608 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11616.90 | 44.00 | 1.039 | 0.30( 0.30) | 1.00 | 7599.6 | 11801.00 |
| 2 | 12892.03 | 58.27 | 0.896 | 0.30( 0.30) | 1.00 | 10804.1 | 11530.00 |
| 3 | 13438.67 | 64.50 | 0.859 | 0.30( 0.30) | 1.00 | 12758.4 | 11701.00 |
| 4 | 13628.71 | 66.49 | 0.849 | 0.30( 0.30) | 1.00 | 13434.8 | 11000.00 |
| 5 | 15265.02 | 77.21 | 0.797 | 0.30( 0.30) | 1.00 | 18437.6 | 11330.00 |
| 6 | 15528.32 | 79.96 | 0.783 | 0.30( 0.30) | 1.00 | 19719.4 | 10800.00 |
| 7 | 15902.78 | 82.44 | 0.771 | 0.30( 0.30) | 1.00 | 21039.3 | 11300.00 |
| 8 | 16140.10 | 85.75 | 0.755 | 0.30( 0.30) | 1.00 | 22434.4 | 10630.00 |
| 9 | 15918.65 | 96.09 | 0.717 | 0.30( 0.30) | 1.00 | 25763.3 | 11620.00 |
| 10 | 15868.02 | 97.88 | 0.712 | 0.30( 0.30) | 1.00 | 26303.3 | 11600.00 |
| 11 | 15636.46 | 103.56 | 0.697 | 0.30( 0.30) | 1.00 | 27777.9 | 11111.00 |
| 12 | 15531.21 | 106.40 | 0.689 | 0.30( 0.30) | 1.00 | 28370.9 | 10500.00 |
| 13 | 15352.00 | 110.70 | 0.677 | 0.30( 0.30) | 1.00 | 29161.8 | 10710.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | 15201.33 | 113.32 | 0.670 | 0.30( 0.30) | 1.00 | 29547.2 | 10410.00 |
| 15 | 14857.39 | 118.86 | 0.655 | 0.30( 0.30) | 1.00 | 30260.6 | 10700.00 |
| 16 | 14446.26 | 125.40 | 0.643 | 0.30( 0.30) | 1.00 | 31040.6 | 10400.00 |
| 17 | 14178.55 | 129.18 | 0.636 | 0.30( 0.30) | 1.00 | 31414.4 | 10200.00 |
| 18 | 13775.63 | 136.31 | 0.624 | 0.30( 0.30) | 1.00 | 32035.9 | 10320.00 |
| 19 | 13411.70 | 140.89 | 0.616 | 0.30( 0.30) | 1.00 | 32196.8 | 10210.00 |
| 20 | 11422.66 | 173.20 | 0.561 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15427.07 | 44.00 | 1.039 | 0.30( 0.30) | 0.99 | 11287.3 | 11801.00 |
| 2 | 16968.09 | 58.27 | 0.896 | 0.30( 0.30) | 0.99 | 15687.3 | 11530.00 |
| 3 | 17671.53 | 64.50 | 0.859 | 0.30( 0.30) | 0.99 | 18163.7 | 11701.00 |
| 4 | 17916.64 | 66.49 | 0.849 | 0.30( 0.30) | 0.99 | 19007.1 | 11000.00 |
| 5 | 19259.36 | 74.17 | 0.812 | 0.30( 0.30) | 0.99 | 23236.5 | 12500.00 |
| 6 | 19795.97 | 77.21 | 0.797 | 0.30( 0.30) | 0.99 | 25040.6 | 11330.00 |
| 7 | 20125.68 | 79.96 | 0.783 | 0.30( 0.30) | 0.99 | 26674.0 | 10800.00 |
| 8 | 20559.80 | 82.44 | 0.771 | 0.30( 0.30) | 0.99 | 28309.7 | 11300.00 |
| 9 | 20877.05 | 85.75 | 0.755 | 0.30( 0.30) | 0.99 | 30127.8 | 10630.00 |
| 10 | 20887.39 | 89.61 | 0.736 | 0.30( 0.30) | 0.99 | 31863.6 | 12300.00 |
| 11 | 20907.71 | 91.31 | 0.730 | 0.30( 0.30) | 0.99 | 32717.7 | 12330.00 |
| 12 | 20928.11 | 94.56 | 0.722 | 0.30( 0.30) | 0.99 | 34317.4 | 12410.00 |
| 13 | 20924.67 | 96.09 | 0.717 | 0.30( 0.30) | 0.99 | 35043.8 | 11620.00 |
| 14 | 20908.49 | 97.88 | 0.712 | 0.30( 0.30) | 0.99 | 35860.1 | 11600.00 |
| 15 | 20878.88 | 99.26 | 0.709 | 0.30( 0.30) | 0.99 | 36427.0 | 12400.00 |
| 16 | 20749.46 | 103.56 | 0.697 | 0.30( 0.30) | 0.99 | 38094.4 | 11111.00 |
| 17 | 20720.29 | 104.67 | 0.694 | 0.30( 0.30) | 0.99 | 38466.4 | 12211.00 |
| 18 | 20666.45 | 106.40 | 0.689 | 0.30( 0.30) | 0.99 | 39044.4 | 10500.00 |
| 19 | 20552.81 | 109.58 | 0.680 | 0.30( 0.30) | 0.99 | 40028.3 | 12201.00 |
| 20 | 20487.24 | 110.70 | 0.677 | 0.30( 0.30) | 0.99 | 40339.9 | 10710.00 |
| 21 | 20291.57 | 113.32 | 0.670 | 0.30( 0.30) | 0.99 | 40976.1 | 10410.00 |
| 22 | 20182.47 | 114.70 | 0.666 | 0.30( 0.30) | 0.99 | 41285.1 | 12111.00 |
| 23 | 19946.92 | 118.21 | 0.657 | 0.30( 0.30) | 0.99 | 42116.5 | 12231.00 |
| 24 | 19897.64 | 118.86 | 0.655 | 0.30( 0.30) | 0.99 | 42260.3 | 10700.00 |
| 25 | 19726.52 | 121.09 | 0.650 | 0.30( 0.30) | 0.99 | 42733.2 | 12101.10 |
| 26 | 19615.75 | 122.44 | 0.648 | 0.30( 0.30) | 0.99 | 43005.4 | 12261.00 |
| 27 | 19345.12 | 125.40 | 0.643 | 0.30( 0.30) | 0.99 | 43528.1 | 10400.00 |
| 28 | 18969.58 | 129.18 | 0.636 | 0.30( 0.30) | 0.99 | 44118.3 | 10200.00 |
| 29 | 18362.79 | 136.31 | 0.624 | 0.30( 0.30) | 0.99 | 45148.8 | 10320.00 |
| 30 | 18349.32 | 136.43 | 0.624 | 0.30( 0.30) | 0.99 | 45160.4 | 12010.00 |
| 31 | 17833.67 | 140.89 | 0.616 | 0.30( 0.30) | 0.99 | 45374.3 | 10210.00 |
| 32 | 17382.11 | 145.50 | 0.608 | 0.30( 0.30) | 0.99 | 45536.7 | 12000.00 |
| 33 | 15034.06 | 173.20 | 0.561 | 0.30( 0.30) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 20928.11 Tc(MIN.) = 94.562
EFFECTIVE AREA(ACRES) = 34317.40 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<



>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.93
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.720
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.30 | 0.987 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20930.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.87
AVERAGE FLOW DEPTH(FEET) = 6.93 TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 95.25
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 5.48
EFFECTIVE AREA(ACRES) = 34331.77 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 20928.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.93 FLOW VELOCITY(FEET/SEC.) = 12.87
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

**********
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15427.07 | 44.77 | 1.030 | 0.30( 0.30) | 0.99 | 11301.7 | 11801.00 |
| 2 | 16968.09 | 59.01 | 0.890 | 0.30( 0.30) | 0.99 | 15701.7 | 11530.00 |
| 3 | 17671.53 | 65.23 | 0.855 | 0.30( 0.30) | 0.99 | 18178.1 | 11701.00 |
| 4 | 17916.64 | 67.22 | 0.846 | 0.30( 0.30) | 0.99 | 19021.5 | 11000.00 |
| 5 | 19259.36 | 74.88 | 0.808 | 0.30( 0.30) | 0.99 | 23250.9 | 12500.00 |
| 6 | 19795.97 | 77.91 | 0.793 | 0.30( 0.30) | 0.99 | 25055.0 | 11330.00 |
| 7 | 20125.68 | 80.66 | 0.780 | 0.30( 0.30) | 0.99 | 26688.3 | 10800.00 |
| 8 | 20559.80 | 83.13 | 0.768 | 0.30( 0.30) | 0.99 | 28324.0 | 11300.00 |
| 9 | 20877.05 | 86.44 | 0.751 | 0.30( 0.30) | 0.99 | 30142.2 | 10630.00 |
| 10 | 20887.39 | 90.30 | 0.733 | 0.30( 0.30) | 0.99 | 31878.0 | 12300.00 |
| 11 | 20907.71 | 92.00 | 0.729 | 0.30( 0.30) | 0.99 | 32732.0 | 12330.00 |
| 12 | 20928.11 | 95.25 | 0.720 | 0.30( 0.30) | 0.99 | 34331.8 | 12410.00 |
| 13 | 20924.67 | 96.78 | 0.715 | 0.30( 0.30) | 0.99 | 35058.2 | 11620.00 |
| 14 | 20908.49 | 98.57 | 0.711 | 0.30( 0.30) | 0.99 | 35874.5 | 11600.00 |
| 15 | 20878.88 | 99.95 | 0.707 | 0.30( 0.30) | 0.99 | 36441.4 | 12400.00 |
| 16 | 20749.46 | 104.26 | 0.695 | 0.30( 0.30) | 0.99 | 38108.8 | 11111.00 |
| 17 | 20720.29 | 105.36 | 0.692 | 0.30( 0.30) | 0.99 | 38480.8 | 12211.00 |
| 18 | 20666.45 | 107.09 | 0.687 | 0.30( 0.30) | 0.99 | 39058.8 | 10500.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | 20552.81 | 110.28 | 0.679 | 0.30( 0.30) | 0.99 | 40042.7 | 12201.00 |
| 20 | 20487.24 | 111.39 | 0.676 | 0.30( 0.30) | 0.99 | 40354.2 | 10710.00 |
| 21 | 20291.57 | 114.02 | 0.668 | 0.30( 0.30) | 0.99 | 40990.5 | 10410.00 |
| 22 | 20182.47 | 115.39 | 0.665 | 0.30( 0.30) | 0.99 | 41299.5 | 12111.00 |
| 23 | 19946.92 | 118.91 | 0.655 | 0.30( 0.30) | 0.99 | 42130.9 | 12231.00 |
| 24 | 19897.64 | 119.56 | 0.653 | 0.30( 0.30) | 0.99 | 42274.7 | 10700.00 |
| 25 | 19726.52 | 121.79 | 0.649 | 0.30( 0.30) | 0.99 | 42747.6 | 12101.10 |
| 26 | 19615.75 | 123.15 | 0.647 | 0.30( 0.30) | 0.99 | 43019.8 | 12261.00 |
| 27 | 19345.12 | 126.11 | 0.642 | 0.30( 0.30) | 0.99 | 43542.5 | 10400.00 |
| 28 | 18969.58 | 129.89 | 0.635 | 0.30( 0.30) | 0.99 | 44132.7 | 10200.00 |
| 29 | 18362.79 | 137.03 | 0.623 | 0.30( 0.30) | 0.99 | 45163.2 | 10320.00 |
| 30 | 18349.32 | 137.15 | 0.623 | 0.30( 0.30) | 0.99 | 45174.8 | 12010.00 |
| 31 | 17833.67 | 141.62 | 0.615 | 0.30( 0.30) | 0.99 | 45388.7 | 10210.00 |
| 32 | 17382.11 | 146.24 | 0.607 | 0.30( 0.30) | 0.99 | 45551.1 | 12000.00 |
| 33 | 15034.06 | 173.97 | 0.559 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1659.11 | 33.46 | 1.204 | 0.30( 0.30) | 1.00 | 1885.7 | 40130.00 |
| 2 | 1665.58 | 35.33 | 1.170 | 0.30( 0.30) | 1.00 | 1992.5 | 40100.00 |
| 3 | 1692.35 | 67.13 | 0.846 | 0.30( 0.30) | 1.00 | 3321.6 | 11910.00 |
| 4 | 1685.45 | 67.62 | 0.844 | 0.30( 0.30) | 1.00 | 3327.6 | 11900.00 |

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15929.33 | 33.46 | 1.204 | 0.30( 0.30) | 0.99 | 10331.7 | 40130.00 |
| 2 | 16173.79 | 35.33 | 1.170 | 0.30( 0.30) | 0.99 | 10911.0 | 40100.00 |
| 3 | 17100.60 | 44.77 | 1.030 | 0.30( 0.30) | 0.99 | 13688.7 | 11801.00 |
| 4 | 18653.61 | 59.01 | 0.890 | 0.30( 0.30) | 0.99 | 18684.0 | 11530.00 |
| 5 | 19362.29 | 65.23 | 0.855 | 0.30( 0.30) | 0.99 | 21420.3 | 11701.00 |
| 6 | 19597.81 | 67.13 | 0.846 | 0.30( 0.30) | 0.99 | 22304.6 | 11910.00 |
| 7 | 19607.73 | 67.22 | 0.846 | 0.30( 0.30) | 0.99 | 22344.2 | 11000.00 |
| 8 | 19672.87 | 67.62 | 0.844 | 0.30( 0.30) | 0.99 | 22572.1 | 11900.00 |
| 9 | 20834.75 | 74.88 | 0.808 | 0.30( 0.30) | 0.99 | 26578.5 | 12500.00 |
| 10 | 21325.43 | 77.91 | 0.793 | 0.30( 0.30) | 0.99 | 28382.6 | 11330.00 |
| 11 | 21613.42 | 80.66 | 0.780 | 0.30( 0.30) | 0.99 | 30016.0 | 10800.00 |
| 12 | 22010.08 | 83.13 | 0.768 | 0.30( 0.30) | 0.99 | 31651.7 | 11300.00 |
| 13 | 22277.11 | 86.44 | 0.751 | 0.30( 0.30) | 0.99 | 33469.8 | 10630.00 |
| 14 | 22230.94 | 90.30 | 0.733 | 0.30( 0.30) | 0.99 | 35205.6 | 12300.00 |
| 15 | 22236.95 | 92.00 | 0.729 | 0.30( 0.30) | 0.99 | 36059.7 | 12330.00 |
| 16 | 22229.80 | 95.25 | 0.720 | 0.30( 0.30) | 0.99 | 37659.4 | 12410.00 |
| 17 | 22213.45 | 96.78 | 0.715 | 0.30( 0.30) | 0.99 | 38385.8 | 11620.00 |
| 18 | 22182.07 | 98.57 | 0.711 | 0.30( 0.30) | 0.99 | 39202.1 | 11600.00 |
| 19 | 22140.86 | 99.95 | 0.707 | 0.30( 0.30) | 0.99 | 39769.0 | 12400.00 |
| 20 | 21974.99 | 104.26 | 0.695 | 0.30( 0.30) | 0.99 | 41436.4 | 11111.00 |
| 21 | 21936.47 | 105.36 | 0.692 | 0.30( 0.30) | 0.99 | 41808.4 | 12211.00 |
| 22 | 21868.00 | 107.09 | 0.687 | 0.30( 0.30) | 0.99 | 42386.4 | 10500.00 |
| 23 | 21727.41 | 110.28 | 0.679 | 0.30( 0.30) | 0.99 | 43370.3 | 12201.00 |
| 24 | 21652.42 | 111.39 | 0.676 | 0.30( 0.30) | 0.99 | 43681.9 | 10710.00 |
| 25 | 21434.54 | 114.02 | 0.668 | 0.30( 0.30) | 0.99 | 44318.1 | 10410.00 |
| 26 | 21313.77 | 115.39 | 0.665 | 0.30( 0.30) | 0.99 | 44627.1 | 12111.00 |
| 27 | 21048.44 | 118.91 | 0.655 | 0.30( 0.30) | 0.99 | 45458.5 | 12231.00 |
| 28 | 20993.68 | 119.56 | 0.653 | 0.30( 0.30) | 0.99 | 45602.3 | 10700.00 |
| 29 | 20809.33 | 121.79 | 0.649 | 0.30( 0.30) | 0.99 | 46075.2 | 12101.10 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 30 | 20691.36 | 123.15 | 0.647 | 0.30( 0.30) | 0.99 | 46347.4 | 12261.00 |
| 31 | 20404.98 | 126.11 | 0.642 | 0.30( 0.30) | 0.99 | 46870.1 | 10400.00 |
| 32 | 20009.38 | 129.89 | 0.635 | 0.30( 0.30) | 0.99 | 47460.3 | 10200.00 |
| 33 | 19364.66 | 137.03 | 0.623 | 0.30( 0.30) | 0.99 | 48490.9 | 10320.00 |
| 34 | 19350.52 | 137.15 | 0.623 | 0.30( 0.30) | 0.99 | 48502.4 | 12010.00 |
| 35 | 18811.18 | 141.62 | 0.615 | 0.30( 0.30) | 0.99 | 48716.3 | 10210.00 |
| 36 | 18335.06 | 146.24 | 0.607 | 0.30( 0.30) | 0.99 | 48878.7 | 12000.00 |
| 37 | 15839.68 | 173.97 | 0.559 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22277.11 Tc(MIN.) = 86.444
EFFECTIVE AREA(ACRES) = 33469.80 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 86.44
EFFECTIVE AREA(ACRES) = 33469.80 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 22277.11

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15929.33 | 33.46 | 1.204 | 0.30( 0.30) | 0.99 | 10331.7 | 40130.00 |
| 2 | 16173.79 | 35.33 | 1.170 | 0.30( 0.30) | 0.99 | 10911.0 | 40100.00 |
| 3 | 17100.60 | 44.77 | 1.030 | 0.30( 0.30) | 0.99 | 13688.7 | 11801.00 |
| 4 | 18653.61 | 59.01 | 0.890 | 0.30( 0.30) | 0.99 | 18684.0 | 11530.00 |
| 5 | 19362.29 | 65.23 | 0.855 | 0.30( 0.30) | 0.99 | 21420.3 | 11701.00 |
| 6 | 19597.81 | 67.13 | 0.846 | 0.30( 0.30) | 0.99 | 22304.6 | 11910.00 |
| 7 | 19607.73 | 67.22 | 0.846 | 0.30( 0.30) | 0.99 | 22344.2 | 11000.00 |
| 8 | 19672.87 | 67.62 | 0.844 | 0.30( 0.30) | 0.99 | 22572.1 | 11900.00 |
| 9 | 20834.75 | 74.88 | 0.808 | 0.30( 0.30) | 0.99 | 26578.5 | 12500.00 |
| 10 | 21325.43 | 77.91 | 0.793 | 0.30( 0.30) | 0.99 | 28382.6 | 11330.00 |
| 11 | 21613.42 | 80.66 | 0.780 | 0.30( 0.30) | 0.99 | 30016.0 | 10800.00 |
| 12 | 22010.08 | 83.13 | 0.768 | 0.30( 0.30) | 0.99 | 31651.7 | 11300.00 |
| 13 | 22277.11 | 86.44 | 0.751 | 0.30( 0.30) | 0.99 | 33469.8 | 10630.00 |
| 14 | 22230.94 | 90.30 | 0.733 | 0.30( 0.30) | 0.99 | 35205.6 | 12300.00 |
| 15 | 22236.95 | 92.00 | 0.729 | 0.30( 0.30) | 0.99 | 36059.7 | 12330.00 |
| 16 | 22229.80 | 95.25 | 0.720 | 0.30( 0.30) | 0.99 | 37659.4 | 12410.00 |
| 17 | 22213.45 | 96.78 | 0.715 | 0.30( 0.30) | 0.99 | 38385.8 | 11620.00 |
| 18 | 22182.07 | 98.57 | 0.711 | 0.30( 0.30) | 0.99 | 39202.1 | 11600.00 |
| 19 | 22140.86 | 99.95 | 0.707 | 0.30( 0.30) | 0.99 | 39769.0 | 12400.00 |
| 20 | 21974.99 | 104.26 | 0.695 | 0.30( 0.30) | 0.99 | 41436.4 | 11111.00 |
| 21 | 21936.47 | 105.36 | 0.692 | 0.30( 0.30) | 0.99 | 41808.4 | 12211.00 |
| 22 | 21868.00 | 107.09 | 0.687 | 0.30( 0.30) | 0.99 | 42386.4 | 10500.00 |
| 23 | 21727.41 | 110.28 | 0.679 | 0.30( 0.30) | 0.99 | 43370.3 | 12201.00 |
| 24 | 21652.42 | 111.39 | 0.676 | 0.30( 0.30) | 0.99 | 43681.9 | 10710.00 |
| 25 | 21434.54 | 114.02 | 0.668 | 0.30( 0.30) | 0.99 | 44318.1 | 10410.00 |
| 26 | 21313.77 | 115.39 | 0.665 | 0.30( 0.30) | 0.99 | 44627.1 | 12111.00 |
| 27 | 21048.44 | 118.91 | 0.655 | 0.30( 0.30) | 0.99 | 45458.5 | 12231.00 |
| 28 | 20993.68 | 119.56 | 0.653 | 0.30( 0.30) | 0.99 | 45602.3 | 10700.00 |
| 29 | 20809.33 | 121.79 | 0.649 | 0.30( 0.30) | 0.99 | 46075.2 | 12101.10 |
| 30 | 20691.36 | 123.15 | 0.647 | 0.30( 0.30) | 0.99 | 46347.4 | 12261.00 |
| 31 | 20404.98 | 126.11 | 0.642 | 0.30( 0.30) | 0.99 | 46870.1 | 10400.00 |
| 32 | 20009.38 | 129.89 | 0.635 | 0.30( 0.30) | 0.99 | 47460.3 | 10200.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 19364.66 | 137.03 | 0.623 | 0.30( 0.30) | 0.99 | 48490.9 | 10320.00 |
| 34 | 19350.52 | 137.15 | 0.623 | 0.30( 0.30) | 0.99 | 48502.4 | 12010.00 |
| 35 | 18811.18 | 141.62 | 0.615 | 0.30( 0.30) | 0.99 | 48716.3 | 10210.00 |
| 36 | 18335.06 | 146.24 | 0.607 | 0.30( 0.30) | 0.99 | 48878.7 | 12000.00 |
| 37 | 15839.68 | 173.97 | 0.559 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 10-YR EV MAY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI10EV26.DAT
  TIME/DATE OF STUDY: 08:11 05/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.912
   2)   10.00;  2.592
   3)   15.00;  1.893
   4)   20.00;  1.621
   5)   25.00;  1.412
   6)   30.00;  1.265
   7)   40.00;  1.084
   8)   50.00;  0.966
   9)   60.00;  0.879
  10)   90.00;  0.732
  11)  120.00;  0.650
  12)  180.00;  0.547
  13)  360.00;  0.406
  14) 1200.00;  0.179
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16173.79   35.33  0.30( 0.30) 0.99   10911.0   40100.00
      2    17100.60   44.77  0.30( 0.30) 0.99   13688.7   11801.00
      3    18653.61   59.01  0.30( 0.30) 0.99   18684.0   11530.00
      4    19672.87   67.62  0.30( 0.30) 0.99   22572.1   11900.00
      5    21325.43   77.91  0.30( 0.30) 0.99   28382.6   11330.00
      6    22010.08   83.13  0.30( 0.30) 0.99   31651.7   11300.00
      7    22277.11   86.44  0.30( 0.30) 0.99   33469.8   10630.00
      8    22236.95   92.00  0.30( 0.30) 0.99   36059.7   12330.00
      9    22229.80   95.25  0.30( 0.30) 0.99   37659.4   12410.00
     10    22182.07   98.57  0.30( 0.30) 0.99   39202.1   11600.00
     11    21974.99  104.26  0.30( 0.30) 0.99   41436.4   11111.00
     12    21727.41  110.28  0.30( 0.30) 0.99   43370.3   12201.00
     13    21434.54  114.02  0.30( 0.30) 0.99   44318.1   10410.00
     14    21048.44  118.91  0.30( 0.30) 0.99   45458.5   12231.00
     15    20404.98  126.11  0.30( 0.30) 0.99   46870.1   10400.00
     16    20009.38  129.89  0.30( 0.30) 0.99   47460.3   10200.00
     17    19364.66  137.03  0.30( 0.30) 0.99   48490.9   10320.00
     18    18811.18  141.62  0.30( 0.30) 0.99   48716.3   10210.00
     19    18335.06  146.24  0.30( 0.30) 0.99   48878.7   12000.00
     20    15839.68  173.97  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16173.79   35.33  0.30( 0.30) 0.99   10911.0   40100.00
      2    17100.60   44.77  0.30( 0.30) 0.99   13688.7   11801.00
      3    18653.61   59.01  0.30( 0.30) 0.99   18684.0   11530.00
      4    19672.87   67.62  0.30( 0.30) 0.99   22572.1   11900.00
      5    21325.43   77.91  0.30( 0.30) 0.99   28382.6   11330.00
      6    22010.08   83.13  0.30( 0.30) 0.99   31651.7   11300.00
      7    22277.11   86.44  0.30( 0.30) 0.99   33469.8   10630.00
      8    22236.95   92.00  0.30( 0.30) 0.99   36059.7   12330.00
      9    22229.80   95.25  0.30( 0.30) 0.99   37659.4   12410.00
     10    22182.07   98.57  0.30( 0.30) 0.99   39202.1   11600.00
     11    21974.99  104.26  0.30( 0.30) 0.99   41436.4   11111.00
     12    21727.41  110.28  0.30( 0.30) 0.99   43370.3   12201.00
     13    21434.54  114.02  0.30( 0.30) 0.99   44318.1   10410.00
```

```
    14    21048.44  118.91  0.30( 0.30) 0.99   45458.5   12231.00
    15    20404.98  126.11  0.30( 0.30) 0.99   46870.1   10400.00
    16    20009.38  129.89  0.30( 0.30) 0.99   47460.3   10200.00
    17    19364.66  137.03  0.30( 0.30) 0.99   48490.9   10320.00
    18    18811.18  141.62  0.30( 0.30) 0.99   48716.3   10210.00
    19    18335.06  146.24  0.30( 0.30) 0.99   48878.7   12000.00
    20    15839.68  173.97  0.30( 0.30) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.742
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22279.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.05
  AVERAGE FLOW DEPTH(FEET) =   6.03   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   87.97
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    5.61
  EFFECTIVE AREA(ACRES) =  33483.91     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   22277.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.03   FLOW VELOCITY(FEET/SEC.) =  16.05
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O10EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       67.76   17.31  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    16173.79   37.03    1.138  0.30( 0.30) 0.99    10925.1   40100.00
      2    17100.60   46.44    1.008  0.30( 0.30) 0.99    13702.8   11801.00
      3    18653.61   60.63    0.876  0.30( 0.30) 0.99    18698.1   11530.00
      4    19672.87   69.21    0.834  0.30( 0.30) 0.99    22586.2   11900.00
      5    21325.43   79.46    0.784  0.30( 0.30) 0.99    28396.7   11330.00
      6    22010.08   84.66    0.758  0.30( 0.30) 0.99    31665.8   11300.00
      7    22277.11   87.97    0.742  0.30( 0.30) 0.99    33483.9   10630.00
      8    22236.95   93.52    0.722  0.30( 0.30) 0.99    36073.8   12330.00
      9    22229.80   96.78    0.713  0.30( 0.30) 0.99    37673.5   12410.00
     10    22182.07  100.10    0.704  0.30( 0.30) 0.99    39216.2   11600.00
     11    21974.99  105.79    0.689  0.30( 0.30) 0.99    41450.6   11111.00
     12    21727.41  111.81    0.672  0.30( 0.30) 0.99    43384.4   12201.00
     13    21434.54  115.56    0.662  0.30( 0.30) 0.99    44332.2   10410.00
     14    21048.44  120.47    0.649  0.30( 0.30) 0.99    45472.6   12231.00
     15    20404.98  127.69    0.637  0.30( 0.30) 0.99    46884.2   10400.00
     16    20009.38  131.47    0.630  0.30( 0.30) 0.99    47474.4   10200.00
     17    19364.66  138.63    0.618  0.30( 0.30) 0.99    48505.0   10320.00
     18    18811.18  143.23    0.610  0.30( 0.30) 0.99    48730.4   10210.00
     19    18335.06  147.87    0.602  0.30( 0.30) 0.99    48892.8   12000.00
     20    15839.68  175.69    0.554  0.30( 0.30) 0.99    49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       67.76   17.31    1.767  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    13297.29   17.31    1.767  0.30( 0.30) 0.99     5159.0     600.00
      2    16212.60   37.03    1.138  0.30( 0.30) 0.99    10976.2   40100.00
      3    17133.45   46.44    1.008  0.30( 0.30) 0.99    13753.9   11801.00
      4    18680.38   60.63    0.876  0.30( 0.30) 0.99    18749.2   11530.00
      5    19697.71   69.21    0.834  0.30( 0.30) 0.99    22637.3   11900.00
      6    21347.96   79.46    0.784  0.30( 0.30) 0.99    28447.8   11330.00
      7    22031.44   84.66    0.758  0.30( 0.30) 0.99    31716.9   11300.00
      8    22297.72   87.97    0.742  0.30( 0.30) 0.99    33535.0   10630.00
      9    22256.66   93.52    0.722  0.30( 0.30) 0.99    36124.9   12330.00
```

```
     10    22249.10   96.78    0.713  0.30( 0.30) 0.99   37724.6   12410.00
     11    22200.96  100.10    0.704  0.30( 0.30) 0.99   39267.3   11600.00
     12    21993.16  105.79    0.689  0.30( 0.30) 0.99   41501.7   11111.00
     13    21744.82  111.81    0.672  0.30( 0.30) 0.99   43435.5   12201.00
     14    21451.48  115.56    0.662  0.30( 0.30) 0.99   44383.3   10410.00
     15    21064.79  120.47    0.649  0.30( 0.30) 0.99   45523.8   12231.00
     16    20420.76  127.69    0.637  0.30( 0.30) 0.99   46935.3   10400.00
     17    20024.86  131.47    0.630  0.30( 0.30) 0.99   47525.5   10200.00
     18    19379.57  138.63    0.618  0.30( 0.30) 0.99   48556.1   10320.00
     19    18825.73  143.23    0.610  0.30( 0.30) 0.99   48781.5   10210.00
     20    18349.25  147.87    0.602  0.30( 0.30) 0.99   48943.9   12000.00
     21    15851.67  175.69    0.554  0.30( 0.30) 0.99   49560.9   10100.00
    TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    22297.72  Tc(MIN.) =   87.968
  EFFECTIVE AREA(ACRES) =  33535.01  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.47
  CHANNEL FLOW THRU SUBAREA(CFS) =   22297.72
  FLOW VELOCITY(FEET/SEC.) =  14.82   FLOW DEPTH(FEET) =   6.47
  TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =   89.87
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4E10EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      346.22    9.57  0.30( 0.16) 0.52     148.8     800.00
      2      304.47   13.17  0.30( 0.17) 0.57     168.1     818.00
      3      283.23   14.36  0.30( 0.17) 0.58     171.0     810.00
    TOTAL AREA(ACRES) =      171.0

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



```
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13297.29   19.59    1.643  0.30( 0.30) 0.99    5159.0     600.00
      2    16212.60   39.16    1.099  0.30( 0.30) 0.99   10976.2   40100.00
      3    17133.45   48.52    0.983  0.30( 0.30) 0.99   13753.9   11801.00
      4    18680.38   62.65    0.866  0.30( 0.30) 0.99   18749.2   11530.00
      5    19697.71   71.20    0.824  0.30( 0.30) 0.99   22637.3   11900.00
      6    21347.96   81.39    0.774  0.30( 0.30) 0.99   28447.8   11330.00
      7    22031.44   86.57    0.749  0.30( 0.30) 0.99   31716.9   11300.00
      8    22297.72   89.87    0.733  0.30( 0.30) 0.99   33535.0   10630.00
      9    22256.66   95.42    0.717  0.30( 0.30) 0.99   36124.9   12330.00
     10    22249.10   98.68    0.708  0.30( 0.30) 0.99   37724.6   12410.00
     11    22200.96  102.01    0.699  0.30( 0.30) 0.99   39267.3   11600.00
     12    21993.16  107.70    0.684  0.30( 0.30) 0.99   41501.7   11111.00
     13    21744.82  113.73    0.667  0.30( 0.30) 0.99   43435.5   12201.00
     14    21451.48  117.49    0.657  0.30( 0.30) 0.99   44383.3   10410.00
     15    21064.79  122.41    0.646  0.30( 0.30) 0.99   45523.8   12231.00
     16    20420.76  129.64    0.633  0.30( 0.30) 0.99   46935.3   10400.00
     17    20024.86  133.45    0.627  0.30( 0.30) 0.99   47525.5   10200.00
     18    19379.57  140.63    0.615  0.30( 0.30) 0.99   48556.1   10320.00
     19    18825.73  145.25    0.607  0.30( 0.30) 0.99   48781.5   10210.00
     20    18349.25  149.90    0.599  0.30( 0.30) 0.99   48943.9   12000.00
     21    15851.67  177.83    0.551  0.30( 0.30) 0.99   49560.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      346.22    9.57    2.705  0.30( 0.16) 0.52     148.8     800.00
      2      304.47   13.17    2.148  0.30( 0.17) 0.57     168.1     818.00
      3      283.23   14.36    1.983  0.30( 0.17) 0.58     171.0     810.00
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11970.58    9.57    2.705  0.30( 0.29) 0.97    2669.7     800.00
      2    12602.99   13.17    2.148  0.30( 0.29) 0.97    3637.3     818.00
      3    12488.28   14.36    1.983  0.30( 0.29) 0.98    3951.7     810.00
      4    13527.34   19.59    1.643  0.30( 0.29) 0.98    5330.0     600.00
      5    16357.47   39.16    1.099  0.30( 0.30) 0.99   11147.2   40100.00
      6    17260.18   48.52    0.983  0.30( 0.30) 0.99   13924.9   11801.00
      7    18788.73   62.65    0.866  0.30( 0.30) 0.99   18920.2   11530.00
      8    19799.50   71.20    0.824  0.30( 0.30) 0.99   22808.3   11900.00
      9    21441.94   81.39    0.774  0.30( 0.30) 0.99   28618.8   11330.00
     10    22121.44   86.57    0.749  0.30( 0.30) 0.99   31887.9   11300.00
     11    22385.19   89.87    0.733  0.30( 0.30) 0.99   33706.0   10630.00
     12    22341.71   95.42    0.717  0.30( 0.30) 0.99   36295.9   12330.00
     13    22332.75   98.68    0.708  0.30( 0.30) 0.99   37895.6   12410.00
     14    22283.19  102.01    0.699  0.30( 0.30) 0.99   39438.3   11600.00
     15    22072.96  107.70    0.684  0.30( 0.30) 0.99   41672.7   11111.00
     16    21822.04  113.73    0.667  0.30( 0.30) 0.99   43606.5   12201.00
```

```
    17    21527.09  117.49    0.657  0.30( 0.30) 0.99   44554.3   10410.00
    18    21138.67  122.41    0.646  0.30( 0.30) 0.99   45694.8   12231.00
    19    20492.69  129.64    0.633  0.30( 0.30) 0.99   47106.3   10400.00
    20    20095.77  133.45    0.627  0.30( 0.30) 0.99   47696.5   10200.00
    21    19448.56  140.63    0.615  0.30( 0.30) 0.99   48727.1   10320.00
    22    18893.47  145.25    0.607  0.30( 0.30) 0.99   48952.5   10210.00
    23    18415.74  149.90    0.599  0.30( 0.30) 0.99   49114.9   12000.00
    24    15910.65  177.83    0.551  0.30( 0.30) 0.99   49731.9   10100.00
   TOTAL AREA(ACRES) =     49731.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    22385.19  Tc(MIN.) =   89.869
  EFFECTIVE AREA(ACRES) =  33706.01  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  PUBLIC PARK                B        1.30      0.30     0.850    56
  COMMERCIAL                 B        1.40      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =    7.56
  EFFECTIVE AREA(ACRES) =  33724.31   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       26.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   10.47
  EFFECTIVE AREA(ACRES) =  33751.21   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.40      0.30     1.000    72
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.70      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    1.31
  EFFECTIVE AREA(ACRES) =  33754.51   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    4.31
  EFFECTIVE AREA(ACRES) =  33765.31   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =  33779.91   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.39
  CHANNEL FLOW THRU SUBAREA(CFS) =   22385.19
  FLOW VELOCITY(FEET/SEC.) =  12.78   FLOW DEPTH(FEET) =   7.39
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   91.02
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
```



```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    3.19
  EFFECTIVE AREA(ACRES) =  33787.71   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    5.19
  EFFECTIVE AREA(ACRES) =  33800.51   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   22385.19
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.51
  CHANNEL FLOW THRU SUBAREA(CFS) =   22385.19
  FLOW VELOCITY(FEET/SEC.) =  14.80   FLOW DEPTH(FEET) =   6.51
  TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =   93.45
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

>>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F10EVRL.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 782.26 | 10.18 | 0.30( 0.24) | 0.78 | 372.7 | 940.00 |
| 2 | 785.21 | 10.40 | 0.30( 0.24) | 0.79 | 379.2 | 930.00 |
| 3 | 773.11 | 13.38 | 0.30( 0.25) | 0.82 | 458.5 | 910.00 |
| 4 | 748.34 | 17.31 | 0.30( 0.25) | 0.85 | 549.5 | 920.00 |
| 5 | 737.08 | 17.93 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 726.64 | 18.32 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

TOTAL AREA(ACRES) = 553.8

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 11970.58 | 14.03 | 2.029 | 0.30( 0.29) | 0.97 | 2764.2 | 800.00 |
| 2 | 12602.99 | 17.55 | 1.754 | 0.30( 0.29) | 0.97 | 3731.8 | 818.00 |
| 3 | 12488.28 | 18.75 | 1.689 | 0.30( 0.29) | 0.98 | 4046.2 | 810.00 |
| 4 | 13527.34 | 23.86 | 1.460 | 0.30( 0.29) | 0.98 | 5424.5 | 600.00 |
| 5 | 16357.47 | 43.15 | 1.047 | 0.30( 0.30) | 0.99 | 11241.7 | 40100.00 |
| 6 | 17260.18 | 52.45 | 0.945 | 0.30( 0.30) | 0.99 | 14019.4 | 11801.00 |
| 7 | 18788.73 | 66.46 | 0.847 | 0.30( 0.30) | 0.99 | 19014.7 | 11530.00 |
| 8 | 19799.50 | 74.94 | 0.806 | 0.30( 0.30) | 0.99 | 22902.8 | 11900.00 |
| 9 | 21441.94 | 85.03 | 0.756 | 0.30( 0.30) | 0.99 | 28713.3 | 11330.00 |
| 10 | 22121.44 | 90.17 | 0.732 | 0.30( 0.30) | 0.99 | 31982.4 | 11300.00 |
| 11 | 22385.19 | 93.45 | 0.723 | 0.30( 0.30) | 0.99 | 33800.5 | 10630.00 |
| 12 | 22341.71 | 99.01 | 0.707 | 0.30( 0.30) | 0.99 | 36390.4 | 12330.00 |
| 13 | 22332.75 | 102.27 | 0.698 | 0.30( 0.30) | 0.99 | 37990.1 | 12410.00 |
| 14 | 22283.19 | 105.60 | 0.689 | 0.30( 0.30) | 0.99 | 39532.8 | 11600.00 |
| 15 | 22072.96 | 111.30 | 0.674 | 0.30( 0.30) | 0.99 | 41767.2 | 11111.00 |
| 16 | 21822.04 | 117.35 | 0.657 | 0.30( 0.30) | 0.99 | 43701.0 | 12201.00 |
| 17 | 21527.09 | 121.12 | 0.648 | 0.30( 0.30) | 0.99 | 44648.8 | 10410.00 |
| 18 | 21138.67 | 126.07 | 0.640 | 0.30( 0.30) | 0.99 | 45789.3 | 12231.00 |
| 19 | 20492.69 | 133.34 | 0.627 | 0.30( 0.30) | 0.99 | 47200.8 | 10400.00 |
| 20 | 20095.77 | 137.17 | 0.621 | 0.30( 0.30) | 0.99 | 47791.0 | 10200.00 |
| 21 | 19448.56 | 144.39 | 0.608 | 0.30( 0.30) | 0.99 | 48821.6 | 10320.00 |
| 22 | 18893.47 | 149.05 | 0.600 | 0.30( 0.30) | 0.99 | 49047.0 | 10210.00 |
| 23 | 18415.74 | 153.74 | 0.592 | 0.30( 0.30) | 0.99 | 49209.4 | 12000.00 |
| 24 | 15910.65 | 181.86 | 0.546 | 0.30( 0.30) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 782.26 | 10.18 | 2.567 | 0.30( 0.24) | 0.78 | 372.7 | 940.00 |
| 2 | 785.21 | 10.40 | 2.536 | 0.30( 0.24) | 0.79 | 379.2 | 930.00 |
| 3 | 773.11 | 13.38 | 2.119 | 0.30( 0.25) | 0.82 | 458.5 | 910.00 |
| 4 | 748.34 | 17.31 | 1.767 | 0.30( 0.25) | 0.85 | 549.5 | 920.00 |
| 5 | 737.08 | 17.93 | 1.734 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 726.64 | 18.32 | 1.713 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |



LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12155.86 | 10.18 | 2.567 | 0.30( 0.28) | 0.94 | 2377.8 | 940.00 |
| 2 | 12248.55 | 10.40 | 2.536 | 0.30( 0.28) | 0.94 | 2428.1 | 930.00 |
| 3 | 12743.69 | 13.38 | 2.119 | 0.30( 0.28) | 0.94 | 3095.4 | 910.00 |
| 4 | 12739.61 | 14.03 | 2.029 | 0.30( 0.28) | 0.95 | 3237.7 | 800.00 |
| 5 | 13307.18 | 17.31 | 1.767 | 0.30( 0.29) | 0.96 | 4213.8 | 920.00 |
| 6 | 13346.87 | 17.55 | 1.754 | 0.30( 0.29) | 0.96 | 4283.0 | 818.00 |
| 7 | 13304.04 | 17.93 | 1.734 | 0.30( 0.29) | 0.96 | 4384.3 | 950.00 |
| 8 | 13256.50 | 18.32 | 1.713 | 0.30( 0.29) | 0.96 | 4486.1 | 900.00 |
| 9 | 13203.18 | 18.75 | 1.689 | 0.30( 0.29) | 0.96 | 4600.0 | 810.00 |
| 10 | 14127.90 | 23.86 | 1.460 | 0.30( 0.29) | 0.97 | 5978.3 | 600.00 |
| 11 | 16752.27 | 43.15 | 1.047 | 0.30( 0.29) | 0.98 | 11795.5 | 40100.00 |
| 12 | 17604.10 | 52.45 | 0.945 | 0.30( 0.29) | 0.98 | 14573.2 | 11801.00 |
| 13 | 19084.11 | 66.46 | 0.847 | 0.30( 0.30) | 0.99 | 19568.5 | 11530.00 |
| 14 | 20074.17 | 74.94 | 0.806 | 0.30( 0.30) | 0.99 | 23456.6 | 11900.00 |
| 15 | 21691.98 | 85.03 | 0.756 | 0.30( 0.30) | 0.99 | 29267.1 | 11330.00 |
| 16 | 22359.10 | 90.17 | 0.732 | 0.30( 0.30) | 0.99 | 32536.2 | 11300.00 |
| 17 | 22618.37 | 93.45 | 0.723 | 0.30( 0.30) | 0.99 | 34354.3 | 10630.00 |
| 18 | 22567.32 | 99.01 | 0.707 | 0.30( 0.30) | 0.99 | 36944.2 | 12330.00 |
| 19 | 22553.93 | 102.27 | 0.698 | 0.30( 0.30) | 0.99 | 38543.9 | 12410.00 |
| 20 | 22499.83 | 105.60 | 0.689 | 0.30( 0.30) | 0.99 | 40086.6 | 11600.00 |
| 21 | 22281.83 | 111.30 | 0.674 | 0.30( 0.30) | 0.99 | 42321.0 | 11111.00 |
| 22 | 22022.67 | 117.35 | 0.657 | 0.30( 0.30) | 0.99 | 44254.8 | 12201.00 |
| 23 | 21723.15 | 121.12 | 0.648 | 0.30( 0.30) | 0.99 | 45202.6 | 10410.00 |
| 24 | 21330.50 | 126.07 | 0.640 | 0.30( 0.30) | 0.99 | 46343.1 | 12231.00 |
| 25 | 20678.30 | 133.34 | 0.627 | 0.30( 0.30) | 0.99 | 47754.6 | 10400.00 |
| 26 | 20278.10 | 137.17 | 0.621 | 0.30( 0.30) | 0.99 | 48344.8 | 10200.00 |
| 27 | 19624.71 | 144.39 | 0.608 | 0.30( 0.30) | 0.99 | 49375.4 | 10320.00 |
| 28 | 19065.64 | 149.05 | 0.600 | 0.30( 0.30) | 0.99 | 49600.8 | 10210.00 |
| 29 | 18583.90 | 153.74 | 0.592 | 0.30( 0.30) | 0.99 | 49763.2 | 12000.00 |
| 30 | 16055.61 | 181.86 | 0.546 | 0.30( 0.30) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22618.37 Tc(MIN.) = 93.454
EFFECTIVE AREA(ACRES) = 34354.31 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 93.45
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.723
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER "CHAPARRAL,BROADLEAF" | B | 0.30 | 0.30 | 1.000 | 63 |
| NATURAL FAIR COVER "GRASS" | B | 0.30 | 0.30 | 1.000 | 69 |

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  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.60      0.30     1.000    72
  COMMERCIAL                 B        1.10      0.30     0.100    56
  PUBLIC PARK                B        0.80      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.666
  SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =    1.65
  EFFECTIVE AREA(ACRES) =  34357.81   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50383.7       PEAK FLOW RATE(CFS) =   22618.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   93.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.723
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.50      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.80      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    3.23
  EFFECTIVE AREA(ACRES) =  34366.31   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50392.2       PEAK FLOW RATE(CFS) =   22618.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   93.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.723
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.30      0.30     1.000    66
  PUBLIC PARK                B        3.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        3.90      0.30     1.000    72
```



```
  PUBLIC PARK                B        5.90      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.969
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =   18.07
  EFFECTIVE AREA(ACRES) =  34412.81   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50438.7       PEAK FLOW RATE(CFS) =   22618.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    50438.7  TC(MIN.) =     93.45
  EFFECTIVE AREA(ACRES) =  34412.81  AREA-AVERAGED Fm(INCH/HR)=  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.990
  PEAK FLOW RATE(CFS)   =   22618.37

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    12155.86   10.18    2.567  0.30( 0.28) 0.94    2436.3     940.00
      2    12248.55   10.40    2.536  0.30( 0.28) 0.94    2486.6     930.00
      3    12743.69   13.38    2.119  0.30( 0.28) 0.94    3153.9     910.00
      4    12739.61   14.03    2.029  0.30( 0.28) 0.95    3296.2     800.00
      5    13307.18   17.31    1.767  0.30( 0.29) 0.96    4272.3     920.00
      6    13346.87   17.55    1.754  0.30( 0.29) 0.96    4341.5     818.00
      7    13304.04   17.93    1.734  0.30( 0.29) 0.96    4442.8     950.00
      8    13256.50   18.32    1.713  0.30( 0.29) 0.96    4544.6     900.00
      9    13203.18   18.75    1.689  0.30( 0.29) 0.96    4658.5     810.00
     10    14127.90   23.86    1.460  0.30( 0.29) 0.97    6036.8     600.00
     11    16752.27   43.15    1.047  0.30( 0.29) 0.98   11854.0   40100.00
     12    17604.10   52.45    0.945  0.30( 0.29) 0.98   14631.7   11801.00
     13    19084.11   66.46    0.847  0.30( 0.30) 0.99   19627.0   11530.00
     14    20074.17   74.94    0.806  0.30( 0.30) 0.99   23515.1   11900.00
     15    21691.98   85.03    0.756  0.30( 0.30) 0.99   29325.6   11330.00
     16    22359.10   90.17    0.732  0.30( 0.30) 0.99   32594.7   11300.00
     17    22618.37   93.45    0.723  0.30( 0.30) 0.99   34412.8   10630.00
     18    22567.32   99.01    0.707  0.30( 0.30) 0.99   37002.7   12330.00
     19    22553.93  102.27    0.698  0.30( 0.30) 0.99   38602.4   12410.00
     20    22499.83  105.60    0.689  0.30( 0.30) 0.99   40145.1   11600.00
     21    22281.83  111.30    0.674  0.30( 0.30) 0.99   42379.5   11111.00
     22    22022.67  117.35    0.657  0.30( 0.30) 0.99   44313.3   12201.00
     23    21723.15  121.12    0.648  0.30( 0.30) 0.99   45261.1   10410.00
     24    21330.50  126.07    0.640  0.30( 0.30) 0.99   46401.6   12231.00
     25    20678.30  133.34    0.627  0.30( 0.30) 0.99   47813.1   10400.00
     26    20278.10  137.17    0.621  0.30( 0.30) 0.99   48403.3   10200.00
     27    19624.71  144.39    0.608  0.30( 0.30) 0.99   49433.9   10320.00
     28    19065.64  149.05    0.600  0.30( 0.30) 0.99   49659.3   10210.00
     29    18583.90  153.74    0.592  0.30( 0.30) 0.99   49821.7   12000.00
     30    16055.61  181.86    0.546  0.30( 0.30) 0.99   50438.7   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 10-YR EV MAY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI10EV27.DAT
  TIME/DATE OF STUDY: 08:12 05/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.867
   2)   10.00;  2.568
   3)   15.00;  1.883
   4)   20.00;  1.612
   5)   25.00;  1.405
   6)   30.00;  1.260
   7)   40.00;  1.079
   8)   50.00;  0.961
   9)   60.00;  0.873
  10)   90.00;  0.726
  11)  120.00;  0.643
  12)  180.00;  0.540
  13)  360.00;  0.400
  14) 1200.00;  0.176
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12742.83   13.38  0.30( 0.28) 0.94    3153.5     910.00
      2    13345.75   17.55  0.30( 0.29) 0.96    4341.1     818.00
      3    14126.73   23.86  0.30( 0.29) 0.97    6036.3     600.00
      4    16752.28   43.15  0.30( 0.29) 0.98   11854.0   40100.00
      5    17604.12   52.45  0.30( 0.29) 0.98   14631.7   11801.00
      6    19084.12   66.46  0.30( 0.30) 0.99   19627.0   11530.00
      7    20074.18   74.94  0.30( 0.30) 0.99   23515.1   11900.00
      8    21691.99   85.03  0.30( 0.30) 0.99   29325.7   11330.00
      9    22618.38   93.45  0.30( 0.30) 0.99   34412.8   10630.00
     10    22567.33   99.01  0.30( 0.30) 0.99   37002.7   12330.00
     11    22499.84  105.60  0.30( 0.30) 0.99   40145.1   11600.00
     12    22281.84  111.30  0.30( 0.30) 0.99   42379.5   11111.00
     13    22022.68  117.35  0.30( 0.30) 0.99   44313.3   12201.00
     14    21330.51  126.07  0.30( 0.30) 0.99   46401.6   12231.00
     15    20678.31  133.34  0.30( 0.30) 0.99   47813.1   10400.00
     16    20278.11  137.17  0.30( 0.30) 0.99   48403.3   10200.00
     17    19624.71  144.39  0.30( 0.30) 0.99   49433.9   10320.00
     18    19065.64  149.05  0.30( 0.30) 0.99   49659.4   10210.00
     19    18583.90  153.74  0.30( 0.30) 0.99   49821.7   12000.00
     20    16055.62  181.86  0.30( 0.30) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =    50438.7

************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12742.83   13.38  0.30( 0.28) 0.94    3153.5     910.00
      2    13345.75   17.55  0.30( 0.29) 0.96    4341.1     818.00
      3    14126.73   23.86  0.30( 0.29) 0.97    6036.3     600.00
      4    16752.28   43.15  0.30( 0.29) 0.98   11854.0   40100.00
      5    17604.12   52.45  0.30( 0.29) 0.98   14631.7   11801.00
      6    19084.12   66.46  0.30( 0.30) 0.99   19627.0   11530.00
      7    20074.18   74.94  0.30( 0.30) 0.99   23515.1   11900.00
      8    21691.99   85.03  0.30( 0.30) 0.99   29325.7   11330.00
      9    22618.38   93.45  0.30( 0.30) 0.99   34412.8   10630.00
     10    22567.33   99.01  0.30( 0.30) 0.99   37002.7   12330.00
     11    22499.84  105.60  0.30( 0.30) 0.99   40145.1   11600.00
     12    22281.84  111.30  0.30( 0.30) 0.99   42379.5   11111.00
     13    22022.68  117.35  0.30( 0.30) 0.99   44313.3   12201.00
```

```
     14    21330.51  126.07  0.30( 0.30) 0.99   46401.6   12231.00
     15    20678.31  133.34  0.30( 0.30) 0.99   47813.1   10400.00
     16    20278.11  137.17  0.30( 0.30) 0.99   48403.3   10200.00
     17    19624.71  144.39  0.30( 0.30) 0.99   49433.9   10320.00
     18    19065.64  149.05  0.30( 0.30) 0.99   49659.4   10210.00
     19    18583.90  153.74  0.30( 0.30) 0.99   49821.7   12000.00
     20    16055.62  181.86  0.30( 0.30) 0.99   50438.7   10100.00
    TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.75
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.712
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22625.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.35
  AVERAGE FLOW DEPTH(FEET) =   6.75   TRAVEL TIME(MIN.) =   1.46
  Tc(MIN.) =   94.92
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   14.76
  EFFECTIVE AREA(ACRES) =  34448.92     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =   22618.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.74   FLOW VELOCITY(FEET/SEC.) =  14.36
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.06
  CHANNEL FLOW THRU SUBAREA(CFS) =   22618.38
  FLOW VELOCITY(FEET/SEC.) =  13.62   FLOW DEPTH(FEET) =   7.06
  TRAVEL TIME(MIN.) =   0.18   Tc(MIN.) =   95.10
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   95.10
  RAINFALL INTENSITY(INCH/HR) =   0.71
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34448.92
  TOTAL STREAM AREA(ACRES) =   50474.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22618.38

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.032
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.23
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     10.23

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.58
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.795
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       26.94      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.41
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.70
 AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   2.71
 Tc(MIN.) =   16.62
 SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   36.25
 EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      45.07
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.71

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   5.52
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.75
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.649
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.73      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.02
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.33
 AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   2.70
 Tc(MIN.) =   19.32
 SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   17.88
 EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      58.54
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.78

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.78   FLOW VELOCITY(FEET/SEC.) =   6.54
```



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 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.534
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      105.64      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.46
 AVERAGE FLOW DEPTH(FEET) =   1.26   TRAVEL TIME(MIN.) =   2.57
 Tc(MIN.) =   21.89
 SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  117.30
 EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     170.86
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.55

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.55   FLOW VELOCITY(FEET/SEC.) =   8.40
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.06
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.424
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.13      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     235.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.26
```

AVERAGE FLOW DEPTH(FEET) = 2.03 TRAVEL TIME(MIN.) = 2.65
Tc(MIN.) = 24.54
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 128.60
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 284.24
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.25 FLOW VELOCITY(FEET/SEC.) = 8.72
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 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.) = 24.54
RAINFALL INTENSITY(INCH/HR) = 1.42
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 281.00
TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 284.24

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12742.83 | 15.39 | 1.862 | 0.30( 0.28) | 0.94 | 3189.6 | 910.00 |
| 1 | 13345.75 | 19.53 | 1.638 | 0.30( 0.29) | 0.96 | 4377.2 | 818.00 |
| 1 | 14126.73 | 25.79 | 1.382 | 0.30( 0.29) | 0.97 | 6072.4 | 600.00 |
| 1 | 16752.28 | 44.98 | 1.020 | 0.30( 0.29) | 0.98 | 11890.1 | 40100.00 |
| 1 | 17604.12 | 54.24 | 0.924 | 0.30( 0.29) | 0.98 | 14667.8 | 11801.00 |
| 1 | 19084.12 | 68.21 | 0.833 | 0.30( 0.30) | 0.98 | 19663.1 | 11530.00 |
| 1 | 20074.18 | 76.65 | 0.791 | 0.30( 0.30) | 0.99 | 23551.2 | 11900.00 |
| 1 | 21691.99 | 86.69 | 0.742 | 0.30( 0.30) | 0.99 | 29361.8 | 11330.00 |
| 1 | 22618.38 | 95.10 | 0.712 | 0.30( 0.30) | 0.99 | 34448.9 | 10630.00 |
| 1 | 22567.33 | 100.66 | 0.697 | 0.30( 0.30) | 0.99 | 37038.8 | 12330.00 |
| 1 | 22499.84 | 107.24 | 0.678 | 0.30( 0.30) | 0.99 | 40181.2 | 11600.00 |
| 1 | 22281.84 | 112.96 | 0.662 | 0.30( 0.30) | 0.99 | 42415.6 | 11111.00 |
| 1 | 22022.68 | 119.01 | 0.646 | 0.30( 0.30) | 0.99 | 44349.4 | 12201.00 |
| 1 | 21330.51 | 127.74 | 0.630 | 0.30( 0.30) | 0.99 | 46437.7 | 12231.00 |
| 1 | 20678.31 | 135.04 | 0.617 | 0.30( 0.30) | 0.99 | 47849.2 | 10400.00 |
| 1 | 20278.11 | 138.87 | 0.611 | 0.30( 0.30) | 0.99 | 48439.4 | 10200.00 |
| 1 | 19624.71 | 146.12 | 0.598 | 0.30( 0.30) | 0.99 | 49470.0 | 10320.00 |
| 1 | 19065.64 | 150.79 | 0.590 | 0.30( 0.30) | 0.99 | 49695.5 | 10210.00 |
| 1 | 18583.90 | 155.49 | 0.582 | 0.30( 0.30) | 0.99 | 49857.8 | 12000.00 |
| 1 | 16055.62 | 183.71 | 0.537 | 0.30( 0.30) | 0.99 | 50474.8 | 10100.00 |
| 2 | 284.24 | 24.54 | 1.424 | 0.30( 0.30) | 1.00 | 281.0 | 12710.00 |

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



** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12990.52 | 15.39 | 1.862 | 0.30( 0.28) | 0.95 | 3365.8 | 910.00 |
| 2 | 13614.90 | 19.53 | 1.638 | 0.30( 0.29) | 0.96 | 4600.8 | 818.00 |
| 3 | 14255.05 | 24.54 | 1.424 | 0.30( 0.29) | 0.97 | 6015.0 | 12710.00 |
| 4 | 14400.36 | 25.79 | 1.382 | 0.30( 0.29) | 0.97 | 6353.4 | 600.00 |
| 5 | 16934.44 | 44.98 | 1.020 | 0.30( 0.29) | 0.98 | 12171.1 | 40100.00 |
| 6 | 17761.85 | 54.24 | 0.924 | 0.30( 0.29) | 0.98 | 14948.8 | 11801.00 |
| 7 | 19218.86 | 68.21 | 0.833 | 0.30( 0.30) | 0.99 | 19944.1 | 11530.00 |
| 8 | 20198.46 | 76.65 | 0.791 | 0.30( 0.30) | 0.99 | 23832.2 | 11900.00 |
| 9 | 21803.82 | 86.69 | 0.742 | 0.30( 0.30) | 0.99 | 29642.8 | 11330.00 |
| 10 | 22722.55 | 95.10 | 0.712 | 0.30( 0.30) | 0.99 | 34729.9 | 10630.00 |
| 11 | 22667.61 | 100.66 | 0.697 | 0.30( 0.30) | 0.99 | 37319.8 | 12330.00 |
| 12 | 22595.51 | 107.24 | 0.678 | 0.30( 0.30) | 0.99 | 40462.2 | 11600.00 |
| 13 | 22373.51 | 112.96 | 0.662 | 0.30( 0.30) | 0.99 | 42696.6 | 11111.00 |
| 14 | 22110.12 | 119.01 | 0.646 | 0.30( 0.30) | 0.99 | 44630.4 | 12201.00 |
| 15 | 21413.89 | 127.74 | 0.630 | 0.30( 0.30) | 0.99 | 46718.7 | 12231.00 |
| 16 | 20758.53 | 135.04 | 0.617 | 0.30( 0.30) | 0.99 | 48130.2 | 10400.00 |
| 17 | 20356.66 | 138.87 | 0.611 | 0.30( 0.30) | 0.99 | 48720.4 | 10200.00 |
| 18 | 19700.12 | 146.12 | 0.598 | 0.30( 0.30) | 0.99 | 49751.0 | 10320.00 |
| 19 | 19139.02 | 150.79 | 0.590 | 0.30( 0.30) | 0.99 | 49976.5 | 10210.00 |
| 20 | 18655.24 | 155.49 | 0.582 | 0.30( 0.30) | 0.99 | 50138.8 | 12000.00 |
| 21 | 16115.58 | 183.71 | 0.537 | 0.30( 0.30) | 0.99 | 50755.8 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22722.55 Tc(MIN.) = 95.10
EFFECTIVE AREA(ACRES) = 34729.92 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.21
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.703
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER "OPEN BRUSH" | B | 0.20 | 0.30 | 1.000 | 66 |
| NATURAL FAIR COVER "WOODLAND,GRASS" | B | 0.30 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.30 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |

```
  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22722.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.36
  AVERAGE FLOW DEPTH(FEET) =   7.21   TRAVEL TIME(MIN.) =   3.33
  Tc(MIN.) =   98.43
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    0.69
  EFFECTIVE AREA(ACRES) =  34731.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50757.5         PEAK FLOW RATE(CFS) =   22722.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.21   FLOW VELOCITY(FEET/SEC.) =  13.36
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.703
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK               B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.50      0.30     1.000    66
  COMMERCIAL                B        1.40      0.30     0.100    56
  COMMERCIAL                B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                   B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =    6.61
  EFFECTIVE AREA(ACRES) =  34747.32   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =   22722.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.703
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"          B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"    B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   22.51
  EFFECTIVE AREA(ACRES) =  34809.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =   22722.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3C10EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)     NODE
      1     1545.06   13.20  0.30( 0.13) 0.42     857.0     410.00
      2     1519.93   14.67  0.30( 0.13) 0.42     937.2     420.00
      3     1601.87   18.83  0.30( 0.13) 0.42    1148.8     310.00
      4     1602.72   19.53  0.30( 0.13) 0.42    1176.5     400.00
      5     1568.53   22.04  0.30( 0.13) 0.42    1243.9     430.00
      6     1559.38   22.72  0.30( 0.13) 0.42    1261.5     300.00
      7     1555.67   22.91  0.30( 0.13) 0.42    1265.9     320.00
      8     1330.34   29.55  0.30( 0.13) 0.43    1292.3     390.00
    TOTAL AREA(ACRES) =     1292.3

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
      1    12990.52   19.43    1.643  0.30( 0.28) 0.95    3445.3     910.00
      2    13614.90   23.50    1.467  0.30( 0.29) 0.96    4680.3     818.00
      3    14255.05   28.45    1.305  0.30( 0.29) 0.97    6094.5   12710.00
      4    14400.36   29.69    1.269  0.30( 0.29) 0.97    6432.9     600.00
      5    16934.44   48.65    0.977  0.30( 0.29) 0.98   12250.6   40100.00
      6    17761.85   57.86    0.892  0.30( 0.29) 0.98   15028.3   11801.00
      7    19218.86   71.73    0.816  0.30( 0.30) 0.99   20023.6   11530.00
      8    20198.46   80.12    0.774  0.30( 0.30) 0.99   23911.7   11900.00
      9    21803.82   90.07    0.726  0.30( 0.30) 0.99   29722.3   11330.00
     10    22722.55   98.43    0.703  0.30( 0.30) 0.99   34809.4   10630.00
     11    22667.61  103.99    0.687  0.30( 0.30) 0.99   37399.3   12330.00
     12    22595.51  110.58    0.669  0.30( 0.30) 0.99   40541.7   11600.00
     13    22373.51  116.30    0.653  0.30( 0.30) 0.99   42776.1   11111.00
     14    22110.12  122.37    0.639  0.30( 0.30) 0.99   44709.9   12201.00
     15    21413.89  131.14    0.624  0.30( 0.30) 0.99   46798.2   12231.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | 20758.53 | 138.47 | 0.611 | 0.30( 0.30) | 0.99 | 48209.7 | 10400.00 |
| 17 | 20356.66 | 142.33 | 0.605 | 0.30( 0.30) | 0.99 | 48799.9 | 10200.00 |
| 18 | 19700.12 | 149.61 | 0.592 | 0.30( 0.30) | 0.99 | 49830.5 | 10320.00 |
| 19 | 19139.02 | 154.32 | 0.584 | 0.30( 0.30) | 0.99 | 50056.0 | 10210.00 |
| 20 | 18655.24 | 159.05 | 0.576 | 0.30( 0.30) | 0.99 | 50218.3 | 12000.00 |
| 21 | 16115.58 | 187.45 | 0.534 | 0.30( 0.30) | 0.99 | 50835.3 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1545.06 | 13.20 | 2.129 | 0.30( 0.13) | 0.42 | 857.0 | 410.00 |
| 2 | 1519.93 | 14.67 | 1.928 | 0.30( 0.13) | 0.42 | 937.2 | 420.00 |
| 3 | 1601.87 | 18.83 | 1.675 | 0.30( 0.13) | 0.42 | 1148.8 | 310.00 |
| 4 | 1602.72 | 19.53 | 1.638 | 0.30( 0.13) | 0.42 | 1176.5 | 400.00 |
| 5 | 1568.53 | 22.04 | 1.528 | 0.30( 0.13) | 0.42 | 1243.9 | 430.00 |
| 6 | 1559.38 | 22.72 | 1.500 | 0.30( 0.13) | 0.42 | 1261.5 | 300.00 |
| 7 | 1555.67 | 22.91 | 1.492 | 0.30( 0.13) | 0.42 | 1265.9 | 320.00 |
| 8 | 1330.34 | 29.55 | 1.273 | 0.30( 0.13) | 0.43 | 1292.3 | 390.00 |

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12720.50 = 13248.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13531.88 | 13.20 | 2.129 | 0.30( 0.24) | 0.81 | 3199.1 | 410.00 |
| 2 | 13387.17 | 14.67 | 1.928 | 0.30( 0.24) | 0.81 | 3539.9 | 420.00 |
| 3 | 14493.86 | 18.83 | 1.675 | 0.30( 0.24) | 0.81 | 4489.1 | 310.00 |
| 4 | 14593.11 | 19.43 | 1.643 | 0.30( 0.24) | 0.81 | 4617.7 | 910.00 |
| 5 | 14609.06 | 19.53 | 1.638 | 0.30( 0.24) | 0.81 | 4653.1 | 400.00 |
| 6 | 14960.09 | 22.04 | 1.528 | 0.30( 0.25) | 0.83 | 5482.5 | 430.00 |
| 7 | 15054.51 | 22.72 | 1.500 | 0.30( 0.25) | 0.84 | 5704.9 | 300.00 |
| 8 | 15080.14 | 22.91 | 1.492 | 0.30( 0.25) | 0.84 | 5767.3 | 320.00 |
| 9 | 15150.55 | 23.50 | 1.467 | 0.30( 0.25) | 0.84 | 5948.5 | 818.00 |
| 10 | 15622.60 | 28.45 | 1.305 | 0.30( 0.26) | 0.87 | 7382.4 | 12710.00 |
| 11 | 15714.13 | 29.55 | 1.273 | 0.30( 0.26) | 0.88 | 7686.6 | 390.00 |
| 12 | 15725.94 | 29.69 | 1.269 | 0.30( 0.26) | 0.88 | 7725.2 | 600.00 |
| 13 | 17920.20 | 48.65 | 0.977 | 0.30( 0.28) | 0.93 | 13542.9 | 40100.00 |
| 14 | 18648.71 | 57.86 | 0.892 | 0.30( 0.28) | 0.94 | 16320.6 | 11801.00 |
| 15 | 20016.96 | 71.73 | 0.816 | 0.30( 0.29) | 0.95 | 21315.9 | 11530.00 |
| 16 | 20948.75 | 80.12 | 0.774 | 0.30( 0.29) | 0.96 | 25204.0 | 11900.00 |
| 17 | 22497.56 | 90.07 | 0.726 | 0.30( 0.29) | 0.97 | 31014.6 | 11330.00 |
| 18 | 23389.39 | 98.43 | 0.703 | 0.30( 0.29) | 0.97 | 36101.7 | 10630.00 |
| 19 | 23316.57 | 103.99 | 0.687 | 0.30( 0.29) | 0.97 | 38691.6 | 12330.00 |
| 20 | 23223.25 | 110.58 | 0.669 | 0.30( 0.29) | 0.97 | 41834.0 | 11600.00 |
| 21 | 22982.84 | 116.30 | 0.653 | 0.30( 0.29) | 0.97 | 44068.4 | 11111.00 |
| 22 | 22702.82 | 122.37 | 0.639 | 0.30( 0.29) | 0.97 | 46002.2 | 12201.00 |
| 23 | 21989.08 | 131.14 | 0.624 | 0.30( 0.29) | 0.97 | 48090.5 | 12231.00 |
| 24 | 21319.08 | 138.47 | 0.611 | 0.30( 0.29) | 0.97 | 49502.0 | 10400.00 |
| 25 | 20909.51 | 142.33 | 0.605 | 0.30( 0.29) | 0.97 | 50092.2 | 10200.00 |
| 26 | 20238.43 | 149.61 | 0.592 | 0.30( 0.29) | 0.97 | 51122.8 | 10320.00 |
| 27 | 19667.93 | 154.32 | 0.584 | 0.30( 0.29) | 0.97 | 51348.3 | 10210.00 |
| 28 | 19174.70 | 159.05 | 0.576 | 0.30( 0.29) | 0.98 | 51510.6 | 12000.00 |
| 29 | 16586.48 | 187.45 | 0.534 | 0.30( 0.29) | 0.98 | 52127.6 | 10100.00 |

TOTAL AREA(ACRES) = 52127.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23389.39 Tc(MIN.) = 98.428
EFFECTIVE AREA(ACRES) = 36101.72 AREA-AVERAGED Fm(INCH/HR) = 0.29



AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) = 52127.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.71
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.697
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| PUBLIC PARK NATURAL FAIR COVER "GRASS" | B | 0.10 | 0.30 | 0.850 | 56 |
| NATURAL FAIR COVER "GRASS" | B | 0.10 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "GRASS" | B | 0.20 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "GRASS" | B | 0.30 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "OPEN BRUSH" | B | 0.30 | 0.30 | 1.000 | 66 |
| COMMERCIAL | B | 0.40 | 0.30 | 0.100 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23389.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.69
AVERAGE FLOW DEPTH(FEET) = 9.71 TRAVEL TIME(MIN.) = 2.18
Tc(MIN.) = 100.61
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 0.60
EFFECTIVE AREA(ACRES) = 36103.12 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52129.0 PEAK FLOW RATE(CFS) = 23389.39
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.71 FLOW VELOCITY(FEET/SEC.) = 9.69
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

**********
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

```
==========================================================================
  MAINLINE Tc(MIN.) =  100.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.697
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.60      0.30     1.000    86
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    1.77
  EFFECTIVE AREA(ACRES) =  36107.32   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52133.2       PEAK FLOW RATE(CFS) =   23389.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =  100.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.697
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =    7.21
  EFFECTIVE AREA(ACRES) =  36127.52   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52153.4       PEAK FLOW RATE(CFS) =   23389.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
```



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  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
  COMMERCIAL                 B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   23390.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.15
  AVERAGE FLOW DEPTH(FEET) =   8.02   TRAVEL TIME(MIN.) =   0.86
  Tc(MIN.) =  101.47
  SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    2.02
  EFFECTIVE AREA(ACRES) =  36132.12     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52158.0         PEAK FLOW RATE(CFS) =   23389.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.01   FLOW VELOCITY(FEET/SEC.) =  12.16
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =  101.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =    9.83
  EFFECTIVE AREA(ACRES) =  36158.12   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52184.0       PEAK FLOW RATE(CFS) =   23389.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  101.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   13.84
  EFFECTIVE AREA(ACRES) =  36197.12   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52223.0       PEAK FLOW RATE(CFS) =   23389.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =  101.47
  RAINFALL INTENSITY(INCH/HR) =   0.69
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =   36197.12
  TOTAL STREAM AREA(ACRES) =   52223.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   23389.39

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.044
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.94
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =      9.94

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.24
  AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   17.65
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   44.85
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9          PEAK FLOW RATE(CFS) =      53.05
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   5.01
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.570
```

```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       59.52      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.14
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.72
 AVERAGE FLOW DEPTH(FEET) =   1.22   TRAVEL TIME(MIN.) =   3.37
 Tc(MIN.) =   21.02
 SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =   68.03
 EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     114.83
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.43

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.43   FLOW VELOCITY(FEET/SEC.) =   6.25
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.84
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.386
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       64.05      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.19
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.96
 AVERAGE FLOW DEPTH(FEET) =   1.80   TRAVEL TIME(MIN.) =   4.63
 Tc(MIN.) =   25.64
 SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   62.62
 EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     160.85
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.90   FLOW VELOCITY(FEET/SEC.) =   6.15
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.
```



```
****************************************************************************
 FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.74
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       26.02      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     172.12
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.36
 AVERAGE FLOW DEPTH(FEET) =   1.74   TRAVEL TIME(MIN.) =   4.26
 Tc(MIN.) =   29.91
 SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   22.54
 EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     165.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =   7.27
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   29.91
 RAINFALL INTENSITY(INCH/HR) =   1.26
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =     190.54
 TOTAL STREAM AREA(ACRES) =     190.54
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     165.09

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    13531.88   16.85    1.783  0.30( 0.24) 0.81    3294.5     410.00
     1    13387.17   18.34    1.702  0.30( 0.24) 0.81    3635.3     420.00
     1    14493.86   22.40    1.513  0.30( 0.24) 0.81    4584.5     310.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 14593.11 | 22.98 | 1.489 | 0.30( 0.24) | 0.82 | 4713.1 | 910.00 |
| 1 | 14609.06 | 23.08 | 1.484 | 0.30( 0.24) | 0.82 | 4748.5 | 400.00 |
| 1 | 14960.09 | 25.57 | 1.389 | 0.30( 0.25) | 0.83 | 5577.9 | 430.00 |
| 1 | 15054.51 | 26.23 | 1.369 | 0.30( 0.25) | 0.84 | 5800.3 | 300.00 |
| 1 | 15080.14 | 26.42 | 1.364 | 0.30( 0.25) | 0.84 | 5862.7 | 320.00 |
| 1 | 15150.55 | 27.01 | 1.347 | 0.30( 0.25) | 0.85 | 6043.9 | 818.00 |
| 1 | 15622.60 | 31.92 | 1.225 | 0.30( 0.26) | 0.87 | 7477.8 | 12710.00 |
| 1 | 15714.13 | 33.01 | 1.205 | 0.30( 0.26) | 0.88 | 7782.0 | 390.00 |
| 1 | 15725.94 | 33.15 | 1.203 | 0.30( 0.26) | 0.88 | 7820.6 | 600.00 |
| 1 | 17920.20 | 51.97 | 0.944 | 0.30( 0.28) | 0.93 | 13638.3 | 40100.00 |
| 1 | 18648.71 | 61.13 | 0.867 | 0.30( 0.28) | 0.94 | 16416.0 | 11801.00 |
| 1 | 20016.96 | 74.93 | 0.800 | 0.30( 0.29) | 0.95 | 21411.3 | 11530.00 |
| 1 | 20948.75 | 83.27 | 0.759 | 0.30( 0.29) | 0.96 | 25299.4 | 11900.00 |
| 1 | 22497.56 | 93.15 | 0.717 | 0.30( 0.29) | 0.97 | 31110.0 | 11330.00 |
| 1 | 23389.39 | 101.47 | 0.694 | 0.30( 0.29) | 0.97 | 36197.1 | 10630.00 |
| 1 | 23316.57 | 107.03 | 0.679 | 0.30( 0.29) | 0.97 | 38787.0 | 12330.00 |
| 1 | 23223.25 | 113.63 | 0.661 | 0.30( 0.29) | 0.97 | 41929.4 | 11600.00 |
| 1 | 22982.84 | 119.36 | 0.645 | 0.30( 0.29) | 0.97 | 44163.8 | 11111.00 |
| 1 | 22702.82 | 125.43 | 0.634 | 0.30( 0.29) | 0.97 | 46097.6 | 12201.00 |
| 1 | 21989.08 | 134.24 | 0.619 | 0.30( 0.29) | 0.97 | 48185.9 | 12231.00 |
| 1 | 21319.08 | 141.60 | 0.606 | 0.30( 0.29) | 0.97 | 49597.4 | 10400.00 |
| 1 | 20909.51 | 145.48 | 0.599 | 0.30( 0.29) | 0.97 | 50187.6 | 10200.00 |
| 1 | 20238.43 | 152.80 | 0.587 | 0.30( 0.29) | 0.97 | 51218.2 | 10320.00 |
| 1 | 19667.93 | 157.54 | 0.579 | 0.30( 0.29) | 0.97 | 51443.7 | 10210.00 |
| 1 | 19174.70 | 162.30 | 0.570 | 0.30( 0.29) | 0.98 | 51606.0 | 12000.00 |
| 1 | 16586.48 | 190.86 | 0.532 | 0.30( 0.29) | 0.98 | 52223.0 | 10100.00 |
| 2 | 165.09 | 29.91 | 1.263 | 0.30( 0.30) | 1.00 | 190.5 | 12730.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13675.15 | 16.85 | 1.783 | 0.30( 0.24) | 0.82 | 3401.8 | 410.00 |
| 2 | 13534.60 | 18.34 | 1.702 | 0.30( 0.24) | 0.82 | 3752.1 | 420.00 |
| 3 | 14649.61 | 22.40 | 1.513 | 0.30( 0.25) | 0.82 | 4727.2 | 310.00 |
| 4 | 14749.74 | 22.98 | 1.489 | 0.30( 0.25) | 0.82 | 4859.5 | 910.00 |
| 5 | 14765.82 | 23.08 | 1.484 | 0.30( 0.25) | 0.82 | 4895.6 | 400.00 |
| 6 | 15119.68 | 25.57 | 1.389 | 0.30( 0.25) | 0.84 | 5740.8 | 430.00 |
| 7 | 15215.35 | 26.23 | 1.369 | 0.30( 0.25) | 0.84 | 5967.5 | 300.00 |
| 8 | 15241.31 | 26.42 | 1.364 | 0.30( 0.25) | 0.85 | 6031.1 | 320.00 |
| 9 | 15312.66 | 27.01 | 1.347 | 0.30( 0.25) | 0.85 | 6216.0 | 818.00 |
| 10 | 15593.90 | 29.91 | 1.263 | 0.30( 0.26) | 0.87 | 7079.7 | 12730.00 |
| 11 | 15781.25 | 31.92 | 1.225 | 0.30( 0.26) | 0.88 | 7668.4 | 12710.00 |
| 12 | 15869.40 | 33.01 | 1.205 | 0.30( 0.26) | 0.88 | 7972.6 | 390.00 |
| 13 | 15880.78 | 33.15 | 1.203 | 0.30( 0.26) | 0.88 | 8011.2 | 600.00 |
| 14 | 18030.58 | 51.97 | 0.944 | 0.30( 0.28) | 0.93 | 13828.8 | 40100.00 |
| 15 | 18746.02 | 61.13 | 0.867 | 0.30( 0.28) | 0.94 | 16606.6 | 11801.00 |
| 16 | 20102.68 | 74.93 | 0.800 | 0.30( 0.29) | 0.95 | 21601.8 | 11530.00 |
| 17 | 21027.46 | 83.27 | 0.759 | 0.30( 0.29) | 0.96 | 25489.9 | 11900.00 |
| 18 | 22569.12 | 93.15 | 0.717 | 0.30( 0.29) | 0.97 | 31300.5 | 11330.00 |
| 19 | 23457.01 | 101.47 | 0.694 | 0.30( 0.29) | 0.97 | 36387.7 | 10630.00 |
| 20 | 23381.55 | 107.03 | 0.679 | 0.30( 0.29) | 0.97 | 38977.5 | 12330.00 |
| 21 | 23285.09 | 113.63 | 0.661 | 0.30( 0.29) | 0.97 | 42120.0 | 11600.00 |
| 22 | 23041.97 | 119.36 | 0.645 | 0.30( 0.29) | 0.97 | 44354.3 | 11111.00 |
| 23 | 22760.04 | 125.43 | 0.634 | 0.30( 0.29) | 0.97 | 46288.2 | 12201.00 |
| 24 | 22043.71 | 134.24 | 0.619 | 0.30( 0.29) | 0.97 | 48376.4 | 12231.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | 21371.54 | 141.60 | 0.606 | 0.30( 0.29) | 0.97 | 49788.0 | 10400.00 |
| 26 | 20960.83 | 145.48 | 0.599 | 0.30( 0.29) | 0.97 | 50378.2 | 10200.00 |
| 27 | 20287.60 | 152.80 | 0.587 | 0.30( 0.29) | 0.97 | 51408.7 | 10320.00 |
| 28 | 19715.70 | 157.54 | 0.579 | 0.30( 0.29) | 0.98 | 51634.2 | 10210.00 |
| 29 | 19221.06 | 162.30 | 0.570 | 0.30( 0.29) | 0.98 | 51796.5 | 12000.00 |
| 30 | 16626.19 | 190.86 | 0.532 | 0.30( 0.29) | 0.98 | 52413.5 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23457.01 Tc(MIN.) = 101.47
EFFECTIVE AREA(ACRES) = 36387.66 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52413.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.96 FEET.

**********
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0099
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.46
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.691
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,STRAIGHT ROW" | B | 0.30 | 0.30 | 1.000 | 81 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.40 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.40 | 0.30 | 0.100 | 56 |
| COMMERCIAL | B | 0.60 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 1.50 | 0.30 | 1.000 | 66 |
| PUBLIC PARK | B | 3.20 | 0.30 | 0.850 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.784
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23458.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.63
AVERAGE FLOW DEPTH(FEET) = 6.46 TRAVEL TIME(MIN.) = 1.30
Tc(MIN.) = 102.77
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 2.62
EFFECTIVE AREA(ACRES) = 36394.06 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52419.9 PEAK FLOW RATE(CFS) = 23457.01
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.46 FLOW VELOCITY(FEET/SEC.) = 15.64
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81

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

==========

MAINLINE Tc(MIN.) = 102.77

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.691

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER "GRASS" | B | 3.90 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "GRASS" | B | 8.70 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "WOODLAND,GRASS" | B | 10.30 | 0.30 | 1.000 | 65 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 8.05

EFFECTIVE AREA(ACRES) = 36416.96 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 52442.8 PEAK FLOW RATE(CFS) = 23457.01

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52442.8 TC(MIN.) = 102.77

EFFECTIVE AREA(ACRES) = 36416.96 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970

PEAK FLOW RATE(CFS) = 23457.01

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13675.15 | 18.42 | 1.698 | 0.30( 0.24) | 0.82 | 3431.1 | 410.00 |
| 2 | 13534.60 | 19.91 | 1.617 | 0.30( 0.25) | 0.82 | 3781.4 | 420.00 |
| 3 | 14649.61 | 23.93 | 1.449 | 0.30( 0.25) | 0.82 | 4756.5 | 310.00 |
| 4 | 14749.74 | 24.51 | 1.425 | 0.30( 0.25) | 0.82 | 4888.8 | 910.00 |
| 5 | 14765.82 | 24.61 | 1.421 | 0.30( 0.25) | 0.82 | 4924.9 | 400.00 |
| 6 | 15119.68 | 27.08 | 1.345 | 0.30( 0.25) | 0.84 | 5770.1 | 430.00 |
| 7 | 15215.35 | 27.75 | 1.325 | 0.30( 0.25) | 0.84 | 5996.8 | 300.00 |
| 8 | 15241.31 | 27.93 | 1.320 | 0.30( 0.25) | 0.85 | 6060.4 | 320.00 |
| 9 | 15312.66 | 28.52 | 1.303 | 0.30( 0.26) | 0.85 | 6245.3 | 818.00 |
| 10 | 15593.90 | 31.41 | 1.235 | 0.30( 0.26) | 0.87 | 7109.0 | 12730.00 |
| 11 | 15781.25 | 33.42 | 1.198 | 0.30( 0.26) | 0.88 | 7697.7 | 12710.00 |
| 12 | 15869.40 | 34.50 | 1.178 | 0.30( 0.26) | 0.88 | 8001.9 | 390.00 |
| 13 | 15880.78 | 34.64 | 1.176 | 0.30( 0.26) | 0.88 | 8040.5 | 600.00 |
| 14 | 18030.58 | 53.40 | 0.931 | 0.30( 0.28) | 0.93 | 13858.1 | 40100.00 |
| 15 | 18746.02 | 62.54 | 0.861 | 0.30( 0.28) | 0.94 | 16635.9 | 11801.00 |
| 16 | 20102.68 | 76.30 | 0.793 | 0.30( 0.29) | 0.95 | 21631.1 | 11530.00 |
| 17 | 21027.46 | 84.62 | 0.752 | 0.30( 0.29) | 0.96 | 25519.2 | 11900.00 |
| 18 | 22569.12 | 94.46 | 0.714 | 0.30( 0.29) | 0.97 | 31329.8 | 11330.00 |
| 19 | 23457.01 | 102.77 | 0.691 | 0.30( 0.29) | 0.97 | 36417.0 | 10630.00 |
| 20 | 23381.55 | 108.33 | 0.675 | 0.30( 0.29) | 0.97 | 39006.8 | 12330.00 |
| 21 | 23285.09 | 114.93 | 0.657 | 0.30( 0.29) | 0.97 | 42149.3 | 11600.00 |
| 22 | 23041.97 | 120.67 | 0.642 | 0.30( 0.29) | 0.97 | 44383.6 | 11111.00 |
| 23 | 22760.04 | 126.75 | 0.631 | 0.30( 0.29) | 0.97 | 46317.4 | 12201.00 |
| 24 | 22043.71 | 135.57 | 0.616 | 0.30( 0.29) | 0.97 | 48405.7 | 12231.00 |
| 25 | 21371.54 | 142.94 | 0.604 | 0.30( 0.29) | 0.97 | 49817.2 | 10400.00 |
| 26 | 20960.83 | 146.83 | 0.597 | 0.30( 0.29) | 0.97 | 50407.5 | 10200.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | 20287.60 | 154.16 | 0.584 | 0.30( 0.29) | 0.97 | 51438.0 | 10320.00 |
| 28 | 19715.70 | 158.92 | 0.576 | 0.30( 0.29) | 0.98 | 51663.5 | 10210.00 |
| 29 | 19221.06 | 163.69 | 0.568 | 0.30( 0.29) | 0.98 | 51825.8 | 12000.00 |
| 30 | 16626.19 | 192.32 | 0.530 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 10-YR EV MAY 2023 ROKAMOTO                                          *
 **********************************************************************

  FILE NAME: RI10EV28.DAT
  TIME/DATE OF STUDY: 08:12 05/09/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.867
   2)   10.00;  2.568
   3)   15.00;  1.883
   4)   20.00;  1.612
   5)   25.00;  1.405
   6)   30.00;  1.260
   7)   40.00;  1.079
   8)   50.00;  0.961
   9)   60.00;  0.873
  10)   90.00;  0.726
  11)  120.00;  0.643
  12)  180.00;  0.540
  13)  360.00;  0.400
  14) 1200.00;  0.176
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV27.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    13675.15   18.42  0.30( 0.24) 0.82    3431.1     410.00
      2    14765.82   24.61  0.30( 0.25) 0.82    4924.9     400.00
      3    15880.78   34.64  0.30( 0.26) 0.88    8040.5     600.00
      4    18030.58   53.40  0.30( 0.28) 0.93   13858.1   40100.00
      5    18746.02   62.54  0.30( 0.28) 0.94   16635.9   11801.00
      6    20102.68   76.30  0.30( 0.29) 0.95   21631.1   11530.00
      7    21027.46   84.62  0.30( 0.29) 0.96   25519.2   11900.00
      8    22569.12   94.46  0.30( 0.29) 0.97   31329.8   11330.00
      9    23457.01  102.77  0.30( 0.29) 0.97   36417.0   10630.00
     10    23381.55  108.33  0.30( 0.29) 0.97   39006.8   12330.00
     11    23285.09  114.93  0.30( 0.29) 0.97   42149.3   11600.00
     12    23041.97  120.67  0.30( 0.29) 0.97   44383.6   11111.00
     13    22760.04  126.75  0.30( 0.29) 0.97   46317.4   12201.00
     14    22043.71  135.57  0.30( 0.29) 0.97   48405.7   12231.00
     15    21371.54  142.94  0.30( 0.29) 0.97   49817.2   10400.00
     16    20960.83  146.83  0.30( 0.29) 0.97   50407.5   10200.00
     17    20287.60  154.16  0.30( 0.29) 0.97   51438.0   10320.00
     18    19715.70  158.92  0.30( 0.29) 0.98   51663.5   10210.00
     19    19221.06  163.69  0.30( 0.29) 0.98   51825.8   12000.00
     20    16626.19  192.32  0.30( 0.29) 0.98   52442.8   10100.00
    TOTAL AREA(ACRES) =    52442.8

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501V.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      980.25   27.73  0.30( 0.29) 0.98    1026.3   50120.00
      2      957.41   29.15  0.30( 0.29) 0.98    1042.7   50150.00
      3      896.35   32.55  0.30( 0.29) 0.98    1063.4   50100.00
    TOTAL AREA(ACRES) =     1063.4

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|
| 1 | 980.25 | 27.73 | 0.30( 0.29) | 0.98 | 1026.3 | 50120.00 |
| 2 | 957.41 | 29.15 | 0.30( 0.29) | 0.98 | 1042.7 | 50150.00 |
| 3 | 896.35 | 32.55 | 0.30( 0.29) | 0.98 | 1063.4 | 50100.00 |

TOTAL AREA(ACRES) = 1063.4

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 980.25 | 27.73 | 1.326 | 0.30( 0.29) | 0.98 | 1026.3 | 50120.00 |
| 2 | 957.41 | 29.15 | 1.285 | 0.30( 0.29) | 0.98 | 1042.7 | 50150.00 |
| 3 | 896.35 | 32.55 | 1.214 | 0.30( 0.29) | 0.98 | 1063.4 | 50100.00 |

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13675.15 | 18.42 | 1.698 | 0.30( 0.24) | 0.82 | 3431.1 | 410.00 |
| 2 | 14765.82 | 24.61 | 1.421 | 0.30( 0.25) | 0.82 | 4924.9 | 400.00 |
| 3 | 15880.78 | 34.64 | 1.176 | 0.30( 0.26) | 0.88 | 8040.5 | 600.00 |
| 4 | 18030.58 | 53.40 | 0.931 | 0.30( 0.28) | 0.93 | 13858.1 | 40100.00 |
| 5 | 18746.02 | 62.54 | 0.861 | 0.30( 0.28) | 0.94 | 16635.9 | 11801.00 |
| 6 | 20102.68 | 76.30 | 0.793 | 0.30( 0.29) | 0.95 | 21631.1 | 11530.00 |
| 7 | 21027.46 | 84.62 | 0.752 | 0.30( 0.29) | 0.96 | 25519.2 | 11900.00 |
| 8 | 22569.12 | 94.46 | 0.714 | 0.30( 0.29) | 0.97 | 31329.8 | 11330.00 |
| 9 | 23457.01 | 102.77 | 0.691 | 0.30( 0.29) | 0.97 | 36417.0 | 10630.00 |
| 10 | 23381.55 | 108.33 | 0.675 | 0.30( 0.29) | 0.97 | 39006.8 | 12330.00 |
| 11 | 23285.09 | 114.93 | 0.657 | 0.30( 0.29) | 0.97 | 42149.3 | 11600.00 |
| 12 | 23041.97 | 120.67 | 0.642 | 0.30( 0.29) | 0.97 | 44383.6 | 11111.00 |
| 13 | 22760.04 | 126.75 | 0.631 | 0.30( 0.29) | 0.97 | 46317.4 | 12201.00 |
| 14 | 22043.71 | 135.57 | 0.616 | 0.30( 0.29) | 0.97 | 48405.7 | 12231.00 |
| 15 | 21371.54 | 142.94 | 0.604 | 0.30( 0.29) | 0.97 | 49817.2 | 10400.00 |
| 16 | 20960.83 | 146.83 | 0.597 | 0.30( 0.29) | 0.97 | 50407.5 | 10200.00 |
| 17 | 20287.60 | 154.16 | 0.584 | 0.30( 0.29) | 0.97 | 51438.0 | 10320.00 |
| 18 | 19715.70 | 158.92 | 0.576 | 0.30( 0.29) | 0.98 | 51663.5 | 10210.00 |
| 19 | 19221.06 | 163.69 | 0.568 | 0.30( 0.29) | 0.98 | 51825.8 | 12000.00 |
| 20 | 16626.19 | 192.32 | 0.530 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14560.99 | 18.42 | 1.698 | 0.30( 0.25) | 0.84 | 4112.9 | 410.00 |
| 2 | 15716.17 | 24.61 | 1.421 | 0.30( 0.25) | 0.85 | 5835.8 | 400.00 |
| 3 | 16092.70 | 27.73 | 1.326 | 0.30( 0.26) | 0.86 | 6919.8 | 50120.00 |
| 4 | 16227.78 | 29.15 | 1.285 | 0.30( 0.26) | 0.87 | 7377.5 | 50150.00 |
| 5 | 16544.68 | 32.55 | 1.214 | 0.30( 0.27) | 0.88 | 8454.3 | 50100.00 |
| 6 | 16740.21 | 34.64 | 1.176 | 0.30( 0.27) | 0.89 | 9103.9 | 600.00 |
| 7 | 18651.31 | 53.40 | 0.931 | 0.30( 0.28) | 0.93 | 14921.5 | 40100.00 |
| 8 | 19297.96 | 62.54 | 0.861 | 0.30( 0.28) | 0.94 | 17699.2 | 11801.00 |
| 9 | 20588.88 | 76.30 | 0.793 | 0.30( 0.29) | 0.95 | 22694.5 | 11530.00 |
| 10 | 21473.92 | 84.62 | 0.752 | 0.30( 0.29) | 0.96 | 26582.6 | 11900.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 22977.82 | 94.46 | 0.714 | 0.30( 0.29) | 0.97 | 32393.2 | 11330.00 |
| 12 | 23843.31 | 102.77 | 0.691 | 0.30( 0.29) | 0.97 | 37480.3 | 10630.00 |
| 13 | 23752.85 | 108.33 | 0.675 | 0.30( 0.29) | 0.97 | 40070.2 | 12330.00 |
| 14 | 23638.59 | 114.93 | 0.657 | 0.30( 0.29) | 0.97 | 43212.7 | 11600.00 |
| 15 | 23380.68 | 120.67 | 0.642 | 0.30( 0.29) | 0.97 | 45447.0 | 11111.00 |
| 16 | 23088.57 | 126.75 | 0.631 | 0.30( 0.29) | 0.97 | 47380.8 | 12201.00 |
| 17 | 22357.47 | 135.57 | 0.616 | 0.30( 0.29) | 0.97 | 49469.1 | 12231.00 |
| 18 | 21672.96 | 142.94 | 0.604 | 0.30( 0.29) | 0.97 | 50880.6 | 10400.00 |
| 19 | 21255.74 | 146.83 | 0.597 | 0.30( 0.29) | 0.97 | 51470.8 | 10200.00 |
| 20 | 20570.24 | 154.16 | 0.584 | 0.30( 0.29) | 0.98 | 52501.4 | 10320.00 |
| 21 | 19990.38 | 158.92 | 0.576 | 0.30( 0.29) | 0.98 | 52726.9 | 10210.00 |
| 22 | 19487.76 | 163.69 | 0.568 | 0.30( 0.29) | 0.98 | 52889.2 | 12000.00 |
| 23 | 16856.24 | 192.32 | 0.530 | 0.30( 0.29) | 0.98 | 53506.2 | 10100.00 |

TOTAL AREA(ACRES) = 53506.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23843.31 Tc(MIN.) = 102.767

EFFECTIVE AREA(ACRES) = 37480.34 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 53506.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53506.2 TC(MIN.) = 102.77

EFFECTIVE AREA(ACRES) = 37480.34 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970

PEAK FLOW RATE(CFS) = 23843.31

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14560.99 | 18.42 | 1.698 | 0.30( 0.25) | 0.84 | 4112.9 | 410.00 |
| 2 | 15716.17 | 24.61 | 1.421 | 0.30( 0.25) | 0.85 | 5835.8 | 400.00 |
| 3 | 16092.70 | 27.73 | 1.326 | 0.30( 0.26) | 0.86 | 6919.8 | 50120.00 |
| 4 | 16227.78 | 29.15 | 1.285 | 0.30( 0.26) | 0.87 | 7377.5 | 50150.00 |
| 5 | 16544.68 | 32.55 | 1.214 | 0.30( 0.27) | 0.88 | 8454.3 | 50100.00 |
| 6 | 16740.21 | 34.64 | 1.176 | 0.30( 0.27) | 0.89 | 9103.9 | 600.00 |
| 7 | 18651.31 | 53.40 | 0.931 | 0.30( 0.28) | 0.93 | 14921.5 | 40100.00 |
| 8 | 19297.96 | 62.54 | 0.861 | 0.30( 0.28) | 0.94 | 17699.2 | 11801.00 |
| 9 | 20588.88 | 76.30 | 0.793 | 0.30( 0.29) | 0.95 | 22694.5 | 11530.00 |
| 10 | 21473.92 | 84.62 | 0.752 | 0.30( 0.29) | 0.96 | 26582.6 | 11900.00 |
| 11 | 22977.82 | 94.46 | 0.714 | 0.30( 0.29) | 0.97 | 32393.2 | 11330.00 |
| 12 | 23843.31 | 102.77 | 0.691 | 0.30( 0.29) | 0.97 | 37480.3 | 10630.00 |
| 13 | 23752.85 | 108.33 | 0.675 | 0.30( 0.29) | 0.97 | 40070.2 | 12330.00 |
| 14 | 23638.59 | 114.93 | 0.657 | 0.30( 0.29) | 0.97 | 43212.7 | 11600.00 |
| 15 | 23380.68 | 120.67 | 0.642 | 0.30( 0.29) | 0.97 | 45447.0 | 11111.00 |
| 16 | 23088.57 | 126.75 | 0.631 | 0.30( 0.29) | 0.97 | 47380.8 | 12201.00 |
| 17 | 22357.47 | 135.57 | 0.616 | 0.30( 0.29) | 0.97 | 49469.1 | 12231.00 |
| 18 | 21672.96 | 142.94 | 0.604 | 0.30( 0.29) | 0.97 | 50880.6 | 10400.00 |
| 19 | 21255.74 | 146.83 | 0.597 | 0.30( 0.29) | 0.97 | 51470.8 | 10200.00 |
| 20 | 20570.24 | 154.16 | 0.584 | 0.30( 0.29) | 0.98 | 52501.4 | 10320.00 |
| 21 | 19990.38 | 158.92 | 0.576 | 0.30( 0.29) | 0.98 | 52726.9 | 10210.00 |
| 22 | 19487.76 | 163.69 | 0.568 | 0.30( 0.29) | 0.98 | 52889.2 | 12000.00 |
| 23 | 16856.24 | 192.32 | 0.530 | 0.30( 0.29) | 0.98 | 53506.2 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

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******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 10-YR EV MAY 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI10EV29.DAT
  TIME/DATE OF STUDY: 08:12 05/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.855
   2)   10.00;  2.561
   3)   15.00;  1.881
   4)   20.00;  1.610
   5)   25.00;  1.403
   6)   30.00;  1.259
   7)   40.00;  1.077
   8)   50.00;  0.959
   9)   60.00;  0.872
  10)   90.00;  0.725
  11)  120.00;  0.642
  12)  180.00;  0.539
  13)  360.00;  0.399
  14) 1200.00;  0.175
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    14560.99   18.42  0.30( 0.25) 0.84    4112.9     410.00
      2    15716.17   24.61  0.30( 0.25) 0.85    5835.8     400.00
      3    16227.78   29.15  0.30( 0.26) 0.87    7377.5   50150.00
      4    16740.21   34.64  0.30( 0.27) 0.89    9103.9     600.00
      5    18651.31   53.40  0.30( 0.28) 0.93   14921.5   40100.00
      6    19297.96   62.54  0.30( 0.28) 0.94   17699.2   11801.00
      7    20588.88   76.30  0.30( 0.29) 0.95   22694.5   11530.00
      8    21473.92   84.62  0.30( 0.29) 0.96   26582.6   11900.00
      9    22977.82   94.46  0.30( 0.29) 0.97   32393.2   11330.00
     10    23843.31  102.77  0.30( 0.29) 0.97   37480.3   10630.00
     11    23752.85  108.33  0.30( 0.29) 0.97   40070.2   12330.00
     12    23638.59  114.93  0.30( 0.29) 0.97   43212.7   11600.00
     13    23380.68  120.67  0.30( 0.29) 0.97   45447.0   11111.00
     14    23088.57  126.75  0.30( 0.29) 0.97   47380.8   12201.00
     15    22357.47  135.57  0.30( 0.29) 0.97   49469.1   12231.00
     16    21672.96  142.94  0.30( 0.29) 0.97   50880.6   10400.00
     17    20570.24  154.16  0.30( 0.29) 0.98   52501.4   10320.00
     18    19990.38  158.92  0.30( 0.29) 0.98   52726.9   10210.00
     19    19487.76  163.69  0.30( 0.29) 0.98   52889.2   12000.00
     20    16856.24  192.32  0.30( 0.29) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =    53506.2

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    14560.99   18.42  0.30( 0.25) 0.84    4112.9     410.00
      2    15716.17   24.61  0.30( 0.25) 0.85    5835.8     400.00
      3    16227.78   29.15  0.30( 0.26) 0.87    7377.5   50150.00
      4    16740.21   34.64  0.30( 0.27) 0.89    9103.9     600.00
      5    18651.31   53.40  0.30( 0.28) 0.93   14921.5   40100.00
      6    19297.96   62.54  0.30( 0.28) 0.94   17699.2   11801.00
      7    20588.88   76.30  0.30( 0.29) 0.95   22694.5   11530.00
      8    21473.92   84.62  0.30( 0.29) 0.96   26582.6   11900.00
      9    22977.82   94.46  0.30( 0.29) 0.97   32393.2   11330.00
     10    23843.31  102.77  0.30( 0.29) 0.97   37480.3   10630.00
     11    23752.85  108.33  0.30( 0.29) 0.97   40070.2   12330.00
     12    23638.59  114.93  0.30( 0.29) 0.97   43212.7   11600.00
     13    23380.68  120.67  0.30( 0.29) 0.97   45447.0   11111.00
```

```
     14    23088.57  126.75  0.30( 0.29) 0.97   47380.8   12201.00
     15    22357.47  135.57  0.30( 0.29) 0.97   49469.1   12231.00
     16    21672.96  142.94  0.30( 0.29) 0.97   50880.6   10400.00
     17    20570.24  154.16  0.30( 0.29) 0.98   52501.4   10320.00
     18    19990.38  158.92  0.30( 0.29) 0.98   52726.9   10210.00
     19    19487.76  163.69  0.30( 0.29) 0.98   52889.2   12000.00
     20    16856.24  192.32  0.30( 0.29) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.01
  CHANNEL FLOW THRU SUBAREA(CFS) =   23843.31
  FLOW VELOCITY(FEET/SEC.) =  14.46   FLOW DEPTH(FEET) =   7.01
  TRAVEL TIME(MIN.) =   3.60   Tc(MIN.) =  106.36
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.680
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   11.96
  EFFECTIVE AREA(ACRES) =  37504.04   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =   23843.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.680
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.36
  EFFECTIVE AREA(ACRES) =  37507.14   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =   23843.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.680
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    3.59
  EFFECTIVE AREA(ACRES) =  37516.34   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =   23843.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.680
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   13.33
  EFFECTIVE AREA(ACRES) =  37551.84   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =   23843.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.680
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   19.16
  EFFECTIVE AREA(ACRES) =  37603.34   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =   23843.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.89
  CHANNEL FLOW THRU SUBAREA(CFS) =   23843.31
  FLOW VELOCITY(FEET/SEC.) =  14.77   FLOW DEPTH(FEET) =   6.89
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  106.50
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XX10.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       44.85   11.41  0.30( 0.27) 0.91      28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14560.99   22.85    1.492  0.30( 0.25) 0.84    4235.9     410.00
      2    15716.17   28.92    1.290  0.30( 0.25) 0.85    5958.8     400.00
      3    16227.78   33.41    1.197  0.30( 0.26) 0.87    7500.5   50150.00
      4    16740.21   38.86    1.098  0.30( 0.27) 0.89    9226.9     600.00
      5    18651.31   57.45    0.894  0.30( 0.28) 0.93   15044.5   40100.00
      6    19297.96   66.55    0.840  0.30( 0.28) 0.94   17822.2   11801.00
      7    20588.88   80.22    0.773  0.30( 0.29) 0.95   22817.5   11530.00
      8    21473.92   88.49    0.732  0.30( 0.29) 0.96   26705.6   11900.00
      9    22977.82   98.25    0.702  0.30( 0.29) 0.97   32516.2   11330.00
     10    23843.31  106.50    0.679  0.30( 0.29) 0.97   37603.3   10630.00
     11    23752.85  112.07    0.664  0.30( 0.29) 0.97   40193.2   12330.00
     12    23638.59  118.67    0.646  0.30( 0.29) 0.97   43335.7   11600.00
     13    23380.68  124.43    0.634  0.30( 0.29) 0.97   45570.0   11111.00
     14    23088.57  130.52    0.624  0.30( 0.29) 0.97   47503.8   12201.00
     15    22357.47  139.38    0.609  0.30( 0.29) 0.97   49592.1   12231.00
     16    21672.96  146.80    0.596  0.30( 0.29) 0.97   51003.6   10400.00
     17    20570.24  158.09    0.577  0.30( 0.29) 0.97   52624.4   10320.00
     18    19990.38  162.88    0.568  0.30( 0.29) 0.97   52849.9   10210.00
     19    19487.76  167.69    0.560  0.30( 0.29) 0.97   53012.2   12000.00
     20    16856.24  196.53    0.526  0.30( 0.29) 0.98   53629.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       44.85   11.41    2.370  0.30( 0.27) 0.91      28.7   50200.00
  LONGEST FLOWPATH FROM NODE  50200.00 TO NODE  12902.00 =    1426.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12461.48   11.41    2.370  0.30( 0.25) 0.84    2143.7   50200.00
      2    14587.07   22.85    1.492  0.30( 0.25) 0.84    4264.6     410.00
      3    15737.92   28.92    1.290  0.30( 0.25) 0.85    5987.5     400.00
      4    16247.55   33.41    1.197  0.30( 0.26) 0.87    7529.2   50150.00
      5    16757.86   38.86    1.098  0.30( 0.27) 0.89    9255.6     600.00
      6    18664.60   57.45    0.894  0.30( 0.28) 0.93   15073.2   40100.00
```

```
      7    19310.09   66.55    0.840  0.30( 0.28) 0.94   17850.9   11801.00
      8    20599.57   80.22    0.773  0.30( 0.29) 0.95   22846.2   11530.00
      9    21483.75   88.49    0.732  0.30( 0.29) 0.96   26734.3   11900.00
     10    22987.01   98.25    0.702  0.30( 0.29) 0.97   32544.9   11330.00
     11    23852.01  106.50    0.679  0.30( 0.29) 0.97   37632.0   10630.00
     12    23761.22  112.07    0.664  0.30( 0.29) 0.97   40221.9   12330.00
     13    23646.57  118.67    0.646  0.30( 0.29) 0.97   43364.4   11600.00
     14    23388.41  124.43    0.634  0.30( 0.29) 0.97   45598.7   11111.00
     15    23096.08  130.52    0.624  0.30( 0.29) 0.97   47532.5   12201.00
     16    22364.65  139.38    0.609  0.30( 0.29) 0.97   49620.8   12231.00
     17    21679.87  146.80    0.596  0.30( 0.29) 0.97   51032.3   10400.00
     18    20576.74  158.09    0.577  0.30( 0.29) 0.97   52653.1   10320.00
     19    19996.70  162.88    0.568  0.30( 0.29) 0.97   52878.6   10210.00
     20    19493.90  167.69    0.560  0.30( 0.29) 0.97   53040.9   12000.00
     21    16861.65  196.53    0.526  0.30( 0.29) 0.98   53657.9   10100.00
   TOTAL AREA(ACRES) =     53657.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    23852.01  Tc(MIN.) =  106.501
  EFFECTIVE AREA(ACRES) =  37632.04  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53657.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E503XX10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      315.51   26.45  0.30( 0.30) 0.99     366.4   50300.00
    TOTAL AREA(ACRES) =      366.4

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12461.48   11.41    2.370  0.30( 0.25) 0.84    2143.7   50200.00
      2    14587.07   22.85    1.492  0.30( 0.25) 0.84    4264.6     410.00
      3    15737.92   28.92    1.290  0.30( 0.25) 0.85    5987.5     400.00
      4    16247.55   33.41    1.197  0.30( 0.26) 0.87    7529.2   50150.00
      5    16757.86   38.86    1.098  0.30( 0.27) 0.89    9255.6     600.00
      6    18664.60   57.45    0.894  0.30( 0.28) 0.93   15073.2   40100.00
      7    19310.09   66.55    0.840  0.30( 0.28) 0.94   17850.9   11801.00
```



```
      8    20599.57   80.22    0.773  0.30( 0.29) 0.95   22846.2   11530.00
      9    21483.75   88.49    0.732  0.30( 0.29) 0.96   26734.3   11900.00
     10    22987.01   98.25    0.702  0.30( 0.29) 0.97   32544.9   11330.00
     11    23852.01  106.50    0.679  0.30( 0.29) 0.97   37632.0   10630.00
     12    23761.22  112.07    0.664  0.30( 0.29) 0.97   40221.9   12330.00
     13    23646.57  118.67    0.646  0.30( 0.29) 0.97   43364.4   11600.00
     14    23388.41  124.43    0.634  0.30( 0.29) 0.97   45598.7   11111.00
     15    23096.08  130.52    0.624  0.30( 0.29) 0.97   47532.5   12201.00
     16    22364.65  139.38    0.609  0.30( 0.29) 0.97   49620.8   12231.00
     17    21679.87  146.80    0.596  0.30( 0.29) 0.97   51032.3   10400.00
     18    20576.74  158.09    0.577  0.30( 0.29) 0.97   52653.1   10320.00
     19    19996.70  162.88    0.568  0.30( 0.29) 0.97   52878.6   10210.00
     20    19493.90  167.69    0.560  0.30( 0.29) 0.97   53040.9   12000.00
     21    16861.65  196.53    0.526  0.30( 0.29) 0.98   53657.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      315.51   26.45    1.361  0.30( 0.30) 0.99     366.4   50300.00
  LONGEST FLOWPATH FROM NODE  50300.00 TO NODE  12902.00 =    8614.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12726.30   11.41    2.370  0.30( 0.26) 0.85    2301.7   50200.00
      2    14893.08   22.85    1.492  0.30( 0.26) 0.85    4581.1     410.00
      3    15585.33   26.45    1.361  0.30( 0.26) 0.85    5653.1   50300.00
      4    16032.37   28.92    1.290  0.30( 0.26) 0.85    6353.9     400.00
      5    16514.40   33.41    1.197  0.30( 0.26) 0.87    7895.6   50150.00
      6    16995.36   38.86    1.098  0.30( 0.27) 0.90    9622.0     600.00
      7    18841.83   57.45    0.894  0.30( 0.28) 0.93   15439.6   40100.00
      8    19471.26   66.55    0.840  0.30( 0.28) 0.94   18217.3   11801.00
      9    20740.91   80.22    0.773  0.30( 0.29) 0.95   23212.6   11530.00
     10    21613.10   88.49    0.732  0.30( 0.29) 0.96   27100.7   11900.00
     11    23107.40   98.25    0.702  0.30( 0.29) 0.97   32911.3   11330.00
     12    23965.65  106.50    0.679  0.30( 0.29) 0.97   37998.4   10630.00
     13    23870.30  112.07    0.664  0.30( 0.29) 0.97   40588.3   12330.00
     14    23750.24  118.67    0.646  0.30( 0.29) 0.97   43730.8   11600.00
     15    23488.74  124.43    0.634  0.30( 0.29) 0.97   45965.1   11111.00
     16    23193.31  130.52    0.624  0.30( 0.29) 0.97   47898.9   12201.00
     17    22457.38  139.38    0.609  0.30( 0.29) 0.97   49987.2   12231.00
     18    21768.83  146.80    0.596  0.30( 0.29) 0.97   51398.7   10400.00
     19    20659.96  158.09    0.577  0.30( 0.29) 0.97   53019.5   10320.00
     20    20077.49  162.88    0.568  0.30( 0.29) 0.97   53245.0   10210.00
     21    19572.25  167.69    0.560  0.30( 0.29) 0.97   53407.3   12000.00
     22    16929.94  196.53    0.526  0.30( 0.29) 0.98   54024.3   10100.00
   TOTAL AREA(ACRES) =     54024.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    23965.65  Tc(MIN.) =  106.501
  EFFECTIVE AREA(ACRES) =  37998.44  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54024.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
```

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

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.14
  CHANNEL FLOW THRU SUBAREA(CFS) =   23965.65
  FLOW VELOCITY(FEET/SEC.) =   7.57   FLOW DEPTH(FEET) =  12.14
  TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  108.47
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XX10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       81.37   17.84  0.30( 0.29) 0.97       70.5   50400.00
    TOTAL AREA(ACRES) =       70.5

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    12726.30   13.83    2.041  0.30( 0.26) 0.85    2301.7   50200.00
      2    14893.08   25.14    1.399  0.30( 0.26) 0.85    4581.1     410.00
      3    15585.33   28.71    1.296  0.30( 0.26) 0.85    5653.1   50300.00
      4    16032.37   31.16    1.238  0.30( 0.26) 0.85    6353.9     400.00
      5    16514.40   35.64    1.156  0.30( 0.26) 0.87    7895.6   50150.00
      6    16995.36   41.06    1.064  0.30( 0.27) 0.90    9622.0     600.00
      7    18841.83   59.58    0.876  0.30( 0.28) 0.93   15439.6   40100.00
      8    19471.26   68.66    0.830  0.30( 0.28) 0.94   18217.3   11801.00
      9    20740.91   82.29    0.763  0.30( 0.29) 0.95   23212.6   11530.00
     10    21613.10   90.52    0.724  0.30( 0.29) 0.96   27100.7   11900.00
     11    23107.40  100.24    0.697  0.30( 0.29) 0.97   32911.3   11330.00
     12    23965.65  108.47    0.674  0.30( 0.29) 0.97   37998.4   10630.00
     13    23870.30  114.04    0.658  0.30( 0.29) 0.97   40588.3   12330.00
     14    23750.24  120.65    0.641  0.30( 0.29) 0.97   43730.8   11600.00
     15    23488.74  126.41    0.631  0.30( 0.29) 0.97   45965.1   11111.00
     16    23193.31  132.52    0.621  0.30( 0.29) 0.97   47898.9   12201.00
     17    22457.38  141.40    0.605  0.30( 0.29) 0.97   49987.2   12231.00
```



```
     18    21768.83  148.83    0.593  0.30( 0.29) 0.97   51398.7   10400.00
     19    20659.96  160.16    0.573  0.30( 0.29) 0.97   53019.5   10320.00
     20    20077.49  164.97    0.565  0.30( 0.29) 0.97   53245.0   10210.00
     21    19572.25  169.79    0.557  0.30( 0.29) 0.97   53407.3   12000.00
     22    16929.94  198.73    0.524  0.30( 0.29) 0.98   54024.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       81.37   17.84    1.727  0.30( 0.29) 0.97       70.5   50400.00
  LONGEST FLOWPATH FROM NODE  50400.00 TO NODE  12903.00 =    3607.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    12803.13   13.83    2.041  0.30( 0.26) 0.86    2356.3   50200.00
      2    13575.40   17.84    1.727  0.30( 0.26) 0.86    3179.8   50400.00
      3    14955.86   25.14    1.399  0.30( 0.26) 0.85    4651.6     410.00
      4    15642.29   28.71    1.296  0.30( 0.26) 0.86    5723.6   50300.00
      5    16086.04   31.16    1.238  0.30( 0.26) 0.86    6424.4     400.00
      6    16563.45   35.64    1.156  0.30( 0.26) 0.87    7966.1   50150.00
      7    17039.21   41.06    1.064  0.30( 0.27) 0.90    9692.5     600.00
      8    18874.99   59.58    0.876  0.30( 0.28) 0.93   15510.1   40100.00
      9    19501.81   68.66    0.830  0.30( 0.28) 0.94   18287.8   11801.00
     10    20767.68   82.29    0.763  0.30( 0.29) 0.95   23283.1   11530.00
     11    21637.64   90.52    0.724  0.30( 0.29) 0.96   27171.2   11900.00
     12    23130.43  100.24    0.697  0.30( 0.29) 0.97   32981.8   11330.00
     13    23987.38  108.47    0.674  0.30( 0.29) 0.97   38068.9   10630.00
     14    23891.16  114.04    0.658  0.30( 0.29) 0.97   40658.8   12330.00
     15    23770.10  120.65    0.641  0.30( 0.29) 0.97   43801.3   11600.00
     16    23508.05  126.41    0.631  0.30( 0.29) 0.97   46035.6   11111.00
     17    23212.03  132.52    0.621  0.30( 0.29) 0.97   47969.4   12201.00
     18    22475.24  141.40    0.605  0.30( 0.29) 0.97   50057.7   12231.00
     19    21785.96  148.83    0.593  0.30( 0.29) 0.97   51469.2   10400.00
     20    20675.99  160.16    0.573  0.30( 0.29) 0.97   53090.0   10320.00
     21    20093.05  164.97    0.565  0.30( 0.29) 0.97   53315.5   10210.00
     22    19587.34  169.79    0.557  0.30( 0.29) 0.97   53477.8   12000.00
     23    16943.21  198.73    0.524  0.30( 0.29) 0.98   54094.8   10100.00
    TOTAL AREA(ACRES) =     54094.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    23987.38  Tc(MIN.) =  108.472
  EFFECTIVE AREA(ACRES) =  38068.94  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54094.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12904.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.64
CHANNEL FLOW THRU SUBAREA(CFS) = 23987.38
FLOW VELOCITY(FEET/SEC.) = 7.98 FLOW DEPTH(FEET) = 11.64
TRAVEL TIME(MIN.) = 1.60 Tc(MIN.) = 110.08
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3B10EVRL.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 285.52 | 17.62 | 0.30( 0.13) | 0.43 | 197.2 | 203.00 |
| 2 | 284.35 | 20.09 | 0.30( 0.13) | 0.43 | 213.7 | 210.00 |

TOTAL AREA(ACRES) = 213.7

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12803.13 | 15.79 | 1.838 | 0.30( 0.26) | 0.86 | 2356.3 | 50200.00 |
| 2 | 13575.40 | 19.76 | 1.623 | 0.30( 0.26) | 0.86 | 3179.8 | 50400.00 |
| 3 | 14955.86 | 27.01 | 1.345 | 0.30( 0.26) | 0.85 | 4651.6 | 410.00 |
| 4 | 15642.29 | 30.55 | 1.249 | 0.30( 0.26) | 0.86 | 5723.6 | 50300.00 |
| 5 | 16086.04 | 32.99 | 1.205 | 0.30( 0.26) | 0.86 | 6424.4 | 400.00 |
| 6 | 16563.45 | 37.44 | 1.124 | 0.30( 0.26) | 0.87 | 7966.1 | 50150.00 |
| 7 | 17039.21 | 42.85 | 1.043 | 0.30( 0.27) | 0.90 | 9692.5 | 600.00 |
| 8 | 18874.99 | 61.31 | 0.866 | 0.30( 0.28) | 0.93 | 15510.1 | 40100.00 |
| 9 | 19501.81 | 70.37 | 0.821 | 0.30( 0.28) | 0.94 | 18287.8 | 11801.00 |
| 10 | 20767.68 | 83.96 | 0.755 | 0.30( 0.29) | 0.95 | 23283.1 | 11530.00 |
| 11 | 21637.64 | 92.18 | 0.719 | 0.30( 0.29) | 0.96 | 27171.2 | 11900.00 |
| 12 | 23130.43 | 101.86 | 0.692 | 0.30( 0.29) | 0.97 | 32981.8 | 11330.00 |
| 13 | 23987.38 | 110.08 | 0.669 | 0.30( 0.29) | 0.97 | 38068.9 | 10630.00 |
| 14 | 23891.16 | 115.65 | 0.654 | 0.30( 0.29) | 0.97 | 40658.8 | 12330.00 |
| 15 | 23770.10 | 122.26 | 0.638 | 0.30( 0.29) | 0.97 | 43801.3 | 11600.00 |
| 16 | 23508.05 | 128.02 | 0.628 | 0.30( 0.29) | 0.97 | 46035.6 | 11111.00 |
| 17 | 23212.03 | 134.14 | 0.618 | 0.30( 0.29) | 0.97 | 47969.4 | 12201.00 |
| 18 | 22475.24 | 143.03 | 0.602 | 0.30( 0.29) | 0.97 | 50057.7 | 12231.00 |
| 19 | 21785.96 | 150.49 | 0.590 | 0.30( 0.29) | 0.97 | 51469.2 | 10400.00 |
| 20 | 20675.99 | 161.84 | 0.570 | 0.30( 0.29) | 0.97 | 53090.0 | 10320.00 |
| 21 | 20093.05 | 166.67 | 0.562 | 0.30( 0.29) | 0.97 | 53315.5 | 10210.00 |
| 22 | 19587.34 | 171.50 | 0.554 | 0.30( 0.29) | 0.97 | 53477.8 | 12000.00 |
| 23 | 16943.21 | 200.53 | 0.523 | 0.30( 0.29) | 0.98 | 54094.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.



** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 285.52 | 17.62 | 1.739 | 0.30( 0.13) | 0.43 | 197.2 | 203.00 |
| 2 | 284.35 | 20.09 | 1.606 | 0.30( 0.13) | 0.43 | 213.7 | 210.00 |

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 7986.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13074.82 | 15.79 | 1.838 | 0.30( 0.25) | 0.83 | 2533.1 | 50200.00 |
| 2 | 13443.41 | 17.62 | 1.739 | 0.30( 0.25) | 0.83 | 2931.8 | 203.00 |
| 3 | 13859.91 | 19.76 | 1.623 | 0.30( 0.25) | 0.83 | 3391.4 | 50400.00 |
| 4 | 13921.15 | 20.09 | 1.606 | 0.30( 0.25) | 0.83 | 3459.0 | 210.00 |
| 5 | 15189.94 | 27.01 | 1.345 | 0.30( 0.25) | 0.84 | 4865.3 | 410.00 |
| 6 | 15857.89 | 30.55 | 1.249 | 0.30( 0.25) | 0.84 | 5937.3 | 50300.00 |
| 7 | 16293.12 | 32.99 | 1.205 | 0.30( 0.25) | 0.84 | 6638.1 | 400.00 |
| 8 | 16754.94 | 37.44 | 1.124 | 0.30( 0.26) | 0.86 | 8179.8 | 50150.00 |
| 9 | 17215.27 | 42.85 | 1.043 | 0.30( 0.27) | 0.89 | 9906.2 | 600.00 |
| 10 | 19016.85 | 61.31 | 0.866 | 0.30( 0.28) | 0.93 | 15723.8 | 40100.00 |
| 11 | 19635.14 | 70.37 | 0.821 | 0.30( 0.28) | 0.94 | 18501.5 | 11801.00 |
| 12 | 20888.20 | 83.96 | 0.755 | 0.30( 0.28) | 0.95 | 23496.8 | 11530.00 |
| 13 | 21751.31 | 92.18 | 0.719 | 0.30( 0.29) | 0.95 | 27384.9 | 11900.00 |
| 14 | 23238.95 | 101.86 | 0.692 | 0.30( 0.29) | 0.96 | 33195.5 | 11330.00 |
| 15 | 24091.53 | 110.08 | 0.669 | 0.30( 0.29) | 0.97 | 38282.6 | 10630.00 |
| 16 | 23992.35 | 115.65 | 0.654 | 0.30( 0.29) | 0.97 | 40872.5 | 12330.00 |
| 17 | 23868.22 | 122.26 | 0.638 | 0.30( 0.29) | 0.97 | 44015.0 | 11600.00 |
| 18 | 23604.27 | 128.02 | 0.628 | 0.30( 0.29) | 0.97 | 46249.3 | 11111.00 |
| 19 | 23306.23 | 134.14 | 0.618 | 0.30( 0.29) | 0.97 | 48183.1 | 12201.00 |
| 20 | 22566.50 | 143.03 | 0.602 | 0.30( 0.29) | 0.97 | 50271.4 | 12231.00 |
| 21 | 21874.76 | 150.49 | 0.590 | 0.30( 0.29) | 0.97 | 51682.9 | 10400.00 |
| 22 | 20761.04 | 161.84 | 0.570 | 0.30( 0.29) | 0.97 | 53303.7 | 10320.00 |
| 23 | 20176.51 | 166.67 | 0.562 | 0.30( 0.29) | 0.97 | 53529.2 | 10210.00 |
| 24 | 19669.20 | 171.50 | 0.554 | 0.30( 0.29) | 0.97 | 53691.5 | 12000.00 |
| 25 | 17019.20 | 200.53 | 0.523 | 0.30( 0.29) | 0.97 | 54308.5 | 10100.00 |

TOTAL AREA(ACRES) = 54308.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 24091.53 Tc(MIN.) = 110.075
EFFECTIVE AREA(ACRES) = 38282.64 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 54308.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 110.08
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| RESIDENTIAL "4 DWELLING/ACRE" | B | 0.10 | 0.30 | 0.900 | 56 |
| NATURAL FAIR COVER | | | | | |

```
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  COMMERCIAL                 B        1.20      0.30     0.100    56
  COMMERCIAL                 B        1.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.641
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    2.92
  EFFECTIVE AREA(ACRES) =  38289.44   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54315.3       PEAK FLOW RATE(CFS) =   24091.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  110.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.60      0.30     1.000    69
  PUBLIC PARK                B       15.10      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B       20.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.941
  SUBAREA AREA(ACRES) =   38.70      SUBAREA RUNOFF(CFS) =   13.48
  EFFECTIVE AREA(ACRES) =  38328.14   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54354.0       PEAK FLOW RATE(CFS) =   24091.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    54354.0  TC(MIN.) =    110.08
  EFFECTIVE AREA(ACRES) =  38328.14  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.966
  PEAK FLOW RATE(CFS)   =   24091.53

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    13074.82   15.79    1.838  0.30( 0.25) 0.83    2578.6   50200.00
      2    13443.41   17.62    1.739  0.30( 0.25) 0.83    2977.3     203.00
      3    13859.91   19.76    1.623  0.30( 0.25) 0.83    3436.9   50400.00
      4    13921.15   20.09    1.606  0.30( 0.25) 0.83    3504.5     210.00
      5    15189.94   27.01    1.345  0.30( 0.25) 0.84    4910.8     410.00
      6    15857.89   30.55    1.249  0.30( 0.25) 0.84    5982.8   50300.00
      7    16293.12   32.99    1.205  0.30( 0.25) 0.84    6683.6     400.00
      8    16754.94   37.44    1.124  0.30( 0.26) 0.86    8225.3   50150.00
      9    17215.27   42.85    1.043  0.30( 0.27) 0.89    9951.7     600.00
     10    19016.85   61.31    0.866  0.30( 0.28) 0.93   15769.3   40100.00
     11    19635.14   70.37    0.821  0.30( 0.28) 0.94   18547.0   11801.00
```



```
     12    20888.20   83.96    0.755  0.30( 0.28) 0.95   23542.3   11530.00
     13    21751.31   92.18    0.719  0.30( 0.29) 0.95   27430.4   11900.00
     14    23238.95  101.86    0.692  0.30( 0.29) 0.96   33241.0   11330.00
     15    24091.53  110.08    0.669  0.30( 0.29) 0.97   38328.1   10630.00
     16    23992.35  115.65    0.654  0.30( 0.29) 0.97   40918.0   12330.00
     17    23868.22  122.26    0.638  0.30( 0.29) 0.97   44060.5   11600.00
     18    23604.27  128.02    0.628  0.30( 0.29) 0.97   46294.8   11111.00
     19    23306.23  134.14    0.618  0.30( 0.29) 0.97   48228.6   12201.00
     20    22566.50  143.03    0.602  0.30( 0.29) 0.97   50316.9   12231.00
     21    21874.76  150.49    0.590  0.30( 0.29) 0.97   51728.4   10400.00
     22    20761.04  161.84    0.570  0.30( 0.29) 0.97   53349.2   10320.00
     23    20176.51  166.67    0.562  0.30( 0.29) 0.97   53574.7   10210.00
     24    19669.20  171.50    0.554  0.30( 0.29) 0.97   53737.0   12000.00
     25    17019.20  200.53    0.523  0.30( 0.29) 0.97   54354.0   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 10-YR EV MAY 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI10EV33.DAT
  TIME/DATE OF STUDY: 08:12 05/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.775
   2)   10.00;  2.517
   3)   15.00;  1.863
   4)   20.00;  1.593
   5)   25.00;  1.391
   6)   30.00;  1.250
   7)   40.00;  1.068
   8)   50.00;  0.950
   9)   60.00;  0.862
  10)   90.00;  0.714
  11)  120.00;  0.630
  12)  180.00;  0.528
  13)  360.00;  0.388
  14) 1200.00;  0.170
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1716.14   38.98  0.30( 0.24) 0.81    2485.1   13100.00
      2     1689.35   68.05  0.30( 0.24) 0.81    3778.1   13000.00
      3     1657.69   70.37  0.30( 0.24) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

****************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      821.94   36.32  0.30( 0.25) 0.83    1125.1   13210.00
      2      821.47   36.44  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =     1127.6

****************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      821.94   36.32  0.30( 0.25) 0.83    1125.1   13210.00
      2      821.47   36.44  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =      1127.6

****************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      821.94   36.32    1.135  0.30( 0.25) 0.83    1125.1   13210.00
      2      821.47   36.44    1.133  0.30( 0.25) 0.83    1127.6   13200.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      1716.14   38.98    1.087  0.30( 0.24) 0.81    2485.1   13100.00
     2      1689.35   68.05    0.822  0.30( 0.24) 0.81    3778.1   13000.00
     3      1657.69   70.37    0.811  0.30( 0.24) 0.81    3796.8   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      2512.74   36.32    1.135  0.30( 0.24) 0.82    3440.8   13210.00
     2      2513.70   36.44    1.133  0.30( 0.24) 0.82    3450.9   13200.00
     3      2494.71   38.98    1.087  0.30( 0.24) 0.82    3612.7   13100.00
     4      2222.44   68.05    0.822  0.30( 0.24) 0.81    4905.7   13000.00
     5      2180.16   70.37    0.811  0.30( 0.24) 0.81    4924.4   13010.00
   TOTAL AREA(ACRES) =      4924.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     2513.70  Tc(MIN.) =   36.438
 EFFECTIVE AREA(ACRES) =   3450.86  AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     4924.4
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.83
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.064
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       15.60      0.30     1.000    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
 AGRICULTURAL POOR COVER
```



```
 "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 COMMERCIAL                 B       22.60      0.30     0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2532.15
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.74
 AVERAGE FLOW DEPTH(FEET) =   3.83   TRAVEL TIME(MIN.) =   3.93
 Tc(MIN.) =   40.37
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   36.91
 EFFECTIVE AREA(ACRES) =   3496.06     AREA-AVERAGED Fm(INCH/HR) =   0.24
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.81
 TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    2580.54
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.87   FLOW VELOCITY(FEET/SEC.) =  10.82
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      2577.71   40.24    1.065  0.30( 0.24) 0.81    3486.0   13210.00
     2      2580.54   40.37    1.064  0.30( 0.24) 0.81    3496.1   13200.00
     3      2601.28   42.91    1.034  0.30( 0.24) 0.81    3657.9   13100.00
     4      2491.96   72.14    0.802  0.30( 0.24) 0.81    4950.9   13000.00
     5      2449.85   74.49    0.791  0.30( 0.24) 0.81    4969.6   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2601.28  Tc(MIN.) =   42.91
 AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.81  EFFECTIVE AREA(ACRES) =    3657.90

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.034
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        7.40      0.30     0.100    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   12.69
 EFFECTIVE AREA(ACRES) =   3674.40   AREA-AVERAGED Fm(INCH/HR) =  0.24
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    2613.98

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        1.30      0.30     1.000    86
  COMMERCIAL                B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    5.26
  EFFECTIVE AREA(ACRES) =   3682.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    2619.24

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   14.53
  EFFECTIVE AREA(ACRES) =   3704.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
```



```
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    2633.77

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =    9.90
  EFFECTIVE AREA(ACRES) =   3719.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    2643.67

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.859
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.53
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      2.53

****************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.25
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   0.36
  Tc(MIN.) =    9.00
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    2.89
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       5.33

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOW VELOCITY(FEET/SEC.) =   6.88
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.43
  AVERAGE FLOW DEPTH(FEET) =   0.59   TRAVEL TIME(MIN.) =   0.46
  Tc(MIN.) =    9.46
```



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  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    4.87
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =       9.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   7.96
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.467
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.79
  AVERAGE FLOW DEPTH(FEET) =   0.88   TRAVEL TIME(MIN.) =   0.92
  Tc(MIN.) =   10.38
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    7.02
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      16.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =   6.07
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.367
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
```

```
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.26
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   0.77
  Tc(MIN.) =   11.15
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   11.91
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      27.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.26
  AVERAGE FLOW DEPTH(FEET) =   1.30   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =   11.94
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   19.09
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      45.07
```



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  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.40   FLOW VELOCITY(FEET/SEC.) =   7.65
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.070
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.97
  AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   1.48
  Tc(MIN.) =   13.42
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   24.05
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      64.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.73   FLOW VELOCITY(FEET/SEC.) =   7.16
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.952
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```

```
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.98
  AVERAGE FLOW DEPTH(FEET) =   1.93   TRAVEL TIME(MIN.) =   0.90
  Tc(MIN.) =   14.32
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   27.21
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =      87.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   7.18
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.841
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.93
  AVERAGE FLOW DEPTH(FEET) =   2.03   TRAVEL TIME(MIN.) =   1.09
  Tc(MIN.) =   15.41
```



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  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   20.25
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     101.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.06   FLOW VELOCITY(FEET/SEC.) =   8.03
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.841
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   45.49
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     147.42

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
```

```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     152.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.34
  AVERAGE FLOW DEPTH(FEET) =   2.47   TRAVEL TIME(MIN.) =   2.84
  Tc(MIN.) =   18.25
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   10.37
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     147.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.44   FLOW VELOCITY(FEET/SEC.) =   8.28
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   27.24
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     170.37

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



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  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     180.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.44
  AVERAGE FLOW DEPTH(FEET) =   2.84   TRAVEL TIME(MIN.) =   4.14
  Tc(MIN.) =   22.38
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   19.51
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     170.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.78   FLOW VELOCITY(FEET/SEC.) =   7.35
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      170.37   22.38    1.497  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2621.84   40.24    1.065  0.30( 0.24) 0.81    3547.4   13210.00
      2     2624.58   40.37    1.064  0.30( 0.24) 0.81    3557.5   13200.00
      3     2643.67   42.91    1.034  0.30( 0.24) 0.81    3719.3   13100.00
      4     2521.55   72.14    0.802  0.30( 0.24) 0.81    5012.3   13000.00
      5     2478.80   74.49    0.791  0.30( 0.24) 0.81    5031.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

```
      1     2395.03   22.38    1.497  0.30( 0.25) 0.83    2127.6   31100.00
      2     2730.78   40.24    1.065  0.30( 0.25) 0.82    3701.9   13210.00
      3     2733.32   40.37    1.064  0.30( 0.25) 0.82    3712.0   13200.00
      4     2748.13   42.91    1.034  0.30( 0.25) 0.82    3873.8   13100.00
      5     2593.06   72.14    0.802  0.30( 0.24) 0.82    5166.8   13000.00
      6     2548.66   74.49    0.791  0.30( 0.24) 0.82    5185.5   13010.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2748.13  Tc(MIN.) =   42.911
  EFFECTIVE AREA(ACRES) =   3873.80  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2751.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.65
  AVERAGE FLOW DEPTH(FEET) =   5.43   TRAVEL TIME(MIN.) =   2.49
  Tc(MIN.) =   45.40
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    5.96
  EFFECTIVE AREA(ACRES) =   3883.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    2748.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
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  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.42   FLOW VELOCITY(FEET/SEC.) =   7.65
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13302.00 =   35800.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2395.03   24.98    1.392  0.30( 0.25) 0.83    2137.0   31100.00
      2     2730.78   42.73    1.036  0.30( 0.25) 0.82    3711.3   13210.00
      3     2733.32   42.86    1.034  0.30( 0.25) 0.82    3721.4   13200.00
      4     2748.13   45.40    1.004  0.30( 0.25) 0.82    3883.2   13100.00
      5     2593.06   74.67    0.790  0.30( 0.24) 0.82    5176.2   13000.00
      6     2548.66   77.03    0.778  0.30( 0.24) 0.82    5194.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2748.13  Tc(MIN.) =   45.40
  AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.82  EFFECTIVE AREA(ACRES) =    3883.20

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.40
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        2.60      0.30     1.000    86
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   18.17
  EFFECTIVE AREA(ACRES) =   3911.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    2748.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.40
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
 COMMERCIAL                 B        0.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
 SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.05
 EFFECTIVE AREA(ACRES) =   3914.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    2748.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.40
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.10      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       13.80      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   12.80
 EFFECTIVE AREA(ACRES) =   3934.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    2748.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.40
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
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 "ROW CROPS,CONTOURED"      B       34.60      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       22.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B       11.60      0.30     1.000    79
 APARTMENTS                 B        0.40      0.30     0.200    56
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        4.80      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
 SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   48.51
 EFFECTIVE AREA(ACRES) =   4011.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    2748.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.40
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                    B        1.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       46.40      0.30     1.000    66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"       B        0.10      0.30     0.200    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B       60.70      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        5.80      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
 SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   72.66
 EFFECTIVE AREA(ACRES) =   4125.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    2803.58

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.91
 CHANNEL FLOW THRU SUBAREA(CFS) =    2803.58
 FLOW VELOCITY(FEET/SEC.) =   8.82   FLOW DEPTH(FEET) =   4.91
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 TRAVEL TIME(MIN.) =   4.15   Tc(MIN.) =   49.54
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13303.00 =   37994.87 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2438.32   29.31    1.269  0.30( 0.25) 0.84    2379.4   31100.00
     2     2797.64   46.88    0.987  0.30( 0.25) 0.83    3953.7   13210.00
     3     2799.68   47.01    0.985  0.30( 0.25) 0.83    3963.8   13200.00
     4     2803.58   49.54    0.955  0.30( 0.25) 0.83    4125.6   13100.00
     5     2644.86   78.89    0.769  0.30( 0.25) 0.82    5418.6   13000.00
     6     2597.35   81.28    0.757  0.30( 0.25) 0.82    5437.3   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2803.58  Tc(MIN.) =   49.54
 AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    4125.60

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   49.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.80      0.30     1.000    86
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        2.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.20      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
 SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    4.82
 EFFECTIVE AREA(ACRES) =   4133.20   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   49.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
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 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
 COMMERCIAL                 B        3.60      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        4.00      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
 SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =    9.60
 EFFECTIVE AREA(ACRES) =   4148.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   49.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.30      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =   14.51
 EFFECTIVE AREA(ACRES) =   4172.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   49.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        0.30      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.60      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B       31.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
  SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =   20.92
  EFFECTIVE AREA(ACRES) =   4207.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   49.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    6.68
  EFFECTIVE AREA(ACRES) =   4218.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   49.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =   4230.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.936
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2805.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.37
  AVERAGE FLOW DEPTH(FEET) =   5.68   TRAVEL TIME(MIN.) =   2.09
  Tc(MIN.) =   51.64
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    3.83
  EFFECTIVE AREA(ACRES) =   4236.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.68   FLOW VELOCITY(FEET/SEC.) =   7.36
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.
```

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 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2438.32   31.50    1.223  0.30( 0.25) 0.85    2490.5   31100.00
     2     2797.64   48.98    0.962  0.30( 0.25) 0.83    4064.8   13210.00
     3     2799.68   49.10    0.961  0.30( 0.25) 0.83    4074.9   13200.00
     4     2803.58   51.64    0.936  0.30( 0.25) 0.83    4236.7   13100.00
     5     2644.86   81.02    0.758  0.30( 0.25) 0.83    5529.7   13000.00
     6     2597.35   83.42    0.746  0.30( 0.25) 0.83    5548.4   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2803.58  Tc(MIN.) =   51.64
 AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    4236.70

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   51.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.936
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.80      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    4.06
 EFFECTIVE AREA(ACRES) =   4243.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   51.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.936
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        7.80      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        9.40      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.20      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
```



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 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   13.05
 EFFECTIVE AREA(ACRES) =   4266.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   51.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.936
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
 SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    1.95
 EFFECTIVE AREA(ACRES) =   4270.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    2803.58
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.57
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        1.70      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        0.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 NATURAL FAIR COVER
```

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"WOODLAND,GRASS"           B        0.40      0.30     1.000    65
NATURAL POOR COVER
"BARREN"                   B        2.20      0.30     1.000    86
NATURAL FAIR COVER
"GRASS"                    B        4.20      0.30     1.000    69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2806.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.63
AVERAGE FLOW DEPTH(FEET) =   4.57   TRAVEL TIME(MIN.) =   5.13
Tc(MIN.) =   56.77
SUBAREA AREA(ACRES) =     9.20       SUBAREA RUNOFF(CFS) =    4.89
EFFECTIVE AREA(ACRES) =   4279.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    2803.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) =   4.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  4.57   FLOW VELOCITY(FEET/SEC.) =   9.64
LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
    1     2438.32   36.86    1.125  0.30( 0.26) 0.85    2533.0   31100.00
    2     2797.64   54.11    0.914  0.30( 0.25) 0.84    4107.3   13210.00
    3     2799.68   54.23    0.913  0.30( 0.25) 0.84    4117.4   13200.00
    4     2803.58   56.77    0.890  0.30( 0.25) 0.84    4279.2   13100.00
    5     2644.86   86.25    0.733  0.30( 0.25) 0.83    5572.2   13000.00
    6     2597.35   88.68    0.721  0.30( 0.25) 0.83    5590.9   13010.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    2803.58  Tc(MIN.) =   56.77
AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.84  EFFECTIVE AREA(ACRES) =    4279.20

****************************************************************************
FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   56.77
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"               B        8.10      0.30     1.000    66
NATURAL FAIR COVER
"WOODLAND,GRASS"           B        2.30      0.30     1.000    65
NATURAL FAIR COVER
"GRASS"                    B        0.20      0.30     1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"               B        6.90      0.30     1.000    66
NATURAL FAIR COVER
"WOODLAND,GRASS"           B        0.70      0.30     1.000    65
```



```
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =    9.67
EFFECTIVE AREA(ACRES) =   4297.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    2803.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   56.77
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL POOR COVER
"BARREN"                   B       18.40      0.30     1.000    86
NATURAL FAIR COVER
"MEADOWS"                  B        1.20      0.30     1.000    70
NATURAL FAIR COVER
"WOODLAND,GRASS"           B        0.10      0.30     1.000    65
NATURAL POOR COVER
"BARREN"                   B       26.60      0.30     1.000    86
COMMERCIAL                 B        3.90      0.30     0.100    56
AGRICULTURAL POOR COVER
"FALLOW"                   B        3.00      0.30     1.000    86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   29.22
EFFECTIVE AREA(ACRES) =   4350.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    2803.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   56.77
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"           B        0.20      0.30     1.000    65
NATURAL POOR COVER
"BARREN"                   B       14.00      0.30     1.000    86
COMMERCIAL                 B        4.30      0.30     0.100    56
AGRICULTURAL POOR COVER
"FALLOW"                   B        5.30      0.30     1.000    86
NATURAL FAIR COVER
"GRASS"                    B        2.70      0.30     1.000    69
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   15.71
  EFFECTIVE AREA(ACRES) =   4378.20   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                 B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   13.86
  EFFECTIVE AREA(ACRES) =   4403.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    6.24
  EFFECTIVE AREA(ACRES) =   4414.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.890
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    4.84
  EFFECTIVE AREA(ACRES) =   4423.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    2803.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A10EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      742.58   14.11  0.30( 0.13) 0.43     433.8     120.00
      2      739.67   14.27  0.30( 0.13) 0.43     436.5     110.00
      3      635.72   21.58  0.30( 0.13) 0.43     503.8     100.00
      4      587.61   24.64  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2438.32   36.86    1.125  0.30( 0.26) 0.85    2677.1   31100.00
      2     2797.64   54.11    0.914  0.30( 0.25) 0.84    4251.4   13210.00
      3     2799.68   54.23    0.913  0.30( 0.25) 0.84    4261.5   13200.00
```

```
     4     2803.58   56.77    0.890  0.30( 0.25) 0.84    4423.3   13100.00
     5     2644.86   86.25    0.733  0.30( 0.25) 0.83    5716.3   13000.00
     6     2597.35   88.68    0.721  0.30( 0.25) 0.83    5735.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      742.58   14.11    1.980  0.30( 0.13) 0.43     433.8     120.00
      2      739.67   14.27    1.959  0.30( 0.13) 0.43     436.5     110.00
      3      635.72   21.58    1.529  0.30( 0.13) 0.43     503.8     100.00
      4      587.61   24.64    1.406  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2593.75   14.11    1.980  0.30( 0.22) 0.73    1458.5     120.00
      2     2589.10   14.27    1.959  0.30( 0.22) 0.73    1472.8     110.00
      3     2727.09   21.58    1.529  0.30( 0.23) 0.75    2071.2     100.00
      4     2743.59   24.64    1.406  0.30( 0.23) 0.76    2299.7     150.00
      5     2896.72   36.86    1.125  0.30( 0.24) 0.79    3187.3   31100.00
      6     3158.69   54.11    0.914  0.30( 0.24) 0.80    4761.6   13210.00
      7     3160.24   54.23    0.913  0.30( 0.24) 0.80    4771.7   13200.00
      8     3153.84   56.77    0.890  0.30( 0.24) 0.80    4933.5   13100.00
      9     2922.38   86.25    0.733  0.30( 0.24) 0.80    6226.5   13000.00
     10     2869.36   88.68    0.721  0.30( 0.24) 0.80    6245.2   13010.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3160.24  Tc(MIN.) =   54.232
  EFFECTIVE AREA(ACRES) =   4771.66  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
```



```
  "BARREN"                  B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                   B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        4.10      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3164.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.06
  AVERAGE FLOW DEPTH(FEET) =   4.51   TRAVEL TIME(MIN.) =   6.64
  Tc(MIN.) =   60.88
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =    9.24
  EFFECTIVE AREA(ACRES) =   4790.06     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6          PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.50   FLOW VELOCITY(FEET/SEC.) =  11.05
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2593.75   21.19    1.545  0.30( 0.22) 0.73    1476.9     120.00
      2     2589.10   21.35    1.539  0.30( 0.22) 0.73    1491.2     110.00
      3     2727.09   28.55    1.291  0.30( 0.23) 0.75    2089.6     100.00
      4     2743.59   31.58    1.221  0.30( 0.23) 0.76    2318.1     150.00
      5     2896.72   43.69    1.024  0.30( 0.24) 0.79    3205.7   31100.00
      6     3158.69   60.76    0.858  0.30( 0.24) 0.80    4780.0   13210.00
      7     3160.24   60.88    0.858  0.30( 0.24) 0.80    4790.1   13200.00
      8     3153.84   63.43    0.845  0.30( 0.24) 0.80    4951.9   13100.00
      9     2922.38   93.07    0.705  0.30( 0.24) 0.80    6244.9   13000.00
     10     2869.36   95.53    0.699  0.30( 0.24) 0.80    6263.6   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3160.24  Tc(MIN.) =   60.88
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    4790.06

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   24.89
  EFFECTIVE AREA(ACRES) =   4839.66   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.40
  EFFECTIVE AREA(ACRES) =   4840.46   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
```



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  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.67
  EFFECTIVE AREA(ACRES) =   4841.76   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    4.18
  EFFECTIVE AREA(ACRES) =   4849.36   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
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```
  COMMERCIAL                  B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   28.28
  EFFECTIVE AREA(ACRES) =   4896.96   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   60.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                    B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                    B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   29.20
  EFFECTIVE AREA(ACRES) =   4955.14   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.45
  CHANNEL FLOW THRU SUBAREA(CFS) =    3160.24
  FLOW VELOCITY(FEET/SEC.) =  11.23   FLOW DEPTH(FEET) =   4.45
  TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =   63.17
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2593.75   23.63    1.446  0.30( 0.22) 0.75    1642.0     120.00
      2     2589.10   23.79    1.440  0.30( 0.22) 0.75    1656.2     110.00
      3     2727.09   30.95    1.233  0.30( 0.23) 0.76    2254.7     100.00
      4     2743.59   33.98    1.178  0.30( 0.23) 0.77    2483.1     150.00
      5     2896.72   46.05    0.997  0.30( 0.24) 0.79    3370.8   31100.00
      6     3158.69   63.05    0.847  0.30( 0.24) 0.80    4945.1   13210.00
      7     3160.24   63.17    0.846  0.30( 0.24) 0.80    4955.1   13200.00
      8     3153.84   65.72    0.834  0.30( 0.24) 0.80    5117.0   13100.00
```



```
      9     2922.38   95.42    0.699  0.30( 0.24) 0.80    6410.0   13000.00
     10     2869.36   97.89    0.692  0.30( 0.24) 0.80    6428.7   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3160.24  Tc(MIN.) =   63.17
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    4955.14

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                    B        3.70      0.30     1.000    86
  COMMERCIAL                  B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    3.91
  EFFECTIVE AREA(ACRES) =   4962.84   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    3.00
  EFFECTIVE AREA(ACRES) =   4968.94   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

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****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.33
  CHANNEL FLOW THRU SUBAREA(CFS) =    3160.24
  FLOW VELOCITY(FEET/SEC.) =   8.99   FLOW DEPTH(FEET) =   5.33
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =   64.88
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13308.00 =   48763.78 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2593.75   25.45    1.378  0.30( 0.23) 0.75    1655.8     120.00
      2     2589.10   25.62    1.374  0.30( 0.23) 0.75    1670.0     110.00
      3     2727.09   32.75    1.200  0.30( 0.23) 0.76    2268.5     100.00
      4     2743.59   35.77    1.145  0.30( 0.23) 0.77    2496.9     150.00
      5     2896.72   47.81    0.976  0.30( 0.24) 0.79    3384.6   31100.00
      6     3158.69   64.77    0.838  0.30( 0.24) 0.80    4958.9   13210.00
      7     3160.24   64.88    0.838  0.30( 0.24) 0.80    4968.9   13200.00
      8     3153.84   67.43    0.825  0.30( 0.24) 0.80    5130.8   13100.00
      9     2922.38   97.17    0.694  0.30( 0.24) 0.80    6423.8   13000.00
     10     2869.36   99.66    0.687  0.30( 0.24) 0.80    6442.5   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3160.24  Tc(MIN.) =   64.88
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    4968.94

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.00      0.30     1.000    65
  COMMERCIAL                 B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
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  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    5.38
  EFFECTIVE AREA(ACRES) =   4978.44   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  COMMERCIAL                 B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   46.85
  EFFECTIVE AREA(ACRES) =   5054.04   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.90      0.30     1.000    79
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       13.20      0.30     1.000    65
  APARTMENTS                 B        0.50      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
  SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =    7.70
  EFFECTIVE AREA(ACRES) =   5069.64   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
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  TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B       17.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       16.80      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.60      0.30     0.200    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.50      0.30     0.400    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       10.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   47.53
  EFFECTIVE AREA(ACRES) =   5150.04   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.52
  EFFECTIVE AREA(ACRES) =   5151.04   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.02
  EFFECTIVE AREA(ACRES) =   5153.14   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   64.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  PUBLIC PARK                B        1.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =   5164.74   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    3160.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
```

```
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM        Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)  (MIN.)   (INCH/HR)           (ACRES)    NODE
      1    13921.15   20.09  0.30( 0.25) 0.83    3504.5     210.00
      2    15189.94   27.01  0.30( 0.25) 0.84    4910.8     410.00
      3    16754.94   37.44  0.30( 0.26) 0.86    8225.3   50150.00
      4    17215.27   42.85  0.30( 0.27) 0.89    9951.7     600.00
      5    19016.85   61.31  0.30( 0.28) 0.93   15769.3   40100.00
      6    19635.14   70.37  0.30( 0.28) 0.94   18547.0   11801.00
      7    20888.20   83.96  0.30( 0.28) 0.95   23542.3   11530.00
      8    21751.31   92.18  0.30( 0.29) 0.95   27430.4   11900.00
      9    23238.95  101.86  0.30( 0.29) 0.96   33241.0   11330.00
     10    24091.53  110.08  0.30( 0.29) 0.97   38328.1   10630.00
     11    23992.35  115.65  0.30( 0.29) 0.97   40918.0   12330.00
     12    23868.22  122.26  0.30( 0.29) 0.97   44060.5   11600.00
     13    23604.27  128.02  0.30( 0.29) 0.97   46294.8   11111.00
     14    23306.23  134.14  0.30( 0.29) 0.97   48228.6   12201.00
     15    22566.50  143.03  0.30( 0.29) 0.97   50316.9   12231.00
     16    21874.76  150.49  0.30( 0.29) 0.97   51728.4   10400.00
     17    20761.04  161.84  0.30( 0.29) 0.97   53349.2   10320.00
     18    20176.51  166.67  0.30( 0.29) 0.97   53574.7   10210.00
     19    19669.20  171.50  0.30( 0.29) 0.97   53737.0   12000.00
     20    17019.20  200.53  0.30( 0.29) 0.97   54354.0   10100.00
    TOTAL AREA(ACRES) =    54354.0

******************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM        Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)  (MIN.)   (INCH/HR)           (ACRES)    NODE
      1    13921.15   20.09  0.30( 0.25) 0.83    3504.5     210.00
      2    15189.94   27.01  0.30( 0.25) 0.84    4910.8     410.00
      3    16754.94   37.44  0.30( 0.26) 0.86    8225.3   50150.00
      4    17215.27   42.85  0.30( 0.27) 0.89    9951.7     600.00
      5    19016.85   61.31  0.30( 0.28) 0.93   15769.3   40100.00
      6    19635.14   70.37  0.30( 0.28) 0.94   18547.0   11801.00
      7    20888.20   83.96  0.30( 0.28) 0.95   23542.3   11530.00
      8    21751.31   92.18  0.30( 0.29) 0.95   27430.4   11900.00
      9    23238.95  101.86  0.30( 0.29) 0.96   33241.0   11330.00
     10    24091.53  110.08  0.30( 0.29) 0.97   38328.1   10630.00
     11    23992.35  115.65  0.30( 0.29) 0.97   40918.0   12330.00
     12    23868.22  122.26  0.30( 0.29) 0.97   44060.5   11600.00
     13    23604.27  128.02  0.30( 0.29) 0.97   46294.8   11111.00
     14    23306.23  134.14  0.30( 0.29) 0.97   48228.6   12201.00
     15    22566.50  143.03  0.30( 0.29) 0.97   50316.9   12231.00
     16    21874.76  150.49  0.30( 0.29) 0.97   51728.4   10400.00
     17    20761.04  161.84  0.30( 0.29) 0.97   53349.2   10320.00
     18    20176.51  166.67  0.30( 0.29) 0.97   53574.7   10210.00
     19    19669.20  171.50  0.30( 0.29) 0.97   53737.0   12000.00
     20    17019.20  200.53  0.30( 0.29) 0.97   54354.0   10100.00
```



```
    TOTAL AREA(ACRES) =     54354.0

******************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.75
  CHANNEL FLOW THRU SUBAREA(CFS) =   24091.53
  FLOW VELOCITY(FEET/SEC.) =   6.52   FLOW DEPTH(FEET) =  13.75
  TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =  113.63
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    13921.15   24.31    1.419  0.30( 0.25) 0.83    3504.5     210.00
      2    15189.94   31.12    1.230  0.30( 0.25) 0.84    4910.8     410.00
      3    16754.94   41.42    1.051  0.30( 0.26) 0.86    8225.3   50150.00
      4    17215.27   46.80    0.988  0.30( 0.27) 0.89    9951.7     600.00
      5    19016.85   65.14    0.837  0.30( 0.28) 0.93   15769.3   40100.00
      6    19635.14   74.16    0.792  0.30( 0.28) 0.94   18547.0   11801.00
      7    20888.20   87.68    0.725  0.30( 0.28) 0.95   23542.3   11530.00
      8    21751.31   95.85    0.698  0.30( 0.29) 0.95   27430.4   11900.00
      9    23238.95  105.46    0.671  0.30( 0.29) 0.96   33241.0   11330.00
     10    24091.53  113.63    0.648  0.30( 0.29) 0.97   38328.1   10630.00
     11    23992.35  119.20    0.632  0.30( 0.29) 0.97   40918.0   12330.00
     12    23868.22  125.82    0.620  0.30( 0.29) 0.97   44060.5   11600.00
     13    23604.27  131.60    0.610  0.30( 0.29) 0.97   46294.8   11111.00
     14    23306.23  137.73    0.600  0.30( 0.29) 0.97   48228.6   12201.00
     15    22566.50  146.66    0.585  0.30( 0.29) 0.97   50316.9   12231.00
     16    21874.76  154.15    0.572  0.30( 0.29) 0.97   51728.4   10400.00
     17    20761.04  165.56    0.553  0.30( 0.29) 0.97   53349.2   10320.00
     18    20176.51  170.42    0.544  0.30( 0.29) 0.97   53574.7   10210.00
     19    19669.20  175.29    0.536  0.30( 0.29) 0.97   53737.0   12000.00
     20    17019.20  204.49    0.509  0.30( 0.29) 0.97   54354.0   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   24091.53  Tc(MIN.) =  113.63
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   38328.14

******************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    13921.15   24.31    1.419  0.30( 0.25) 0.83    3504.5     210.00
      2    15189.94   31.12    1.230  0.30( 0.25) 0.84    4910.8     410.00
      3    16754.94   41.42    1.051  0.30( 0.26) 0.86    8225.3   50150.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 17215.27 | 46.80 | 0.988 | 0.30( 0.27) | 0.89 | 9951.7 | 600.00 |
| 5 | 19016.85 | 65.14 | 0.837 | 0.30( 0.28) | 0.93 | 15769.3 | 40100.00 |
| 6 | 19635.14 | 74.16 | 0.792 | 0.30( 0.28) | 0.94 | 18547.0 | 11801.00 |
| 7 | 20888.20 | 87.68 | 0.725 | 0.30( 0.28) | 0.95 | 23542.3 | 11530.00 |
| 8 | 21751.31 | 95.85 | 0.698 | 0.30( 0.29) | 0.95 | 27430.4 | 11900.00 |
| 9 | 23238.95 | 105.46 | 0.671 | 0.30( 0.29) | 0.96 | 33241.0 | 11330.00 |
| 10 | 24091.53 | 113.63 | 0.648 | 0.30( 0.29) | 0.97 | 38328.1 | 10630.00 |
| 11 | 23992.35 | 119.20 | 0.632 | 0.30( 0.29) | 0.97 | 40918.0 | 12330.00 |
| 12 | 23868.22 | 125.82 | 0.620 | 0.30( 0.29) | 0.97 | 44060.5 | 11600.00 |
| 13 | 23604.27 | 131.60 | 0.610 | 0.30( 0.29) | 0.97 | 46294.8 | 11111.00 |
| 14 | 23306.23 | 137.73 | 0.600 | 0.30( 0.29) | 0.97 | 48228.6 | 12201.00 |
| 15 | 22566.50 | 146.66 | 0.585 | 0.30( 0.29) | 0.97 | 50316.9 | 12231.00 |
| 16 | 21874.76 | 154.15 | 0.572 | 0.30( 0.29) | 0.97 | 51728.4 | 10400.00 |
| 17 | 20761.04 | 165.56 | 0.553 | 0.30( 0.29) | 0.97 | 53349.2 | 10320.00 |
| 18 | 20176.51 | 170.42 | 0.544 | 0.30( 0.29) | 0.97 | 53574.7 | 10210.00 |
| 19 | 19669.20 | 175.29 | 0.536 | 0.30( 0.29) | 0.97 | 53737.0 | 12000.00 |
| 20 | 17019.20 | 204.49 | 0.509 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2593.75 | 25.45 | 1.378 | 0.30( 0.22) | 0.74 | 1851.6 | 120.00 |
| 2 | 2589.10 | 25.62 | 1.374 | 0.30( 0.22) | 0.74 | 1865.8 | 110.00 |
| 3 | 2727.09 | 32.75 | 1.200 | 0.30( 0.23) | 0.75 | 2464.3 | 100.00 |
| 4 | 2743.59 | 35.77 | 1.145 | 0.30( 0.23) | 0.76 | 2692.7 | 150.00 |
| 5 | 2896.72 | 47.81 | 0.976 | 0.30( 0.24) | 0.78 | 3580.4 | 31100.00 |
| 6 | 3158.69 | 64.77 | 0.838 | 0.30( 0.24) | 0.79 | 5154.7 | 13210.00 |
| 7 | 3160.24 | 64.88 | 0.838 | 0.30( 0.24) | 0.79 | 5164.7 | 13200.00 |
| 8 | 3153.84 | 67.43 | 0.825 | 0.30( 0.24) | 0.79 | 5326.6 | 13100.00 |
| 9 | 2922.38 | 97.17 | 0.694 | 0.30( 0.24) | 0.80 | 6619.6 | 13000.00 |
| 10 | 2869.36 | 99.66 | 0.687 | 0.30( 0.24) | 0.80 | 6638.3 | 13010.00 |

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 16485.46 | 24.31 | 1.419 | 0.30( 0.24) | 0.80 | 5273.0 | 210.00 |
| 2 | 16727.60 | 25.45 | 1.378 | 0.30( 0.24) | 0.80 | 5591.8 | 120.00 |
| 3 | 16753.01 | 25.62 | 1.374 | 0.30( 0.24) | 0.80 | 5639.4 | 110.00 |
| 4 | 17885.57 | 31.12 | 1.230 | 0.30( 0.24) | 0.81 | 7238.6 | 410.00 |
| 5 | 18164.09 | 32.75 | 1.200 | 0.30( 0.24) | 0.81 | 7898.3 | 100.00 |
| 6 | 18640.16 | 35.77 | 1.145 | 0.30( 0.25) | 0.82 | 9100.1 | 150.00 |
| 7 | 19570.41 | 41.42 | 1.051 | 0.30( 0.25) | 0.84 | 11334.7 | 50150.00 |
| 8 | 20099.14 | 46.80 | 0.988 | 0.30( 0.26) | 0.86 | 13457.5 | 600.00 |
| 9 | 20211.29 | 47.81 | 0.976 | 0.30( 0.26) | 0.86 | 13852.7 | 31100.00 |
| 10 | 22138.75 | 64.77 | 0.838 | 0.30( 0.27) | 0.89 | 20805.2 | 13210.00 |
| 11 | 22151.92 | 64.88 | 0.838 | 0.30( 0.27) | 0.89 | 20852.8 | 13200.00 |
| 12 | 22176.45 | 65.14 | 0.837 | 0.30( 0.27) | 0.89 | 20950.3 | 40100.00 |
| 13 | 22327.96 | 67.43 | 0.825 | 0.30( 0.27) | 0.90 | 21802.4 | 13100.00 |
| 14 | 22736.66 | 74.16 | 0.792 | 0.30( 0.27) | 0.90 | 24165.9 | 11801.00 |
| 15 | 23884.47 | 87.68 | 0.725 | 0.30( 0.27) | 0.92 | 29749.2 | 11530.00 |
| 16 | 24684.02 | 95.85 | 0.698 | 0.30( 0.28) | 0.92 | 33992.4 | 11900.00 |
| 17 | 24879.06 | 97.17 | 0.694 | 0.30( 0.28) | 0.93 | 34852.2 | 13000.00 |
| 18 | 25211.00 | 99.66 | 0.687 | 0.30( 0.28) | 0.93 | 36374.5 | 13010.00 |
| 19 | 26004.40 | 105.46 | 0.671 | 0.30( 0.28) | 0.93 | 39879.3 | 11330.00 |
| 20 | 26710.53 | 113.63 | 0.648 | 0.30( 0.28) | 0.94 | 44966.5 | 10630.00 |
| 21 | 26511.41 | 119.20 | 0.632 | 0.30( 0.28) | 0.94 | 47556.3 | 12330.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 26309.67 | 125.82 | 0.620 | 0.30( 0.28) | 0.95 | 50698.8 | 11600.00 |
| 23 | 25982.83 | 131.60 | 0.610 | 0.30( 0.28) | 0.95 | 52933.1 | 11111.00 |
| 24 | 25618.13 | 137.73 | 0.600 | 0.30( 0.28) | 0.95 | 54866.9 | 12201.00 |
| 25 | 24781.18 | 146.66 | 0.585 | 0.30( 0.29) | 0.95 | 56955.2 | 12231.00 |
| 26 | 24007.93 | 154.15 | 0.572 | 0.30( 0.29) | 0.95 | 58366.7 | 10400.00 |
| 27 | 22770.04 | 165.56 | 0.553 | 0.30( 0.29) | 0.95 | 59987.5 | 10320.00 |
| 28 | 22132.60 | 170.42 | 0.544 | 0.30( 0.29) | 0.95 | 60213.0 | 10210.00 |
| 29 | 21572.32 | 175.29 | 0.536 | 0.30( 0.29) | 0.95 | 60375.3 | 12000.00 |
| 30 | 18749.11 | 204.49 | 0.509 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

TOTAL AREA(ACRES) = 60992.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 26710.53 Tc(MIN.) = 113.628
EFFECTIVE AREA(ACRES) = 44966.45 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 60992.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60992.3 TC(MIN.) = 113.63
EFFECTIVE AREA(ACRES) = 44966.45 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 26710.53

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 16485.46 | 24.31 | 1.419 | 0.30( 0.24) | 0.80 | 5273.0 | 210.00 |
| 2 | 16727.60 | 25.45 | 1.378 | 0.30( 0.24) | 0.80 | 5591.8 | 120.00 |
| 3 | 16753.01 | 25.62 | 1.374 | 0.30( 0.24) | 0.80 | 5639.4 | 110.00 |
| 4 | 17885.57 | 31.12 | 1.230 | 0.30( 0.24) | 0.81 | 7238.6 | 410.00 |
| 5 | 18164.09 | 32.75 | 1.200 | 0.30( 0.24) | 0.81 | 7898.3 | 100.00 |
| 6 | 18640.16 | 35.77 | 1.145 | 0.30( 0.25) | 0.82 | 9100.1 | 150.00 |
| 7 | 19570.41 | 41.42 | 1.051 | 0.30( 0.25) | 0.84 | 11334.7 | 50150.00 |
| 8 | 20099.14 | 46.80 | 0.988 | 0.30( 0.26) | 0.86 | 13457.5 | 600.00 |
| 9 | 20211.29 | 47.81 | 0.976 | 0.30( 0.26) | 0.86 | 13852.7 | 31100.00 |
| 10 | 22138.75 | 64.77 | 0.838 | 0.30( 0.27) | 0.89 | 20805.2 | 13210.00 |
| 11 | 22151.92 | 64.88 | 0.838 | 0.30( 0.27) | 0.89 | 20852.8 | 13200.00 |
| 12 | 22176.45 | 65.14 | 0.837 | 0.30( 0.27) | 0.89 | 20950.3 | 40100.00 |
| 13 | 22327.96 | 67.43 | 0.825 | 0.30( 0.27) | 0.90 | 21802.4 | 13100.00 |
| 14 | 22736.66 | 74.16 | 0.792 | 0.30( 0.27) | 0.90 | 24165.9 | 11801.00 |
| 15 | 23884.47 | 87.68 | 0.725 | 0.30( 0.27) | 0.92 | 29749.2 | 11530.00 |
| 16 | 24684.02 | 95.85 | 0.698 | 0.30( 0.28) | 0.92 | 33992.4 | 11900.00 |
| 17 | 24879.06 | 97.17 | 0.694 | 0.30( 0.28) | 0.93 | 34852.2 | 13000.00 |
| 18 | 25211.00 | 99.66 | 0.687 | 0.30( 0.28) | 0.93 | 36374.5 | 13010.00 |
| 19 | 26004.40 | 105.46 | 0.671 | 0.30( 0.28) | 0.93 | 39879.3 | 11330.00 |
| 20 | 26710.53 | 113.63 | 0.648 | 0.30( 0.28) | 0.94 | 44966.5 | 10630.00 |
| 21 | 26511.41 | 119.20 | 0.632 | 0.30( 0.28) | 0.94 | 47556.3 | 12330.00 |
| 22 | 26309.67 | 125.82 | 0.620 | 0.30( 0.28) | 0.95 | 50698.8 | 11600.00 |
| 23 | 25982.83 | 131.60 | 0.610 | 0.30( 0.28) | 0.95 | 52933.1 | 11111.00 |
| 24 | 25618.13 | 137.73 | 0.600 | 0.30( 0.28) | 0.95 | 54866.9 | 12201.00 |
| 25 | 24781.18 | 146.66 | 0.585 | 0.30( 0.29) | 0.95 | 56955.2 | 12231.00 |
| 26 | 24007.93 | 154.15 | 0.572 | 0.30( 0.29) | 0.95 | 58366.7 | 10400.00 |
| 27 | 22770.04 | 165.56 | 0.553 | 0.30( 0.29) | 0.95 | 59987.5 | 10320.00 |
| 28 | 22132.60 | 170.42 | 0.544 | 0.30( 0.29) | 0.95 | 60213.0 | 10210.00 |
| 29 | 21572.32 | 175.29 | 0.536 | 0.30( 0.29) | 0.95 | 60375.3 | 12000.00 |
| 30 | 18749.11 | 204.49 | 0.509 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                   *
* 10-YR EV AUG 2023 ROKAMOTO                                               *
 ***************************************************************************

  FILE NAME: RI10EV34.DAT
  TIME/DATE OF STUDY: 14:36 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.757
   2)   10.00;  2.507
   3)   15.00;  1.859
   4)   20.00;  1.590
   5)   25.00;  1.388
   6)   30.00;  1.248
   7)   40.00;  1.066
   8)   50.00;  0.948
   9)   60.00;  0.860
  10)   90.00;  0.712
  11)  120.00;  0.627
  12)  180.00;  0.525
  13)  360.00;  0.386
  14) 1200.00;  0.169
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16753.01   25.62  0.30( 0.24) 0.80    5639.4     110.00
      2    18640.16   35.77  0.30( 0.25) 0.82    9100.1     150.00
      3    19570.41   41.42  0.30( 0.25) 0.84   11334.7   50150.00
      4    20211.29   47.81  0.30( 0.26) 0.86   13852.7   31100.00
      5    22327.96   67.43  0.30( 0.27) 0.90   21802.4   13100.00
      6    22736.66   74.16  0.30( 0.27) 0.90   24165.9   11801.00
      7    23884.47   87.68  0.30( 0.27) 0.92   29749.2   11530.00
      8    25211.00   99.66  0.30( 0.28) 0.93   36374.5   13010.00
      9    26004.40  105.46  0.30( 0.28) 0.93   39879.3   11330.00
     10    26710.53  113.63  0.30( 0.28) 0.94   44966.5   10630.00
     11    26511.41  119.20  0.30( 0.28) 0.94   47556.3   12330.00
     12    26309.67  125.82  0.30( 0.28) 0.95   50698.8   11600.00
     13    25982.83  131.60  0.30( 0.28) 0.95   52933.1   11111.00
     14    25618.13  137.73  0.30( 0.28) 0.95   54866.9   12201.00
     15    24781.18  146.66  0.30( 0.29) 0.95   56955.2   12231.00
     16    24007.93  154.15  0.30( 0.29) 0.95   58366.7   10400.00
     17    22770.04  165.56  0.30( 0.29) 0.95   59987.5   10320.00
     18    22132.60  170.42  0.30( 0.29) 0.95   60213.0   10210.00
     19    21572.32  175.29  0.30( 0.29) 0.95   60375.3   12000.00
     20    18749.11  204.49  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16753.01   25.62  0.30( 0.24) 0.80    5639.4     110.00
      2    18640.16   35.77  0.30( 0.25) 0.82    9100.1     150.00
      3    19570.41   41.42  0.30( 0.25) 0.84   11334.7   50150.00
      4    20211.29   47.81  0.30( 0.26) 0.86   13852.7   31100.00
      5    22327.96   67.43  0.30( 0.27) 0.90   21802.4   13100.00
      6    22736.66   74.16  0.30( 0.27) 0.90   24165.9   11801.00
      7    23884.47   87.68  0.30( 0.27) 0.92   29749.2   11530.00
      8    25211.00   99.66  0.30( 0.28) 0.93   36374.5   13010.00
      9    26004.40  105.46  0.30( 0.28) 0.93   39879.3   11330.00
     10    26710.53  113.63  0.30( 0.28) 0.94   44966.5   10630.00
     11    26511.41  119.20  0.30( 0.28) 0.94   47556.3   12330.00
     12    26309.67  125.82  0.30( 0.28) 0.95   50698.8   11600.00
     13    25982.83  131.60  0.30( 0.28) 0.95   52933.1   11111.00
```

```
    14    25618.13  137.73  0.30( 0.28) 0.95   54866.9   12201.00
    15    24781.18  146.66  0.30( 0.29) 0.95   56955.2   12231.00
    16    24007.93  154.15  0.30( 0.29) 0.95   58366.7   10400.00
    17    22770.04  165.56  0.30( 0.29) 0.95   59987.5   10320.00
    18    22132.60  170.42  0.30( 0.29) 0.95   60213.0   10210.00
    19    21572.32  175.29  0.30( 0.29) 0.95   60375.3   12000.00
    20    18749.11  204.49  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56
  CHANNEL FLOW THRU SUBAREA(CFS) =   26710.53
  FLOW VELOCITY(FEET/SEC.) =  12.86   FLOW DEPTH(FEET) =   8.56
  TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  114.44
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505V.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     172.78   21.02  0.30( 0.30) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    16753.01   26.56    1.344  0.30( 0.24) 0.80    5639.4     110.00
      2    18640.16   36.69    1.126  0.30( 0.25) 0.82    9100.1     150.00
      3    19570.41   42.32    1.039  0.30( 0.25) 0.84   11334.7   50150.00
      4    20211.29   48.70    0.963  0.30( 0.26) 0.86   13852.7   31100.00
      5    22327.96   68.29    0.819  0.30( 0.27) 0.90   21802.4   13100.00
      6    22736.66   75.01    0.786  0.30( 0.27) 0.90   24165.9   11801.00
      7    23884.47   88.52    0.719  0.30( 0.27) 0.92   29749.2   11530.00
      8    25211.00  100.48    0.682  0.30( 0.28) 0.93   36374.5   13010.00
      9    26004.40  106.27    0.666  0.30( 0.28) 0.93   39879.3   11330.00
     10    26710.53  114.44    0.643  0.30( 0.28) 0.94   44966.5   10630.00
     11    26511.41  120.01    0.627  0.30( 0.28) 0.94   47556.3   12330.00
     12    26309.67  126.63    0.616  0.30( 0.28) 0.95   50698.8   11600.00
```



```
    13    25982.83  132.41    0.606  0.30( 0.28) 0.95   52933.1   11111.00
    14    25618.13  138.54    0.595  0.30( 0.28) 0.95   54866.9   12201.00
    15    24781.18  147.49    0.580  0.30( 0.29) 0.95   56955.2   12231.00
    16    24007.93  154.99    0.568  0.30( 0.29) 0.95   58366.7   10400.00
    17    22770.04  166.41    0.548  0.30( 0.29) 0.95   59987.5   10320.00
    18    22132.60  171.28    0.540  0.30( 0.29) 0.95   60213.0   10210.00
    19    21572.32  176.16    0.532  0.30( 0.29) 0.95   60375.3   12000.00
    20    18749.11  205.40    0.505  0.30( 0.29) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     172.78   21.02    1.549  0.30( 0.30) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    15885.82   21.02    1.549  0.30( 0.24) 0.81    4616.1   50500.00
      2    16897.59   26.56    1.344  0.30( 0.24) 0.80    5792.6     110.00
      3    18754.69   36.69    1.126  0.30( 0.25) 0.82    9253.3     150.00
      4    19672.84   42.32    1.039  0.30( 0.25) 0.84   11487.8   50150.00
      5    20303.35   48.70    0.963  0.30( 0.26) 0.86   14005.9   31100.00
      6    22400.11   68.29    0.819  0.30( 0.27) 0.90   21955.6   13100.00
      7    22804.25   75.01    0.786  0.30( 0.27) 0.90   24319.1   11801.00
      8    23942.86   88.52    0.719  0.30( 0.27) 0.92   29902.4   11530.00
      9    25264.29  100.48    0.682  0.30( 0.28) 0.93   36527.7   13010.00
     10    26055.43  106.27    0.666  0.30( 0.28) 0.93   40032.5   11330.00
     11    26758.37  114.44    0.643  0.30( 0.28) 0.94   45119.6   10630.00
     12    26557.08  120.01    0.627  0.30( 0.28) 0.94   47709.5   12330.00
     13    26353.78  126.63    0.616  0.30( 0.28) 0.95   50851.9   11600.00
     14    26025.59  132.41    0.606  0.30( 0.28) 0.95   53086.3   11111.00
     15    25659.45  138.54    0.595  0.30( 0.28) 0.95   55020.1   12201.00
     16    24820.40  147.49    0.580  0.30( 0.29) 0.95   57108.4   12231.00
     17    24045.40  154.99    0.568  0.30( 0.29) 0.95   58519.9   10400.00
     18    22804.82  166.41    0.548  0.30( 0.29) 0.95   60140.7   10320.00
     19    22166.24  171.28    0.540  0.30( 0.29) 0.95   60366.2   10210.00
     20    21604.82  176.16    0.532  0.30( 0.29) 0.95   60528.5   12000.00
     21    18778.00  205.40    0.505  0.30( 0.29) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    26758.37  Tc(MIN.) =  114.436
  EFFECTIVE AREA(ACRES) =  45119.63  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.45
CHANNEL FLOW THRU SUBAREA(CFS) = 26758.37
FLOW VELOCITY(FEET/SEC.) = 13.07 FLOW DEPTH(FEET) = 8.45
TRAVEL TIME(MIN.) = 0.50 Tc(MIN.) = 114.94
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
>>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
PEAK FLOWRATE TABLE FILE NAME: 0610506V.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 61.99 | 18.17 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

TOTAL AREA(ACRES) = 49.6

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15885.82 | 21.62 | 1.525 | 0.30( 0.24) | 0.81 | 4616.1 | 50500.00 |
| 2 | 16897.59 | 27.15 | 1.328 | 0.30( 0.24) | 0.80 | 5792.6 | 110.00 |
| 3 | 18754.69 | 37.25 | 1.116 | 0.30( 0.25) | 0.82 | 9253.3 | 150.00 |
| 4 | 19672.84 | 42.88 | 1.032 | 0.30( 0.25) | 0.84 | 11487.8 | 50150.00 |
| 5 | 20303.35 | 49.25 | 0.957 | 0.30( 0.26) | 0.86 | 14005.9 | 31100.00 |
| 6 | 22400.11 | 68.83 | 0.816 | 0.30( 0.27) | 0.90 | 21955.6 | 13100.00 |
| 7 | 22804.25 | 75.54 | 0.783 | 0.30( 0.27) | 0.90 | 24319.1 | 11801.00 |
| 8 | 23942.86 | 89.04 | 0.717 | 0.30( 0.27) | 0.92 | 29902.4 | 11530.00 |
| 9 | 25264.29 | 101.00 | 0.681 | 0.30( 0.28) | 0.93 | 36527.7 | 13010.00 |
| 10 | 26055.43 | 106.78 | 0.664 | 0.30( 0.28) | 0.93 | 40032.5 | 11330.00 |
| 11 | 26758.37 | 114.94 | 0.641 | 0.30( 0.28) | 0.94 | 45119.6 | 10630.00 |
| 12 | 26557.08 | 120.52 | 0.626 | 0.30( 0.28) | 0.94 | 47709.5 | 12330.00 |
| 13 | 26353.78 | 127.14 | 0.615 | 0.30( 0.28) | 0.95 | 50851.9 | 11600.00 |
| 14 | 26025.59 | 132.92 | 0.605 | 0.30( 0.28) | 0.95 | 53086.3 | 11111.00 |
| 15 | 25659.45 | 139.06 | 0.595 | 0.30( 0.28) | 0.95 | 55020.1 | 12201.00 |
| 16 | 24820.40 | 148.00 | 0.579 | 0.30( 0.29) | 0.95 | 57108.4 | 12231.00 |
| 17 | 24045.40 | 155.51 | 0.567 | 0.30( 0.29) | 0.95 | 58519.9 | 10400.00 |
| 18 | 22804.82 | 166.94 | 0.547 | 0.30( 0.29) | 0.95 | 60140.7 | 10320.00 |
| 19 | 22166.24 | 171.82 | 0.539 | 0.30( 0.29) | 0.95 | 60366.2 | 10210.00 |
| 20 | 21604.82 | 176.70 | 0.531 | 0.30( 0.29) | 0.95 | 60528.5 | 12000.00 |
| 21 | 18778.00 | 205.97 | 0.505 | 0.30( 0.29) | 0.95 | 61145.5 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 61.99 | 18.17 | 1.688 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.

** PEAK FLOW RATE TABLE **



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 15118.56 | 18.17 | 1.688 | 0.30( 0.24) | 0.81 | 3929.0 | 50600.00 |
| 2 | 15940.49 | 21.62 | 1.525 | 0.30( 0.24) | 0.81 | 4665.7 | 50500.00 |
| 3 | 16943.48 | 27.15 | 1.328 | 0.30( 0.24) | 0.81 | 5842.2 | 110.00 |
| 4 | 18791.12 | 37.25 | 1.116 | 0.30( 0.25) | 0.83 | 9302.9 | 150.00 |
| 5 | 19705.53 | 42.88 | 1.032 | 0.30( 0.25) | 0.84 | 11537.4 | 50150.00 |
| 6 | 20332.67 | 49.25 | 0.957 | 0.30( 0.26) | 0.86 | 14055.5 | 31100.00 |
| 7 | 22423.17 | 68.83 | 0.816 | 0.30( 0.27) | 0.90 | 22005.2 | 13100.00 |
| 8 | 22825.83 | 75.54 | 0.783 | 0.30( 0.27) | 0.90 | 24368.7 | 11801.00 |
| 9 | 23961.47 | 89.04 | 0.717 | 0.30( 0.27) | 0.92 | 29952.0 | 11530.00 |
| 10 | 25281.30 | 101.00 | 0.681 | 0.30( 0.28) | 0.93 | 36577.3 | 13010.00 |
| 11 | 26071.71 | 106.78 | 0.664 | 0.30( 0.28) | 0.93 | 40082.1 | 11330.00 |
| 12 | 26773.62 | 114.94 | 0.641 | 0.30( 0.28) | 0.94 | 45169.2 | 10630.00 |
| 13 | 26571.64 | 120.52 | 0.626 | 0.30( 0.28) | 0.94 | 47759.1 | 12330.00 |
| 14 | 26367.84 | 127.14 | 0.615 | 0.30( 0.28) | 0.95 | 50901.5 | 11600.00 |
| 15 | 26039.21 | 132.92 | 0.605 | 0.30( 0.28) | 0.95 | 53135.9 | 11111.00 |
| 16 | 25672.60 | 139.06 | 0.595 | 0.30( 0.28) | 0.95 | 55069.7 | 12201.00 |
| 17 | 24832.88 | 148.00 | 0.579 | 0.30( 0.29) | 0.95 | 57158.0 | 12231.00 |
| 18 | 24057.30 | 155.51 | 0.567 | 0.30( 0.29) | 0.95 | 58569.5 | 10400.00 |
| 19 | 22815.86 | 166.94 | 0.547 | 0.30( 0.29) | 0.95 | 60190.3 | 10320.00 |
| 20 | 22176.91 | 171.82 | 0.539 | 0.30( 0.29) | 0.95 | 60415.8 | 10210.00 |
| 21 | 21615.12 | 176.70 | 0.531 | 0.30( 0.29) | 0.95 | 60578.1 | 12000.00 |
| 22 | 18787.16 | 205.97 | 0.505 | 0.30( 0.29) | 0.95 | 61195.1 | 10100.00 |

TOTAL AREA(ACRES) = 61195.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 26773.62 Tc(MIN.) = 114.940
EFFECTIVE AREA(ACRES) = 45169.23 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 61195.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.56
CHANNEL FLOW THRU SUBAREA(CFS) = 26773.62
FLOW VELOCITY(FEET/SEC.) = 14.90 FLOW DEPTH(FEET) = 7.56
TRAVEL TIME(MIN.) = 1.79 Tc(MIN.) = 116.73
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120708.25 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 116.73
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.636
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ | SCS SOIL | AREA | Fp | Ap | SCS |
|---|---|---|---|---|---|

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.80      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =    6.14
  EFFECTIVE AREA(ACRES) =  45189.53   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61215.4       PEAK FLOW RATE(CFS) =   26773.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  116.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.636
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        3.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =    5.02
  EFFECTIVE AREA(ACRES) =  45206.13   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61232.0       PEAK FLOW RATE(CFS) =   26773.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
```



```
  PEAK FLOWRATE TABLE FILE NAME: 2P10EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1      518.09   10.14  0.30( 0.11) 0.38     237.9     429.00
      2      548.24   11.82  0.30( 0.11) 0.38     277.3     425.00
      3      551.99   12.10  0.30( 0.11) 0.38     284.1     400.00
      4      566.31   13.74  0.30( 0.11) 0.38     322.9     300.00
      5      605.65   19.30  0.30( 0.11) 0.38     439.2     210.00
      6      601.31   21.30  0.30( 0.11) 0.38     463.8     410.00
      7      598.36   22.55  0.30( 0.11) 0.38     478.8     200.00
      8      595.72   23.25  0.30( 0.11) 0.38     486.6     230.00
      9      580.44   24.41  0.30( 0.11) 0.37     491.2     220.50
    TOTAL AREA(ACRES) =      491.2

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    15118.56   20.35    1.576  0.30( 0.24) 0.81     3965.9    50600.00
      2    15940.49   23.76    1.438  0.30( 0.24) 0.81     4702.6    50500.00
      3    16943.48   29.24    1.269  0.30( 0.24) 0.81     5879.1      110.00
      4    18791.12   39.27    1.079  0.30( 0.25) 0.83     9339.8      150.00
      5    19705.53   44.87    1.009  0.30( 0.25) 0.84    11574.3    50150.00
      6    20332.67   51.22    0.937  0.30( 0.26) 0.86    14092.4    31100.00
      7    22423.17   70.73    0.807  0.30( 0.27) 0.90    22042.1    13100.00
      8    22825.83   77.43    0.774  0.30( 0.27) 0.90    24405.6    11801.00
      9    23961.47   90.90    0.709  0.30( 0.27) 0.92    29988.9    11530.00
     10    25281.30  102.82    0.676  0.30( 0.28) 0.93    36614.2    13010.00
     11    26071.71  108.59    0.659  0.30( 0.28) 0.93    40119.0    11330.00
     12    26773.62  116.73    0.636  0.30( 0.28) 0.94    45206.1    10630.00
     13    26571.64  122.31    0.623  0.30( 0.28) 0.94    47796.0    12330.00
     14    26367.84  128.94    0.612  0.30( 0.28) 0.95    50938.4    11600.00
     15    26039.21  134.73    0.602  0.30( 0.28) 0.95    53172.8    11111.00
     16    25672.60  140.87    0.592  0.30( 0.28) 0.95    55106.6    12201.00
     17    24832.88  149.84    0.576  0.30( 0.29) 0.95    57194.9    12231.00
     18    24057.30  157.37    0.563  0.30( 0.29) 0.95    58606.4    10400.00
     19    22815.86  168.83    0.544  0.30( 0.29) 0.95    60227.2    10320.00
     20    22176.91  173.73    0.536  0.30( 0.29) 0.95    60452.7    10210.00
     21    21615.12  178.62    0.527  0.30( 0.29) 0.95    60615.0    12000.00
     22    18787.16  207.99    0.503  0.30( 0.29) 0.95    61232.0    10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      518.09   10.14    2.489  0.30( 0.11) 0.38     237.9     429.00
      2      548.24   11.82    2.271  0.30( 0.11) 0.38     277.3     425.00
      3      551.99   12.10    2.234  0.30( 0.11) 0.38     284.1     400.00
      4      566.31   13.74    2.022  0.30( 0.11) 0.38     322.9     300.00
      5      605.65   19.30    1.628  0.30( 0.11) 0.38     439.2     210.00
      6      601.31   21.30    1.537  0.30( 0.11) 0.38     463.8     410.00
      7      598.36   22.55    1.487  0.30( 0.11) 0.38     478.8     200.00
```

```
     8      595.72   23.25    1.459  0.30( 0.11) 0.38     486.6     230.00
     9      580.44   24.41    1.412  0.30( 0.11) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13209.97   10.14    2.489  0.30( 0.23) 0.76    2213.5     429.00
      2    13911.27   11.82    2.271  0.30( 0.23) 0.76    2581.4     425.00
      3    13987.22   12.10    2.234  0.30( 0.23) 0.76    2643.1     400.00
      4    14193.71   13.74    2.022  0.30( 0.23) 0.76    3001.8     300.00
      5    15501.65   19.30    1.628  0.30( 0.23) 0.77    4200.6     210.00
      6    15721.93   20.35    1.576  0.30( 0.23) 0.77    4418.0   50600.00
      7    15949.11   21.30    1.537  0.30( 0.23) 0.77    4635.2     410.00
      8    16246.21   22.55    1.487  0.30( 0.23) 0.77    4919.1     200.00
      9    16412.39   23.25    1.459  0.30( 0.23) 0.77    5078.2     230.00
     10    16529.49   23.76    1.438  0.30( 0.23) 0.77    5191.2   50500.00
     11    16640.64   24.41    1.412  0.30( 0.23) 0.77    5334.2     220.50
     12    17460.28   29.24    1.269  0.30( 0.23) 0.77    6370.3     110.00
     13    19223.04   39.27    1.079  0.30( 0.24) 0.80    9831.0     150.00
     14    20105.89   44.87    1.009  0.30( 0.25) 0.82   12065.5   50150.00
     15    20701.19   51.22    0.937  0.30( 0.25) 0.85   14583.6   31100.00
     16    22733.52   70.73    0.807  0.30( 0.27) 0.89   22533.3   13100.00
     17    23121.40   77.43    0.774  0.30( 0.27) 0.89   24896.8   11801.00
     18    24228.19   90.90    0.709  0.30( 0.27) 0.91   30480.1   11530.00
     19    25532.93  102.82    0.676  0.30( 0.28) 0.92   37105.4   13010.00
     20    26316.04  108.59    0.659  0.30( 0.28) 0.93   40610.2   11330.00
     21    27007.64  116.73    0.636  0.30( 0.28) 0.94   45697.3   10630.00
     22    26799.77  122.31    0.623  0.30( 0.28) 0.94   48287.2   12330.00
     23    26590.94  128.94    0.612  0.30( 0.28) 0.94   51429.6   11600.00
     24    26257.91  134.73    0.602  0.30( 0.28) 0.94   53664.0   11111.00
     25    25886.64  140.87    0.592  0.30( 0.28) 0.94   55597.8   12201.00
     26    25040.10  149.84    0.576  0.30( 0.28) 0.95   57686.1   12231.00
     27    24258.82  157.37    0.563  0.30( 0.28) 0.95   59097.6   10400.00
     28    23008.66  168.83    0.544  0.30( 0.28) 0.95   60718.4   10320.00
     29    22365.99  173.73    0.536  0.30( 0.28) 0.95   60943.9   10210.00
     30    21800.49  178.62    0.527  0.30( 0.28) 0.95   61106.2   12000.00
     31    18961.82  207.99    0.503  0.30( 0.28) 0.95   61723.2   10100.00
    TOTAL AREA(ACRES) =     61723.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    27007.64  Tc(MIN.) =  116.732
  EFFECTIVE AREA(ACRES) =  45697.33  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    61723.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.39
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  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.628
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.00      0.30      1.000     -
  USER-DEFINED                -        3.30      0.30      1.000     -
  USER-DEFINED                -        0.40      0.30      0.100     -
  USER-DEFINED                -        1.40      0.30      1.000     -
  USER-DEFINED                -        0.30      0.30      0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   27009.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.31
  AVERAGE FLOW DEPTH(FEET) =   8.39   TRAVEL TIME(MIN.) =   3.08
  Tc(MIN.) =  119.81
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    3.83
  EFFECTIVE AREA(ACRES) =  45709.73     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    61735.6         PEAK FLOW RATE(CFS) =   27007.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.39   FLOW VELOCITY(FEET/SEC.) =  13.31
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610507V.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      264.52   21.27  0.30( 0.30) 0.99     236.8   50700.00
    TOTAL AREA(ACRES) =      236.8

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13209.97   14.06    1.981  0.30( 0.23) 0.76    2225.9     429.00
      2    13911.27   15.68    1.823  0.30( 0.23) 0.76    2593.8     425.00
      3    13987.22   15.95    1.808  0.30( 0.23) 0.76    2655.5     400.00
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     4    14193.71   17.57    1.721  0.30( 0.23) 0.76    3014.2     300.00
     5    15501.65   23.01    1.468  0.30( 0.23) 0.77    4213.0     210.00
     6    15721.93   24.04    1.427  0.30( 0.23) 0.77    4430.4   50600.00
     7    15949.11   24.98    1.389  0.30( 0.23) 0.77    4647.6     410.00
     8    16246.21   26.20    1.354  0.30( 0.23) 0.77    4931.5     200.00
     9    16412.39   26.89    1.335  0.30( 0.23) 0.77    5090.6     230.00
    10    16529.49   27.39    1.321  0.30( 0.23) 0.77    5203.6   50500.00
    11    16640.64   28.04    1.303  0.30( 0.23) 0.77    5346.6     220.50
    12    17460.28   32.81    1.197  0.30( 0.23) 0.77    6382.7     110.00
    13    19223.04   42.72    1.034  0.30( 0.24) 0.80    9843.4     150.00
    14    20105.89   48.26    0.968  0.30( 0.25) 0.82   12077.9   50150.00
    15    20701.19   54.58    0.908  0.30( 0.25) 0.85   14596.0   31100.00
    16    22733.52   73.99    0.791  0.30( 0.27) 0.89   22545.7   13100.00
    17    23121.40   80.67    0.758  0.30( 0.27) 0.89   24909.2   11801.00
    18    24228.19   94.09    0.700  0.30( 0.27) 0.91   30492.5   11530.00
    19    25532.93  105.96    0.667  0.30( 0.28) 0.92   37117.8   13010.00
    20    26316.04  111.69    0.651  0.30( 0.28) 0.93   40622.6   11330.00
    21    27007.64  119.81    0.628  0.30( 0.28) 0.94   45709.7   10630.00
    22    26799.77  125.40    0.618  0.30( 0.28) 0.94   48299.6   12330.00
    23    26590.94  132.03    0.607  0.30( 0.28) 0.94   51442.0   11600.00
    24    26257.91  137.84    0.597  0.30( 0.28) 0.94   53676.4   11111.00
    25    25886.64  143.99    0.586  0.30( 0.28) 0.94   55610.2   12201.00
    26    25040.10  153.00    0.571  0.30( 0.28) 0.95   57698.5   12231.00
    27    24258.82  160.55    0.558  0.30( 0.28) 0.95   59110.0   10400.00
    28    23008.66  172.08    0.538  0.30( 0.28) 0.95   60730.8   10320.00
    29    22365.99  177.00    0.530  0.30( 0.28) 0.95   60956.3   10210.00
    30    21800.49  181.93    0.524  0.30( 0.28) 0.95   61118.6   12000.00
    31    18961.82  211.45    0.501  0.30( 0.28) 0.95   61735.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       264.52   21.27    1.539  0.30( 0.30) 0.99     236.8   50700.00
LONGEST FLOWPATH FROM NODE  50700.00 TO NODE  13408.00 =    7903.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    13447.12   14.06    1.981  0.30( 0.23) 0.78    2382.4     429.00
    2    14150.81   15.68    1.823  0.30( 0.23) 0.78    2768.3     425.00
    3    14228.61   15.95    1.808  0.30( 0.23) 0.78    2833.1     400.00
    4    14444.27   17.57    1.721  0.30( 0.23) 0.78    3209.8     300.00
    5    15347.54   21.27    1.539  0.30( 0.23) 0.78    4066.1   50700.00
    6    15751.17   23.01    1.468  0.30( 0.23) 0.78    4449.8     210.00
    7    15962.58   24.04    1.427  0.30( 0.23) 0.78    4667.2   50600.00
    8    16181.71   24.98    1.389  0.30( 0.23) 0.78    4884.4     410.00
    9    16471.45   26.20    1.354  0.30( 0.23) 0.78    5168.3     200.00
   10    16633.52   26.89    1.335  0.30( 0.23) 0.78    5327.4     230.00
   11    16747.62   27.39    1.321  0.30( 0.23) 0.78    5440.4   50500.00
   12    16854.91   28.04    1.303  0.30( 0.23) 0.78    5583.4     220.50
   13    17651.95   32.81    1.197  0.30( 0.23) 0.78    6619.5     110.00
   14    19379.96   42.72    1.034  0.30( 0.24) 0.81   10080.1     150.00
   15    20248.87   48.26    0.968  0.30( 0.25) 0.82   12314.7   50150.00
   16    20831.21   54.58    0.908  0.30( 0.25) 0.85   14832.8   31100.00
   17    22838.66   73.99    0.791  0.30( 0.27) 0.89   22782.5   13100.00
   18    23219.52   80.67    0.758  0.30( 0.27) 0.89   25145.9   11801.00
   19    24314.03   94.09    0.700  0.30( 0.27) 0.91   30729.2   11530.00
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     20    25611.60  105.96    0.667  0.30( 0.28) 0.92   37354.5   13010.00
     21    26391.25  111.69    0.651  0.30( 0.28) 0.93   40859.3   11330.00
     22    27077.95  119.81    0.628  0.30( 0.28) 0.94   45946.5   10630.00
     23    26868.00  125.40    0.618  0.30( 0.28) 0.94   48536.4   12330.00
     24    26656.77  132.03    0.607  0.30( 0.28) 0.94   51678.8   11600.00
     25    26321.64  137.84    0.597  0.30( 0.28) 0.94   53913.2   11111.00
     26    25948.13  143.99    0.586  0.30( 0.28) 0.94   55847.0   12201.00
     27    25098.33  153.00    0.571  0.30( 0.28) 0.95   57935.3   12231.00
     28    24314.31  160.55    0.558  0.30( 0.28) 0.95   59346.8   10400.00
     29    23059.98  172.08    0.538  0.30( 0.28) 0.95   60967.6   10320.00
     30    22415.53  177.00    0.530  0.30( 0.28) 0.95   61193.0   10210.00
     31    21848.61  181.93    0.524  0.30( 0.28) 0.95   61355.4   12000.00
     32    19005.09  211.45    0.501  0.30( 0.28) 0.95   61972.4   10100.00
   TOTAL AREA(ACRES) =     61972.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    27077.95  Tc(MIN.) =  119.810
  EFFECTIVE AREA(ACRES) =  45946.51  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    61972.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    182.00  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =   952.73   CHANNEL SLOPE =  0.0034
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.49
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.625
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       0.40      0.30     1.000     -
  USER-DEFINED               -       2.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   27078.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.54
  AVERAGE FLOW DEPTH(FEET) =   9.49   TRAVEL TIME(MIN.) =   1.38
  Tc(MIN.) =  121.19
  SUBAREA AREA(ACRES) =     3.30       SUBAREA RUNOFF(CFS) =    0.97
  EFFECTIVE AREA(ACRES) =  45949.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    61975.7         PEAK FLOW RATE(CFS) =   27077.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.49   FLOW VELOCITY(FEET/SEC.) =  11.54
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     1521.80   30.81  0.30( 0.27) 0.90    1440.9     110.00
      2     1573.72   33.19  0.30( 0.27) 0.90    1597.0     100.00
      3     1590.73   34.56  0.30( 0.27) 0.90    1678.1     100.00
      4     1600.63   37.85  0.30( 0.27) 0.91    1850.3     130.00
      5     1651.13   52.91  0.30( 0.28) 0.93    2602.0   20100.00
      6     1611.81   59.35  0.30( 0.28) 0.93    2797.2   13600.00
      7     1408.16  100.08  0.30( 0.28) 0.93    3789.3   13510.00
      8     1318.82  111.28  0.30( 0.28) 0.93    3859.7   13500.00
    TOTAL AREA(ACRES) =     3859.7

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    13447.12   15.80    1.816  0.30( 0.23) 0.78    2385.7     429.00
      2    14150.81   17.39    1.731  0.30( 0.23) 0.78    2771.6     425.00
      3    14228.61   17.66    1.716  0.30( 0.23) 0.78    2836.4     400.00
      4    14444.27   19.27    1.629  0.30( 0.23) 0.78    3213.1     300.00
      5    15347.54   22.93    1.471  0.30( 0.23) 0.78    4069.4   50700.00
      6    15751.17   24.66    1.402  0.30( 0.23) 0.78    4453.1     210.00
      7    15962.58   25.68    1.369  0.30( 0.23) 0.78    4670.5   50600.00
      8    16181.71   26.61    1.343  0.30( 0.23) 0.78    4887.6     410.00
      9    16471.45   27.82    1.309  0.30( 0.23) 0.78    5171.6     200.00
     10    16633.52   28.51    1.290  0.30( 0.23) 0.78    5330.7     230.00
     11    16747.62   29.01    1.276  0.30( 0.23) 0.78    5443.7   50500.00
     12    16854.91   29.65    1.258  0.30( 0.23) 0.78    5586.7     220.50
     13    17651.95   34.40    1.168  0.30( 0.23) 0.78    6622.8     110.00
     14    19379.96   44.26    1.016  0.30( 0.24) 0.81   10083.4     150.00
     15    20248.87   49.78    0.951  0.30( 0.25) 0.82   12318.0   50150.00
     16    20831.21   56.08    0.894  0.30( 0.25) 0.85   14836.1   31100.00
     17    22838.66   75.44    0.784  0.30( 0.27) 0.89   22785.8   13100.00
     18    23219.52   82.12    0.751  0.30( 0.27) 0.89   25149.2   11801.00
     19    24314.03   95.52    0.696  0.30( 0.27) 0.91   30732.5   11530.00
     20    25611.60  107.36    0.663  0.30( 0.28) 0.92   37357.8   13010.00
     21    26391.25  113.08    0.647  0.30( 0.28) 0.93   40862.6   11330.00
     22    27077.95  121.19    0.625  0.30( 0.28) 0.94   45949.8   10630.00
     23    26868.00  126.78    0.615  0.30( 0.28) 0.94   48539.7   12330.00
     24    26656.77  133.42    0.604  0.30( 0.28) 0.94   51682.1   11600.00
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     25    26321.64  139.23    0.594  0.30( 0.28) 0.94   53916.5   11111.00
     26    25948.13  145.39    0.584  0.30( 0.28) 0.94   55850.3   12201.00
     27    25098.33  154.41    0.569  0.30( 0.28) 0.95   57938.6   12231.00
     28    24314.31  161.98    0.556  0.30( 0.28) 0.95   59350.1   10400.00
     29    23059.98  173.53    0.536  0.30( 0.28) 0.95   60970.9   10320.00
     30    22415.53  178.47    0.528  0.30( 0.28) 0.95   61196.3   10210.00
     31    21848.61  183.40    0.522  0.30( 0.28) 0.95   61358.7   12000.00
     32    19005.09  213.00    0.500  0.30( 0.28) 0.95   61975.7   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     1521.80   30.81    1.233  0.30( 0.27) 0.90    1440.9     110.00
      2     1573.72   33.19    1.190  0.30( 0.27) 0.90    1597.0     100.00
      3     1590.73   34.56    1.165  0.30( 0.27) 0.90    1678.1     100.00
      4     1600.63   37.85    1.105  0.30( 0.27) 0.91    1850.3     130.00
      5     1651.13   52.91    0.922  0.30( 0.28) 0.93    2602.0   20100.00
      6     1611.81   59.35    0.866  0.30( 0.28) 0.93    2797.2   13600.00
      7     1408.16  100.08    0.683  0.30( 0.28) 0.93    3789.3   13510.00
      8     1318.82  111.28    0.652  0.30( 0.28) 0.93    3859.7   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    14699.84   15.80    1.816  0.30( 0.24) 0.81    3124.8     429.00
      2    15453.16   17.39    1.731  0.30( 0.24) 0.81    3584.8     425.00
      3    15538.10   17.66    1.716  0.30( 0.24) 0.81    3662.3     400.00
      4    15787.58   19.27    1.629  0.30( 0.24) 0.81    4114.4     300.00
      5    16760.62   22.93    1.471  0.30( 0.24) 0.80    5142.1   50700.00
      6    17182.40   24.66    1.402  0.30( 0.24) 0.80    5606.5     210.00
      7    17409.89   25.68    1.369  0.30( 0.24) 0.80    5871.8   50600.00
      8    17645.85   26.61    1.343  0.30( 0.24) 0.80    6132.4     410.00
      9    17953.85   27.82    1.309  0.30( 0.24) 0.80    6473.0     200.00
     10    18124.35   28.51    1.290  0.30( 0.24) 0.80    6664.1     230.00
     11    18243.76   29.01    1.276  0.30( 0.24) 0.80    6800.5   50500.00
     12    18356.83   29.65    1.258  0.30( 0.24) 0.80    6973.5     220.50
     13    18570.92   30.81    1.233  0.30( 0.24) 0.80    7280.0     110.00
     14    19022.66   33.19    1.190  0.30( 0.24) 0.80    7955.9     100.00
     15    19240.65   34.40    1.168  0.30( 0.24) 0.81    8291.2     110.00
     16    19271.34   34.56    1.165  0.30( 0.24) 0.81    8358.2     100.00
     17    19857.79   37.85    1.105  0.30( 0.24) 0.81    9685.1     130.00
     18    21002.09   44.26    1.016  0.30( 0.25) 0.83   12253.8     150.00
     19    21889.51   49.78    0.951  0.30( 0.25) 0.84   14764.0   50150.00
     20    22188.81   52.91    0.922  0.30( 0.26) 0.85   16168.9   20100.00
     21    22462.97   56.08    0.894  0.30( 0.26) 0.86   17534.3   31100.00
     22    22782.18   59.35    0.866  0.30( 0.26) 0.87   18976.4   13600.00
     23    24370.01   75.44    0.784  0.30( 0.27) 0.89   25975.0   13100.00
     24    24717.49   82.12    0.751  0.30( 0.27) 0.90   28501.1   11801.00
     25    25744.98   95.52    0.696  0.30( 0.27) 0.91   34410.9   11530.00
     26    26221.46  100.08    0.683  0.30( 0.27) 0.92   37071.1   13510.00
     27    26961.66  107.36    0.663  0.30( 0.28) 0.92   41192.9   13010.00
     28    27464.61  111.28    0.652  0.30( 0.28) 0.93   43618.9   13500.00
     29    27691.96  113.08    0.647  0.30( 0.28) 0.93   44722.3   11330.00
     30    28301.93  121.19    0.625  0.30( 0.28) 0.94   49809.5   10630.00
     31    28058.25  126.78    0.615  0.30( 0.28) 0.94   52399.4   12330.00
     32    27806.97  133.42    0.604  0.30( 0.28) 0.94   55541.8   11600.00
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     33    27436.80  139.23    0.594  0.30( 0.28) 0.94   57776.1   11111.00
     34    27026.13  145.39    0.584  0.30( 0.28) 0.94   59710.0   12201.00
     35    26121.92  154.41    0.569  0.30( 0.28) 0.95   61798.2   12231.00
     36    25292.22  161.98    0.556  0.30( 0.28) 0.95   63209.8   10400.00
     37    23968.20  173.53    0.536  0.30( 0.28) 0.95   64830.5   10320.00
     38    23293.98  178.47    0.528  0.30( 0.28) 0.95   65056.0   10210.00
     39    22708.49  183.40    0.522  0.30( 0.28) 0.95   65218.4   12000.00
     40    19783.88  213.00    0.500  0.30( 0.28) 0.95   65835.4   10100.00
    TOTAL AREA(ACRES) =     65835.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    28301.93  Tc(MIN.) =  121.186
  EFFECTIVE AREA(ACRES) =  49809.50  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    65835.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.07
  CHANNEL FLOW THRU SUBAREA(CFS) =   28301.93
  FLOW VELOCITY(FEET/SEC.) =  17.01   FLOW DEPTH(FEET) =   7.07
  TRAVEL TIME(MIN.) =   0.17   Tc(MIN.) =  121.35
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101E.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      366.95   40.42  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14699.84   16.01    1.805  0.30( 0.24) 0.81    3124.8     429.00
    2    15453.16   17.59    1.720  0.30( 0.24) 0.81    3584.8     425.00
    3    15538.10   17.86    1.705  0.30( 0.24) 0.81    3662.3     400.00
    4    15787.58   19.47    1.618  0.30( 0.24) 0.81    4114.4     300.00
    5    16760.62   23.13    1.463  0.30( 0.24) 0.80    5142.1   50700.00
    6    17182.40   24.86    1.394  0.30( 0.24) 0.80    5606.5     210.00
    7    17409.89   25.88    1.363  0.30( 0.24) 0.80    5871.8   50600.00
    8    17645.85   26.81    1.337  0.30( 0.24) 0.80    6132.4     410.00
    9    17953.85   28.02    1.303  0.30( 0.24) 0.80    6473.0     200.00
   10    18124.35   28.70    1.284  0.30( 0.24) 0.80    6664.1     230.00
   11    18243.76   29.20    1.270  0.30( 0.24) 0.80    6800.5   50500.00
   12    18356.83   29.84    1.252  0.30( 0.24) 0.80    6973.5     220.50
   13    18570.92   31.00    1.230  0.30( 0.24) 0.80    7280.0     110.00
   14    19022.66   33.38    1.187  0.30( 0.24) 0.80    7955.9     100.00
   15    19240.65   34.59    1.165  0.30( 0.24) 0.81    8291.2     110.00
   16    19271.34   34.75    1.162  0.30( 0.24) 0.81    8358.2     100.00
   17    19857.79   38.04    1.102  0.30( 0.24) 0.81    9685.1     130.00
   18    21002.09   44.44    1.014  0.30( 0.25) 0.83   12253.8     150.00
   19    21889.51   49.96    0.948  0.30( 0.25) 0.84   14764.0   50150.00
   20    22188.81   53.09    0.921  0.30( 0.26) 0.85   16168.9   20100.00
   21    22462.97   56.26    0.893  0.30( 0.26) 0.86   17534.3   31100.00
   22    22782.18   59.53    0.864  0.30( 0.26) 0.87   18976.4   13600.00
   23    24370.01   75.62    0.783  0.30( 0.27) 0.89   25975.0   13100.00
   24    24717.49   82.29    0.750  0.30( 0.27) 0.90   28501.1   11801.00
   25    25744.98   95.69    0.696  0.30( 0.27) 0.91   34410.9   11530.00
   26    26221.46  100.25    0.683  0.30( 0.27) 0.92   37071.1   13510.00
   27    26961.66  107.53    0.662  0.30( 0.28) 0.92   41192.9   13010.00
   28    27464.61  111.45    0.651  0.30( 0.28) 0.93   43618.9   13500.00
   29    27691.96  113.25    0.646  0.30( 0.28) 0.93   44722.3   11330.00
   30    28301.93  121.35    0.625  0.30( 0.28) 0.94   49809.5   10630.00
   31    28058.25  126.95    0.615  0.30( 0.28) 0.94   52399.4   12330.00
   32    27806.97  133.58    0.604  0.30( 0.28) 0.94   55541.8   11600.00
   33    27436.80  139.39    0.594  0.30( 0.28) 0.94   57776.1   11111.00
   34    27026.13  145.56    0.584  0.30( 0.28) 0.94   59710.0   12201.00
   35    26121.92  154.58    0.568  0.30( 0.28) 0.95   61798.2   12231.00
   36    25292.22  162.15    0.555  0.30( 0.28) 0.95   63209.8   10400.00
   37    23968.20  173.71    0.536  0.30( 0.28) 0.95   64830.5   10320.00
   38    23293.98  178.64    0.527  0.30( 0.28) 0.95   65056.0   10210.00
   39    22708.49  183.58    0.522  0.30( 0.28) 0.95   65218.4   12000.00
   40    19783.88  213.19    0.499  0.30( 0.28) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      366.95   40.42    1.061  0.30( 0.30) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14986.27   16.01    1.805  0.30( 0.25) 0.82    3358.8     429.00
    2    15750.14   17.59    1.720  0.30( 0.25) 0.82    3842.0     425.00
    3    15836.57   17.86    1.705  0.30( 0.25) 0.82    3923.5     400.00
    4    16092.97   19.47    1.618  0.30( 0.25) 0.82    4399.1     300.00
    5    17080.94   23.13    1.463  0.30( 0.24) 0.82    5480.3   50700.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | 17506.07 | 24.86 | 1.394 | 0.30( 0.24) | 0.81 | 5970.0 | 210.00 |
| 7 | 17737.55 | 25.88 | 1.363 | 0.30( 0.24) | 0.81 | 6250.2 | 50600.00 |
| 8 | 17977.00 | 26.81 | 1.337 | 0.30( 0.24) | 0.81 | 6524.3 | 410.00 |
| 9 | 18288.71 | 28.02 | 1.303 | 0.30( 0.24) | 0.81 | 6882.7 | 200.00 |
| 10 | 18460.86 | 28.70 | 1.284 | 0.30( 0.24) | 0.81 | 7083.7 | 230.00 |
| 11 | 18581.29 | 29.20 | 1.270 | 0.30( 0.24) | 0.81 | 7227.4 | 50500.00 |
| 12 | 18695.42 | 29.84 | 1.252 | 0.30( 0.24) | 0.81 | 7409.8 | 220.50 |
| 13 | 18914.33 | 31.00 | 1.230 | 0.30( 0.24) | 0.81 | 7733.2 | 110.00 |
| 14 | 19375.30 | 33.38 | 1.187 | 0.30( 0.24) | 0.82 | 8443.9 | 100.00 |
| 15 | 19597.04 | 34.59 | 1.165 | 0.30( 0.24) | 0.82 | 8796.8 | 110.00 |
| 16 | 19628.19 | 34.75 | 1.162 | 0.30( 0.24) | 0.82 | 8866.2 | 100.00 |
| 17 | 20221.43 | 38.04 | 1.102 | 0.30( 0.25) | 0.82 | 10241.2 | 130.00 |
| 18 | 20651.04 | 40.42 | 1.061 | 0.30( 0.25) | 0.83 | 11233.1 | 10100.00 |
| 19 | 21346.32 | 44.44 | 1.014 | 0.30( 0.25) | 0.83 | 12844.8 | 150.00 |
| 20 | 22202.55 | 49.96 | 0.948 | 0.30( 0.25) | 0.85 | 15355.0 | 50150.00 |
| 21 | 22488.62 | 53.09 | 0.921 | 0.30( 0.26) | 0.86 | 16759.9 | 20100.00 |
| 22 | 22749.39 | 56.26 | 0.893 | 0.30( 0.26) | 0.87 | 18125.3 | 31100.00 |
| 23 | 23054.81 | 59.53 | 0.864 | 0.30( 0.26) | 0.87 | 19567.4 | 13600.00 |
| 24 | 24603.76 | 75.62 | 0.783 | 0.30( 0.27) | 0.89 | 26566.0 | 13100.00 |
| 25 | 24935.47 | 82.29 | 0.750 | 0.30( 0.27) | 0.90 | 29092.1 | 11801.00 |
| 26 | 25937.01 | 95.69 | 0.696 | 0.30( 0.27) | 0.91 | 35001.9 | 11530.00 |
| 27 | 26407.31 | 100.25 | 0.683 | 0.30( 0.27) | 0.92 | 37662.1 | 13510.00 |
| 28 | 27137.62 | 107.53 | 0.662 | 0.30( 0.28) | 0.92 | 41783.9 | 13010.00 |
| 29 | 27635.26 | 111.45 | 0.651 | 0.30( 0.28) | 0.93 | 44209.9 | 13500.00 |
| 30 | 27860.17 | 113.25 | 0.646 | 0.30( 0.28) | 0.93 | 45313.3 | 11330.00 |
| 31 | 28459.87 | 121.35 | 0.625 | 0.30( 0.28) | 0.94 | 50400.5 | 10630.00 |
| 32 | 28211.63 | 126.95 | 0.615 | 0.30( 0.28) | 0.94 | 52990.4 | 12330.00 |
| 33 | 27954.95 | 133.58 | 0.604 | 0.30( 0.28) | 0.94 | 56132.8 | 11600.00 |
| 34 | 27580.05 | 139.39 | 0.594 | 0.30( 0.28) | 0.94 | 58367.1 | 11111.00 |
| 35 | 27164.36 | 145.56 | 0.584 | 0.30( 0.28) | 0.94 | 60301.0 | 12201.00 |
| 36 | 26252.80 | 154.58 | 0.568 | 0.30( 0.28) | 0.95 | 62389.2 | 12231.00 |
| 37 | 25416.93 | 162.15 | 0.555 | 0.30( 0.28) | 0.95 | 63800.8 | 10400.00 |
| 38 | 24083.50 | 173.71 | 0.536 | 0.30( 0.28) | 0.95 | 65421.5 | 10320.00 |
| 39 | 23405.26 | 178.64 | 0.527 | 0.30( 0.28) | 0.95 | 65647.0 | 10210.00 |
| 40 | 22817.34 | 183.58 | 0.522 | 0.30( 0.28) | 0.95 | 65809.4 | 12000.00 |
| 41 | 19881.77 | 213.19 | 0.499 | 0.30( 0.28) | 0.95 | 66426.4 | 10100.00 |

TOTAL AREA(ACRES) = 66426.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 28459.87 Tc(MIN.) = 121.353
EFFECTIVE AREA(ACRES) = 50400.50 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 66426.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

**********
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0266
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.43
CHANNEL FLOW THRU SUBAREA(CFS) = 28459.87
FLOW VELOCITY(FEET/SEC.) = 23.09 FLOW DEPTH(FEET) = 5.43



TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 121.54
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0610508V.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 143.78 | 21.90 | 0.30( 0.30) | 0.99 | 131.3 | 50800.00 |

TOTAL AREA(ACRES) = 131.3

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14986.27 | 16.25 | 1.792 | 0.30( 0.25) | 0.82 | 3358.8 | 429.00 |
| 2 | 15750.14 | 17.82 | 1.707 | 0.30( 0.25) | 0.82 | 3842.0 | 425.00 |
| 3 | 15836.57 | 18.09 | 1.693 | 0.30( 0.25) | 0.82 | 3923.5 | 400.00 |
| 4 | 16092.97 | 19.70 | 1.606 | 0.30( 0.25) | 0.82 | 4399.1 | 300.00 |
| 5 | 17080.94 | 23.36 | 1.454 | 0.30( 0.24) | 0.82 | 5480.3 | 50700.00 |
| 6 | 17506.07 | 25.08 | 1.386 | 0.30( 0.24) | 0.81 | 5970.0 | 210.00 |
| 7 | 17737.55 | 26.10 | 1.357 | 0.30( 0.24) | 0.81 | 6250.2 | 50600.00 |
| 8 | 17977.00 | 27.03 | 1.331 | 0.30( 0.24) | 0.81 | 6524.3 | 410.00 |
| 9 | 18288.71 | 28.24 | 1.297 | 0.30( 0.24) | 0.81 | 6882.7 | 200.00 |
| 10 | 18460.86 | 28.92 | 1.278 | 0.30( 0.24) | 0.81 | 7083.7 | 230.00 |
| 11 | 18581.29 | 29.42 | 1.264 | 0.30( 0.24) | 0.81 | 7227.4 | 50500.00 |
| 12 | 18695.42 | 30.06 | 1.247 | 0.30( 0.24) | 0.81 | 7409.8 | 220.50 |
| 13 | 18914.33 | 31.21 | 1.226 | 0.30( 0.24) | 0.81 | 7733.2 | 110.00 |
| 14 | 19375.30 | 33.59 | 1.183 | 0.30( 0.24) | 0.82 | 8443.9 | 100.00 |
| 15 | 19597.04 | 34.80 | 1.161 | 0.30( 0.24) | 0.82 | 8796.8 | 110.00 |
| 16 | 19628.19 | 34.96 | 1.158 | 0.30( 0.24) | 0.82 | 8866.2 | 100.00 |
| 17 | 20221.43 | 38.25 | 1.098 | 0.30( 0.25) | 0.82 | 10241.2 | 130.00 |
| 18 | 20651.04 | 40.63 | 1.059 | 0.30( 0.25) | 0.83 | 11233.1 | 10100.00 |
| 19 | 21346.32 | 44.65 | 1.011 | 0.30( 0.25) | 0.83 | 12844.8 | 150.00 |
| 20 | 22202.55 | 50.17 | 0.947 | 0.30( 0.25) | 0.85 | 15355.0 | 50150.00 |
| 21 | 22488.62 | 53.29 | 0.919 | 0.30( 0.26) | 0.86 | 16759.9 | 20100.00 |
| 22 | 22749.39 | 56.47 | 0.891 | 0.30( 0.26) | 0.87 | 18125.3 | 31100.00 |
| 23 | 23054.81 | 59.73 | 0.862 | 0.30( 0.26) | 0.87 | 19567.4 | 13600.00 |
| 24 | 24603.76 | 75.82 | 0.782 | 0.30( 0.27) | 0.89 | 26566.0 | 13100.00 |
| 25 | 24935.47 | 82.49 | 0.749 | 0.30( 0.27) | 0.90 | 29092.1 | 11801.00 |
| 26 | 25937.01 | 95.88 | 0.695 | 0.30( 0.27) | 0.91 | 35001.9 | 11530.00 |
| 27 | 26407.31 | 100.44 | 0.682 | 0.30( 0.27) | 0.92 | 37662.1 | 13510.00 |
| 28 | 27137.62 | 107.72 | 0.662 | 0.30( 0.28) | 0.92 | 41783.9 | 13010.00 |

```
   29    27635.26  111.64    0.651  0.30( 0.28) 0.93   44209.9   13500.00
   30    27860.17  113.44    0.646  0.30( 0.28) 0.93   45313.3   11330.00
   31    28459.87  121.54    0.624  0.30( 0.28) 0.94   50400.5   10630.00
   32    28211.63  127.13    0.615  0.30( 0.28) 0.94   52990.4   12330.00
   33    27954.95  133.77    0.604  0.30( 0.28) 0.94   56132.8   11600.00
   34    27580.05  139.58    0.594  0.30( 0.28) 0.94   58367.1   11111.00
   35    27164.36  145.75    0.583  0.30( 0.28) 0.94   60301.0   12201.00
   36    26252.80  154.77    0.568  0.30( 0.28) 0.95   62389.2   12231.00
   37    25416.93  162.35    0.555  0.30( 0.28) 0.95   63800.8   10400.00
   38    24083.50  173.91    0.535  0.30( 0.28) 0.95   65421.5   10320.00
   39    23405.26  178.85    0.527  0.30( 0.28) 0.95   65647.0   10210.00
   40    22817.34  183.79    0.522  0.30( 0.28) 0.95   65809.4   12000.00
   41    19881.77  213.40    0.499  0.30( 0.28) 0.95   66426.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124549.22 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      143.78   21.90    1.513  0.30( 0.30) 0.99     131.3   50800.00
LONGEST FLOWPATH FROM NODE  50800.00 TO NODE  13700.00 =    5946.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    15117.36   16.25    1.792  0.30( 0.25) 0.83   3456.2     429.00
    2    15885.80   17.82    1.707  0.30( 0.25) 0.82   3948.8     425.00
    3    15972.87   18.09    1.693  0.30( 0.25) 0.82   4031.9     400.00
    4    16232.19   19.70    1.606  0.30( 0.25) 0.82   4517.2     300.00
    5    16830.83   21.90    1.513  0.30( 0.25) 0.82   5180.5   50800.00
    6    17217.77   23.36    1.454  0.30( 0.25) 0.82   5611.6   50700.00
    7    17634.79   25.08    1.386  0.30( 0.25) 0.82   6101.2     210.00
    8    17862.90   26.10    1.357  0.30( 0.25) 0.82   6381.4   50600.00
    9    18099.28   27.03    1.331  0.30( 0.25) 0.82   6655.5     410.00
   10    18406.98   28.24    1.297  0.30( 0.25) 0.82   7013.9     200.00
   11    18576.88   28.92    1.278  0.30( 0.25) 0.82   7215.0     230.00
   12    18695.65   29.42    1.264  0.30( 0.25) 0.82   7358.7   50500.00
   13    18807.74   30.06    1.247  0.30( 0.25) 0.82   7541.0     220.50
   14    19024.16   31.21    1.226  0.30( 0.25) 0.82   7864.5     110.00
   15    19480.02   33.59    1.183  0.30( 0.25) 0.82   8575.1     100.00
   16    19699.16   34.80    1.161  0.30( 0.25) 0.82   8928.1     110.00
   17    19729.96   34.96    1.158  0.30( 0.25) 0.82   8997.5     100.00
   18    20316.13   38.25    1.098  0.30( 0.25) 0.82  10372.5     130.00
   19    20741.09   40.63    1.059  0.30( 0.25) 0.83  11364.3   10100.00
   20    21430.77   44.65    1.011  0.30( 0.25) 0.84  12976.0     150.00
   21    22279.37   50.17    0.947  0.30( 0.25) 0.85  15486.2   50150.00
   22    22562.19   53.29    0.919  0.30( 0.26) 0.86  16891.1   20100.00
   23    22819.66   56.47    0.891  0.30( 0.26) 0.87  18256.5   31100.00
   24    23121.68   59.73    0.862  0.30( 0.26) 0.87  19698.6   13600.00
   25    24661.13   75.82    0.782  0.30( 0.27) 0.89  26697.3   13100.00
   26    24988.95   82.49    0.749  0.30( 0.27) 0.90  29223.3   11801.00
   27    25984.15   95.88    0.695  0.30( 0.27) 0.91  35133.1   11530.00
   28    26452.92  100.44    0.682  0.30( 0.28) 0.92  37793.4   13510.00
   29    27180.79  107.72    0.662  0.30( 0.28) 0.92  41915.2   13010.00
   30    27677.12  111.64    0.651  0.30( 0.28) 0.93  44341.2   13500.00
   31    27901.43  113.44    0.646  0.30( 0.28) 0.93  45444.6   11330.00
   32    28498.62  121.54    0.624  0.30( 0.28) 0.94  50531.8   10630.00
   33    28249.26  127.13    0.615  0.30( 0.28) 0.94  53121.6   12330.00
   34    27991.24  133.77    0.604  0.30( 0.28) 0.94  56264.1   11600.00
```



```
   35    27615.17  139.58    0.594  0.30( 0.28) 0.94   58498.4   11111.00
   36    27198.24  145.75    0.583  0.30( 0.28) 0.94   60432.3   12201.00
   37    26284.88  154.77    0.568  0.30( 0.28) 0.95   62520.5   12231.00
   38    25447.49  162.35    0.555  0.30( 0.28) 0.95   63932.1   10400.00
   39    24111.73  173.91    0.535  0.30( 0.28) 0.95   65552.8   10320.00
   40    23432.50  178.85    0.527  0.30( 0.28) 0.95   65778.3   10210.00
   41    22844.00  183.79    0.522  0.30( 0.28) 0.95   65940.6   12000.00
   42    19905.73  213.40    0.499  0.30( 0.28) 0.95   66557.6   10100.00
  TOTAL AREA(ACRES) =     66557.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    28498.62  Tc(MIN.) =  121.541
  EFFECTIVE AREA(ACRES) =  50531.76  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    66557.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124549.22 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    66557.6  TC(MIN.) =    121.54
  EFFECTIVE AREA(ACRES) =  50531.76  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.936
  PEAK FLOW RATE(CFS)   =   28498.62

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    15117.36   16.25    1.792  0.30( 0.25) 0.83   3456.2     429.00
      2    15885.80   17.82    1.707  0.30( 0.25) 0.82   3948.8     425.00
      3    15972.87   18.09    1.693  0.30( 0.25) 0.82   4031.9     400.00
      4    16232.19   19.70    1.606  0.30( 0.25) 0.82   4517.2     300.00
      5    16830.83   21.90    1.513  0.30( 0.25) 0.82   5180.5   50800.00
      6    17217.77   23.36    1.454  0.30( 0.25) 0.82   5611.6   50700.00
      7    17634.79   25.08    1.386  0.30( 0.25) 0.82   6101.2     210.00
      8    17862.90   26.10    1.357  0.30( 0.25) 0.82   6381.4   50600.00
      9    18099.28   27.03    1.331  0.30( 0.25) 0.82   6655.5     410.00
     10    18406.98   28.24    1.297  0.30( 0.25) 0.82   7013.9     200.00
     11    18576.88   28.92    1.278  0.30( 0.25) 0.82   7215.0     230.00
     12    18695.65   29.42    1.264  0.30( 0.25) 0.82   7358.7   50500.00
     13    18807.74   30.06    1.247  0.30( 0.25) 0.82   7541.0     220.50
     14    19024.16   31.21    1.226  0.30( 0.25) 0.82   7864.5     110.00
     15    19480.02   33.59    1.183  0.30( 0.25) 0.82   8575.1     100.00
     16    19699.16   34.80    1.161  0.30( 0.25) 0.82   8928.1     110.00
     17    19729.96   34.96    1.158  0.30( 0.25) 0.82   8997.5     100.00
     18    20316.13   38.25    1.098  0.30( 0.25) 0.82  10372.5     130.00
     19    20741.09   40.63    1.059  0.30( 0.25) 0.83  11364.3   10100.00
     20    21430.77   44.65    1.011  0.30( 0.25) 0.84  12976.0     150.00
     21    22279.37   50.17    0.947  0.30( 0.25) 0.85  15486.2   50150.00
     22    22562.19   53.29    0.919  0.30( 0.26) 0.86  16891.1   20100.00
     23    22819.66   56.47    0.891  0.30( 0.26) 0.87  18256.5   31100.00
     24    23121.68   59.73    0.862  0.30( 0.26) 0.87  19698.6   13600.00
     25    24661.13   75.82    0.782  0.30( 0.27) 0.89  26697.3   13100.00
     26    24988.95   82.49    0.749  0.30( 0.27) 0.90  29223.3   11801.00
     27    25984.15   95.88    0.695  0.30( 0.27) 0.91  35133.1   11530.00
     28    26452.92  100.44    0.682  0.30( 0.28) 0.92  37793.4   13510.00
     29    27180.79  107.72    0.662  0.30( 0.28) 0.92  41915.2   13010.00
     30    27677.12  111.64    0.651  0.30( 0.28) 0.93  44341.2   13500.00
     31    27901.43  113.44    0.646  0.30( 0.28) 0.93  45444.6   11330.00
     32    28498.62  121.54    0.624  0.30( 0.28) 0.94  50531.8   10630.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 28249.26 | 127.13 | 0.615 | 0.30( 0.28) | 0.94 | 53121.6 | 12330.00 |
| 34 | 27991.24 | 133.77 | 0.604 | 0.30( 0.28) | 0.94 | 56264.1 | 11600.00 |
| 35 | 27615.17 | 139.58 | 0.594 | 0.30( 0.28) | 0.94 | 58498.4 | 11111.00 |
| 36 | 27198.24 | 145.75 | 0.583 | 0.30( 0.28) | 0.94 | 60432.3 | 12201.00 |
| 37 | 26284.88 | 154.77 | 0.568 | 0.30( 0.28) | 0.95 | 62520.5 | 12231.00 |
| 38 | 25447.49 | 162.35 | 0.555 | 0.30( 0.28) | 0.95 | 63932.1 | 10400.00 |
| 39 | 24111.73 | 173.91 | 0.535 | 0.30( 0.28) | 0.95 | 65552.8 | 10320.00 |
| 40 | 23432.50 | 178.85 | 0.527 | 0.30( 0.28) | 0.95 | 65778.3 | 10210.00 |
| 41 | 22844.00 | 183.79 | 0.522 | 0.30( 0.28) | 0.95 | 65940.6 | 12000.00 |
| 42 | 19905.73 | 213.40 | 0.499 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 10-YR EV MAY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI10EV36.DAT
  TIME/DATE OF STUDY: 08:13 05/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.720
   2)   10.00;  2.487
   3)   15.00;  1.851
   4)   20.00;  1.582
   5)   25.00;  1.382
   6)   30.00;  1.244
   7)   40.00;  1.061
   8)   50.00;  0.944
   9)   60.00;  0.855
  10)   90.00;  0.707
  11)  120.00;  0.622
  12)  180.00;  0.520
  13)  360.00;  0.381
  14) 1200.00;  0.166
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.360
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    65   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.29
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      6.29

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.101
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.41
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   2.04
  Tc(MIN.) =   13.04
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   12.07
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      17.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.42   FLOW VELOCITY(FEET/SEC.) =   3.89
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.806
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.62
  AVERAGE FLOW DEPTH(FEET) =   0.73   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   15.84
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   41.96
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      56.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   5.26
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.614
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.56
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   3.56
  Tc(MIN.) =   19.40
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   27.63
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =      77.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   5.72
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.500
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.44
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   2.64
  Tc(MIN.) =   22.04
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   22.95
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =      93.35
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.33

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.33   FLOW VELOCITY(FEET/SEC.) =   5.53
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      688.52   58.84  0.30( 0.28) 0.95    1509.5   13510.00
      2      640.29   69.13  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      688.52   58.84  0.30( 0.28) 0.95    1509.5   13510.00
      2      640.29   69.13  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     695.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.42
```



```
  AVERAGE FLOW DEPTH(FEET) =   1.87   TRAVEL TIME(MIN.) =   3.30
  Tc(MIN.) =   62.14
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   12.99
  EFFECTIVE AREA(ACRES) =   1535.98     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =     774.35
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.99   FLOW VELOCITY(FEET/SEC.) =  10.79
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      774.35   62.14    0.844  0.30( 0.28) 0.95    1536.0   13510.00
      2      736.87   72.51    0.793  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     774.35  Tc(MIN.) =   62.14
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1535.98

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   62.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    0.71
  EFFECTIVE AREA(ACRES) =   1537.43   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =     775.06

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      775.06   62.14    0.844  0.30( 0.28) 0.95    1537.4   13510.00
      2      737.52   72.51    0.793  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1        93.35   22.04    1.500  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1       690.20   22.04    1.500  0.30( 0.29) 0.96      631.7   13600.00
     2       817.40   62.14    0.844  0.30( 0.29) 0.95     1623.8   13510.00
     3       775.88   72.51    0.793  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      817.40  Tc(MIN.) =   62.136
 EFFECTIVE AREA(ACRES) =   1623.83  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.834
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     830.51
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.89
 AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   2.12
 Tc(MIN.) =   64.26
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   26.21
 EFFECTIVE AREA(ACRES) =   1678.35     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =     828.33
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.10   FLOW VELOCITY(FEET/SEC.) =  10.90
```



```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1       694.12   24.27    1.411  0.30( 0.29) 0.96      686.3   13600.00
     2       828.33   64.26    0.834  0.30( 0.29) 0.95     1678.3   13510.00
     3       783.33   74.67    0.783  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     828.33  Tc(MIN.) =   64.26
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1678.35

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.26
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.834
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   28.05
 EFFECTIVE AREA(ACRES) =   1736.71   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =     856.39

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XX10.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)          (ACRES)     NODE
     1       158.08   17.90  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1       752.50   24.27    1.411  0.30( 0.29) 0.96      744.6   13600.00
     2       856.39   64.26    0.834  0.30( 0.29) 0.95     1736.7   13510.00
     3       808.68   74.67    0.783  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      158.08   17.90    1.695  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      853.43   17.90    1.695  0.30( 0.28) 0.94     683.2   20100.00
     2      879.44   24.27    1.411  0.30( 0.28) 0.95     878.4   13600.00
     3      919.88   64.26    0.834  0.30( 0.28) 0.95    1870.5   13510.00
     4      866.53   74.67    0.783  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      919.88  Tc(MIN.) =   64.255
 EFFECTIVE AREA(ACRES) =   1870.51  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.85
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     935.24
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.51
 AVERAGE FLOW DEPTH(FEET) =   2.85   TRAVEL TIME(MIN.) =   5.86
 Tc(MIN.) =   70.12
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   30.72
 EFFECTIVE AREA(ACRES) =   1938.09     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =     919.88
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.83
```



```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.83   FLOW VELOCITY(FEET/SEC.) =   8.46
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      853.43   23.86    1.428  0.30( 0.28) 0.95     750.8   20100.00
     2      879.44   30.19    1.241  0.30( 0.28) 0.95     946.0   13600.00
     3      919.88   70.12    0.805  0.30( 0.28) 0.95    1938.1   13510.00
     4      866.53   80.65    0.753  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     919.88  Tc(MIN.) =   70.12
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1938.09

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.12
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   47.60
 EFFECTIVE AREA(ACRES) =   2042.79   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =     955.58

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.12
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    3.65
 EFFECTIVE AREA(ACRES) =   2050.82   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =     959.23
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1006.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.26
  AVERAGE FLOW DEPTH(FEET) =   3.10   TRAVEL TIME(MIN.) =   5.68
  Tc(MIN.) =   75.80
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =   94.15
  EFFECTIVE AREA(ACRES) =   2270.07     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1001.67
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.09   FLOW VELOCITY(FEET/SEC.) =   8.26
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      942.27   29.58    1.256  0.30( 0.29) 0.96    1082.8   20100.00
      2      974.92   35.88    1.136  0.30( 0.29) 0.96    1278.0   13600.00
      3     1001.67   75.80    0.777  0.30( 0.29) 0.96    2270.1   13510.00
      4      923.24   86.45    0.725  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1001.67  Tc(MIN.) =   75.80
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2270.07

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.80
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =   92.52
  EFFECTIVE AREA(ACRES) =   2485.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1094.18

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1127.58   29.58    1.256  0.30( 0.29) 0.97    1298.2   20100.00
      2     1137.09   35.88    1.136  0.30( 0.29) 0.97    1493.4   13600.00
      3     1094.18   75.80    0.777  0.30( 0.29) 0.96    2485.5   13510.00
      4     1005.57   86.45    0.725  0.30( 0.29) 0.96    2555.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1137.09  Tc(MIN.) =   35.88
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1493.41

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   12.59
  EFFECTIVE AREA(ACRES) =   1510.13   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1149.68

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
```

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.048
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.22 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.17 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 9.19 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 67.57 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 35.19 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 30.67 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1198.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.29
AVERAGE FLOW DEPTH(FEET) = 3.25 TRAVEL TIME(MIN.) = 5.22
Tc(MIN.) = 41.11
SUBAREA AREA(ACRES) = 145.01 SUBAREA RUNOFF(CFS) = 97.63
EFFECTIVE AREA(ACRES) = 1655.14 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2717.6 PEAK FLOW RATE(CFS) = 1149.68
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.17 FLOW VELOCITY(FEET/SEC.) = 9.18
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1141.97 | 34.79 | 1.156 | 0.30( 0.29) | 0.97 | 1459.9 | 20100.00 |
| 2 | 1149.68 | 41.11 | 1.048 | 0.30( 0.29) | 0.97 | 1655.1 | 13600.00 |
| 3 | 1101.36 | 81.12 | 0.751 | 0.30( 0.29) | 0.96 | 2647.2 | 13510.00 |
| 4 | 1011.96 | 91.91 | 0.702 | 0.30( 0.29) | 0.96 | 2717.6 | 13500.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1149.68 Tc(MIN.) = 41.11
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1655.14

**********
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 41.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.048
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.89 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 20.65 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.69 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 8.45 | 0.30 | 1.000 | - |



| USER-DEFINED | - | 96.93 | 0.30 | 1.000 | - |
|---|---|---|---|---|---|
| USER-DEFINED | - | 13.19 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 96.14
EFFECTIVE AREA(ACRES) = 1797.94 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 1223.45

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1246.17 | 34.79 | 1.156 | 0.30( 0.29) | 0.97 | 1602.7 | 20100.00 |
| 2 | 1223.45 | 41.11 | 1.048 | 0.30( 0.29) | 0.97 | 1797.9 | 13600.00 |
| 3 | 1159.10 | 81.12 | 0.751 | 0.30( 0.29) | 0.96 | 2790.0 | 13510.00 |
| 4 | 1062.94 | 91.91 | 0.702 | 0.30( 0.29) | 0.96 | 2860.4 | 13500.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1246.17 Tc(MIN.) = 34.79
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1602.73

**********
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 34.79
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.156
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 42.54 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 16.96 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 80.60 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 1.56 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.00 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 3.11 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 113.12
EFFECTIVE AREA(ACRES) = 1749.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3007.2 PEAK FLOW RATE(CFS) = 1359.28

**********
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.15
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.113
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ | SCS SOIL | AREA | Fp | Ap | SCS |
|---|---|---|---|---|---|

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.89      0.30      1.000     -
  USER-DEFINED             -       23.73      0.30      1.000     -
  USER-DEFINED             -        0.27      0.30      1.000     -
  USER-DEFINED             -       19.87      0.30      1.000     -
  USER-DEFINED             -        6.40      0.30      1.000     -
  USER-DEFINED             -        3.14      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1379.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.11
  AVERAGE FLOW DEPTH(FEET) =   3.15   TRAVEL TIME(MIN.) =   2.39
  Tc(MIN.) =   37.18
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   39.72
  EFFECTIVE AREA(ACRES) =   1803.80     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    1359.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.12   FLOW VELOCITY(FEET/SEC.) =  11.08
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1359.28   37.18    1.113  0.30( 0.29) 0.98    1803.8   20100.00
      2     1322.27   43.52    1.020  0.30( 0.29) 0.98    1999.0   13600.00
      3     1218.66   83.59    0.739  0.30( 0.29) 0.97    2991.1   13510.00
      4     1115.99   94.45    0.694  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1359.28  Tc(MIN.) =   37.18
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1803.80

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.67      0.30      1.000     -
  USER-DEFINED             -        9.52      0.30      1.000     -
  USER-DEFINED             -        0.71      0.30      1.000     -
  USER-DEFINED             -        0.22      0.30      1.000     -
  USER-DEFINED             -       39.42      0.30      1.000     -
  USER-DEFINED             -        0.62      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   37.42
  EFFECTIVE AREA(ACRES) =   1854.96   AREA-AVERAGED Fm(INCH/HR) =  0.29
```



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  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    1367.67

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.11      0.30      1.000     -
  USER-DEFINED             -        0.77      0.30      1.000     -
  USER-DEFINED             -        0.22      0.30      1.000     -
  USER-DEFINED             -        2.69      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    2.77
  EFFECTIVE AREA(ACRES) =   1858.75   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    1370.44

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P10EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      369.81   15.08  0.30( 0.11) 0.36     172.7     110.00
      2      370.44   17.62  0.30( 0.11) 0.37     203.0     100.00
      3      361.39   19.04  0.30( 0.11) 0.38     213.7     100.00
      4      316.02   22.37  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN  87.0 INCH PIPE IS  70.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.17
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    1370.44
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   37.56
```

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 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.44   37.56    1.106  0.30( 0.29) 0.98    1858.7   20100.00
     2     1343.78   43.90    1.015  0.30( 0.29) 0.98    2054.0   13600.00
     3     1229.56   83.98    0.737  0.30( 0.29) 0.97    3046.0   13510.00
     4     1135.31   94.85    0.693  0.30( 0.29) 0.97    3116.4   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      369.81   15.08    1.847  0.30( 0.11) 0.36     172.7     110.00
     2      370.44   17.62    1.710  0.30( 0.11) 0.37     203.0     100.00
     3      361.39   19.04    1.634  0.30( 0.11) 0.38     213.7     100.00
     4      316.02   22.37    1.487  0.30( 0.12) 0.40     221.1     130.00
 LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1421.87   15.08    1.847  0.30( 0.26) 0.86     918.7     110.00
     2     1491.67   17.62    1.710  0.30( 0.26) 0.86    1074.8     100.00
     3     1507.68   19.04    1.634  0.30( 0.26) 0.87    1155.9     100.00
     4     1515.65   22.37    1.487  0.30( 0.26) 0.88    1328.1     130.00
     5     1598.25   37.56    1.106  0.30( 0.28) 0.92    2079.8   20100.00
     6     1550.73   43.90    1.015  0.30( 0.28) 0.92    2275.1   13600.00
     7     1372.07   83.98    0.737  0.30( 0.28) 0.93    3267.1   13510.00
     8     1267.78   94.85    0.693  0.30( 0.28) 0.93    3337.5   13500.00
   TOTAL AREA(ACRES) =      3337.5

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1598.25  Tc(MIN.) =   37.564
 EFFECTIVE AREA(ACRES) =   2079.85  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
 TOTAL AREA(ACRES) =     3337.5
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                    B        1.11      0.30     1.000    86
```



```
 AGRICULTURAL POOR COVER
 "FALLOW"                    B        0.44      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                     B        1.49      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                     B        1.70      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.09      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       18.57      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   17.69
 EFFECTIVE AREA(ACRES) =   2104.25   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    1598.25
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                  B       12.39      0.30     1.000    65
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                  B        2.30      0.30     1.000    65
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B        5.19      0.30     1.000    79
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"    B       28.71      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B        0.17      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   35.35
 EFFECTIVE AREA(ACRES) =   2153.01   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    1607.75

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.19
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.22      0.30      1.000     -
 USER-DEFINED               -        9.23      0.30      1.000     -
 USER-DEFINED               -        0.54      0.30      1.000     -
 USER-DEFINED               -        5.66      0.30      1.000     -
 USER-DEFINED               -        3.66      0.30      1.000     -
 USER-DEFINED               -        0.67      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1614.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
 AVERAGE FLOW DEPTH(FEET) =   4.19   TRAVEL TIME(MIN.) =   1.72
 Tc(MIN.) =   39.28
 SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   13.92
 EFFECTIVE AREA(ACRES) =   2172.99     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
 TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.18

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.18   FLOW VELOCITY(FEET/SEC.) =   9.05
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1421.87   16.86    1.751  0.30( 0.26) 0.88    1011.8     110.00
     2     1496.44   19.37    1.616  0.30( 0.26) 0.87    1168.0     100.00
     3     1516.47   20.79    1.550  0.30( 0.26) 0.88    1249.0     100.00
     4     1539.45   24.11    1.418  0.30( 0.27) 0.89    1421.3     130.00
     5     1607.75   39.28    1.074  0.30( 0.28) 0.92    2173.0   20100.00
     6     1560.66   45.63    0.995  0.30( 0.28) 0.92    2368.2   13600.00
     7     1375.63   85.78    0.728  0.30( 0.28) 0.93    3360.3   13510.00
     8     1272.00   96.70    0.688  0.30( 0.28) 0.93    3430.6   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1607.75  Tc(MIN.) =   39.28
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2172.99

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.56      0.30      1.000     -
 USER-DEFINED               -        9.40      0.30      1.000     -
 USER-DEFINED               -        2.76      0.30      1.000     -
 USER-DEFINED               -       17.38      0.30      1.000     -
 USER-DEFINED               -        2.46      0.30      1.000     -
```



```
 USER-DEFINED               -        5.56      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   27.26
 EFFECTIVE AREA(ACRES) =   2212.11   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.65      0.30      1.000     -
 USER-DEFINED               -        1.70      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    1.64
 EFFECTIVE AREA(ACRES) =   2214.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.29      0.30      1.000     -
 USER-DEFINED               -       31.25      0.30      1.000     -
 USER-DEFINED               -        0.22      0.30      1.000     -
 USER-DEFINED               -        6.26      0.30      1.000     -
 USER-DEFINED               -        0.07      0.30      1.000     -
 USER-DEFINED               -        0.22      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   30.18
 EFFECTIVE AREA(ACRES) =   2257.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    1619.86
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   30.89
  EFFECTIVE AREA(ACRES) =   2296.93   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    1650.76

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.37
  EFFECTIVE AREA(ACRES) =   2297.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    1651.13

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
```



```
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1654.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.87
  AVERAGE FLOW DEPTH(FEET) =   3.99   TRAVEL TIME(MIN.) =   4.83
  Tc(MIN.) =   44.11
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =    7.49
  EFFECTIVE AREA(ACRES) =   2309.13     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.99   FLOW VELOCITY(FEET/SEC.) =   9.87
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     1521.80   21.81    1.510  0.30( 0.26) 0.88    1148.0     110.00
      2     1573.72   24.27    1.411  0.30( 0.26) 0.88    1304.1     100.00
      3     1590.73   25.67    1.363  0.30( 0.26) 0.88    1385.2     100.00
      4     1600.63   28.98    1.272  0.30( 0.27) 0.89    1557.4     130.00
      5     1651.13   44.11    1.013  0.30( 0.28) 0.92    2309.1   20100.00
      6     1611.81   50.50    0.940  0.30( 0.28) 0.92    2504.3   13600.00
      7     1408.16   90.85    0.705  0.30( 0.28) 0.93    3496.4   13510.00
      8     1310.02  101.87    0.673  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   44.11
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2309.13

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   56.44
```

```
  EFFECTIVE AREA(ACRES) =   2397.09   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        0.18      0.30     1.000     -
  USER-DEFINED               -        0.38      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        7.73      0.30     1.000     -
  USER-DEFINED               -        4.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =    8.27
  EFFECTIVE AREA(ACRES) =   2409.98   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.57      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.97      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.98      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.39      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.67      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =    8.07
  EFFECTIVE AREA(ACRES) =   2422.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.44      0.30     1.000    66
  PUBLIC PARK                B        2.65      0.30     0.850    56
  PUBLIC PARK                B        1.16      0.30     0.850    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   16.43
  EFFECTIVE AREA(ACRES) =   2447.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.30     1.000     -
  USER-DEFINED               -        6.75      0.30     1.000     -
  USER-DEFINED               -        0.02      0.30     1.000     -
  USER-DEFINED               -        0.93      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =    9.48
  EFFECTIVE AREA(ACRES) =   2462.55   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
```

CHANNEL LENGTH THRU SUBAREA(FEET) = 2526.22 CHANNEL SLOPE = 0.0132
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.22
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 8.49 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 13.31 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.87 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 20.26 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 1.21 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.05 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1664.24
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.24
AVERAGE FLOW DEPTH(FEET) = 4.22 TRAVEL TIME(MIN.) = 4.56
Tc(MIN.) = 48.67
SUBAREA AREA(ACRES) = 44.19 SUBAREA RUNOFF(CFS) = 26.24
EFFECTIVE AREA(ACRES) = 2506.74 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3764.4 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 4.20 FLOW VELOCITY(FEET/SEC.) = 9.23
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1521.80 | 26.46 | 1.342 | 0.30( 0.27) | 0.90 | 1345.6 | 110.00 |
| 2 | 1573.72 | 28.89 | 1.275 | 0.30( 0.27) | 0.89 | 1501.7 | 100.00 |
| 3 | 1590.73 | 30.27 | 1.239 | 0.30( 0.27) | 0.89 | 1582.8 | 100.00 |
| 4 | 1600.63 | 33.57 | 1.179 | 0.30( 0.27) | 0.90 | 1755.0 | 130.00 |
| 5 | 1651.13 | 48.67 | 0.960 | 0.30( 0.28) | 0.93 | 2506.7 | 20100.00 |
| 6 | 1611.81 | 55.09 | 0.899 | 0.30( 0.28) | 0.93 | 2701.9 | 13600.00 |
| 7 | 1408.16 | 95.63 | 0.691 | 0.30( 0.28) | 0.93 | 3694.0 | 13510.00 |
| 8 | 1318.82 | 106.75 | 0.660 | 0.30( 0.28) | 0.93 | 3764.4 | 13500.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1651.13 Tc(MIN.) = 48.67
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2506.74

**********
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 12.56 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.81 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.01 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 1.11 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.59 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 3.04 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 18.12 SUBAREA RUNOFF(CFS) = 10.76
EFFECTIVE AREA(ACRES) = 2524.86 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3782.5 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| RESIDENTIAL | | | | | |
| "8-10 DWELLINGS/ACRE" | B | 0.10 | 0.30 | 0.400 | 56 |
| PUBLIC PARK | B | 1.30 | 0.30 | 0.850 | 56 |
| RESIDENTIAL | | | | | |
| "8-10 DWELLINGS/ACRE" | B | 0.10 | 0.30 | 0.400 | 56 |
| PUBLIC PARK | B | 1.70 | 0.30 | 0.850 | 56 |
| PUBLIC PARK | B | 0.10 | 0.30 | 0.850 | 56 |
| PUBLIC PARK | B | 2.90 | 0.30 | 0.850 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835
SUBAREA AREA(ACRES) = 6.20 SUBAREA RUNOFF(CFS) = 3.96
EFFECTIVE AREA(ACRES) = 2531.06 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3788.7 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| RESIDENTIAL | | | | | |
| "5-7 DWELLINGS/ACRE" | B | 0.10 | 0.30 | 0.500 | 56 |
| CONDOMINIUMS | B | 0.10 | 0.30 | 0.350 | 56 |
| PUBLIC PARK | B | 6.90 | 0.30 | 0.850 | 56 |
| PUBLIC PARK | B | 0.40 | 0.30 | 0.850 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839

```
 SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    4.78
 EFFECTIVE AREA(ACRES) =   2538.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
 ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   48.67
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        2.55      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        0.01      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.35      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        0.44      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        0.67      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.06      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    3.61
 EFFECTIVE AREA(ACRES) =   2544.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   48.67
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.16      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.45      0.30     1.000    66
 NATURAL FAIR COVER
```



```
 "OPEN BRUSH"               B        6.15      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   20.59
 EFFECTIVE AREA(ACRES) =   2579.33   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   48.67
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =    8.49
 EFFECTIVE AREA(ACRES) =   2593.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
 CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.92
 CHANNEL FLOW THRU SUBAREA(CFS) =    1651.13
 FLOW VELOCITY(FEET/SEC.) =  14.56   FLOW DEPTH(FEET) =   2.92
 TRAVEL TIME(MIN.) =   0.33   Tc(MIN.) =   49.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   26.80    1.332  0.30( 0.27) 0.90    1432.5     110.00
     2     1573.72   29.22    1.265  0.30( 0.27) 0.90    1588.6     100.00
     3     1590.73   30.61    1.233  0.30( 0.27) 0.90    1669.7     100.00
     4     1600.63   33.91    1.172  0.30( 0.27) 0.91    1841.9     130.00
     5     1651.13   49.00    0.956  0.30( 0.28) 0.93    2593.6   20100.00
     6     1611.81   55.42    0.896  0.30( 0.28) 0.93    2788.8   13600.00
     7     1408.16   95.98    0.690  0.30( 0.28) 0.93    3780.9   13510.00
     8     1318.82  107.10    0.659  0.30( 0.28) 0.93    3851.3   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   49.00
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2593.64

****************************************************************************
 FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.75
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.918
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.23      0.30     1.000     -
 USER-DEFINED               -        1.52      0.30     1.000     -
 USER-DEFINED               -        0.06      0.30     1.000     -
 USER-DEFINED               -        0.13      0.30     1.000     -
 USER-DEFINED               -        6.45      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1653.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.87
 AVERAGE FLOW DEPTH(FEET) =   4.75   TRAVEL TIME(MIN.) =   3.91
 Tc(MIN.) =   52.91
 SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    4.67
 EFFECTIVE AREA(ACRES) =   2602.03     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.75

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.75   FLOW VELOCITY(FEET/SEC.) =   7.86
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   30.81    1.229  0.30( 0.27) 0.90    1440.9     110.00
     2     1573.72   33.19    1.186  0.30( 0.27) 0.90    1597.0     100.00
     3     1590.73   34.56    1.161  0.30( 0.27) 0.90    1678.1     100.00
     4     1600.63   37.85    1.100  0.30( 0.27) 0.91    1850.3     130.00
     5     1651.13   52.91    0.918  0.30( 0.28) 0.93    2602.0   20100.00
     6     1611.81   59.35    0.861  0.30( 0.28) 0.93    2797.2   13600.00
     7     1408.16  100.08    0.678  0.30( 0.28) 0.93    3789.3   13510.00
     8     1318.82  111.28    0.647  0.30( 0.28) 0.93    3859.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   52.91
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2602.03
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     3859.7  TC(MIN.) =     52.91
 EFFECTIVE AREA(ACRES) =   2602.03  AREA-AVERAGED Fm(INCH/HR)=  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.927
 PEAK FLOW RATE(CFS)   =    1651.13

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   30.81    1.229  0.30( 0.27) 0.90    1440.9     110.00
     2     1573.72   33.19    1.186  0.30( 0.27) 0.90    1597.0     100.00
     3     1590.73   34.56    1.161  0.30( 0.27) 0.90    1678.1     100.00
     4     1600.63   37.85    1.100  0.30( 0.27) 0.91    1850.3     130.00
     5     1651.13   52.91    0.918  0.30( 0.28) 0.93    2602.0   20100.00
     6     1611.81   59.35    0.861  0.30( 0.28) 0.93    2797.2   13600.00
     7     1408.16  100.08    0.678  0.30( 0.28) 0.93    3789.3   13510.00
     8     1318.82  111.28    0.647  0.30( 0.28) 0.93    3859.7   13500.00
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 10-YR EV AUG 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI10EV37.DAT
  TIME/DATE OF STUDY: 14:37 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.709
   2)   10.00;  2.481
   3)   15.00;  1.848
   4)   20.00;  1.580
   5)   25.00;  1.381
   6)   30.00;  1.243
   7)   40.00;  1.060
   8)   50.00;  0.942
   9)   60.00;  0.854
  10)   90.00;  0.706
  11)  120.00;  0.620
  12)  180.00;  0.519
  13)  360.00;  0.379
  14) 1200.00;  0.165
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    16232.19   19.70  0.30( 0.25) 0.82    4517.2     300.00
      2    17634.79   25.08  0.30( 0.25) 0.82    6101.2     210.00
      3    19729.96   34.96  0.30( 0.25) 0.82    8997.5     100.00
      4    21430.77   44.65  0.30( 0.25) 0.84   12976.0     150.00
      5    23121.68   59.73  0.30( 0.26) 0.87   19698.6   13600.00
      6    24661.13   75.82  0.30( 0.27) 0.89   26697.3   13100.00
      7    24988.95   82.49  0.30( 0.27) 0.90   29223.3   11801.00
      8    26452.92  100.44  0.30( 0.28) 0.92   37793.4   13510.00
      9    27180.79  107.72  0.30( 0.28) 0.92   41915.2   13010.00
     10    27901.43  113.44  0.30( 0.28) 0.93   45444.6   11330.00
     11    28498.62  121.54  0.30( 0.28) 0.94   50531.8   10630.00
     12    28249.26  127.13  0.30( 0.28) 0.94   53121.6   12330.00
     13    27991.24  133.77  0.30( 0.28) 0.94   56264.1   11600.00
     14    27615.17  139.58  0.30( 0.28) 0.94   58498.4   11111.00
     15    27198.24  145.75  0.30( 0.28) 0.94   60432.3   12201.00
     16    26284.88  154.77  0.30( 0.28) 0.95   62520.5   12231.00
     17    25447.49  162.35  0.30( 0.28) 0.95   63932.1   10400.00
     18    24111.73  173.91  0.30( 0.28) 0.95   65552.8   10320.00
     19    22844.00  183.79  0.30( 0.28) 0.95   65940.6   12000.00
     20    19905.73  213.40  0.30( 0.28) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    16232.19   19.70  0.30( 0.25) 0.82    4517.2     300.00
      2    17634.79   25.08  0.30( 0.25) 0.82    6101.2     210.00
      3    19729.96   34.96  0.30( 0.25) 0.82    8997.5     100.00
      4    21430.77   44.65  0.30( 0.25) 0.84   12976.0     150.00
      5    23121.68   59.73  0.30( 0.26) 0.87   19698.6   13600.00
      6    24661.13   75.82  0.30( 0.27) 0.89   26697.3   13100.00
      7    24988.95   82.49  0.30( 0.27) 0.90   29223.3   11801.00
      8    26452.92  100.44  0.30( 0.28) 0.92   37793.4   13510.00
      9    27180.79  107.72  0.30( 0.28) 0.92   41915.2   13010.00
     10    27901.43  113.44  0.30( 0.28) 0.93   45444.6   11330.00
     11    28498.62  121.54  0.30( 0.28) 0.94   50531.8   10630.00
     12    28249.26  127.13  0.30( 0.28) 0.94   53121.6   12330.00
     13    27991.24  133.77  0.30( 0.28) 0.94   56264.1   11600.00
```

```
     14    27615.17  139.58  0.30( 0.28) 0.94   58498.4   11111.00
     15    27198.24  145.75  0.30( 0.28) 0.94   60432.3   12201.00
     16    26284.88  154.77  0.30( 0.28) 0.95   62520.5   12231.00
     17    25447.49  162.35  0.30( 0.28) 0.95   63932.1   10400.00
     18    24111.73  173.91  0.30( 0.28) 0.95   65552.8   10320.00
     19    22844.00  183.79  0.30( 0.28) 0.95   65940.6   12000.00
     20    19905.73  213.40  0.30( 0.28) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
  CHANNEL FLOW THRU SUBAREA(CFS) =   28498.62
  FLOW VELOCITY(FEET/SEC.) =  10.34   FLOW DEPTH(FEET) =  10.84
  TRAVEL TIME(MIN.) =   3.05   Tc(MIN.) =  124.59
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      239.83   16.06  0.30( 0.29) 0.96     193.8   10230.00
      2      217.18   25.14  0.30( 0.29) 0.95     240.5   10250.00
      3      216.13   25.45  0.30( 0.29) 0.95     241.8   10200.00
      4      200.96   29.41  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    16232.19   23.37    1.446  0.30( 0.25) 0.82    4517.2     300.00
      2    17634.79   28.65    1.280  0.30( 0.25) 0.82    6101.2     210.00
      3    19729.96   38.40    1.089  0.30( 0.25) 0.82    8997.5     100.00
```



```
      4    21430.77   47.99    0.966  0.30( 0.25) 0.84   12976.0     150.00
      5    23121.68   63.00    0.839  0.30( 0.26) 0.87   19698.6   13600.00
      6    24661.13   79.01    0.760  0.30( 0.27) 0.89   26697.3   13100.00
      7    24988.95   85.67    0.727  0.30( 0.27) 0.90   29223.3   11801.00
      8    26452.92  103.56    0.667  0.30( 0.28) 0.92   37793.4   13510.00
      9    27180.79  110.82    0.646  0.30( 0.28) 0.92   41915.2   13010.00
     10    27901.43  116.50    0.630  0.30( 0.28) 0.93   45444.6   11330.00
     11    28498.62  124.59    0.612  0.30( 0.28) 0.94   50531.8   10630.00
     12    28249.26  130.19    0.603  0.30( 0.28) 0.94   53121.6   12330.00
     13    27991.24  136.84    0.592  0.30( 0.28) 0.94   56264.1   11600.00
     14    27615.17  142.66    0.582  0.30( 0.28) 0.94   58498.4   11111.00
     15    27198.24  148.84    0.571  0.30( 0.28) 0.94   60432.3   12201.00
     16    26284.88  157.90    0.556  0.30( 0.28) 0.95   62520.5   12231.00
     17    25447.49  165.51    0.543  0.30( 0.28) 0.95   63932.1   10400.00
     18    24111.73  177.13    0.524  0.30( 0.28) 0.95   65552.8   10320.00
     19    22844.00  187.06    0.514  0.30( 0.28) 0.95   65940.6   12000.00
     20    19905.73  216.83    0.490  0.30( 0.28) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      239.83   16.06    1.791  0.30( 0.29) 0.96     193.8   10230.00
    2      217.18   25.14    1.377  0.30( 0.29) 0.95     240.5   10250.00
    3      216.13   25.45    1.369  0.30( 0.29) 0.95     241.8   10200.00
    4      200.96   29.41    1.259  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14607.63   16.06    1.791  0.30( 0.25) 0.83    3298.9   10230.00
    2    16453.79   23.37    1.446  0.30( 0.25) 0.83    4748.7     300.00
    3    16920.45   25.14    1.377  0.30( 0.25) 0.83    5289.8   10250.00
    4    17001.62   25.45    1.369  0.30( 0.25) 0.83    5383.9   10200.00
    5    17838.69   28.65    1.280  0.30( 0.25) 0.82    6346.6     210.00
    6    18000.02   29.41    1.259  0.30( 0.25) 0.82    6574.5   10220.00
    7    19895.84   38.40    1.089  0.30( 0.25) 0.82    9243.8     100.00
    8    21571.12   47.99    0.966  0.30( 0.25) 0.84   13222.3     150.00
    9    23235.91   63.00    0.839  0.30( 0.26) 0.87   19944.9   13600.00
   10    24759.04   79.01    0.760  0.30( 0.27) 0.89   26943.5   13100.00
   11    25080.09   85.67    0.727  0.30( 0.27) 0.90   29469.6   11801.00
   12    26531.61  103.56    0.667  0.30( 0.28) 0.92   38039.6   13510.00
   13    27255.19  110.82    0.646  0.30( 0.28) 0.92   42161.5   13010.00
   14    27972.46  116.50    0.630  0.30( 0.28) 0.93   45690.9   11330.00
   15    28565.98  124.59    0.612  0.30( 0.28) 0.94   50778.0   10630.00
   16    28314.68  130.19    0.603  0.30( 0.28) 0.94   53367.9   12330.00
   17    28054.35  136.84    0.592  0.30( 0.28) 0.94   56510.3   11600.00
   18    27676.25  142.66    0.582  0.30( 0.28) 0.94   58744.7   11111.00
   19    27257.18  148.84    0.571  0.30( 0.28) 0.94   60678.5   12201.00
   20    26340.66  157.90    0.556  0.30( 0.28) 0.95   62766.8   12231.00
   21    25500.62  165.51    0.543  0.30( 0.28) 0.95   64178.3   10400.00
   22    24160.83  177.13    0.524  0.30( 0.28) 0.95   65799.1   10320.00
   23    22890.97  187.06    0.514  0.30( 0.28) 0.95   66186.9   12000.00
   24    19947.92  216.83    0.490  0.30( 0.28) 0.95   66803.9   10100.00
  TOTAL AREA(ACRES) =     66803.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    28565.98  Tc(MIN.) =  124.589
  EFFECTIVE AREA(ACRES) =  50778.02  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.13
  CHANNEL FLOW THRU SUBAREA(CFS) =   28565.98
  FLOW VELOCITY(FEET/SEC.) =  10.03   FLOW DEPTH(FEET) =  11.13
  TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =  128.02
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      489.59   19.32  0.30( 0.23) 0.76     401.6   10300.00
      2      490.14   20.03  0.30( 0.23) 0.76     412.9   10380.00
      3      480.40   22.78  0.30( 0.23) 0.76     441.7   10320.00
      4      464.91   24.67  0.30( 0.23) 0.76     451.8   10360.00
      5      436.74   27.62  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14607.63   20.34    1.566  0.30( 0.25) 0.83    3298.9   10230.00
      2    16453.79   27.48    1.313  0.30( 0.25) 0.83    4748.7     300.00
      3    16920.45   29.22    1.265  0.30( 0.25) 0.83    5289.8   10250.00
      4    17001.62   29.52    1.256  0.30( 0.25) 0.83    5383.9   10200.00
      5    17838.69   32.65    1.195  0.30( 0.25) 0.82    6346.6     210.00
```



```
      6    18000.02   33.40    1.181  0.30( 0.25) 0.82    6574.5   10220.00
      7    19895.84   42.26    1.033  0.30( 0.25) 0.82    9243.8     100.00
      8    21571.12   51.75    0.927  0.30( 0.25) 0.84   13222.3     150.00
      9    23235.91   66.67    0.821  0.30( 0.26) 0.87   19944.9   13600.00
     10    24759.04   82.60    0.742  0.30( 0.27) 0.89   26943.5   13100.00
     11    25080.09   89.25    0.710  0.30( 0.27) 0.90   29469.6   11801.00
     12    26531.61  107.08    0.657  0.30( 0.28) 0.92   38039.6   13510.00
     13    27255.19  114.30    0.636  0.30( 0.28) 0.92   42161.5   13010.00
     14    27972.46  119.96    0.620  0.30( 0.28) 0.93   45690.9   11330.00
     15    28565.98  128.02    0.606  0.30( 0.28) 0.94   50778.0   10630.00
     16    28314.68  133.63    0.597  0.30( 0.28) 0.94   53367.9   12330.00
     17    28054.35  140.29    0.586  0.30( 0.28) 0.94   56510.3   11600.00
     18    27676.25  146.13    0.576  0.30( 0.28) 0.94   58744.7   11111.00
     19    27257.18  152.33    0.566  0.30( 0.28) 0.94   60678.5   12201.00
     20    26340.66  161.42    0.550  0.30( 0.28) 0.95   62766.8   12231.00
     21    25500.62  169.07    0.537  0.30( 0.28) 0.95   64178.3   10400.00
     22    24160.83  180.75    0.518  0.30( 0.28) 0.95   65799.1   10320.00
     23    22890.97  190.75    0.511  0.30( 0.28) 0.95   66186.9   12000.00
     24    19947.92  220.68    0.487  0.30( 0.28) 0.95   66803.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      489.59   19.32    1.617  0.30( 0.23) 0.76     401.6   10300.00
      2      490.14   20.03    1.579  0.30( 0.23) 0.76     412.9   10380.00
      3      480.40   22.78    1.469  0.30( 0.23) 0.76     441.7   10320.00
      4      464.91   24.67    1.394  0.30( 0.23) 0.76     451.8   10360.00
      5      436.74   27.62    1.309  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14889.81   19.32    1.617  0.30( 0.25) 0.82    3534.2   10300.00
      2    15009.90   20.03    1.579  0.30( 0.25) 0.82    3661.5   10380.00
      3    15096.67   20.34    1.566  0.30( 0.25) 0.82    3715.0   10230.00
      4    15718.07   22.78    1.469  0.30( 0.25) 0.82    4235.3   10320.00
      5    16191.43   24.67    1.394  0.30( 0.25) 0.82    4629.3   10360.00
      6    16891.85   27.48    1.313  0.30( 0.25) 0.82    5209.0     300.00
      7    16927.81   27.62    1.309  0.30( 0.25) 0.82    5252.7   10340.00
      8    17339.38   29.22    1.265  0.30( 0.25) 0.82    5750.6   10250.00
      9    17417.17   29.52    1.256  0.30( 0.25) 0.82    5844.7   10200.00
     10    18229.25   32.65    1.195  0.30( 0.25) 0.82    6807.4     210.00
     11    18385.00   33.40    1.181  0.30( 0.25) 0.82    7035.3   10220.00
     12    20221.19   42.26    1.033  0.30( 0.25) 0.82    9704.6     100.00
     13    21853.28   51.75    0.927  0.30( 0.25) 0.84   13683.1     150.00
     14    23475.41   66.67    0.821  0.30( 0.26) 0.87   20405.7   13600.00
     15    24966.75   82.60    0.742  0.30( 0.27) 0.89   27404.3   13100.00
     16    25274.53   89.25    0.710  0.30( 0.27) 0.90   29930.4   11801.00
     17    26704.75  107.08    0.657  0.30( 0.27) 0.92   38500.4   13510.00
     18    27419.95  114.30    0.636  0.30( 0.28) 0.92   42622.3   13010.00
     19    28130.65  119.96    0.620  0.30( 0.28) 0.93   46151.7   11330.00
     20    28718.67  128.02    0.606  0.30( 0.28) 0.93   51238.8   10630.00
     21    28463.54  133.63    0.597  0.30( 0.28) 0.94   53828.7   12330.00
     22    28198.68  140.29    0.586  0.30( 0.28) 0.94   56971.1   11600.00
     23    27816.61  146.13    0.576  0.30( 0.28) 0.94   59205.5   11111.00
     24    27393.31  152.33    0.566  0.30( 0.28) 0.94   61139.3   12201.00
```

```
    25    26470.61  161.42    0.550  0.30( 0.28) 0.94   63227.6   12231.00
    26    25625.36  169.07    0.537  0.30( 0.28) 0.95   64639.1   10400.00
    27    24277.89  180.75    0.518  0.30( 0.28) 0.95   66259.9   10320.00
    28    23004.88  190.75    0.511  0.30( 0.28) 0.95   66647.7   12000.00
    29    20052.41  220.68    0.487  0.30( 0.28) 0.95   67264.7   10100.00
   TOTAL AREA(ACRES) =     67264.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    28718.67  Tc(MIN.) =  128.023
  EFFECTIVE AREA(ACRES) =  51238.82  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    67264.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.46
  CHANNEL FLOW THRU SUBAREA(CFS) =   28718.67
  FLOW VELOCITY(FEET/SEC.) =  35.33   FLOW DEPTH(FEET) =   6.46
  TRAVEL TIME(MIN.) =   0.17   Tc(MIN.) =  128.19
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       49.20   20.74  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14889.81   19.53    1.605  0.30( 0.25) 0.82    3534.2   10300.00
```



```
    2    15009.90   20.25    1.570  0.30( 0.25) 0.82    3661.5   10380.00
    3    15096.67   20.56    1.558  0.30( 0.25) 0.82    3715.0   10230.00
    4    15718.07   22.99    1.461  0.30( 0.25) 0.82    4235.3   10320.00
    5    16191.43   24.88    1.386  0.30( 0.25) 0.82    4629.3   10360.00
    6    16891.85   27.69    1.307  0.30( 0.25) 0.82    5209.0     300.00
    7    16927.81   27.82    1.303  0.30( 0.25) 0.82    5252.7   10340.00
    8    17339.38   29.42    1.259  0.30( 0.25) 0.82    5750.6   10250.00
    9    17417.17   29.72    1.251  0.30( 0.25) 0.82    5844.7   10200.00
   10    18229.25   32.85    1.191  0.30( 0.25) 0.82    6807.4     210.00
   11    18385.00   33.60    1.177  0.30( 0.25) 0.82    7035.3   10220.00
   12    20221.19   42.45    1.031  0.30( 0.25) 0.82    9704.6     100.00
   13    21853.28   51.94    0.925  0.30( 0.25) 0.84   13683.1     150.00
   14    23475.41   66.85    0.820  0.30( 0.26) 0.87   20405.7   13600.00
   15    24966.75   82.78    0.742  0.30( 0.27) 0.89   27404.3   13100.00
   16    25274.53   89.43    0.709  0.30( 0.27) 0.90   29930.4   11801.00
   17    26704.75  107.25    0.657  0.30( 0.27) 0.92   38500.4   13510.00
   18    27419.95  114.48    0.636  0.30( 0.28) 0.92   42622.3   13010.00
   19    28130.65  120.13    0.620  0.30( 0.28) 0.93   46151.7   11330.00
   20    28718.67  128.19    0.606  0.30( 0.28) 0.93   51238.8   10630.00
   21    28463.54  133.81    0.597  0.30( 0.28) 0.94   53828.7   12330.00
   22    28198.68  140.47    0.586  0.30( 0.28) 0.94   56971.1   11600.00
   23    27816.61  146.30    0.576  0.30( 0.28) 0.94   59205.5   11111.00
   24    27393.31  152.50    0.565  0.30( 0.28) 0.94   61139.3   12201.00
   25    26470.61  161.60    0.550  0.30( 0.28) 0.94   63227.6   12231.00
   26    25625.36  169.25    0.537  0.30( 0.28) 0.95   64639.1   10400.00
   27    24277.89  180.93    0.518  0.30( 0.28) 0.95   66259.9   10320.00
   28    23004.88  190.93    0.510  0.30( 0.28) 0.95   66647.7   12000.00
   29    20052.41  220.88    0.487  0.30( 0.28) 0.95   67264.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       49.20   20.74    1.551  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    14938.07   19.53    1.605  0.30( 0.25) 0.82    3576.0   10300.00
    2    15058.66   20.25    1.570  0.30( 0.25) 0.82    3704.8   10380.00
    3    15145.71   20.56    1.558  0.30( 0.25) 0.82    3759.0   10230.00
    4    15191.84   20.74    1.551  0.30( 0.25) 0.82    3797.8   10400.00
    5    15763.90   22.99    1.461  0.30( 0.25) 0.82    4279.6   10320.00
    6    16234.45   24.88    1.386  0.30( 0.25) 0.82    4673.6   10360.00
    7    16931.90   27.69    1.307  0.30( 0.25) 0.82    5253.3     300.00
    8    16967.71   27.82    1.303  0.30( 0.25) 0.82    5297.0   10340.00
    9    17377.64   29.42    1.259  0.30( 0.25) 0.82    5794.9   10250.00
   10    17455.12   29.72    1.251  0.30( 0.25) 0.82    5889.0   10200.00
   11    18264.95   32.85    1.191  0.30( 0.25) 0.82    6851.7     210.00
   12    18420.19   33.60    1.177  0.30( 0.25) 0.82    7079.6   10220.00
   13    20250.89   42.45    1.031  0.30( 0.25) 0.82    9748.9     100.00
   14    21879.00   51.94    0.925  0.30( 0.25) 0.84   13727.4     150.00
   15    23497.21   66.85    0.820  0.30( 0.26) 0.87   20450.0   13600.00
   16    24985.59   82.78    0.742  0.30( 0.27) 0.89   27448.6   13100.00
   17    25292.14   89.43    0.709  0.30( 0.27) 0.90   29974.7   11801.00
   18    26720.40  107.25    0.657  0.30( 0.27) 0.92   38544.7   13510.00
   19    27434.82  114.48    0.636  0.30( 0.28) 0.92   42666.6   13010.00
```

```
     20    28144.92  120.13    0.620  0.30( 0.28) 0.93   46196.0   11330.00
     21    28732.43  128.19    0.606  0.30( 0.28) 0.93   51283.1   10630.00
     22    28476.95  133.81    0.597  0.30( 0.28) 0.94   53873.0   12330.00
     23    28211.67  140.47    0.586  0.30( 0.28) 0.94   57015.4   11600.00
     24    27829.23  146.30    0.576  0.30( 0.28) 0.94   59249.8   11111.00
     25    27405.54  152.50    0.565  0.30( 0.28) 0.94   61183.6   12201.00
     26    26482.26  161.60    0.550  0.30( 0.28) 0.94   63271.9   12231.00
     27    25636.53  169.25    0.537  0.30( 0.28) 0.95   64683.4   10400.00
     28    24288.35  180.93    0.518  0.30( 0.28) 0.95   66304.2   10320.00
     29    23015.05  190.93    0.510  0.30( 0.28) 0.95   66692.0   12000.00
     30    20061.71  220.88    0.487  0.30( 0.28) 0.95   67309.0   10100.00
    TOTAL AREA(ACRES) =     67309.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    28732.43  Tc(MIN.) =  128.194
  EFFECTIVE AREA(ACRES) =  51283.12  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67309.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13802.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    141.00  DOWNSTREAM(FEET) =    135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1533.41   CHANNEL SLOPE =  0.0039
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.30
  CHANNEL FLOW THRU SUBAREA(CFS) =   28732.43
  FLOW VELOCITY(FEET/SEC.) =  14.11   FLOW DEPTH(FEET) =  13.30
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  130.01
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506105L.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      263.73   15.21  0.30( 0.27) 0.90     203.7   10520.00
      2      303.03   33.18  0.30( 0.28) 0.93     403.6   10500.00
    TOTAL AREA(ACRES) =      403.6

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  11
----------------------------------------------------------------------------
```



```
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14938.07   21.73    1.511  0.30( 0.25) 0.82    3576.0   10300.00
      2    15058.66   22.44    1.483  0.30( 0.25) 0.82    3704.8   10380.00
      3    15145.71   22.75    1.471  0.30( 0.25) 0.82    3759.0   10230.00
      4    15191.84   22.92    1.464  0.30( 0.25) 0.82    3797.8   10400.00
      5    15763.90   25.15    1.377  0.30( 0.25) 0.82    4279.6   10320.00
      6    16234.45   27.02    1.325  0.30( 0.25) 0.82    4673.6   10360.00
      7    16931.90   29.80    1.248  0.30( 0.25) 0.82    5253.3     300.00
      8    16967.71   29.94    1.245  0.30( 0.25) 0.82    5297.0   10340.00
      9    17377.64   31.52    1.215  0.30( 0.25) 0.82    5794.9   10250.00
     10    17455.12   31.82    1.210  0.30( 0.25) 0.82    5889.0   10200.00
     11    18264.95   34.92    1.153  0.30( 0.25) 0.82    6851.7     210.00
     12    18420.19   35.67    1.139  0.30( 0.25) 0.82    7079.6   10220.00
     13    20250.89   44.46    1.007  0.30( 0.25) 0.82    9748.9     100.00
     14    21879.00   53.90    0.908  0.30( 0.25) 0.84   13727.4     150.00
     15    23497.21   68.77    0.811  0.30( 0.26) 0.87   20450.0   13600.00
     16    24985.59   84.67    0.732  0.30( 0.27) 0.89   27448.6   13100.00
     17    25292.14   91.31    0.702  0.30( 0.27) 0.90   29974.7   11801.00
     18    26720.40  109.10    0.651  0.30( 0.27) 0.92   38544.7   13510.00
     19    27434.82  116.31    0.631  0.30( 0.28) 0.92   42666.6   13010.00
     20    28144.92  121.96    0.617  0.30( 0.28) 0.93   46196.0   11330.00
     21    28732.43  130.01    0.603  0.30( 0.28) 0.93   51283.1   10630.00
     22    28476.95  135.62    0.594  0.30( 0.28) 0.94   53873.0   12330.00
     23    28211.67  142.29    0.582  0.30( 0.28) 0.94   57015.4   11600.00
     24    27829.23  148.13    0.573  0.30( 0.28) 0.94   59249.8   11111.00
     25    27405.54  154.34    0.562  0.30( 0.28) 0.94   61183.6   12201.00
     26    26482.26  163.46    0.547  0.30( 0.28) 0.94   63271.9   12231.00
     27    25636.53  171.12    0.534  0.30( 0.28) 0.95   64683.4   10400.00
     28    24288.35  182.83    0.517  0.30( 0.28) 0.95   66304.2   10320.00
     29    23015.05  192.87    0.509  0.30( 0.28) 0.95   66692.0   12000.00
     30    20061.71  222.89    0.486  0.30( 0.28) 0.95   67309.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      263.73   15.21    1.837  0.30( 0.27) 0.90     203.7   10520.00
      2      303.03   33.18    1.185  0.30( 0.28) 0.93     403.6   10500.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  13802.00 =   12187.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13411.92   15.21    1.837  0.30( 0.25) 0.83    2706.9   10520.00
      2    15216.06   21.73    1.511  0.30( 0.25) 0.83    3852.2   10300.00
      3    15338.20   22.44    1.483  0.30( 0.25) 0.83    3988.9   10380.00
      4    15425.92   22.75    1.471  0.30( 0.25) 0.83    4046.5   10230.00
      5    15472.44   22.92    1.464  0.30( 0.25) 0.83    4087.3   10400.00
      6    16049.37   25.15    1.377  0.30( 0.25) 0.83    4594.0   10320.00
      7    16524.01   27.02    1.325  0.30( 0.25) 0.83    5008.7   10360.00
      8    17227.54   29.80    1.248  0.30( 0.25) 0.83    5619.4     300.00
      9    17263.66   29.94    1.245  0.30( 0.25) 0.83    5664.5   10340.00
     10    17677.03   31.52    1.215  0.30( 0.25) 0.83    6180.0   10250.00
```

```
    11    17755.16   31.82    1.210  0.30( 0.25) 0.83    6277.4   10200.00
    12    18114.63   33.18    1.185  0.30( 0.25) 0.83    6716.4   10500.00
    13    18557.36   34.92    1.153  0.30( 0.25) 0.83    7255.3     210.00
    14    18708.03   35.67    1.139  0.30( 0.25) 0.82    7483.2   10220.00
    15    20494.65   44.46    1.007  0.30( 0.25) 0.82   10152.5     100.00
    16    22089.43   53.90    0.908  0.30( 0.25) 0.84   14131.0     150.00
    17    23675.24   68.77    0.811  0.30( 0.26) 0.87   20853.6   13600.00
    18    25137.41   84.67    0.732  0.30( 0.27) 0.89   27852.2   13100.00
    19    25433.92   91.31    0.702  0.30( 0.27) 0.90   30378.3   11801.00
    20    26845.13  109.10    0.651  0.30( 0.27) 0.92   38948.3   13510.00
    21    27552.65  116.31    0.631  0.30( 0.28) 0.92   43070.2   13010.00
    22    28258.11  121.96    0.617  0.30( 0.28) 0.93   46599.6   11330.00
    23    28841.09  130.01    0.603  0.30( 0.28) 0.93   51686.7   10630.00
    24    28582.45  135.62    0.594  0.30( 0.28) 0.94   54276.6   12330.00
    25    28313.42  142.29    0.582  0.30( 0.28) 0.94   57419.0   11600.00
    26    27927.70  148.13    0.573  0.30( 0.28) 0.94   59653.4   11111.00
    27    27500.52  154.34    0.562  0.30( 0.28) 0.94   61587.2   12201.00
    28    26572.10  163.46    0.547  0.30( 0.28) 0.94   63675.5   12231.00
    29    25722.06  171.12    0.534  0.30( 0.28) 0.95   65087.0   10400.00
    30    24368.16  182.83    0.517  0.30( 0.28) 0.95   66707.8   10320.00
    31    23092.25  192.87    0.509  0.30( 0.28) 0.95   67095.6   12000.00
    32    20131.10  222.89    0.486  0.30( 0.28) 0.95   67712.6   10100.00
  TOTAL AREA(ACRES) =     67712.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    28841.09  Tc(MIN.) =  130.006
  EFFECTIVE AREA(ACRES) =  51686.72  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    67712.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    135.00  DOWNSTREAM(FEET) =    134.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.23   CHANNEL SLOPE =  0.0000
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  39.32
  CHANNEL FLOW THRU SUBAREA(CFS) =   28841.09
  FLOW VELOCITY(FEET/SEC.) =   2.85   FLOW DEPTH(FEET) =  39.32
  TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  131.22
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13803.00 =  130613.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  131.22
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.601
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
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```
  "1 DWELLING/ACRE"          B       48.80      0.30     0.800    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA AREA(ACRES) =   48.80      SUBAREA RUNOFF(CFS) =   15.86
  EFFECTIVE AREA(ACRES) =  51735.52   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67761.4       PEAK FLOW RATE(CFS) =   28841.09
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506106E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       45.15   18.06  0.30( 0.20) 0.67      36.9   10600.00
    TOTAL AREA(ACRES) =       36.9

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    13411.92   16.69    1.757  0.30( 0.25) 0.83    2755.7   10520.00
      2    15216.06   23.16    1.454  0.30( 0.25) 0.83    3901.0   10300.00
      3    15338.20   23.87    1.426  0.30( 0.25) 0.83    4037.7   10380.00
      4    15425.92   24.17    1.414  0.30( 0.25) 0.83    4095.3   10230.00
      5    15472.44   24.35    1.407  0.30( 0.25) 0.83    4136.1   10400.00
      6    16049.37   26.57    1.338  0.30( 0.25) 0.83    4642.8   10320.00
      7    16524.01   28.42    1.287  0.30( 0.25) 0.83    5057.5   10360.00
      8    17227.54   31.19    1.221  0.30( 0.25) 0.83    5668.2     300.00
      9    17263.66   31.33    1.219  0.30( 0.25) 0.83    5713.3   10340.00
     10    17677.03   32.90    1.190  0.30( 0.25) 0.83    6228.8   10250.00
     11    17755.16   33.19    1.185  0.30( 0.25) 0.83    6326.2   10200.00
     12    18114.63   34.55    1.160  0.30( 0.25) 0.83    6765.2   10500.00
     13    18557.36   36.28    1.128  0.30( 0.25) 0.82    7304.1     210.00
     14    18708.03   37.02    1.114  0.30( 0.25) 0.82    7532.0   10220.00
     15    20494.65   45.78    0.992  0.30( 0.25) 0.82   10201.3     100.00
     16    22089.43   55.20    0.896  0.30( 0.25) 0.84   14179.8     150.00
     17    23675.24   70.05    0.804  0.30( 0.26) 0.87   20902.4   13600.00
     18    25137.41   85.93    0.726  0.30( 0.27) 0.89   27901.0   13100.00
     19    25433.92   92.56    0.699  0.30( 0.27) 0.90   30427.1   11801.00
     20    26845.13  110.34    0.648  0.30( 0.27) 0.92   38997.1   13510.00
     21    27552.65  117.54    0.627  0.30( 0.28) 0.92   43119.0   13010.00
     22    28258.11  123.17    0.615  0.30( 0.28) 0.93   46648.4   11330.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 23 | 28841.09 | 131.22 | 0.601 | 0.30( 0.28) | 0.93 | 51735.5 | 10630.00 |
| 24 | 28582.45 | 136.84 | 0.592 | 0.30( 0.28) | 0.94 | 54325.4 | 12330.00 |
| 25 | 28313.42 | 143.50 | 0.580 | 0.30( 0.28) | 0.94 | 57467.8 | 11600.00 |
| 26 | 27927.70 | 149.35 | 0.571 | 0.30( 0.28) | 0.94 | 59702.2 | 11111.00 |
| 27 | 27500.52 | 155.57 | 0.560 | 0.30( 0.28) | 0.94 | 61636.0 | 12201.00 |
| 28 | 26572.10 | 164.69 | 0.545 | 0.30( 0.28) | 0.94 | 63724.3 | 12231.00 |
| 29 | 25722.06 | 172.37 | 0.532 | 0.30( 0.28) | 0.95 | 65135.8 | 10400.00 |
| 30 | 24368.16 | 184.10 | 0.516 | 0.30( 0.28) | 0.95 | 66756.6 | 10320.00 |
| 31 | 23092.25 | 194.15 | 0.508 | 0.30( 0.28) | 0.95 | 67144.4 | 12000.00 |
| 32 | 20131.10 | 224.22 | 0.485 | 0.30( 0.28) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 45.15 | 18.06 | 1.684 | 0.30( 0.20) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13455.72 | 16.69 | 1.757 | 0.30( 0.25) | 0.82 | 2789.8 | 10520.00 |
| 2 | 13839.51 | 18.06 | 1.684 | 0.30( 0.25) | 0.83 | 3035.4 | 10600.00 |
| 3 | 15254.22 | 23.16 | 1.454 | 0.30( 0.25) | 0.83 | 3937.9 | 10300.00 |
| 4 | 15375.50 | 23.87 | 1.426 | 0.30( 0.25) | 0.83 | 4074.6 | 10380.00 |
| 5 | 15462.86 | 24.17 | 1.414 | 0.30( 0.25) | 0.83 | 4132.2 | 10230.00 |
| 6 | 15509.16 | 24.35 | 1.407 | 0.30( 0.25) | 0.83 | 4173.0 | 10400.00 |
| 7 | 16083.99 | 26.57 | 1.338 | 0.30( 0.25) | 0.83 | 4679.7 | 10320.00 |
| 8 | 16557.07 | 28.42 | 1.287 | 0.30( 0.25) | 0.83 | 5094.4 | 10360.00 |
| 9 | 17258.61 | 31.19 | 1.221 | 0.30( 0.25) | 0.83 | 5705.1 | 300.00 |
| 10 | 17294.65 | 31.33 | 1.219 | 0.30( 0.25) | 0.83 | 5750.2 | 10340.00 |
| 11 | 17707.15 | 32.90 | 1.190 | 0.30( 0.25) | 0.83 | 6265.7 | 10250.00 |
| 12 | 17785.12 | 33.19 | 1.185 | 0.30( 0.25) | 0.83 | 6363.1 | 10200.00 |
| 13 | 18143.82 | 34.55 | 1.160 | 0.30( 0.25) | 0.83 | 6802.1 | 10500.00 |
| 14 | 18585.60 | 36.28 | 1.128 | 0.30( 0.25) | 0.82 | 7341.0 | 210.00 |
| 15 | 18735.85 | 37.02 | 1.114 | 0.30( 0.25) | 0.82 | 7568.9 | 10220.00 |
| 16 | 20518.73 | 45.78 | 0.992 | 0.30( 0.25) | 0.82 | 10238.2 | 100.00 |
| 17 | 22110.60 | 55.20 | 0.896 | 0.30( 0.25) | 0.84 | 14216.7 | 150.00 |
| 18 | 23693.62 | 70.05 | 0.804 | 0.30( 0.26) | 0.87 | 20939.3 | 13600.00 |
| 19 | 25153.40 | 85.93 | 0.726 | 0.30( 0.27) | 0.89 | 27937.9 | 13100.00 |
| 20 | 25449.08 | 92.56 | 0.699 | 0.30( 0.27) | 0.90 | 30464.0 | 11801.00 |
| 21 | 26858.73 | 110.34 | 0.648 | 0.30( 0.27) | 0.92 | 39034.0 | 13510.00 |
| 22 | 27565.62 | 117.54 | 0.627 | 0.30( 0.28) | 0.92 | 43155.9 | 13010.00 |
| 23 | 28270.71 | 123.17 | 0.615 | 0.30( 0.28) | 0.93 | 46685.3 | 11330.00 |
| 24 | 28853.28 | 131.22 | 0.601 | 0.30( 0.28) | 0.93 | 51772.4 | 10630.00 |
| 25 | 28594.35 | 136.84 | 0.592 | 0.30( 0.28) | 0.94 | 54362.3 | 12330.00 |
| 26 | 28324.98 | 143.50 | 0.580 | 0.30( 0.28) | 0.94 | 57504.7 | 11600.00 |
| 27 | 27938.95 | 149.35 | 0.571 | 0.30( 0.28) | 0.94 | 59739.1 | 11111.00 |
| 28 | 27511.45 | 155.57 | 0.560 | 0.30( 0.28) | 0.94 | 61672.9 | 12201.00 |
| 29 | 26582.57 | 164.69 | 0.545 | 0.30( 0.28) | 0.94 | 63761.2 | 12231.00 |
| 30 | 25732.14 | 172.37 | 0.532 | 0.30( 0.28) | 0.94 | 65172.7 | 10400.00 |
| 31 | 24377.74 | 184.10 | 0.516 | 0.30( 0.28) | 0.95 | 66793.5 | 10320.00 |
| 32 | 23101.60 | 194.15 | 0.508 | 0.30( 0.28) | 0.95 | 67181.3 | 12000.00 |
| 33 | 20139.73 | 224.22 | 0.485 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 28853.28 Tc(MIN.) = 131.218



EFFECTIVE AREA(ACRES) = 51772.42 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 131.22
EFFECTIVE AREA(ACRES) = 51772.42 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.934
PEAK FLOW RATE(CFS) = 28853.28

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13455.72 | 16.69 | 1.757 | 0.30( 0.25) | 0.82 | 2789.8 | 10520.00 |
| 2 | 13839.51 | 18.06 | 1.684 | 0.30( 0.25) | 0.83 | 3035.4 | 10600.00 |
| 3 | 15254.22 | 23.16 | 1.454 | 0.30( 0.25) | 0.83 | 3937.9 | 10300.00 |
| 4 | 15375.50 | 23.87 | 1.426 | 0.30( 0.25) | 0.83 | 4074.6 | 10380.00 |
| 5 | 15462.86 | 24.17 | 1.414 | 0.30( 0.25) | 0.83 | 4132.2 | 10230.00 |
| 6 | 15509.16 | 24.35 | 1.407 | 0.30( 0.25) | 0.83 | 4173.0 | 10400.00 |
| 7 | 16083.99 | 26.57 | 1.338 | 0.30( 0.25) | 0.83 | 4679.7 | 10320.00 |
| 8 | 16557.07 | 28.42 | 1.287 | 0.30( 0.25) | 0.83 | 5094.4 | 10360.00 |
| 9 | 17258.61 | 31.19 | 1.221 | 0.30( 0.25) | 0.83 | 5705.1 | 300.00 |
| 10 | 17294.65 | 31.33 | 1.219 | 0.30( 0.25) | 0.83 | 5750.2 | 10340.00 |
| 11 | 17707.15 | 32.90 | 1.190 | 0.30( 0.25) | 0.83 | 6265.7 | 10250.00 |
| 12 | 17785.12 | 33.19 | 1.185 | 0.30( 0.25) | 0.83 | 6363.1 | 10200.00 |
| 13 | 18143.82 | 34.55 | 1.160 | 0.30( 0.25) | 0.83 | 6802.1 | 10500.00 |
| 14 | 18585.60 | 36.28 | 1.128 | 0.30( 0.25) | 0.82 | 7341.0 | 210.00 |
| 15 | 18735.85 | 37.02 | 1.114 | 0.30( 0.25) | 0.82 | 7568.9 | 10220.00 |
| 16 | 20518.73 | 45.78 | 0.992 | 0.30( 0.25) | 0.82 | 10238.2 | 100.00 |
| 17 | 22110.60 | 55.20 | 0.896 | 0.30( 0.25) | 0.84 | 14216.7 | 150.00 |
| 18 | 23693.62 | 70.05 | 0.804 | 0.30( 0.26) | 0.87 | 20939.3 | 13600.00 |
| 19 | 25153.40 | 85.93 | 0.726 | 0.30( 0.27) | 0.89 | 27937.9 | 13100.00 |
| 20 | 25449.08 | 92.56 | 0.699 | 0.30( 0.27) | 0.90 | 30464.0 | 11801.00 |
| 21 | 26858.73 | 110.34 | 0.648 | 0.30( 0.27) | 0.92 | 39034.0 | 13510.00 |
| 22 | 27565.62 | 117.54 | 0.627 | 0.30( 0.28) | 0.92 | 43155.9 | 13010.00 |
| 23 | 28270.71 | 123.17 | 0.615 | 0.30( 0.28) | 0.93 | 46685.3 | 11330.00 |
| 24 | 28853.28 | 131.22 | 0.601 | 0.30( 0.28) | 0.93 | 51772.4 | 10630.00 |
| 25 | 28594.35 | 136.84 | 0.592 | 0.30( 0.28) | 0.94 | 54362.3 | 12330.00 |
| 26 | 28324.98 | 143.50 | 0.580 | 0.30( 0.28) | 0.94 | 57504.7 | 11600.00 |
| 27 | 27938.95 | 149.35 | 0.571 | 0.30( 0.28) | 0.94 | 59739.1 | 11111.00 |
| 28 | 27511.45 | 155.57 | 0.560 | 0.30( 0.28) | 0.94 | 61672.9 | 12201.00 |
| 29 | 26582.57 | 164.69 | 0.545 | 0.30( 0.28) | 0.94 | 63761.2 | 12231.00 |
| 30 | 25732.14 | 172.37 | 0.532 | 0.30( 0.28) | 0.94 | 65172.7 | 10400.00 |
| 31 | 24377.74 | 184.10 | 0.516 | 0.30( 0.28) | 0.95 | 66793.5 | 10320.00 |
| 32 | 23101.60 | 194.15 | 0.508 | 0.30( 0.28) | 0.95 | 67181.3 | 12000.00 |
| 33 | 20139.73 | 224.22 | 0.485 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 10-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI10EV38.DAT
  TIME/DATE OF STUDY: 14:38 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.698
   2)   10.00;  2.475
   3)   15.00;  1.846
   4)   20.00;  1.578
   5)   25.00;  1.379
   6)   30.00;  1.242
   7)   40.00;  1.059
   8)   50.00;  0.941
   9)   60.00;  0.852
  10)   90.00;  0.704
  11)  120.00;  0.619
  12)  180.00;  0.517
  13)  360.00;  0.378
  14) 1200.00;  0.165
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    13839.51   18.06  0.30( 0.25) 0.83    3035.4   10600.00
      2    15509.16   24.35  0.30( 0.25) 0.83    4173.0   10400.00
      3    18735.85   37.02  0.30( 0.25) 0.82    7568.9   10220.00
      4    20518.73   45.78  0.30( 0.25) 0.82   10238.2     100.00
      5    22110.60   55.20  0.30( 0.25) 0.84   14216.7     150.00
      6    23693.62   70.05  0.30( 0.26) 0.87   20939.3   13600.00
      7    25153.40   85.93  0.30( 0.27) 0.89   27937.9   13100.00
      8    25449.08   92.56  0.30( 0.27) 0.90   30464.0   11801.00
      9    26858.73  110.34  0.30( 0.27) 0.92   39034.0   13510.00
     10    28270.71  123.17  0.30( 0.28) 0.93   46685.3   11330.00
     11    28853.28  131.22  0.30( 0.28) 0.93   51772.4   10630.00
     12    28594.35  136.84  0.30( 0.28) 0.94   54362.3   12330.00
     13    28324.98  143.50  0.30( 0.28) 0.94   57504.7   11600.00
     14    27938.95  149.35  0.30( 0.28) 0.94   59739.1   11111.00
     15    27511.45  155.57  0.30( 0.28) 0.94   61672.9   12201.00
     16    26582.57  164.69  0.30( 0.28) 0.94   63761.2   12231.00
     17    25732.14  172.37  0.30( 0.28) 0.94   65172.7   10400.00
     18    24377.74  184.10  0.30( 0.28) 0.95   66793.5   10320.00
     19    23101.60  194.15  0.30( 0.28) 0.95   67181.3   12000.00
     20    20139.73  224.22  0.30( 0.28) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    13839.51   18.06  0.30( 0.25) 0.83    3035.4   10600.00
      2    15509.16   24.35  0.30( 0.25) 0.83    4173.0   10400.00
      3    18735.85   37.02  0.30( 0.25) 0.82    7568.9   10220.00
      4    20518.73   45.78  0.30( 0.25) 0.82   10238.2     100.00
      5    22110.60   55.20  0.30( 0.25) 0.84   14216.7     150.00
      6    23693.62   70.05  0.30( 0.26) 0.87   20939.3   13600.00
      7    25153.40   85.93  0.30( 0.27) 0.89   27937.9   13100.00
      8    25449.08   92.56  0.30( 0.27) 0.90   30464.0   11801.00
      9    26858.73  110.34  0.30( 0.27) 0.92   39034.0   13510.00
     10    28270.71  123.17  0.30( 0.28) 0.93   46685.3   11330.00
     11    28853.28  131.22  0.30( 0.28) 0.93   51772.4   10630.00
     12    28594.35  136.84  0.30( 0.28) 0.94   54362.3   12330.00
     13    28324.98  143.50  0.30( 0.28) 0.94   57504.7   11600.00
```

```
     14    27938.95  149.35  0.30( 0.28) 0.94   59739.1   11111.00
     15    27511.45  155.57  0.30( 0.28) 0.94   61672.9   12201.00
     16    26582.57  164.69  0.30( 0.28) 0.94   63761.2   12231.00
     17    25732.14  172.37  0.30( 0.28) 0.94   65172.7   10400.00
     18    24377.74  184.10  0.30( 0.28) 0.95   66793.5   10320.00
     19    23101.60  194.15  0.30( 0.28) 0.95   67181.3   12000.00
     20    20139.73  224.22  0.30( 0.28) 0.95   67798.3   10100.00
    TOTAL AREA(ACRES) =     67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28857.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.87
  AVERAGE FLOW DEPTH(FEET) =  18.64   TRAVEL TIME(MIN.) =   1.74
  Tc(MIN.) =  132.96
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =    8.55
  EFFECTIVE AREA(ACRES) =  51803.86     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =   28853.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 18.64   FLOW VELOCITY(FEET/SEC.) =   8.87
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =  132.96
  RAINFALL INTENSITY(INCH/HR) =   0.60
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   51803.86
  TOTAL STREAM AREA(ACRES) =   67829.73
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   28853.28

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.47
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =      9.47

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.35
  AVERAGE FLOW DEPTH(FEET) =   0.35   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   14.46
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   21.48
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      29.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   6.19
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.737
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.40
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   2.58
  Tc(MIN.) =   17.04
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   23.81
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      50.14
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   4.70
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.568
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.68
  AVERAGE FLOW DEPTH(FEET) =   0.85   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   20.24
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   32.89
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =      77.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   7.01
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.58
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.16
  PIPE TRAVEL TIME(MIN.) =   1.95    Tc(MIN.) =   22.19
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   22.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.491
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =   99.35
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     171.84

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   22.19
  RAINFALL INTENSITY(INCH/HR) =   1.49
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
```

TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 171.84

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 13839.51 | 20.21 | 1.570 | 0.30( 0.25) | 0.83 | 3066.8 | 10600.00 |
| 1 | 15509.16 | 26.43 | 1.340 | 0.30( 0.25) | 0.83 | 4204.5 | 10400.00 |
| 1 | 18735.85 | 38.99 | 1.078 | 0.30( 0.25) | 0.82 | 7600.4 | 10220.00 |
| 1 | 20518.73 | 47.70 | 0.968 | 0.30( 0.25) | 0.82 | 10269.6 | 100.00 |
| 1 | 22110.60 | 57.08 | 0.878 | 0.30( 0.25) | 0.84 | 14248.1 | 150.00 |
| 1 | 23693.62 | 71.89 | 0.793 | 0.30( 0.26) | 0.87 | 20970.7 | 13600.00 |
| 1 | 25153.40 | 87.73 | 0.715 | 0.30( 0.27) | 0.89 | 27969.4 | 13100.00 |
| 1 | 25449.08 | 94.36 | 0.692 | 0.30( 0.27) | 0.90 | 30495.4 | 11801.00 |
| 1 | 26858.73 | 112.11 | 0.641 | 0.30( 0.27) | 0.92 | 39065.5 | 13510.00 |
| 1 | 28270.71 | 124.93 | 0.611 | 0.30( 0.28) | 0.93 | 46716.7 | 11330.00 |
| 1 | 28853.28 | 132.96 | 0.597 | 0.30( 0.28) | 0.93 | 51803.9 | 10630.00 |
| 1 | 28594.35 | 138.58 | 0.587 | 0.30( 0.28) | 0.94 | 54393.7 | 12330.00 |
| 1 | 28324.98 | 145.25 | 0.576 | 0.30( 0.28) | 0.94 | 57536.2 | 11600.00 |
| 1 | 27938.95 | 151.11 | 0.566 | 0.30( 0.28) | 0.94 | 59770.5 | 11111.00 |
| 1 | 27511.45 | 157.33 | 0.556 | 0.30( 0.28) | 0.94 | 61704.4 | 12201.00 |
| 1 | 26582.57 | 166.47 | 0.540 | 0.30( 0.28) | 0.94 | 63792.6 | 12231.00 |
| 1 | 25732.14 | 174.17 | 0.527 | 0.30( 0.28) | 0.94 | 65204.2 | 10400.00 |
| 1 | 24377.74 | 185.93 | 0.512 | 0.30( 0.28) | 0.95 | 66824.9 | 10320.00 |
| 1 | 23101.60 | 196.00 | 0.505 | 0.30( 0.28) | 0.95 | 67212.7 | 12000.00 |
| 1 | 20139.73 | 226.15 | 0.481 | 0.30( 0.28) | 0.95 | 67829.7 | 10100.00 |
| 2 | 171.84 | 22.19 | 1.491 | 0.30( 0.22) | 0.73 | 150.3 | 13810.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14005.72 | 20.21 | 1.570 | 0.30( 0.25) | 0.82 | 3203.7 | 10600.00 |
| 2 | 14544.02 | 22.19 | 1.491 | 0.30( 0.25) | 0.82 | 3580.1 | 13810.00 |
| 3 | 15660.61 | 26.43 | 1.340 | 0.30( 0.25) | 0.82 | 4354.8 | 10400.00 |
| 4 | 18851.80 | 38.99 | 1.078 | 0.30( 0.25) | 0.82 | 7750.7 | 10220.00 |
| 5 | 20619.89 | 47.70 | 0.968 | 0.30( 0.25) | 0.82 | 10419.9 | 100.00 |
| 6 | 22199.57 | 57.08 | 0.878 | 0.30( 0.25) | 0.84 | 14398.4 | 150.00 |
| 7 | 23771.14 | 71.89 | 0.793 | 0.30( 0.26) | 0.87 | 21121.0 | 13600.00 |
| 8 | 25220.35 | 87.73 | 0.715 | 0.30( 0.27) | 0.89 | 28119.7 | 13100.00 |
| 9 | 25512.84 | 94.36 | 0.692 | 0.30( 0.27) | 0.90 | 30645.7 | 11801.00 |
| 10 | 26915.69 | 112.11 | 0.641 | 0.30( 0.27) | 0.91 | 39215.8 | 13510.00 |
| 11 | 28323.51 | 124.93 | 0.611 | 0.30( 0.28) | 0.93 | 46867.0 | 11330.00 |
| 12 | 28904.23 | 132.96 | 0.597 | 0.30( 0.28) | 0.93 | 51954.2 | 10630.00 |
| 13 | 28644.01 | 138.58 | 0.587 | 0.30( 0.28) | 0.94 | 54544.0 | 12330.00 |
| 14 | 28373.11 | 145.25 | 0.576 | 0.30( 0.28) | 0.94 | 57686.5 | 11600.00 |
| 15 | 27985.73 | 151.11 | 0.566 | 0.30( 0.28) | 0.94 | 59920.8 | 11111.00 |
| 16 | 27556.80 | 157.33 | 0.556 | 0.30( 0.28) | 0.94 | 61854.6 | 12201.00 |
| 17 | 26625.82 | 166.47 | 0.540 | 0.30( 0.28) | 0.94 | 63942.9 | 12231.00 |
| 18 | 25773.62 | 174.17 | 0.527 | 0.30( 0.28) | 0.94 | 65354.4 | 10400.00 |
| 19 | 24417.26 | 185.93 | 0.512 | 0.30( 0.28) | 0.95 | 66975.2 | 10320.00 |
| 20 | 23140.07 | 196.00 | 0.505 | 0.30( 0.28) | 0.95 | 67363.0 | 12000.00 |
| 21 | 20175.05 | 226.15 | 0.481 | 0.30( 0.28) | 0.95 | 67980.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 28904.23 Tc(MIN.) = 132.96



EFFECTIVE AREA(ACRES) = 51954.15 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67980.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.10
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.594
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 31.60 | 0.30 | 0.683 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28909.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.11
AVERAGE FLOW DEPTH(FEET) = 14.10 TRAVEL TIME(MIN.) = 1.60
Tc(MIN.) = 134.56
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 11.07
EFFECTIVE AREA(ACRES) = 51985.75 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68011.6 PEAK FLOW RATE(CFS) = 28904.23
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 14.09 FLOW VELOCITY(FEET/SEC.) = 13.11
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 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.) = 134.56
RAINFALL INTENSITY(INCH/HR) = 0.59
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93
EFFECTIVE STREAM AREA(ACRES) = 51985.75
TOTAL STREAM AREA(ACRES) = 68011.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 28904.23

**********
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.990
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.70
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =      7.70

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.716
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   3.56
  Tc(MIN.) =   17.42
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   41.52
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      47.97
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   6.04
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.505
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.10
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   4.42
  Tc(MIN.) =   21.84
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   34.95
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =      75.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   7.47
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.418
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      89.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.25
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   24.01
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   27.69
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =      98.02
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   7.46
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.49
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.305
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     140.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.45
  AVERAGE FLOW DEPTH(FEET) =   1.46   TRAVEL TIME(MIN.) =   3.69
  Tc(MIN.) =   27.70
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =   85.23
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     173.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.64   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.216
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     269.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.59
  AVERAGE FLOW DEPTH(FEET) =   2.40   TRAVEL TIME(MIN.) =   3.72
  Tc(MIN.) =   31.42
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  192.31
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     350.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.76   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.111
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     401.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.35
  AVERAGE FLOW DEPTH(FEET) =   3.29   TRAVEL TIME(MIN.) =   5.73
  Tc(MIN.) =   37.15
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  102.70
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     412.84
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.34   FLOW VELOCITY(FEET/SEC.) =   7.41
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
```

DEPTH OF FLOW IN 54.0 INCH PIPE IS 43.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 30.24
ESTIMATED PIPE DIAMETER(INCH) = 54.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 412.84
PIPE TRAVEL TIME(MIN.) = 0.63 Tc(MIN.) = 37.79
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

**********
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 37.79
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.099
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 5.97 | 0.30 | 0.622 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622
SUBAREA AREA(ACRES) = 5.97 SUBAREA RUNOFF(CFS) = 4.91
EFFECTIVE AREA(ACRES) = 565.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 565.5 PEAK FLOW RATE(CFS) = 412.84
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 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.) = 37.79
RAINFALL INTENSITY(INCH/HR) = 1.10
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 565.50
TOTAL STREAM AREA(ACRES) = 565.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 412.84

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14005.72 | 22.19 | 1.491 | 0.30( 0.25) | 0.82 | 3235.3 | 10600.00 |
| 1 | 14544.02 | 24.15 | 1.413 | 0.30( 0.25) | 0.82 | 3611.7 | 13810.00 |
| 1 | 15660.61 | 28.34 | 1.287 | 0.30( 0.25) | 0.82 | 4386.4 | 10400.00 |
| 1 | 18851.80 | 40.80 | 1.050 | 0.30( 0.25) | 0.82 | 7782.3 | 10220.00 |
| 1 | 20619.89 | 49.47 | 0.947 | 0.30( 0.25) | 0.82 | 10451.5 | 100.00 |
| 1 | 22199.57 | 58.81 | 0.863 | 0.30( 0.25) | 0.84 | 14430.0 | 150.00 |
| 1 | 23771.14 | 73.58 | 0.785 | 0.30( 0.26) | 0.87 | 21152.6 | 13600.00 |
| 1 | 25220.35 | 89.40 | 0.707 | 0.30( 0.27) | 0.89 | 28151.3 | 13100.00 |
| 1 | 25512.84 | 96.02 | 0.687 | 0.30( 0.27) | 0.90 | 30677.3 | 11801.00 |
| 1 | 26915.69 | 113.75 | 0.637 | 0.30( 0.27) | 0.91 | 39247.4 | 13510.00 |
| 1 | 28323.51 | 126.54 | 0.608 | 0.30( 0.28) | 0.93 | 46898.6 | 11330.00 |
| 1 | 28904.23 | 134.56 | 0.594 | 0.30( 0.28) | 0.93 | 51985.8 | 10630.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 28644.01 | 140.19 | 0.585 | 0.30( 0.28) | 0.94 | 54575.6 | 12330.00 |
| 1 | 28373.11 | 146.87 | 0.573 | 0.30( 0.28) | 0.94 | 57718.1 | 11600.00 |
| 1 | 27985.73 | 152.73 | 0.563 | 0.30( 0.28) | 0.94 | 59952.4 | 11111.00 |
| 1 | 27556.80 | 158.96 | 0.553 | 0.30( 0.28) | 0.94 | 61886.2 | 12201.00 |
| 1 | 26625.82 | 168.12 | 0.537 | 0.30( 0.28) | 0.94 | 63974.5 | 12231.00 |
| 1 | 25773.62 | 175.82 | 0.524 | 0.30( 0.28) | 0.94 | 65386.0 | 10400.00 |
| 1 | 24417.26 | 187.61 | 0.511 | 0.30( 0.28) | 0.95 | 67006.8 | 10320.00 |
| 1 | 23140.07 | 197.71 | 0.503 | 0.30( 0.28) | 0.95 | 67394.6 | 12000.00 |
| 1 | 20175.05 | 227.93 | 0.480 | 0.30( 0.28) | 0.95 | 68011.6 | 10100.00 |
| 2 | 412.84 | 37.79 | 1.099 | 0.30( 0.29) | 0.97 | 565.5 | 13830.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14365.40 | 22.19 | 1.491 | 0.30( 0.25) | 0.83 | 3567.4 | 10600.00 |
| 2 | 14910.03 | 24.15 | 1.413 | 0.30( 0.25) | 0.84 | 3973.1 | 13810.00 |
| 3 | 16042.17 | 28.34 | 1.287 | 0.30( 0.25) | 0.84 | 4810.5 | 10400.00 |
| 4 | 18492.15 | 37.79 | 1.099 | 0.30( 0.25) | 0.83 | 7525.7 | 13830.00 |
| 5 | 19239.16 | 40.80 | 1.050 | 0.30( 0.25) | 0.83 | 8347.8 | 10220.00 |
| 6 | 20955.09 | 49.47 | 0.947 | 0.30( 0.25) | 0.83 | 11017.0 | 100.00 |
| 7 | 22491.58 | 58.81 | 0.863 | 0.30( 0.25) | 0.84 | 14995.5 | 150.00 |
| 8 | 24023.56 | 73.58 | 0.785 | 0.30( 0.26) | 0.87 | 21718.1 | 13600.00 |
| 9 | 25432.96 | 89.40 | 0.707 | 0.30( 0.27) | 0.89 | 28716.8 | 13100.00 |
| 10 | 25715.23 | 96.02 | 0.687 | 0.30( 0.27) | 0.90 | 31242.8 | 11801.00 |
| 11 | 27092.47 | 113.75 | 0.637 | 0.30( 0.27) | 0.92 | 39812.9 | 13510.00 |
| 12 | 28485.59 | 126.54 | 0.608 | 0.30( 0.28) | 0.93 | 47464.1 | 11330.00 |
| 13 | 29059.35 | 134.56 | 0.594 | 0.30( 0.28) | 0.93 | 52551.3 | 10630.00 |
| 14 | 28794.25 | 140.19 | 0.585 | 0.30( 0.28) | 0.94 | 55141.1 | 12330.00 |
| 15 | 28517.55 | 146.87 | 0.573 | 0.30( 0.28) | 0.94 | 58283.6 | 11600.00 |
| 16 | 28125.09 | 152.73 | 0.563 | 0.30( 0.28) | 0.94 | 60517.9 | 11111.00 |
| 17 | 27690.77 | 158.96 | 0.553 | 0.30( 0.28) | 0.94 | 62451.7 | 12201.00 |
| 18 | 26751.84 | 168.12 | 0.537 | 0.30( 0.28) | 0.94 | 64540.0 | 12231.00 |
| 19 | 25892.95 | 175.82 | 0.524 | 0.30( 0.28) | 0.94 | 65951.5 | 10400.00 |
| 20 | 24529.98 | 187.61 | 0.511 | 0.30( 0.28) | 0.95 | 67572.3 | 10320.00 |
| 21 | 23248.80 | 197.71 | 0.503 | 0.30( 0.28) | 0.95 | 67960.1 | 12000.00 |
| 22 | 20271.88 | 227.93 | 0.480 | 0.30( 0.28) | 0.95 | 68577.1 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29059.35 Tc(MIN.) = 134.56
EFFECTIVE AREA(ACRES) = 52551.25 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68577.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 12.83

```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.593
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.61      0.30     0.975     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   29060.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.97
  AVERAGE FLOW DEPTH(FEET) =  12.83   TRAVEL TIME(MIN.) =   0.73
  Tc(MIN.) =  135.29
  SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    1.79
  EFFECTIVE AREA(ACRES) =  52557.86     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68583.7         PEAK FLOW RATE(CFS) =   29059.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.83   FLOW VELOCITY(FEET/SEC.) =  14.97
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 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.) =  135.29
  RAINFALL INTENSITY(INCH/HR) =   0.59
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52557.86
  TOTAL STREAM AREA(ACRES) =   68583.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   29059.35

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.206
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.49
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =      8.49

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.015
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.85
  AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   13.66
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    6.20
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      13.84
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.10
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.98
```

```
  AVERAGE FLOW DEPTH(FEET) =   0.43   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   15.80
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =    9.70
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      21.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   4.19
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.715
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.52
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.64
  Tc(MIN.) =   17.44
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =    8.61
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      29.17
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   4.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.559
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.29
  AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   3.03
  Tc(MIN.) =   20.47
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   20.58
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      46.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.43
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   3.77
  Tc(MIN.) =   24.24
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   39.95
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =      80.95
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.13   FLOW VELOCITY(FEET/SEC.) =   5.82
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.52
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.95
  PIPE TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =   26.35
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.342
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   44.14
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     120.26

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 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.) =   26.35
  RAINFALL INTENSITY(INCH/HR) =   1.34
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     120.26

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    14365.40   23.09    1.455  0.30( 0.25) 0.84    3574.1   10600.00
      1    14910.03   25.04    1.378  0.30( 0.25) 0.84    3979.8   13810.00
      1    16042.17   29.21    1.264  0.30( 0.25) 0.84    4817.2   10400.00
      1    18492.15   38.62    1.084  0.30( 0.25) 0.83    7532.3   13830.00
```



```
      1    19239.16   41.63    1.040  0.30( 0.25) 0.83    8354.4   10220.00
      1    20955.09   50.27    0.939  0.30( 0.25) 0.83   11023.6     100.00
      1    22491.58   59.59    0.856  0.30( 0.25) 0.84   15002.1     150.00
      1    24023.56   74.35    0.781  0.30( 0.26) 0.87   21724.7   13600.00
      1    25432.96   90.16    0.704  0.30( 0.27) 0.89   28723.4   13100.00
      1    25715.23   96.78    0.685  0.30( 0.27) 0.90   31249.4   11801.00
      1    27092.47  114.49    0.635  0.30( 0.27) 0.92   39819.5   13510.00
      1    28485.59  127.27    0.607  0.30( 0.28) 0.93   47470.7   11330.00
      1    29059.35  135.29    0.593  0.30( 0.28) 0.93   52557.9   10630.00
      1    28794.25  140.92    0.583  0.30( 0.28) 0.94   55147.7   12330.00
      1    28517.55  147.60    0.572  0.30( 0.28) 0.94   58290.2   11600.00
      1    28125.09  153.47    0.562  0.30( 0.28) 0.94   60524.5   11111.00
      1    27690.77  159.69    0.552  0.30( 0.28) 0.94   62458.4   12201.00
      1    26751.84  168.86    0.536  0.30( 0.28) 0.94   64546.6   12231.00
      1    25892.95  176.58    0.523  0.30( 0.28) 0.94   65958.2   10400.00
      1    24529.98  188.37    0.511  0.30( 0.28) 0.95   67578.9   10320.00
      1    23248.80  198.49    0.503  0.30( 0.28) 0.95   67966.7   12000.00
      1    20271.88  228.74    0.479  0.30( 0.28) 0.95   68583.7   10100.00
      2      120.26   26.35    1.342  0.30( 0.26) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    14481.76   23.09    1.455  0.30( 0.25) 0.84    3682.0   10600.00
      2    15028.09   25.04    1.378  0.30( 0.25) 0.84    4096.9   13810.00
      3    15385.44   26.35    1.342  0.30( 0.25) 0.84    4365.7   13850.00
      4    16153.73   29.21    1.264  0.30( 0.25) 0.84    4940.4   10400.00
      5    18583.83   38.62    1.084  0.30( 0.25) 0.83    7655.6   13830.00
      6    19325.91   41.63    1.040  0.30( 0.25) 0.83    8477.6   10220.00
      7    21030.61   50.27    0.939  0.30( 0.25) 0.83   11146.8     100.00
      8    22557.91   59.59    0.856  0.30( 0.25) 0.84   15125.4     150.00
      9    24081.63   74.35    0.781  0.30( 0.26) 0.87   21848.0   13600.00
     10    25482.41   90.16    0.704  0.30( 0.27) 0.89   28846.6   13100.00
     11    25762.61   96.78    0.685  0.30( 0.27) 0.90   31372.7   11801.00
     12    27134.28  114.49    0.635  0.30( 0.27) 0.91   39942.7   13510.00
     13    28524.30  127.27    0.607  0.30( 0.28) 0.93   47593.9   11330.00
     14    29096.55  135.29    0.593  0.30( 0.28) 0.93   52681.1   10630.00
     15    28830.39  140.92    0.583  0.30( 0.28) 0.94   55270.9   12330.00
     16    28552.44  147.60    0.572  0.30( 0.28) 0.94   58413.4   11600.00
     17    28158.87  153.47    0.562  0.30( 0.28) 0.94   60647.7   11111.00
     18    27723.37  159.69    0.552  0.30( 0.28) 0.94   62581.6   12201.00
     19    26782.71  168.86    0.536  0.30( 0.28) 0.94   64669.8   12231.00
     20    25922.37  176.58    0.523  0.30( 0.28) 0.94   66081.4   10400.00
     21    24558.04  188.37    0.511  0.30( 0.28) 0.95   67702.1   10320.00
     22    23275.99  198.49    0.503  0.30( 0.28) 0.95   68090.0   12000.00
     23    20296.48  228.74    0.479  0.30( 0.28) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   29096.55    Tc(MIN.) =   135.29
  EFFECTIVE AREA(ACRES) =   52681.08   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
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```
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.592
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   29097.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.94
  AVERAGE FLOW DEPTH(FEET) =   9.26   TRAVEL TIME(MIN.) =   0.44
  Tc(MIN.) =  135.73
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    1.29
  EFFECTIVE AREA(ACRES) =  52685.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68711.8         PEAK FLOW RATE(CFS) =   29096.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.26   FLOW VELOCITY(FEET/SEC.) =  22.94
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 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.) =  135.73
  RAINFALL INTENSITY(INCH/HR) =   0.59
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52685.97
  TOTAL STREAM AREA(ACRES) =   68711.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   29096.55

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47
```



```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.808
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.94
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =      9.94

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.40
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.635
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.27
  AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   3.23
  Tc(MIN.) =   18.93
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   15.63
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      24.43
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.46   FLOW VELOCITY(FEET/SEC.) =   4.83
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.30     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.13
  AVERAGE FLOW DEPTH(FEET) =   0.72   TRAVEL TIME(MIN.) =   3.41
  Tc(MIN.) =   22.34
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   35.86
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      57.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   5.67
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.30     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.37
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   3.43
  Tc(MIN.) =   25.78
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   30.29
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =      81.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   7.67
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.281
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.30     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.46
  AVERAGE FLOW DEPTH(FEET) =   2.28   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   28.59
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =   66.42
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     142.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.56   FLOW VELOCITY(FEET/SEC.) =   3.68
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.65
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     142.31
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   30.45
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   30.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

| LAND USE | GROUP | (ACRES) | (INCH/HR) | (DECIMAL) | CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 34.90 | 0.30 | 0.743 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 31.76
EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 167.41

**********
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 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.) = 30.45
RAINFALL INTENSITY(INCH/HR) = 1.23
AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.90
EFFECTIVE STREAM AREA(ACRES) = 192.83
TOTAL STREAM AREA(ACRES) = 192.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 167.41

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14481.76 | 23.65 | 1.433 | 0.30( 0.25) | 0.84 | 3686.9 | 10600.00 |
| 1 | 15028.09 | 25.59 | 1.363 | 0.30( 0.25) | 0.84 | 4101.8 | 13810.00 |
| 1 | 15385.44 | 26.89 | 1.327 | 0.30( 0.25) | 0.84 | 4370.6 | 13850.00 |
| 1 | 16153.73 | 29.75 | 1.249 | 0.30( 0.25) | 0.84 | 4945.3 | 10400.00 |
| 1 | 18583.83 | 39.13 | 1.075 | 0.30( 0.25) | 0.83 | 7660.4 | 13830.00 |
| 1 | 19325.91 | 42.13 | 1.034 | 0.30( 0.25) | 0.83 | 8482.5 | 10220.00 |
| 1 | 21030.61 | 50.76 | 0.934 | 0.30( 0.25) | 0.83 | 11151.7 | 100.00 |
| 1 | 22557.91 | 60.07 | 0.852 | 0.30( 0.25) | 0.84 | 15130.2 | 150.00 |
| 1 | 24081.63 | 74.82 | 0.779 | 0.30( 0.26) | 0.87 | 21852.8 | 13600.00 |
| 1 | 25482.41 | 90.62 | 0.702 | 0.30( 0.27) | 0.89 | 28851.5 | 13100.00 |
| 1 | 25762.61 | 97.24 | 0.683 | 0.30( 0.27) | 0.90 | 31377.5 | 11801.00 |
| 1 | 27134.28 | 114.95 | 0.633 | 0.30( 0.27) | 0.91 | 39947.6 | 13510.00 |
| 1 | 28524.30 | 127.72 | 0.606 | 0.30( 0.28) | 0.93 | 47598.8 | 11330.00 |
| 1 | 29096.55 | 135.73 | 0.592 | 0.30( 0.28) | 0.93 | 52686.0 | 10630.00 |
| 1 | 28830.39 | 141.37 | 0.583 | 0.30( 0.28) | 0.94 | 55275.8 | 12330.00 |
| 1 | 28552.44 | 148.04 | 0.571 | 0.30( 0.28) | 0.94 | 58418.3 | 11600.00 |
| 1 | 28158.87 | 153.91 | 0.561 | 0.30( 0.28) | 0.94 | 60652.6 | 11111.00 |
| 1 | 27723.37 | 160.15 | 0.551 | 0.30( 0.28) | 0.94 | 62586.5 | 12201.00 |
| 1 | 26782.71 | 169.32 | 0.535 | 0.30( 0.28) | 0.94 | 64674.7 | 12231.00 |
| 1 | 25922.37 | 177.04 | 0.522 | 0.30( 0.28) | 0.94 | 66086.3 | 10400.00 |
| 1 | 24558.04 | 188.84 | 0.510 | 0.30( 0.28) | 0.95 | 67707.0 | 10320.00 |
| 1 | 23275.99 | 198.97 | 0.502 | 0.30( 0.28) | 0.95 | 68094.8 | 12000.00 |
| 1 | 20296.48 | 229.23 | 0.479 | 0.30( 0.28) | 0.95 | 68711.8 | 10100.00 |
| 2 | 167.41 | 30.45 | 1.234 | 0.30( 0.27) | 0.90 | 192.8 | 13870.00 |

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

** PEAK FLOW RATE TABLE **



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14638.62 | 23.65 | 1.433 | 0.30( 0.25) | 0.84 | 3836.7 | 10600.00 |
| 2 | 15187.62 | 25.59 | 1.363 | 0.30( 0.25) | 0.84 | 4263.8 | 13810.00 |
| 3 | 15547.62 | 26.89 | 1.327 | 0.30( 0.25) | 0.84 | 4540.9 | 13850.00 |
| 4 | 16319.86 | 29.75 | 1.249 | 0.30( 0.25) | 0.84 | 5133.7 | 10400.00 |
| 5 | 16501.88 | 30.45 | 1.234 | 0.30( 0.25) | 0.84 | 5340.0 | 13870.00 |
| 6 | 18723.66 | 39.13 | 1.075 | 0.30( 0.25) | 0.84 | 7853.3 | 13830.00 |
| 7 | 19458.61 | 42.13 | 1.034 | 0.30( 0.25) | 0.83 | 8675.3 | 10220.00 |
| 8 | 21146.03 | 50.76 | 0.934 | 0.30( 0.25) | 0.83 | 11344.5 | 100.00 |
| 9 | 22658.99 | 60.07 | 0.852 | 0.30( 0.25) | 0.84 | 15323.1 | 150.00 |
| 10 | 24170.08 | 74.82 | 0.779 | 0.30( 0.26) | 0.87 | 22045.7 | 13600.00 |
| 11 | 25557.57 | 90.62 | 0.702 | 0.30( 0.27) | 0.89 | 29044.3 | 13100.00 |
| 12 | 25834.51 | 97.24 | 0.683 | 0.30( 0.27) | 0.90 | 31570.4 | 11801.00 |
| 13 | 27197.47 | 114.95 | 0.633 | 0.30( 0.27) | 0.91 | 40140.4 | 13510.00 |
| 14 | 28582.73 | 127.72 | 0.606 | 0.30( 0.28) | 0.93 | 47791.6 | 11330.00 |
| 15 | 29152.62 | 135.73 | 0.592 | 0.30( 0.28) | 0.93 | 52878.8 | 10630.00 |
| 16 | 28884.79 | 141.37 | 0.583 | 0.30( 0.28) | 0.94 | 55468.7 | 12330.00 |
| 17 | 28604.87 | 148.04 | 0.571 | 0.30( 0.28) | 0.94 | 58611.1 | 11600.00 |
| 18 | 28209.57 | 153.91 | 0.561 | 0.30( 0.28) | 0.94 | 60845.4 | 11111.00 |
| 19 | 27772.23 | 160.15 | 0.551 | 0.30( 0.28) | 0.94 | 62779.3 | 12201.00 |
| 20 | 26828.87 | 169.32 | 0.535 | 0.30( 0.28) | 0.94 | 64867.5 | 12231.00 |
| 21 | 25966.25 | 177.04 | 0.522 | 0.30( 0.28) | 0.94 | 66279.1 | 10400.00 |
| 22 | 24599.86 | 188.84 | 0.510 | 0.30( 0.28) | 0.95 | 67899.8 | 10320.00 |
| 23 | 23316.46 | 198.97 | 0.502 | 0.30( 0.28) | 0.95 | 68287.7 | 12000.00 |
| 24 | 20332.89 | 229.23 | 0.479 | 0.30( 0.28) | 0.95 | 68904.7 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29152.62 Tc(MIN.) = 135.73
EFFECTIVE AREA(ACRES) = 52878.80 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68904.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134066.75 FEET.

**********
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 20.62
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.588
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 117.69 | 0.30 | 0.724 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29172.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.75
AVERAGE FLOW DEPTH(FEET) = 20.62 TRAVEL TIME(MIN.) = 2.56
Tc(MIN.) = 138.29
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 39.27
EFFECTIVE AREA(ACRES) = 52996.49 AREA-AVERAGED Fm(INCH/HR) = 0.28

```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69022.4         PEAK FLOW RATE(CFS) =   29152.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  20.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 20.61   FLOW VELOCITY(FEET/SEC.) =   7.75
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 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.) =  138.29
  RAINFALL INTENSITY(INCH/HR) =   0.59
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52996.49
  TOTAL STREAM AREA(ACRES) =   69022.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   29152.62

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.215
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =      7.98
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =      7.98

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.825
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.56
  AVERAGE FLOW DEPTH(FEET) =   0.35   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =    8.57
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   18.49
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1          PEAK FLOW RATE(CFS) =      25.41
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =   5.24
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.455
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.93
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =   10.16
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   24.24
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6          PEAK FLOW RATE(CFS) =      45.93
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   7.46
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.67
  AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =   12.29
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   26.95
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      67.18
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   7.97
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.891
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.12
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =   14.64
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   40.81
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =      97.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   8.40
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.93
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      97.48
  PIPE TRAVEL TIME(MIN.) =   1.99    Tc(MIN.) =   16.63
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69       SUBAREA RUNOFF(CFS) =   16.50
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6         PEAK FLOW RATE(CFS) =     105.88

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   16.63
  RAINFALL INTENSITY(INCH/HR) =   1.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 105.88

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 14638.62 | 26.75 | 1.331 | 0.30( 0.25) | 0.84 | 3954.4 | 10600.00 |
| 1 | 15187.62 | 28.66 | 1.279 | 0.30( 0.25) | 0.84 | 4381.5 | 13810.00 |
| 1 | 15547.62 | 29.94 | 1.244 | 0.30( 0.25) | 0.84 | 4658.6 | 13850.00 |
| 1 | 16319.86 | 32.75 | 1.192 | 0.30( 0.25) | 0.84 | 5251.4 | 10400.00 |
| 1 | 16501.88 | 33.44 | 1.179 | 0.30( 0.25) | 0.84 | 5457.7 | 13870.00 |
| 1 | 18723.66 | 42.02 | 1.035 | 0.30( 0.25) | 0.83 | 7971.0 | 13830.00 |
| 1 | 19458.61 | 44.99 | 1.000 | 0.30( 0.25) | 0.83 | 8793.0 | 10220.00 |
| 1 | 21146.03 | 53.56 | 0.909 | 0.30( 0.25) | 0.83 | 11462.2 | 100.00 |
| 1 | 22658.99 | 62.81 | 0.838 | 0.30( 0.25) | 0.84 | 15440.8 | 150.00 |
| 1 | 24170.08 | 77.52 | 0.766 | 0.30( 0.26) | 0.87 | 22163.4 | 13600.00 |
| 1 | 25557.57 | 93.27 | 0.695 | 0.30( 0.27) | 0.89 | 29162.0 | 13100.00 |
| 1 | 25834.51 | 99.89 | 0.676 | 0.30( 0.27) | 0.90 | 31688.1 | 11801.00 |
| 1 | 27197.47 | 117.56 | 0.626 | 0.30( 0.27) | 0.91 | 40258.1 | 13510.00 |
| 1 | 28582.73 | 130.29 | 0.602 | 0.30( 0.28) | 0.93 | 47909.3 | 11330.00 |
| 1 | 29152.62 | 138.29 | 0.588 | 0.30( 0.28) | 0.93 | 52996.5 | 10630.00 |
| 1 | 28884.79 | 143.93 | 0.578 | 0.30( 0.28) | 0.94 | 55586.4 | 12330.00 |
| 1 | 28604.87 | 150.62 | 0.567 | 0.30( 0.28) | 0.94 | 58728.8 | 11600.00 |
| 1 | 28209.57 | 156.50 | 0.557 | 0.30( 0.28) | 0.94 | 60963.1 | 11111.00 |
| 1 | 27772.23 | 162.74 | 0.546 | 0.30( 0.28) | 0.94 | 62897.0 | 12201.00 |
| 1 | 26828.87 | 171.93 | 0.531 | 0.30( 0.28) | 0.94 | 64985.2 | 12231.00 |
| 1 | 25966.25 | 179.68 | 0.518 | 0.30( 0.28) | 0.94 | 66396.8 | 10400.00 |
| 1 | 24599.86 | 191.52 | 0.508 | 0.30( 0.28) | 0.95 | 68017.5 | 10320.00 |
| 1 | 23316.46 | 201.69 | 0.500 | 0.30( 0.28) | 0.95 | 68405.4 | 12000.00 |
| 1 | 20332.89 | 232.06 | 0.477 | 0.30( 0.28) | 0.95 | 69022.4 | 10100.00 |
| 2 | 105.88 | 16.63 | 1.759 | 0.30( 0.28) | 0.94 | 79.6 | 13889.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12806.97 | 16.63 | 1.759 | 0.30( 0.25) | 0.84 | 2537.8 | 13889.00 |
| 2 | 14713.85 | 26.75 | 1.331 | 0.30( 0.25) | 0.84 | 4034.0 | 10600.00 |
| 3 | 15259.10 | 28.66 | 1.279 | 0.30( 0.25) | 0.84 | 4461.1 | 13810.00 |
| 4 | 15616.58 | 29.94 | 1.244 | 0.30( 0.25) | 0.84 | 4738.2 | 13850.00 |
| 5 | 16385.09 | 32.75 | 1.192 | 0.30( 0.25) | 0.84 | 5331.0 | 10400.00 |
| 6 | 16566.21 | 33.44 | 1.179 | 0.30( 0.25) | 0.84 | 5537.3 | 13870.00 |
| 7 | 18777.67 | 42.02 | 1.035 | 0.30( 0.25) | 0.83 | 8050.6 | 13830.00 |
| 8 | 19510.12 | 44.99 | 1.000 | 0.30( 0.25) | 0.83 | 8872.6 | 10220.00 |
| 9 | 21191.03 | 53.56 | 0.909 | 0.30( 0.25) | 0.83 | 11541.9 | 100.00 |
| 10 | 22698.89 | 62.81 | 0.838 | 0.30( 0.25) | 0.84 | 15520.4 | 150.00 |
| 11 | 24204.78 | 77.52 | 0.766 | 0.30( 0.26) | 0.87 | 22243.0 | 13600.00 |
| 12 | 25587.19 | 93.27 | 0.695 | 0.30( 0.27) | 0.89 | 29241.6 | 13100.00 |
| 13 | 25862.79 | 99.89 | 0.676 | 0.30( 0.27) | 0.90 | 31767.7 | 11801.00 |
| 14 | 27222.17 | 117.56 | 0.626 | 0.30( 0.27) | 0.91 | 40337.7 | 13510.00 |
| 15 | 28605.68 | 130.29 | 0.602 | 0.30( 0.28) | 0.93 | 47988.9 | 11330.00 |
| 16 | 29174.59 | 138.29 | 0.588 | 0.30( 0.28) | 0.93 | 53076.1 | 10630.00 |
| 17 | 28906.07 | 143.93 | 0.578 | 0.30( 0.28) | 0.94 | 55666.0 | 12330.00 |
| 18 | 28625.34 | 150.62 | 0.567 | 0.30( 0.28) | 0.94 | 58808.4 | 11600.00 |
| 19 | 28229.32 | 156.50 | 0.557 | 0.30( 0.28) | 0.94 | 61042.8 | 11111.00 |
| 20 | 27791.22 | 162.74 | 0.546 | 0.30( 0.28) | 0.94 | 62976.6 | 12201.00 |
| 21 | 26846.74 | 171.93 | 0.531 | 0.30( 0.28) | 0.94 | 65064.9 | 12231.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 25983.18 | 179.68 | 0.518 | 0.30( 0.28) | 0.94 | 66476.4 | 10400.00 |
| 23 | 24616.11 | 191.52 | 0.508 | 0.30( 0.28) | 0.95 | 68097.1 | 10320.00 |
| 24 | 23332.14 | 201.69 | 0.500 | 0.30( 0.28) | 0.95 | 68485.0 | 12000.00 |
| 25 | 20346.90 | 232.06 | 0.477 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29174.59 Tc(MIN.) = 138.29
EFFECTIVE AREA(ACRES) = 53076.11 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 138.29
EFFECTIVE AREA(ACRES) = 53076.11 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.933
PEAK FLOW RATE(CFS) = 29174.59

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12806.97 | 16.63 | 1.759 | 0.30( 0.25) | 0.84 | 2537.8 | 13889.00 |
| 2 | 14713.85 | 26.75 | 1.331 | 0.30( 0.25) | 0.84 | 4034.0 | 10600.00 |
| 3 | 15259.10 | 28.66 | 1.279 | 0.30( 0.25) | 0.84 | 4461.1 | 13810.00 |
| 4 | 15616.58 | 29.94 | 1.244 | 0.30( 0.25) | 0.84 | 4738.2 | 13850.00 |
| 5 | 16385.09 | 32.75 | 1.192 | 0.30( 0.25) | 0.84 | 5331.0 | 10400.00 |
| 6 | 16566.21 | 33.44 | 1.179 | 0.30( 0.25) | 0.84 | 5537.3 | 13870.00 |
| 7 | 18777.67 | 42.02 | 1.035 | 0.30( 0.25) | 0.83 | 8050.6 | 13830.00 |
| 8 | 19510.12 | 44.99 | 1.000 | 0.30( 0.25) | 0.83 | 8872.6 | 10220.00 |
| 9 | 21191.03 | 53.56 | 0.909 | 0.30( 0.25) | 0.83 | 11541.9 | 100.00 |
| 10 | 22698.89 | 62.81 | 0.838 | 0.30( 0.25) | 0.84 | 15520.4 | 150.00 |
| 11 | 24204.78 | 77.52 | 0.766 | 0.30( 0.26) | 0.87 | 22243.0 | 13600.00 |
| 12 | 25587.19 | 93.27 | 0.695 | 0.30( 0.27) | 0.89 | 29241.6 | 13100.00 |
| 13 | 25862.79 | 99.89 | 0.676 | 0.30( 0.27) | 0.90 | 31767.7 | 11801.00 |
| 14 | 27222.17 | 117.56 | 0.626 | 0.30( 0.27) | 0.91 | 40337.7 | 13510.00 |
| 15 | 28605.68 | 130.29 | 0.602 | 0.30( 0.28) | 0.93 | 47988.9 | 11330.00 |
| 16 | 29174.59 | 138.29 | 0.588 | 0.30( 0.28) | 0.93 | 53076.1 | 10630.00 |
| 17 | 28906.07 | 143.93 | 0.578 | 0.30( 0.28) | 0.94 | 55666.0 | 12330.00 |
| 18 | 28625.34 | 150.62 | 0.567 | 0.30( 0.28) | 0.94 | 58808.4 | 11600.00 |
| 19 | 28229.32 | 156.50 | 0.557 | 0.30( 0.28) | 0.94 | 61042.8 | 11111.00 |
| 20 | 27791.22 | 162.74 | 0.546 | 0.30( 0.28) | 0.94 | 62976.6 | 12201.00 |
| 21 | 26846.74 | 171.93 | 0.531 | 0.30( 0.28) | 0.94 | 65064.9 | 12231.00 |
| 22 | 25983.18 | 179.68 | 0.518 | 0.30( 0.28) | 0.94 | 66476.4 | 10400.00 |
| 23 | 24616.11 | 191.52 | 0.508 | 0.30( 0.28) | 0.95 | 68097.1 | 10320.00 |
| 24 | 23332.14 | 201.69 | 0.500 | 0.30( 0.28) | 0.95 | 68485.0 | 12000.00 |
| 25 | 20346.90 | 232.06 | 0.477 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

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****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                   *
* 10-YR EV AUG 2023 ROKAMOTO                                               *
 ****************************************************************************

  FILE NAME: RI10EV39.DAT
  TIME/DATE OF STUDY: 14:38 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.695
   2)   10.00;  2.473
   3)   15.00;  1.845
   4)   20.00;  1.577
   5)   25.00;  1.378
   6)   30.00;  1.242
   7)   40.00;  1.058
   8)   50.00;  0.941
   9)   60.00;  0.852
  10)   90.00;  0.704
  11)  120.00;  0.618
  12)  180.00;  0.516
  13)  360.00;  0.377
  14) 1200.00;  0.164
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.365
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.43
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      7.43

****************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.119
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.51
  AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =   12.82
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   13.87
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      20.42
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   6.24
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.97
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.40
  Tc(MIN.) =   14.22
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   35.39
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      53.84
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   9.02
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.18
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      53.84
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =   15.12
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   15.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   29.51
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =      79.92

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.96
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      79.92
  PIPE TRAVEL TIME(MIN.) =   2.34    Tc(MIN.) =   17.46
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   59.49
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     132.90

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI10EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 12806.97 | 16.63 | 0.30( 0.25) | 0.84 | 2537.8 | 13889.00 |
| 2 | 16566.21 | 33.44 | 0.30( 0.25) | 0.84 | 5537.3 | 13870.00 |
| 3 | 19510.12 | 44.99 | 0.30( 0.25) | 0.83 | 8872.6 | 10220.00 |
| 4 | 21191.03 | 53.56 | 0.30( 0.25) | 0.83 | 11541.9 | 100.00 |
| 5 | 22698.89 | 62.81 | 0.30( 0.25) | 0.84 | 15520.4 | 150.00 |
| 6 | 24204.78 | 77.52 | 0.30( 0.26) | 0.87 | 22243.0 | 13600.00 |
| 7 | 25587.19 | 93.27 | 0.30( 0.27) | 0.89 | 29241.6 | 13100.00 |
| 8 | 25862.79 | 99.89 | 0.30( 0.27) | 0.90 | 31767.7 | 11801.00 |
| 9 | 27222.17 | 117.56 | 0.30( 0.27) | 0.91 | 40337.7 | 13510.00 |
| 10 | 28605.68 | 130.29 | 0.30( 0.28) | 0.93 | 47988.9 | 11330.00 |
| 11 | 29174.59 | 138.29 | 0.30( 0.28) | 0.93 | 53076.1 | 10630.00 |
| 12 | 28906.07 | 143.93 | 0.30( 0.28) | 0.94 | 55666.0 | 12330.00 |
| 13 | 28625.34 | 150.62 | 0.30( 0.28) | 0.94 | 58808.4 | 11600.00 |
| 14 | 28229.32 | 156.50 | 0.30( 0.28) | 0.94 | 61042.8 | 11111.00 |
| 15 | 27791.22 | 162.74 | 0.30( 0.28) | 0.94 | 62976.6 | 12201.00 |
| 16 | 26846.74 | 171.93 | 0.30( 0.28) | 0.94 | 65064.9 | 12231.00 |
| 17 | 25983.18 | 179.68 | 0.30( 0.28) | 0.94 | 66476.4 | 10400.00 |
| 18 | 24616.11 | 191.52 | 0.30( 0.28) | 0.95 | 68097.1 | 10320.00 |
| 19 | 23332.14 | 201.69 | 0.30( 0.28) | 0.95 | 68485.0 | 12000.00 |
| 20 | 20346.90 | 232.06 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0
----------
>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 12806.97 | 16.63 | 0.30( 0.25) | 0.84 | 2537.8 | 13889.00 |
| 2 | 16566.21 | 33.44 | 0.30( 0.25) | 0.84 | 5537.3 | 13870.00 |
| 3 | 19510.12 | 44.99 | 0.30( 0.25) | 0.83 | 8872.6 | 10220.00 |
| 4 | 21191.03 | 53.56 | 0.30( 0.25) | 0.83 | 11541.9 | 100.00 |
| 5 | 22698.89 | 62.81 | 0.30( 0.25) | 0.84 | 15520.4 | 150.00 |
| 6 | 24204.78 | 77.52 | 0.30( 0.26) | 0.87 | 22243.0 | 13600.00 |
| 7 | 25587.19 | 93.27 | 0.30( 0.27) | 0.89 | 29241.6 | 13100.00 |
| 8 | 25862.79 | 99.89 | 0.30( 0.27) | 0.90 | 31767.7 | 11801.00 |
| 9 | 27222.17 | 117.56 | 0.30( 0.27) | 0.91 | 40337.7 | 13510.00 |
| 10 | 28605.68 | 130.29 | 0.30( 0.28) | 0.93 | 47988.9 | 11330.00 |
| 11 | 29174.59 | 138.29 | 0.30( 0.28) | 0.93 | 53076.1 | 10630.00 |
| 12 | 28906.07 | 143.93 | 0.30( 0.28) | 0.94 | 55666.0 | 12330.00 |
| 13 | 28625.34 | 150.62 | 0.30( 0.28) | 0.94 | 58808.4 | 11600.00 |
| 14 | 28229.32 | 156.50 | 0.30( 0.28) | 0.94 | 61042.8 | 11111.00 |
| 15 | 27791.22 | 162.74 | 0.30( 0.28) | 0.94 | 62976.6 | 12201.00 |
| 16 | 26846.74 | 171.93 | 0.30( 0.28) | 0.94 | 65064.9 | 12231.00 |
| 17 | 25983.18 | 179.68 | 0.30( 0.28) | 0.94 | 66476.4 | 10400.00 |
| 18 | 24616.11 | 191.52 | 0.30( 0.28) | 0.95 | 68097.1 | 10320.00 |
| 19 | 23332.14 | 201.69 | 0.30( 0.28) | 0.95 | 68485.0 | 12000.00 |
| 20 | 20346.90 | 232.06 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56



---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 18.07
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.583
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 96.09 | 0.30 | 0.535 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29192.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.38
AVERAGE FLOW DEPTH(FEET) = 18.07 TRAVEL TIME(MIN.) = 2.45
Tc(MIN.) = 140.74
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 36.52
EFFECTIVE AREA(ACRES) = 53172.20 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69198.1 PEAK FLOW RATE(CFS) = 29174.59
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 18.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 18.06 FLOW VELOCITY(FEET/SEC.) = 9.38
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

**********
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12806.97 | 19.72 | 1.592 | 0.30( 0.25) | 0.83 | 2633.9 | 13889.00 |
| 2 | 16566.21 | 36.31 | 1.126 | 0.30( 0.25) | 0.83 | 5633.4 | 13870.00 |
| 3 | 19510.12 | 47.73 | 0.968 | 0.30( 0.25) | 0.83 | 8968.7 | 10220.00 |
| 4 | 21191.03 | 56.23 | 0.886 | 0.30( 0.25) | 0.83 | 11637.9 | 100.00 |
| 5 | 22698.89 | 65.44 | 0.825 | 0.30( 0.25) | 0.84 | 15616.5 | 150.00 |
| 6 | 24204.78 | 80.09 | 0.753 | 0.30( 0.26) | 0.87 | 22339.1 | 13600.00 |
| 7 | 25587.19 | 95.81 | 0.687 | 0.30( 0.27) | 0.89 | 29337.7 | 13100.00 |
| 8 | 25862.79 | 102.41 | 0.668 | 0.30( 0.27) | 0.90 | 31863.8 | 11801.00 |
| 9 | 27222.17 | 120.05 | 0.618 | 0.30( 0.27) | 0.91 | 40433.8 | 13510.00 |
| 10 | 28605.68 | 132.75 | 0.596 | 0.30( 0.28) | 0.93 | 48085.0 | 11330.00 |
| 11 | 29174.59 | 140.74 | 0.583 | 0.30( 0.28) | 0.93 | 53172.2 | 10630.00 |
| 12 | 28906.07 | 146.38 | 0.573 | 0.30( 0.28) | 0.94 | 55762.1 | 12330.00 |
| 13 | 28625.34 | 153.08 | 0.562 | 0.30( 0.28) | 0.94 | 58904.5 | 11600.00 |
| 14 | 28229.32 | 158.96 | 0.552 | 0.30( 0.28) | 0.94 | 61138.8 | 11111.00 |
| 15 | 27791.22 | 165.22 | 0.541 | 0.30( 0.28) | 0.94 | 63072.7 | 12201.00 |
| 16 | 26846.74 | 174.44 | 0.525 | 0.30( 0.28) | 0.94 | 65160.9 | 12231.00 |

```
    17    25983.18  182.20    0.514  0.30( 0.28) 0.94   66572.5   10400.00
    18    24616.11  194.09    0.505  0.30( 0.28) 0.94   68193.2   10320.00
    19    23332.14  204.29    0.497  0.30( 0.28) 0.94   68581.1   12000.00
    20    20346.90  234.77    0.474  0.30( 0.28) 0.95   69198.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      132.90   17.46    1.713  0.30( 0.25) 0.84     101.1   13900.00
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12494.74   17.46    1.713  0.30( 0.25) 0.83    2433.5   13900.00
      2    12928.86   19.72    1.592  0.30( 0.25) 0.83    2735.0   13889.00
      3    16645.65   36.31    1.126  0.30( 0.25) 0.83    5734.6   13870.00
      4    19575.15   47.73    0.968  0.30( 0.25) 0.83    9069.9   10220.00
      5    21248.60   56.23    0.886  0.30( 0.25) 0.83   11739.1     100.00
      6    22750.96   65.44    0.825  0.30( 0.25) 0.84   15717.6     150.00
      7    24250.28   80.09    0.753  0.30( 0.26) 0.87   22440.2   13600.00
      8    25626.72   95.81    0.687  0.30( 0.27) 0.89   29438.9   13100.00
      9    25900.60  102.41    0.668  0.30( 0.27) 0.90   31964.9   11801.00
     10    27255.38  120.05    0.618  0.30( 0.27) 0.91   40534.9   13510.00
     11    28636.92  132.75    0.596  0.30( 0.28) 0.93   48186.2   11330.00
     12    29204.59  140.74    0.583  0.30( 0.28) 0.93   53273.3   10630.00
     13    28935.21  146.38    0.573  0.30( 0.28) 0.94   55863.2   12330.00
     14    28653.43  153.08    0.562  0.30( 0.28) 0.94   59005.7   11600.00
     15    28256.50  158.96    0.552  0.30( 0.28) 0.94   61240.0   11111.00
     16    27817.44  165.22    0.541  0.30( 0.28) 0.94   63173.8   12201.00
     17    26871.53  174.44    0.525  0.30( 0.28) 0.94   65262.1   12231.00
     18    26006.95  182.20    0.514  0.30( 0.28) 0.94   66673.6   10400.00
     19    24639.05  194.09    0.505  0.30( 0.28) 0.94   68294.4   10320.00
     20    23354.37  204.29    0.497  0.30( 0.28) 0.94   68682.2   12000.00
     21    20366.98  234.77    0.474  0.30( 0.28) 0.95   69299.2   10100.00
    TOTAL AREA(ACRES) =     69299.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    29204.59  Tc(MIN.) =  140.738
  EFFECTIVE AREA(ACRES) =  53273.34  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    69299.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.05
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.582
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.30      0.30      0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   29227.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.34
  AVERAGE FLOW DEPTH(FEET) =  11.05   TRAVEL TIME(MIN.) =   0.30
  Tc(MIN.) =  141.04
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   46.52
  EFFECTIVE AREA(ACRES) =  53407.64     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =   29204.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.04

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.04   FLOW VELOCITY(FEET/SEC.) =  18.34
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.580
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       96.27      0.30      0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   29220.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.37
  AVERAGE FLOW DEPTH(FEET) =  10.19   TRAVEL TIME(MIN.) =   1.14
  Tc(MIN.) =  142.19
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   31.49
  EFFECTIVE AREA(ACRES) =  53503.91     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =   29204.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.19   FLOW VELOCITY(FEET/SEC.) =  20.37
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
  END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 69529.8 TC(MIN.) = 142.19
EFFECTIVE AREA(ACRES) = 53503.91 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.931
PEAK FLOW RATE(CFS) = 29204.59

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 12494.74 | 19.34 | 1.612 | 0.30( 0.24) | 0.82 | 2664.1 | 13900.00 |
| 2 | 12928.86 | 21.58 | 1.514 | 0.30( 0.24) | 0.82 | 2965.6 | 13889.00 |
| 3 | 16645.65 | 38.03 | 1.094 | 0.30( 0.25) | 0.83 | 5965.1 | 13870.00 |
| 4 | 19575.15 | 49.37 | 0.948 | 0.30( 0.25) | 0.83 | 9300.4 | 10220.00 |
| 5 | 21248.60 | 57.83 | 0.871 | 0.30( 0.25) | 0.83 | 11969.7 | 100.00 |
| 6 | 22750.96 | 67.00 | 0.817 | 0.30( 0.25) | 0.84 | 15948.2 | 150.00 |
| 7 | 24250.28 | 81.62 | 0.745 | 0.30( 0.26) | 0.87 | 22670.8 | 13600.00 |
| 8 | 25626.72 | 97.32 | 0.683 | 0.30( 0.27) | 0.89 | 29669.4 | 13100.00 |
| 9 | 25900.60 | 103.91 | 0.664 | 0.30( 0.27) | 0.90 | 32195.5 | 11801.00 |
| 10 | 27255.38 | 121.53 | 0.615 | 0.30( 0.27) | 0.91 | 40765.5 | 13510.00 |
| 11 | 28636.92 | 134.20 | 0.594 | 0.30( 0.28) | 0.92 | 48416.7 | 11330.00 |
| 12 | 29204.59 | 142.19 | 0.580 | 0.30( 0.28) | 0.93 | 53503.9 | 10630.00 |
| 13 | 28935.21 | 147.83 | 0.571 | 0.30( 0.28) | 0.93 | 56093.8 | 12330.00 |
| 14 | 28653.43 | 154.53 | 0.559 | 0.30( 0.28) | 0.94 | 59236.2 | 11600.00 |
| 15 | 28256.50 | 160.42 | 0.549 | 0.30( 0.28) | 0.94 | 61470.6 | 11111.00 |
| 16 | 27817.44 | 166.68 | 0.539 | 0.30( 0.28) | 0.94 | 63404.4 | 12201.00 |
| 17 | 26871.53 | 175.92 | 0.523 | 0.30( 0.28) | 0.94 | 65492.7 | 12231.00 |
| 18 | 26006.95 | 183.70 | 0.513 | 0.30( 0.28) | 0.94 | 66904.2 | 10400.00 |
| 19 | 24639.05 | 195.61 | 0.504 | 0.30( 0.28) | 0.94 | 68524.9 | 10320.00 |
| 20 | 23354.37 | 205.84 | 0.496 | 0.30( 0.28) | 0.94 | 68912.8 | 12000.00 |
| 21 | 20366.98 | 236.38 | 0.472 | 0.30( 0.28) | 0.94 | 69529.8 | 10100.00 |

==========
==========

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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                        Analysis prepared by:

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                         Santa Ana, CA 92707


 ************************* DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP                                *
* REGIONAL WATERSHED S19 - FREE DRAINING - PHASE CONDITION NO PA5      *
* 25-YR RM EV APRIL 2019 FKAZI                                         *
 ************************************************************************

  FILE NAME: RI25EV19.DAT
  TIME/DATE OF STUDY: 10:56 04/01/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.002
   2)   10.00;  3.253
   3)   15.00;  2.474
   4)   20.00;  2.039
   5)   25.00;  1.776
   6)   30.00;  1.555
   7)   40.00;  1.357
   8)   50.00;  1.203
   9)   60.00;  1.080
  10)   90.00;  0.912
  11)  120.00;  0.803
  12)  180.00;  0.673
  13)  360.00;  0.500
  14) 1200.00;  0.221
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.231
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"          -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      5.73
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      5.73

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.158
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.25
  AVERAGE FLOW DEPTH(FEET) =   0.47   TRAVEL TIME(MIN.) =   3.41
  Tc(MIN.) =   10.61
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   21.69
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      25.86
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   3.76
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.21
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.623
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.51
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   3.44
  Tc(MIN.) =   14.05
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   72.97
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      94.03
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.42   FLOW VELOCITY(FEET/SEC.) =   5.14
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.19
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.210
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.75
  AVERAGE FLOW DEPTH(FEET) =   2.14   TRAVEL TIME(MIN.) =   3.98
```



```
  Tc(MIN.) =   18.03
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   40.93
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     118.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.18   FLOW VELOCITY(FEET/SEC.) =   3.77
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.860
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.96
  AVERAGE FLOW DEPTH(FEET) =   2.00   TRAVEL TIME(MIN.) =   5.38
  Tc(MIN.) =   23.41
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =   96.92
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     193.88
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.17   FLOW VELOCITY(FEET/SEC.) =   6.22
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.73
```

```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.707
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     233.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.18
  AVERAGE FLOW DEPTH(FEET) =   1.71   TRAVEL TIME(MIN.) =   3.16
  Tc(MIN.) =   26.57
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   79.96
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     255.05
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.80   FLOW VELOCITY(FEET/SEC.) =  10.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.584
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     304.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.96
  AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   2.78
  Tc(MIN.) =   29.35
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =   98.06
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     330.98
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.63   FLOW VELOCITY(FEET/SEC.) =  15.34
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.474
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     436.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.89
  AVERAGE FLOW DEPTH(FEET) =   2.46   TRAVEL TIME(MIN.) =   4.72
  Tc(MIN.) =   34.07
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  210.79
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     513.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.68   FLOW VELOCITY(FEET/SEC.) =  12.48
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 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.) =   34.07
  RAINFALL INTENSITY(INCH/HR) =   1.47
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     513.75

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.913
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.14
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      8.14

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.24
  AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =   13.75
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   12.35
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      19.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =   4.77
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.076
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.41
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   5.83
  Tc(MIN.) =   19.58
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   86.79
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     101.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.28   FLOW VELOCITY(FEET/SEC.) =   6.29
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.902
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.79
  AVERAGE FLOW DEPTH(FEET) =   1.12   TRAVEL TIME(MIN.) =   3.02
  Tc(MIN.) =   22.60
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =   93.93
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     185.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.28   FLOW VELOCITY(FEET/SEC.) =  11.58
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.58
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     237.72
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.60
 AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =   2.42
 Tc(MIN.) =   25.02
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  104.24
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     275.07
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =  12.11
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.27
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     317.28
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.74
 AVERAGE FLOW DEPTH(FEET) =   2.25   TRAVEL TIME(MIN.) =   3.27
 Tc(MIN.) =   28.29
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   84.40
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     332.54
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.31

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.31   FLOW VELOCITY(FEET/SEC.) =   9.85
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.29
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.543
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     462.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.02
 AVERAGE FLOW DEPTH(FEET) =   2.27   TRAVEL TIME(MIN.) =   2.31
 Tc(MIN.) =   30.60
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  259.78
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     570.46
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.54

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =  14.91
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.25
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.471
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     628.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.79
  AVERAGE FLOW DEPTH(FEET) =   3.24   TRAVEL TIME(MIN.) =   3.62
  Tc(MIN.) =   34.23
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  116.83
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     654.35
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.30   FLOW VELOCITY(FEET/SEC.) =  11.94
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 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.) =   34.23
  RAINFALL INTENSITY(INCH/HR) =   1.47
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     654.35

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      513.75   34.07    1.474  0.30( 0.30) 0.98     484.1   11900.00
      2      654.35   34.23    1.471  0.30( 0.30) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1166.84   34.07    1.474  0.30( 0.30) 0.99    1102.0   11900.00
      2     1166.76   34.23    1.471  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1166.84    Tc(MIN.) =    34.07
  EFFECTIVE AREA(ACRES) =    1101.97   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.428
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1221.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.13
  AVERAGE FLOW DEPTH(FEET) =   5.66   TRAVEL TIME(MIN.) =   2.33
  Tc(MIN.) =   36.41
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  109.12
  EFFECTIVE AREA(ACRES) =   1209.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1230.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.68   FLOW VELOCITY(FEET/SEC.) =  10.14
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.373
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1396.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.27
  AVERAGE FLOW DEPTH(FEET) =   5.76   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   39.20
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  332.46
  EFFECTIVE AREA(ACRES) =   1553.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
```

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  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1502.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.96   FLOW VELOCITY(FEET/SEC.) =  11.49
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.306
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1577.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.60
  AVERAGE FLOW DEPTH(FEET) =   6.12   TRAVEL TIME(MIN.) =   4.11
  Tc(MIN.) =   43.31
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  149.58
  EFFECTIVE AREA(ACRES) =   1718.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1558.63
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.08   FLOW VELOCITY(FEET/SEC.) =  11.56
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1746.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.23
  AVERAGE FLOW DEPTH(FEET) =   6.67   TRAVEL TIME(MIN.) =   2.74
  Tc(MIN.) =   46.04
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  376.31
  EFFECTIVE AREA(ACRES) =   2152.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    1869.76
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.88   FLOW VELOCITY(FEET/SEC.) =  11.44
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1977.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.30
  AVERAGE FLOW DEPTH(FEET) =   7.18   TRAVEL TIME(MIN.) =   4.07
  Tc(MIN.) =   50.11
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  215.41
  EFFECTIVE AREA(ACRES) =   2418.04     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    1964.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.16   FLOW VELOCITY(FEET/SEC.) =  11.28
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
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```
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.15
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       97.46      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2002.19
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.35
 AVERAGE FLOW DEPTH(FEET) =   8.14   TRAVEL TIME(MIN.) =   3.43
 Tc(MIN.) =   53.53
 SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   75.40
 EFFECTIVE AREA(ACRES) =   2515.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    1964.49
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.07

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.07   FLOW VELOCITY(FEET/SEC.) =   9.30
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.42
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.83      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1984.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.78
 AVERAGE FLOW DEPTH(FEET) =   7.41   TRAVEL TIME(MIN.) =   3.35
 Tc(MIN.) =   56.89
 SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   39.65
 EFFECTIVE AREA(ACRES) =   2569.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    1964.49
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



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 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.38

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.38   FLOW VELOCITY(FEET/SEC.) =  10.75
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
================================================================================
 PEAK FLOWRATE TABLE FILE NAME: P401XX25.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      738.86   26.31  0.30( 0.30) 1.00     624.3   40130.00
     2      730.65   28.19  0.30( 0.30) 1.00     654.2   40100.00
   TOTAL AREA(ACRES) =      654.2

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1964.49   56.89    1.118  0.30( 0.30) 1.00    2569.3   11900.00
     2     1962.33   57.06    1.116  0.30( 0.30) 1.00    2572.1   11910.00
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      738.86   26.31    1.718  0.30( 0.30) 1.00     624.3   40130.00
     2      730.65   28.19    1.635  0.30( 0.30) 1.00     654.2   40100.00
 LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2312.56   26.31    1.718  0.30( 0.30) 1.00    1812.4   40130.00
     2     2318.12   28.19    1.635  0.30( 0.30) 1.00    1927.4   40100.00
     3     2412.36   56.89    1.118  0.30( 0.30) 1.00    3223.5   11900.00
     4     2409.06   57.06    1.116  0.30( 0.30) 1.00    3226.4   11910.00
   TOTAL AREA(ACRES) =      3226.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     2412.36  Tc(MIN.) =   56.889
```

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  EFFECTIVE AREA(ACRES) =   3223.53  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.28
  CHANNEL FLOW THRU SUBAREA(CFS) =    2412.36
  FLOW VELOCITY(FEET/SEC.) =   9.10   FLOW DEPTH(FEET) =   9.28
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   58.69
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    6.02
  EFFECTIVE AREA(ACRES) =   3231.93   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.36
  EFFECTIVE AREA(ACRES) =   3232.43   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.43
  EFFECTIVE AREA(ACRES) =   3234.43   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
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 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.53
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.086
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2440.11
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.92
 AVERAGE FLOW DEPTH(FEET) =   7.53   TRAVEL TIME(MIN.) =   0.84
 Tc(MIN.) =   59.53
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   55.51
 EFFECTIVE AREA(ACRES) =   3312.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.49

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.49   FLOW VELOCITY(FEET/SEC.) =  12.88
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   59.53
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.086
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.20
 EFFECTIVE AREA(ACRES) =   3314.14   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
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 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.59
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2415.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.62
 AVERAGE FLOW DEPTH(FEET) =   9.59   TRAVEL TIME(MIN.) =   2.56
 Tc(MIN.) =   62.09
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    5.90
 EFFECTIVE AREA(ACRES) =   3322.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.59

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  9.59   FLOW VELOCITY(FEET/SEC.) =   8.62
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    1.73
 EFFECTIVE AREA(ACRES) =   3324.82   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
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****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
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>>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 16891.05 | 38.90 | 0.30( 0.30) | 1.00 | 7699.7 | 11831.00 |
| 2 | 17269.04 | 41.07 | 0.30( 0.30) | 1.00 | 8149.8 | 11801.00 |
| 3 | 19484.28 | 52.56 | 0.30( 0.30) | 1.00 | 11111.4 | 11530.00 |
| 4 | 20384.42 | 59.71 | 0.30( 0.30) | 1.00 | 13605.9 | 11000.00 |
| 5 | 22298.73 | 70.25 | 0.30( 0.30) | 1.00 | 18738.3 | 11330.00 |
| 6 | 22627.08 | 72.15 | 0.30( 0.30) | 1.00 | 19721.6 | 11350.00 |
| 7 | 22975.81 | 75.44 | 0.30( 0.30) | 1.00 | 21433.1 | 11300.00 |
| 8 | 23115.65 | 77.03 | 0.30( 0.30) | 1.00 | 22200.3 | 11130.00 |
| 9 | 22643.41 | 86.92 | 0.30( 0.30) | 1.00 | 25590.3 | 11620.00 |
| 10 | 22485.53 | 89.04 | 0.30( 0.30) | 1.00 | 26262.8 | 11600.00 |
| 11 | 22019.00 | 94.91 | 0.30( 0.30) | 1.00 | 27853.1 | 11111.00 |
| 12 | 21832.20 | 97.18 | 0.30( 0.30) | 1.00 | 28360.1 | 10500.00 |
| 13 | 21473.90 | 101.65 | 0.30( 0.30) | 1.00 | 29218.6 | 10710.00 |
| 14 | 21235.80 | 103.95 | 0.30( 0.30) | 1.00 | 29569.4 | 10410.00 |
| 15 | 20918.29 | 108.69 | 0.30( 0.30) | 1.00 | 30244.3 | 10700.00 |
| 16 | 20477.99 | 115.41 | 0.30( 0.30) | 1.00 | 31136.9 | 10400.00 |
| 17 | 20244.15 | 118.03 | 0.30( 0.30) | 1.00 | 31425.5 | 10200.00 |
| 18 | 19628.83 | 124.41 | 0.30( 0.30) | 1.00 | 32019.9 | 10300.00 |
| 19 | 19047.00 | 129.43 | 0.30( 0.30) | 1.00 | 32209.8 | 10210.00 |
| 20 | 16600.03 | 158.26 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

TOTAL AREA(ACRES) = 32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: S25X25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 5840.09 | 69.19 | 0.30( 0.30) | 0.99 | 6331.6 | 12500.00 |
| 2 | 6596.78 | 83.06 | 0.30( 0.30) | 0.99 | 8310.4 | 12300.00 |
| 3 | 6685.50 | 84.54 | 0.30( 0.30) | 0.98 | 8607.7 | 12330.00 |
| 4 | 6818.17 | 87.39 | 0.30( 0.30) | 0.98 | 9133.8 | 12410.00 |
| 5 | 6967.16 | 91.70 | 0.30( 0.29) | 0.98 | 9855.5 | 12400.00 |
| 6 | 7051.85 | 96.73 | 0.30( 0.29) | 0.98 | 10551.8 | 12211.00 |
| 7 | 7157.86 | 100.97 | 0.30( 0.29) | 0.98 | 11151.2 | 12201.00 |
| 8 | 7157.25 | 105.22 | 0.30( 0.29) | 0.98 | 11623.9 | 12111.00 |
| 9 | 7110.02 | 108.20 | 0.30( 0.29) | 0.98 | 11957.2 | 12231.00 |
| 10 | 7048.35 | 111.16 | 0.30( 0.29) | 0.98 | 12251.1 | 12101.10 |
| 11 | 7025.02 | 112.24 | 0.30( 0.29) | 0.98 | 12348.3 | 12261.00 |
| 12 | 6564.46 | 124.38 | 0.30( 0.29) | 0.98 | 13114.4 | 12010.00 |
| 13 | 6112.24 | 133.26 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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



MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 5840.09 | 69.19 | 0.30( 0.30) | 0.99 | 6331.6 | 12500.00 |
| 2 | 6596.78 | 83.06 | 0.30( 0.30) | 0.99 | 8310.4 | 12300.00 |
| 3 | 6685.50 | 84.54 | 0.30( 0.30) | 0.98 | 8607.7 | 12330.00 |
| 4 | 6818.17 | 87.39 | 0.30( 0.30) | 0.98 | 9133.8 | 12410.00 |
| 5 | 6967.16 | 91.70 | 0.30( 0.29) | 0.98 | 9855.5 | 12400.00 |
| 6 | 7051.85 | 96.73 | 0.30( 0.29) | 0.98 | 10551.8 | 12211.00 |
| 7 | 7157.86 | 100.97 | 0.30( 0.29) | 0.98 | 11151.2 | 12201.00 |
| 8 | 7157.25 | 105.22 | 0.30( 0.29) | 0.98 | 11623.9 | 12111.00 |
| 9 | 7110.02 | 108.20 | 0.30( 0.29) | 0.98 | 11957.2 | 12231.00 |
| 10 | 7048.35 | 111.16 | 0.30( 0.29) | 0.98 | 12251.1 | 12101.10 |
| 11 | 7025.02 | 112.24 | 0.30( 0.29) | 0.98 | 12348.3 | 12261.00 |
| 12 | 6564.46 | 124.38 | 0.30( 0.29) | 0.98 | 13114.4 | 12010.00 |
| 13 | 6112.24 | 133.26 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 5840.09 | 69.19 | 1.029 | 0.30( 0.30) | 0.99 | 6331.6 | 12500.00 |
| 2 | 6596.78 | 83.06 | 0.951 | 0.30( 0.30) | 0.99 | 8310.4 | 12300.00 |
| 3 | 6685.50 | 84.54 | 0.943 | 0.30( 0.30) | 0.98 | 8607.7 | 12330.00 |
| 4 | 6818.17 | 87.39 | 0.927 | 0.30( 0.30) | 0.98 | 9133.8 | 12410.00 |
| 5 | 6967.16 | 91.70 | 0.906 | 0.30( 0.29) | 0.98 | 9855.5 | 12400.00 |
| 6 | 7051.85 | 96.73 | 0.888 | 0.30( 0.29) | 0.98 | 10551.8 | 12211.00 |
| 7 | 7157.86 | 100.97 | 0.872 | 0.30( 0.29) | 0.98 | 11151.2 | 12201.00 |
| 8 | 7157.25 | 105.22 | 0.857 | 0.30( 0.29) | 0.98 | 11623.9 | 12111.00 |
| 9 | 7110.02 | 108.20 | 0.846 | 0.30( 0.29) | 0.98 | 11957.2 | 12231.00 |
| 10 | 7048.35 | 111.16 | 0.835 | 0.30( 0.29) | 0.98 | 12251.1 | 12101.10 |
| 11 | 7025.02 | 112.24 | 0.831 | 0.30( 0.29) | 0.98 | 12348.3 | 12261.00 |
| 12 | 6564.46 | 124.38 | 0.794 | 0.30( 0.29) | 0.98 | 13114.4 | 12010.00 |
| 13 | 6112.24 | 133.26 | 0.774 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 16891.05 | 38.90 | 1.379 | 0.30( 0.30) | 1.00 | 7699.7 | 11831.00 |
| 2 | 17269.04 | 41.07 | 1.340 | 0.30( 0.30) | 1.00 | 8149.8 | 11801.00 |
| 3 | 19484.28 | 52.56 | 1.172 | 0.30( 0.30) | 1.00 | 11111.4 | 11530.00 |
| 4 | 20384.42 | 59.71 | 1.084 | 0.30( 0.30) | 1.00 | 13605.9 | 11000.00 |
| 5 | 22298.73 | 70.25 | 1.023 | 0.30( 0.30) | 1.00 | 18738.3 | 11330.00 |
| 6 | 22627.08 | 72.15 | 1.012 | 0.30( 0.30) | 1.00 | 19721.6 | 11350.00 |
| 7 | 22975.81 | 75.44 | 0.994 | 0.30( 0.30) | 1.00 | 21433.1 | 11300.00 |
| 8 | 23115.65 | 77.03 | 0.985 | 0.30( 0.30) | 1.00 | 22200.3 | 11130.00 |
| 9 | 22643.41 | 86.92 | 0.929 | 0.30( 0.30) | 1.00 | 25590.3 | 11620.00 |
| 10 | 22485.53 | 89.04 | 0.917 | 0.30( 0.30) | 1.00 | 26262.8 | 11600.00 |
| 11 | 22019.00 | 94.91 | 0.894 | 0.30( 0.30) | 1.00 | 27853.1 | 11111.00 |
| 12 | 21832.20 | 97.18 | 0.886 | 0.30( 0.30) | 1.00 | 28360.1 | 10500.00 |
| 13 | 21473.90 | 101.65 | 0.870 | 0.30( 0.30) | 1.00 | 29218.6 | 10710.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | 21235.80 | 103.95 | 0.861 | 0.30( 0.30) | 1.00 | 29569.4 | 10410.00 |
| 15 | 20918.29 | 108.69 | 0.844 | 0.30( 0.30) | 1.00 | 30244.3 | 10700.00 |
| 16 | 20477.99 | 115.41 | 0.820 | 0.30( 0.30) | 1.00 | 31136.9 | 10400.00 |
| 17 | 20244.15 | 118.03 | 0.810 | 0.30( 0.30) | 1.00 | 31425.5 | 10200.00 |
| 18 | 19628.83 | 124.41 | 0.793 | 0.30( 0.30) | 1.00 | 32019.9 | 10300.00 |
| 19 | 19047.00 | 129.43 | 0.783 | 0.30( 0.30) | 1.00 | 32209.8 | 10210.00 |
| 20 | 16600.03 | 158.26 | 0.720 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21744.22 | 38.90 | 1.379 | 0.30( 0.30) | 0.99 | 11259.4 | 11831.00 |
| 2 | 22212.18 | 41.07 | 1.340 | 0.30( 0.30) | 0.99 | 11908.7 | 11801.00 |
| 3 | 24786.46 | 52.56 | 1.172 | 0.30( 0.30) | 0.99 | 15920.9 | 11530.00 |
| 4 | 25802.98 | 59.71 | 1.084 | 0.30( 0.30) | 0.99 | 19070.2 | 11000.00 |
| 5 | 27946.32 | 69.19 | 1.029 | 0.30( 0.30) | 0.99 | 24553.8 | 12500.00 |
| 6 | 28196.63 | 70.25 | 1.023 | 0.30( 0.30) | 0.99 | 25221.1 | 11330.00 |
| 7 | 28628.91 | 72.15 | 1.012 | 0.30( 0.30) | 0.99 | 26476.2 | 11350.00 |
| 8 | 29156.91 | 75.44 | 0.994 | 0.30( 0.30) | 0.99 | 28656.5 | 11300.00 |
| 9 | 29383.42 | 77.03 | 0.985 | 0.30( 0.30) | 0.99 | 29650.4 | 11130.00 |
| 10 | 29424.60 | 83.06 | 0.951 | 0.30( 0.30) | 0.99 | 32577.0 | 12300.00 |
| 11 | 29442.55 | 84.54 | 0.943 | 0.30( 0.30) | 0.99 | 33382.3 | 12330.00 |
| 12 | 29439.82 | 86.92 | 0.929 | 0.30( 0.30) | 0.99 | 34637.9 | 11620.00 |
| 13 | 29426.78 | 87.39 | 0.927 | 0.30( 0.30) | 0.99 | 34872.4 | 12410.00 |
| 14 | 29360.88 | 89.04 | 0.917 | 0.30( 0.30) | 0.99 | 35673.5 | 11600.00 |
| 15 | 29241.66 | 91.70 | 0.906 | 0.30( 0.30) | 0.99 | 36837.6 | 12400.00 |
| 16 | 29040.22 | 94.91 | 0.894 | 0.30( 0.30) | 0.99 | 38153.0 | 11111.00 |
| 17 | 28921.00 | 96.73 | 0.888 | 0.30( 0.30) | 0.99 | 38811.6 | 12211.00 |
| 18 | 28895.27 | 97.18 | 0.886 | 0.30( 0.30) | 0.99 | 38975.3 | 10500.00 |
| 19 | 28686.30 | 100.97 | 0.872 | 0.30( 0.30) | 0.99 | 40239.2 | 12201.00 |
| 20 | 28631.67 | 101.65 | 0.870 | 0.30( 0.30) | 0.99 | 40445.6 | 10710.00 |
| 21 | 28393.24 | 103.95 | 0.861 | 0.30( 0.30) | 0.99 | 41052.8 | 10410.00 |
| 22 | 28308.43 | 105.22 | 0.857 | 0.30( 0.30) | 0.99 | 41373.2 | 12111.00 |
| 23 | 28060.91 | 108.20 | 0.846 | 0.30( 0.30) | 0.99 | 42132.2 | 12231.00 |
| 24 | 28018.20 | 108.69 | 0.844 | 0.30( 0.30) | 0.99 | 42249.7 | 10700.00 |
| 25 | 27804.43 | 111.16 | 0.835 | 0.30( 0.30) | 0.99 | 42824.2 | 12101.10 |
| 26 | 27710.28 | 112.24 | 0.831 | 0.30( 0.30) | 0.99 | 43065.0 | 12261.00 |
| 27 | 27382.95 | 115.41 | 0.820 | 0.30( 0.30) | 0.99 | 43684.9 | 10400.00 |
| 28 | 27049.59 | 118.03 | 0.810 | 0.30( 0.30) | 0.99 | 44139.1 | 10200.00 |
| 29 | 26196.32 | 124.38 | 0.794 | 0.30( 0.30) | 0.99 | 45131.3 | 12010.00 |
| 30 | 26191.70 | 124.41 | 0.793 | 0.30( 0.30) | 0.99 | 45134.7 | 10300.00 |
| 31 | 25354.30 | 129.43 | 0.783 | 0.30( 0.30) | 0.99 | 45393.9 | 10210.00 |
| 32 | 24834.19 | 133.26 | 0.774 | 0.30( 0.30) | 0.99 | 45540.7 | 12000.00 |
| 33 | 22023.28 | 158.26 | 0.720 | 0.30( 0.30) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29442.55 Tc(MIN.) = 84.542
EFFECTIVE AREA(ACRES) = 33382.26 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<



>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.939
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.30 | 0.987 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29446.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.43
AVERAGE FLOW DEPTH(FEET) = 8.43 TRAVEL TIME(MIN.) = 0.61
Tc(MIN.) = 85.16
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 8.32
EFFECTIVE AREA(ACRES) = 33396.63 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 29442.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.43 FLOW VELOCITY(FEET/SEC.) = 14.43
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

**********
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21744.22 | 39.58 | 1.365 | 0.30( 0.30) | 0.99 | 11273.8 | 11831.00 |
| 2 | 22212.18 | 41.75 | 1.330 | 0.30( 0.30) | 0.99 | 11923.1 | 11801.00 |
| 3 | 24786.46 | 53.21 | 1.164 | 0.30( 0.30) | 0.99 | 15935.3 | 11530.00 |
| 4 | 25802.98 | 60.35 | 1.078 | 0.30( 0.30) | 0.99 | 19084.6 | 11000.00 |
| 5 | 27946.32 | 69.81 | 1.025 | 0.30( 0.30) | 0.99 | 24568.2 | 12500.00 |
| 6 | 28196.63 | 70.87 | 1.019 | 0.30( 0.30) | 0.99 | 25235.5 | 11330.00 |
| 7 | 28628.91 | 72.77 | 1.008 | 0.30( 0.30) | 0.99 | 26490.6 | 11350.00 |
| 8 | 29156.91 | 76.06 | 0.990 | 0.30( 0.30) | 0.99 | 28670.9 | 11300.00 |
| 9 | 29383.42 | 77.64 | 0.981 | 0.30( 0.30) | 0.99 | 29664.8 | 11130.00 |
| 10 | 29424.60 | 83.67 | 0.947 | 0.30( 0.30) | 0.99 | 32591.4 | 12300.00 |
| 11 | 29442.55 | 85.16 | 0.939 | 0.30( 0.30) | 0.99 | 33396.6 | 12330.00 |
| 12 | 29439.82 | 87.54 | 0.926 | 0.30( 0.30) | 0.99 | 34652.2 | 11620.00 |
| 13 | 29426.78 | 88.01 | 0.923 | 0.30( 0.30) | 0.99 | 34886.8 | 12410.00 |
| 14 | 29360.88 | 89.66 | 0.914 | 0.30( 0.30) | 0.99 | 35687.9 | 11600.00 |
| 15 | 29241.66 | 92.31 | 0.904 | 0.30( 0.30) | 0.99 | 36852.0 | 12400.00 |
| 16 | 29040.22 | 95.53 | 0.892 | 0.30( 0.30) | 0.99 | 38167.4 | 11111.00 |
| 17 | 28921.00 | 97.35 | 0.885 | 0.30( 0.30) | 0.99 | 38826.0 | 12211.00 |
| 18 | 28895.27 | 97.80 | 0.884 | 0.30( 0.30) | 0.99 | 38989.7 | 10500.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | 28686.30 | 101.59 | 0.870 | 0.30( 0.30) | 0.99 | 40253.5 | 12201.00 |
| 20 | 28631.67 | 102.27 | 0.867 | 0.30( 0.30) | 0.99 | 40460.0 | 10710.00 |
| 21 | 28393.24 | 104.58 | 0.859 | 0.30( 0.30) | 0.99 | 41067.2 | 10410.00 |
| 22 | 28308.43 | 105.84 | 0.854 | 0.30( 0.30) | 0.99 | 41387.6 | 12111.00 |
| 23 | 28060.91 | 108.83 | 0.844 | 0.30( 0.30) | 0.99 | 42146.6 | 12231.00 |
| 24 | 28018.20 | 109.31 | 0.842 | 0.30( 0.30) | 0.99 | 42264.1 | 10700.00 |
| 25 | 27804.43 | 111.79 | 0.833 | 0.30( 0.30) | 0.99 | 42838.6 | 12101.10 |
| 26 | 27710.28 | 112.87 | 0.829 | 0.30( 0.30) | 0.99 | 43079.4 | 12261.00 |
| 27 | 27382.95 | 116.04 | 0.817 | 0.30( 0.30) | 0.99 | 43699.3 | 10400.00 |
| 28 | 27049.59 | 118.66 | 0.808 | 0.30( 0.30) | 0.99 | 44153.4 | 10200.00 |
| 29 | 26196.32 | 125.02 | 0.792 | 0.30( 0.30) | 0.99 | 45145.7 | 12010.00 |
| 30 | 26191.70 | 125.05 | 0.792 | 0.30( 0.30) | 0.99 | 45149.1 | 10300.00 |
| 31 | 25354.30 | 130.08 | 0.781 | 0.30( 0.30) | 0.99 | 45408.3 | 10210.00 |
| 32 | 24834.19 | 133.91 | 0.773 | 0.30( 0.30) | 0.99 | 45555.1 | 12000.00 |
| 33 | 22023.28 | 158.94 | 0.719 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2312.56 | 31.56 | 1.524 | 0.30( 0.30) | 1.00 | 1913.7 | 40130.00 |
| 2 | 2318.12 | 33.44 | 1.487 | 0.30( 0.30) | 1.00 | 2028.7 | 40100.00 |
| 3 | 2412.36 | 62.09 | 1.068 | 0.30( 0.30) | 1.00 | 3324.8 | 11900.00 |
| 4 | 2409.06 | 62.26 | 1.067 | 0.30( 0.30) | 1.00 | 3327.6 | 11910.00 |

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22229.05 | 31.56 | 1.524 | 0.30( 0.30) | 0.99 | 10902.5 | 40130.00 |
| 2 | 22780.82 | 33.44 | 1.487 | 0.30( 0.30) | 0.99 | 11553.3 | 40100.00 |
| 3 | 24082.55 | 39.58 | 1.365 | 0.30( 0.30) | 0.99 | 13580.4 | 11831.00 |
| 4 | 24557.65 | 41.75 | 1.330 | 0.30( 0.30) | 0.99 | 14327.9 | 11801.00 |
| 5 | 27169.61 | 53.21 | 1.164 | 0.30( 0.30) | 0.99 | 18858.4 | 11530.00 |
| 6 | 28209.64 | 60.35 | 1.078 | 0.30( 0.30) | 0.99 | 22331.0 | 11000.00 |
| 7 | 28607.78 | 62.09 | 1.068 | 0.30( 0.30) | 0.99 | 23413.4 | 11900.00 |
| 8 | 28643.17 | 62.26 | 1.067 | 0.30( 0.30) | 0.99 | 23515.2 | 11910.00 |
| 9 | 30222.67 | 69.81 | 1.025 | 0.30( 0.30) | 0.99 | 27895.8 | 12500.00 |
| 10 | 30454.41 | 70.87 | 1.019 | 0.30( 0.30) | 0.99 | 28563.1 | 11330.00 |
| 11 | 30853.30 | 72.77 | 1.008 | 0.30( 0.30) | 0.99 | 29818.2 | 11350.00 |
| 12 | 31323.67 | 76.06 | 0.990 | 0.30( 0.30) | 0.99 | 31998.5 | 11300.00 |
| 13 | 31522.31 | 77.64 | 0.981 | 0.30( 0.30) | 0.99 | 32992.4 | 11130.00 |
| 14 | 31457.60 | 83.67 | 0.947 | 0.30( 0.30) | 0.99 | 35919.0 | 12300.00 |
| 15 | 31449.52 | 85.16 | 0.939 | 0.30( 0.30) | 0.99 | 36724.3 | 12330.00 |
| 16 | 31404.98 | 87.54 | 0.926 | 0.30( 0.30) | 0.99 | 37979.9 | 11620.00 |
| 17 | 31383.73 | 88.01 | 0.923 | 0.30( 0.30) | 0.99 | 38214.4 | 12410.00 |
| 18 | 31288.81 | 89.66 | 0.914 | 0.30( 0.30) | 0.99 | 39015.5 | 11600.00 |
| 19 | 31137.25 | 92.31 | 0.904 | 0.30( 0.30) | 0.99 | 40179.6 | 12400.00 |
| 20 | 30899.19 | 95.53 | 0.892 | 0.30( 0.30) | 0.99 | 41495.0 | 11111.00 |
| 21 | 30759.23 | 97.35 | 0.885 | 0.30( 0.30) | 0.99 | 42153.6 | 12211.00 |
| 22 | 30728.38 | 97.80 | 0.884 | 0.30( 0.30) | 0.99 | 42317.4 | 10500.00 |
| 23 | 30476.18 | 101.59 | 0.870 | 0.30( 0.30) | 0.99 | 43581.2 | 12201.00 |
| 24 | 30413.79 | 102.27 | 0.867 | 0.30( 0.30) | 0.99 | 43787.7 | 10710.00 |
| 25 | 30149.10 | 104.58 | 0.859 | 0.30( 0.30) | 0.99 | 44394.9 | 10410.00 |
| 26 | 30049.92 | 105.84 | 0.854 | 0.30( 0.30) | 0.99 | 44715.2 | 12111.00 |
| 27 | 29768.36 | 108.83 | 0.844 | 0.30( 0.30) | 0.99 | 45474.2 | 12231.00 |
| 28 | 29720.11 | 109.31 | 0.842 | 0.30( 0.30) | 0.99 | 45591.7 | 10700.00 |
| 29 | 29478.12 | 111.79 | 0.833 | 0.30( 0.30) | 0.99 | 46166.3 | 12101.10 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 30 | 29371.65 | 112.87 | 0.829 | 0.30( 0.30) | 0.99 | 46407.0 | 12261.00 |
| 31 | 29008.24 | 116.04 | 0.817 | 0.30( 0.30) | 0.99 | 47026.9 | 10400.00 |
| 32 | 28644.99 | 118.66 | 0.808 | 0.30( 0.30) | 0.99 | 47481.1 | 10200.00 |
| 33 | 27742.38 | 125.02 | 0.792 | 0.30( 0.30) | 0.99 | 48473.4 | 12010.00 |
| 34 | 27737.54 | 125.05 | 0.792 | 0.30( 0.30) | 0.99 | 48476.7 | 10300.00 |
| 35 | 26866.01 | 130.08 | 0.781 | 0.30( 0.30) | 0.99 | 48735.9 | 10210.00 |
| 36 | 26319.85 | 133.91 | 0.773 | 0.30( 0.30) | 0.99 | 48882.8 | 12000.00 |
| 37 | 23338.91 | 158.94 | 0.719 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31522.31 Tc(MIN.) = 77.644
EFFECTIVE AREA(ACRES) = 32992.41 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 77.64
EFFECTIVE AREA(ACRES) = 32992.41 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 31522.31

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22229.05 | 31.56 | 1.524 | 0.30( 0.30) | 0.99 | 10902.5 | 40130.00 |
| 2 | 22780.82 | 33.44 | 1.487 | 0.30( 0.30) | 0.99 | 11553.3 | 40100.00 |
| 3 | 24082.55 | 39.58 | 1.365 | 0.30( 0.30) | 0.99 | 13580.4 | 11831.00 |
| 4 | 24557.65 | 41.75 | 1.330 | 0.30( 0.30) | 0.99 | 14327.9 | 11801.00 |
| 5 | 27169.61 | 53.21 | 1.164 | 0.30( 0.30) | 0.99 | 18858.4 | 11530.00 |
| 6 | 28209.64 | 60.35 | 1.078 | 0.30( 0.30) | 0.99 | 22331.0 | 11000.00 |
| 7 | 28607.78 | 62.09 | 1.068 | 0.30( 0.30) | 0.99 | 23413.4 | 11900.00 |
| 8 | 28643.17 | 62.26 | 1.067 | 0.30( 0.30) | 0.99 | 23515.2 | 11910.00 |
| 9 | 30222.67 | 69.81 | 1.025 | 0.30( 0.30) | 0.99 | 27895.8 | 12500.00 |
| 10 | 30454.41 | 70.87 | 1.019 | 0.30( 0.30) | 0.99 | 28563.1 | 11330.00 |
| 11 | 30853.30 | 72.77 | 1.008 | 0.30( 0.30) | 0.99 | 29818.2 | 11350.00 |
| 12 | 31323.67 | 76.06 | 0.990 | 0.30( 0.30) | 0.99 | 31998.5 | 11300.00 |
| 13 | 31522.31 | 77.64 | 0.981 | 0.30( 0.30) | 0.99 | 32992.4 | 11130.00 |
| 14 | 31457.60 | 83.67 | 0.947 | 0.30( 0.30) | 0.99 | 35919.0 | 12300.00 |
| 15 | 31449.52 | 85.16 | 0.939 | 0.30( 0.30) | 0.99 | 36724.3 | 12330.00 |
| 16 | 31404.98 | 87.54 | 0.926 | 0.30( 0.30) | 0.99 | 37979.9 | 11620.00 |
| 17 | 31383.73 | 88.01 | 0.923 | 0.30( 0.30) | 0.99 | 38214.4 | 12410.00 |
| 18 | 31288.81 | 89.66 | 0.914 | 0.30( 0.30) | 0.99 | 39015.5 | 11600.00 |
| 19 | 31137.25 | 92.31 | 0.904 | 0.30( 0.30) | 0.99 | 40179.6 | 12400.00 |
| 20 | 30899.19 | 95.53 | 0.892 | 0.30( 0.30) | 0.99 | 41495.0 | 11111.00 |
| 21 | 30759.23 | 97.35 | 0.885 | 0.30( 0.30) | 0.99 | 42153.6 | 12211.00 |
| 22 | 30728.38 | 97.80 | 0.884 | 0.30( 0.30) | 0.99 | 42317.4 | 10500.00 |
| 23 | 30476.18 | 101.59 | 0.870 | 0.30( 0.30) | 0.99 | 43581.2 | 12201.00 |
| 24 | 30413.79 | 102.27 | 0.867 | 0.30( 0.30) | 0.99 | 43787.7 | 10710.00 |
| 25 | 30149.10 | 104.58 | 0.859 | 0.30( 0.30) | 0.99 | 44394.9 | 10410.00 |
| 26 | 30049.92 | 105.84 | 0.854 | 0.30( 0.30) | 0.99 | 44715.2 | 12111.00 |
| 27 | 29768.36 | 108.83 | 0.844 | 0.30( 0.30) | 0.99 | 45474.2 | 12231.00 |
| 28 | 29720.11 | 109.31 | 0.842 | 0.30( 0.30) | 0.99 | 45591.7 | 10700.00 |
| 29 | 29478.12 | 111.79 | 0.833 | 0.30( 0.30) | 0.99 | 46166.3 | 12101.10 |
| 30 | 29371.65 | 112.87 | 0.829 | 0.30( 0.30) | 0.99 | 46407.0 | 12261.00 |
| 31 | 29008.24 | 116.04 | 0.817 | 0.30( 0.30) | 0.99 | 47026.9 | 10400.00 |
| 32 | 28644.99 | 118.66 | 0.808 | 0.30( 0.30) | 0.99 | 47481.1 | 10200.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 27742.38 | 125.02 | 0.792 | 0.30( 0.30) | 0.99 | 48473.4 | 12010.00 |
| 34 | 27737.54 | 125.05 | 0.792 | 0.30( 0.30) | 0.99 | 48476.7 | 10300.00 |
| 35 | 26866.01 | 130.08 | 0.781 | 0.30( 0.30) | 0.99 | 48735.9 | 10210.00 |
| 36 | 26319.85 | 133.91 | 0.773 | 0.30( 0.30) | 0.99 | 48882.8 | 12000.00 |
| 37 | 23338.91 | 158.94 | 0.719 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 25-YR EV FEB 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI25EV26.DAT
  TIME/DATE OF STUDY: 10:09 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.985
   2)   10.00;  3.243
   3)   15.00;  2.468
   4)   20.00;  2.035
   5)   25.00;  1.773
   6)   30.00;  1.553
   7)   40.00;  1.354
   8)   50.00;  1.201
   9)   60.00;  1.077
  10)   90.00;  0.909
  11)  120.00;  0.800
  12)  180.00;  0.670
  13)  360.00;  0.498
  14) 1200.00;  0.220
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    22780.82   33.44  0.30( 0.30) 0.99   11553.3   40100.00
      2    24557.65   41.75  0.30( 0.30) 0.99   14327.9   11801.00
      3    27169.61   53.21  0.30( 0.30) 0.99   18858.4   11530.00
      4    28643.17   62.26  0.30( 0.30) 0.99   23515.2   11910.00
      5    30853.30   72.77  0.30( 0.30) 0.99   29818.2   11350.00
      6    31522.31   77.64  0.30( 0.30) 0.99   32992.4   11130.00
      7    31457.60   83.67  0.30( 0.30) 0.99   35919.0   12300.00
      8    31404.98   87.54  0.30( 0.30) 0.99   37979.9   11620.00
      9    31137.25   92.31  0.30( 0.30) 0.99   40179.6   12400.00
     10    30899.19   95.53  0.30( 0.30) 0.99   41495.0   11111.00
     11    30476.18  101.59  0.30( 0.30) 0.99   43581.2   12201.00
     12    30149.10  104.58  0.30( 0.30) 0.99   44394.9   10410.00
     13    29768.36  108.83  0.30( 0.30) 0.99   45474.2   12231.00
     14    29478.12  111.79  0.30( 0.30) 0.99   46166.3   12101.10
     15    29008.24  116.04  0.30( 0.30) 0.99   47026.9   10400.00
     16    28644.99  118.66  0.30( 0.30) 0.99   47481.1   10200.00
     17    27742.38  125.02  0.30( 0.30) 0.99   48473.4   12010.00
     18    26866.01  130.08  0.30( 0.30) 0.99   48735.9   10210.00
     19    26319.85  133.91  0.30( 0.30) 0.99   48882.8   12000.00
     20    23338.91  158.94  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    22780.82   33.44  0.30( 0.30) 0.99   11553.3   40100.00
      2    24557.65   41.75  0.30( 0.30) 0.99   14327.9   11801.00
      3    27169.61   53.21  0.30( 0.30) 0.99   18858.4   11530.00
      4    28643.17   62.26  0.30( 0.30) 0.99   23515.2   11910.00
      5    30853.30   72.77  0.30( 0.30) 0.99   29818.2   11350.00
      6    31522.31   77.64  0.30( 0.30) 0.99   32992.4   11130.00
      7    31457.60   83.67  0.30( 0.30) 0.99   35919.0   12300.00
      8    31404.98   87.54  0.30( 0.30) 0.99   37979.9   11620.00
      9    31137.25   92.31  0.30( 0.30) 0.99   40179.6   12400.00
     10    30899.19   95.53  0.30( 0.30) 0.99   41495.0   11111.00
     11    30476.18  101.59  0.30( 0.30) 0.99   43581.2   12201.00
     12    30149.10  104.58  0.30( 0.30) 0.99   44394.9   10410.00
     13    29768.36  108.83  0.30( 0.30) 0.99   45474.2   12231.00
```

```
     14    29478.12  111.79  0.30( 0.30) 0.99   46166.3   12101.10
     15    29008.24  116.04  0.30( 0.30) 0.99   47026.9   10400.00
     16    28644.99  118.66  0.30( 0.30) 0.99   47481.1   10200.00
     17    27742.38  125.02  0.30( 0.30) 0.99   48473.4   12010.00
     18    26866.01  130.08  0.30( 0.30) 0.99   48735.9   10210.00
     19    26319.85  133.91  0.30( 0.30) 0.99   48882.8   12000.00
     20    23338.91  158.94  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.971
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                     B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   31526.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.07
  AVERAGE FLOW DEPTH(FEET) =   7.37   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   79.00
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    8.51
  EFFECTIVE AREA(ACRES) =  33006.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   31522.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.37   FLOW VELOCITY(FEET/SEC.) =  18.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
```



```
     1    22780.82   34.95    1.454  0.30( 0.30) 0.99   11567.4   40100.00
     2    24557.65   43.23    1.305  0.30( 0.30) 0.99   14342.0   11801.00
     3    27169.61   54.63    1.144  0.30( 0.30) 0.99   18872.5   11530.00
     4    28643.17   63.66    1.057  0.30( 0.30) 0.99   23529.3   11910.00
     5    30853.30   74.14    0.998  0.30( 0.30) 0.99   29832.3   11350.00
     6    31522.31   79.00    0.971  0.30( 0.30) 0.99   33006.5   11130.00
     7    31457.60   85.03    0.937  0.30( 0.30) 0.99   35933.1   12300.00
     8    31404.98   88.89    0.915  0.30( 0.30) 0.99   37994.0   11620.00
     9    31137.25   93.67    0.896  0.30( 0.30) 0.99   40193.7   12400.00
    10    30899.19   96.89    0.884  0.30( 0.30) 0.99   41509.1   11111.00
    11    30476.18  102.96    0.862  0.30( 0.30) 0.99   43595.3   12201.00
    12    30149.10  105.95    0.851  0.30( 0.30) 0.99   44409.0   10410.00
    13    29768.36  110.21    0.836  0.30( 0.30) 0.99   45488.3   12231.00
    14    29478.12  113.18    0.825  0.30( 0.30) 0.99   46180.4   12101.10
    15    29008.24  117.43    0.809  0.30( 0.30) 0.99   47041.0   10400.00
    16    28644.99  120.06    0.800  0.30( 0.30) 0.99   47495.2   10200.00
    17    27742.38  126.43    0.786  0.30( 0.30) 0.99   48487.5   12010.00
    18    26866.01  131.50    0.775  0.30( 0.30) 0.99   48750.0   10210.00
    19    26319.85  135.35    0.767  0.30( 0.30) 0.99   48896.9   12000.00
    20    23338.91  160.44    0.712  0.30( 0.30) 0.99   49509.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   31522.31  Tc(MIN.) =   79.00
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   33006.52

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O25EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       92.92   16.77  0.30( 0.29) 0.98      51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    22780.82   34.95    1.454  0.30( 0.30) 0.99   11567.4   40100.00
      2    24557.65   43.23    1.305  0.30( 0.30) 0.99   14342.0   11801.00
      3    27169.61   54.63    1.144  0.30( 0.30) 0.99   18872.5   11530.00
      4    28643.17   63.66    1.057  0.30( 0.30) 0.99   23529.3   11910.00
      5    30853.30   74.14    0.998  0.30( 0.30) 0.99   29832.3   11350.00
      6    31522.31   79.00    0.971  0.30( 0.30) 0.99   33006.5   11130.00
      7    31457.60   85.03    0.937  0.30( 0.30) 0.99   35933.1   12300.00
      8    31404.98   88.89    0.915  0.30( 0.30) 0.99   37994.0   11620.00
      9    31137.25   93.67    0.896  0.30( 0.30) 0.99   40193.7   12400.00
     10    30899.19   96.89    0.884  0.30( 0.30) 0.99   41509.1   11111.00
     11    30476.18  102.96    0.862  0.30( 0.30) 0.99   43595.3   12201.00
     12    30149.10  105.95    0.851  0.30( 0.30) 0.99   44409.0   10410.00
```

```
    13    29768.36  110.21    0.836  0.30( 0.30) 0.99   45488.3   12231.00
    14    29478.12  113.18    0.825  0.30( 0.30) 0.99   46180.4   12101.10
    15    29008.24  117.43    0.809  0.30( 0.30) 0.99   47041.0   10400.00
    16    28644.99  120.06    0.800  0.30( 0.30) 0.99   47495.2   10200.00
    17    27742.38  126.43    0.786  0.30( 0.30) 0.99   48487.5   12010.00
    18    26866.01  131.50    0.775  0.30( 0.30) 0.99   48750.0   10210.00
    19    26319.85  135.35    0.767  0.30( 0.30) 0.99   48896.9   12000.00
    20    23338.91  160.44    0.712  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       92.92   16.77    2.315  0.30( 0.29) 0.98      51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19154.32   16.77    2.315  0.30( 0.30) 0.99    5601.9     600.00
      2    22834.20   34.95    1.454  0.30( 0.30) 0.99   11618.5   40100.00
      3    24604.13   43.23    1.305  0.30( 0.30) 0.99   14393.1   11801.00
      4    27208.68   54.63    1.144  0.30( 0.30) 0.99   18923.6   11530.00
      5    28678.24   63.66    1.057  0.30( 0.30) 0.99   23580.4   11910.00
      6    30885.67   74.14    0.998  0.30( 0.30) 0.99   29883.4   11350.00
      7    31553.43   79.00    0.971  0.30( 0.30) 0.99   33057.6   11130.00
      8    31487.16   85.03    0.937  0.30( 0.30) 0.99   35984.2   12300.00
      9    31433.55   88.89    0.915  0.30( 0.30) 0.99   38045.1   11620.00
     10    31164.92   93.67    0.896  0.30( 0.30) 0.99   40244.8   12400.00
     11    30926.32   96.89    0.884  0.30( 0.30) 0.99   41560.2   11111.00
     12    30502.30  102.96    0.862  0.30( 0.30) 0.99   43646.4   12201.00
     13    30174.72  105.95    0.851  0.30( 0.30) 0.99   44460.1   10410.00
     14    29793.27  110.21    0.836  0.30( 0.30) 0.99   45539.4   12231.00
     15    29502.53  113.18    0.825  0.30( 0.30) 0.99   46231.5   12101.10
     16    29031.95  117.43    0.809  0.30( 0.30) 0.99   47092.1   10400.00
     17    28668.26  120.06    0.800  0.30( 0.30) 0.99   47546.3   10200.00
     18    27765.01  126.43    0.786  0.30( 0.30) 0.99   48538.6   12010.00
     19    26888.14  131.50    0.775  0.30( 0.30) 0.99   48801.1   10210.00
     20    26341.59  135.35    0.767  0.30( 0.30) 0.99   48948.0   12000.00
     21    23358.15  160.44    0.712  0.30( 0.30) 0.99   49560.9   10100.00
    TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    31553.43  Tc(MIN.) =   78.998
  EFFECTIVE AREA(ACRES) =  33057.62  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.91
  CHANNEL FLOW THRU SUBAREA(CFS) =   31553.43
  FLOW VELOCITY(FEET/SEC.) =  16.66   FLOW DEPTH(FEET) =   7.91
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =   80.69
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19154.32   18.78    2.141  0.30( 0.30) 0.99    5601.9     600.00
      2    22834.20   36.84    1.417  0.30( 0.30) 0.99   11618.5   40100.00
      3    24604.13   45.06    1.277  0.30( 0.30) 0.99   14393.1   11801.00
      4    27208.68   56.41    1.122  0.30( 0.30) 0.99   18923.6   11530.00
      5    28678.24   65.40    1.047  0.30( 0.30) 0.99   23580.4   11910.00
      6    30885.67   75.84    0.988  0.30( 0.30) 0.99   29883.4   11350.00
      7    31553.43   80.69    0.961  0.30( 0.30) 0.99   33057.6   11130.00
      8    31487.16   86.72    0.927  0.30( 0.30) 0.99   35984.2   12300.00
      9    31433.55   90.59    0.907  0.30( 0.30) 0.99   38045.1   11620.00
     10    31164.92   95.37    0.889  0.30( 0.30) 0.99   40244.8   12400.00
     11    30926.32   98.59    0.878  0.30( 0.30) 0.99   41560.2   11111.00
     12    30502.30  104.67    0.856  0.30( 0.30) 0.99   43646.4   12201.00
     13    30174.72  107.67    0.845  0.30( 0.30) 0.99   44460.1   10410.00
     14    29793.27  111.93    0.829  0.30( 0.30) 0.99   45539.4   12231.00
     15    29502.53  114.90    0.819  0.30( 0.30) 0.99   46231.5   12101.10
     16    29031.95  119.17    0.803  0.30( 0.30) 0.99   47092.1   10400.00
     17    28668.26  121.81    0.796  0.30( 0.30) 0.99   47546.3   10200.00
     18    27765.01  128.20    0.782  0.30( 0.30) 0.99   48538.6   12010.00
     19    26888.14  133.29    0.771  0.30( 0.30) 0.99   48801.1   10210.00
     20    26341.59  137.15    0.763  0.30( 0.30) 0.99   48948.0   12000.00
     21    23358.15  162.31    0.708  0.30( 0.30) 0.99   49560.9   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   31553.43  Tc(MIN.) =   80.69
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   33057.62

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4E25EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      449.88    9.31  0.30( 0.16) 0.52     148.6     800.00
      2      404.95   12.87  0.30( 0.17) 0.57     168.1     818.00
      3      381.66   14.01  0.30( 0.17) 0.58     171.0     810.00
    TOTAL AREA(ACRES) =      171.0

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  11
```

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

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19154.32   18.78    2.141  0.30( 0.30) 0.99    5601.9     600.00
      2    22834.20   36.84    1.417  0.30( 0.30) 0.99   11618.5   40100.00
      3    24604.13   45.06    1.277  0.30( 0.30) 0.99   14393.1   11801.00
      4    27208.68   56.41    1.122  0.30( 0.30) 0.99   18923.6   11530.00
      5    28678.24   65.40    1.047  0.30( 0.30) 0.99   23580.4   11910.00
      6    30885.67   75.84    0.988  0.30( 0.30) 0.99   29883.4   11350.00
      7    31553.43   80.69    0.961  0.30( 0.30) 0.99   33057.6   11130.00
      8    31487.16   86.72    0.927  0.30( 0.30) 0.99   35984.2   12300.00
      9    31433.55   90.59    0.907  0.30( 0.30) 0.99   38045.1   11620.00
     10    31164.92   95.37    0.889  0.30( 0.30) 0.99   40244.8   12400.00
     11    30926.32   98.59    0.878  0.30( 0.30) 0.99   41560.2   11111.00
     12    30502.30  104.67    0.856  0.30( 0.30) 0.99   43646.4   12201.00
     13    30174.72  107.67    0.845  0.30( 0.30) 0.99   44460.1   10410.00
     14    29793.27  111.93    0.829  0.30( 0.30) 0.99   45539.4   12231.00
     15    29502.53  114.90    0.819  0.30( 0.30) 0.99   46231.5   12101.10
     16    29031.95  119.17    0.803  0.30( 0.30) 0.99   47092.1   10400.00
     17    28668.26  121.81    0.796  0.30( 0.30) 0.99   47546.3   10200.00
     18    27765.01  128.20    0.782  0.30( 0.30) 0.99   48538.6   12010.00
     19    26888.14  133.29    0.771  0.30( 0.30) 0.99   48801.1   10210.00
     20    26341.59  137.15    0.763  0.30( 0.30) 0.99   48948.0   12000.00
     21    23358.15  162.31    0.708  0.30( 0.30) 0.99   49560.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      449.88    9.31    3.483  0.30( 0.16) 0.52     148.6     800.00
      2      404.95   12.87    2.798  0.30( 0.17) 0.57     168.1     818.00
      3      381.66   14.01    2.621  0.30( 0.17) 0.58     171.0     810.00
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    16864.99    9.31    3.483  0.30( 0.29) 0.97    2926.7     800.00
      2    18216.67   12.87    2.798  0.30( 0.29) 0.98    4009.3     818.00
      3    18400.09   14.01    2.621  0.30( 0.29) 0.98    4352.5     810.00
      4    19461.16   18.78    2.141  0.30( 0.29) 0.98    5772.9     600.00
      5    23028.08   36.84    1.417  0.30( 0.30) 0.99   11789.5   40100.00
      6    24776.11   45.06    1.277  0.30( 0.30) 0.99   14564.1   11801.00
      7    27356.49   56.41    1.122  0.30( 0.30) 0.99   19094.6   11530.00
      8    28814.38   65.40    1.047  0.30( 0.30) 0.99   23751.4   11910.00
      9    31012.69   75.84    0.988  0.30( 0.30) 0.99   30054.4   11350.00
     10    31676.21   80.69    0.961  0.30( 0.30) 0.99   33228.6   11130.00
     11    31604.68   86.72    0.927  0.30( 0.30) 0.99   36155.2   12300.00
     12    31547.87   90.59    0.907  0.30( 0.30) 0.99   38216.1   11620.00
     13    31276.53   95.37    0.889  0.30( 0.30) 0.99   40415.8   12400.00
     14    31036.11   98.59    0.878  0.30( 0.30) 0.99   41731.2   11111.00
     15    30608.64  104.67    0.856  0.30( 0.30) 0.99   43817.4   12201.00
     16    30279.36  107.67    0.845  0.30( 0.30) 0.99   44631.1   10410.00
     17    29895.50  111.93    0.829  0.30( 0.30) 0.99   45710.4   12231.00
```



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     18    29603.07  114.90    0.819  0.30( 0.30) 0.99   46402.5   12101.10
     19    29130.07  119.17    0.803  0.30( 0.30) 0.99   47263.1   10400.00
     20    28765.30  121.81    0.796  0.30( 0.30) 0.99   47717.3   10200.00
     21    27859.89  128.20    0.782  0.30( 0.30) 0.99   48709.6   12010.00
     22    26981.30  133.29    0.771  0.30( 0.30) 0.99   48972.1   10210.00
     23    26433.44  137.15    0.763  0.30( 0.30) 0.99   49119.0   12000.00
     24    23441.50  162.31    0.708  0.30( 0.30) 0.99   49731.9   10100.00
    TOTAL AREA(ACRES) =     49731.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    31676.21  Tc(MIN.) =   80.688
  EFFECTIVE AREA(ACRES) =  33228.62  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.30      0.30     1.000    66
  PUBLIC PARK               B        1.30      0.30     0.850    56
  COMMERCIAL                B        1.40      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       12.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =   11.33
  EFFECTIVE AREA(ACRES) =  33246.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       26.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
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  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   16.01
  EFFECTIVE AREA(ACRES) =  33273.82   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.40      0.30     1.000    72
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.70      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    1.99
  EFFECTIVE AREA(ACRES) =  33277.12   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    6.53
  EFFECTIVE AREA(ACRES) =  33287.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    8.69
  EFFECTIVE AREA(ACRES) =  33302.52   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.01
  CHANNEL FLOW THRU SUBAREA(CFS) =   31676.21
  FLOW VELOCITY(FEET/SEC.) =  14.35   FLOW DEPTH(FEET) =   9.01
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =   81.72
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    16864.99   10.58    3.153  0.30( 0.29) 0.97    3000.6     800.00
      2    18216.67   14.11    2.606  0.30( 0.29) 0.98    4083.2     818.00
      3    18400.09   15.25    2.446  0.30( 0.29) 0.98    4426.4     810.00
      4    19461.16   19.98    2.036  0.30( 0.29) 0.98    5846.8     600.00
      5    23028.08   37.98    1.394  0.30( 0.30) 0.99   11863.4   40100.00
      6    24776.11   46.18    1.259  0.30( 0.30) 0.99   14638.0   11801.00
      7    27356.49   57.49    1.108  0.30( 0.30) 0.99   19168.5   11530.00
      8    28814.38   66.46    1.041  0.30( 0.30) 0.99   23825.3   11910.00
      9    31012.69   76.88    0.982  0.30( 0.30) 0.99   30128.3   11350.00
     10    31676.21   81.72    0.955  0.30( 0.30) 0.99   33302.5   11130.00
```

```
    11    31604.68   87.75    0.922  0.30( 0.30) 0.99   36229.1   12300.00
    12    31547.87   91.62    0.903  0.30( 0.30) 0.99   38290.0   11620.00
    13    31276.53   96.40    0.886  0.30( 0.30) 0.99   40489.7   12400.00
    14    31036.11   99.63    0.874  0.30( 0.30) 0.99   41805.1   11111.00
    15    30608.64  105.71    0.852  0.30( 0.30) 0.99   43891.3   12201.00
    16    30279.36  108.71    0.841  0.30( 0.30) 0.99   44705.0   10410.00
    17    29895.50  112.98    0.826  0.30( 0.30) 0.99   45784.3   12231.00
    18    29603.07  115.96    0.815  0.30( 0.30) 0.99   46476.4   12101.10
    19    29130.07  120.23    0.800  0.30( 0.30) 0.99   47337.0   10400.00
    20    28765.30  122.87    0.794  0.30( 0.30) 0.99   47791.2   10200.00
    21    27859.89  129.27    0.780  0.30( 0.30) 0.99   48783.5   12010.00
    22    26981.30  134.37    0.769  0.30( 0.30) 0.99   49046.0   10210.00
    23    26433.44  138.24    0.760  0.30( 0.30) 0.99   49192.9   12000.00
    24    23441.50  163.45    0.706  0.30( 0.30) 0.99   49805.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   31676.21  Tc(MIN.) =   81.72
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   33302.52

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   81.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    4.77
  EFFECTIVE AREA(ACRES) =  33310.32   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   81.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    7.80
  EFFECTIVE AREA(ACRES) =  33323.12   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   31676.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.95
  CHANNEL FLOW THRU SUBAREA(CFS) =   31676.21
  FLOW VELOCITY(FEET/SEC.) =  16.63   FLOW DEPTH(FEET) =   7.95
  TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =   83.88
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    16864.99   13.27    2.737  0.30( 0.29) 0.97    3021.2     800.00
      2    18216.67   16.72    2.319  0.30( 0.29) 0.98    4103.8     818.00
      3    18400.09   17.85    2.221  0.30( 0.29) 0.98    4447.0     810.00
      4    19461.16   22.54    1.902  0.30( 0.29) 0.98    5867.4     600.00
      5    23028.08   40.39    1.348  0.30( 0.30) 0.99   11884.0   40100.00
      6    24776.11   48.53    1.224  0.30( 0.30) 0.99   14658.6   11801.00
      7    27356.49   59.76    1.080  0.30( 0.30) 0.99   19189.1   11530.00
      8    28814.38   68.70    1.028  0.30( 0.30) 0.99   23845.9   11910.00
      9    31012.69   79.05    0.970  0.30( 0.30) 0.99   30148.9   11350.00
     10    31676.21   83.88    0.943  0.30( 0.30) 0.99   33323.1   11130.00
     11    31604.68   89.91    0.909  0.30( 0.30) 0.99   36249.7   12300.00
     12    31547.87   93.78    0.895  0.30( 0.30) 0.99   38310.6   11620.00
     13    31276.53   98.57    0.878  0.30( 0.30) 0.99   40510.3   12400.00
     14    31036.11  101.80    0.866  0.30( 0.30) 0.99   41825.7   11111.00
     15    30608.64  107.90    0.844  0.30( 0.30) 0.99   43911.9   12201.00
     16    30279.36  110.91    0.833  0.30( 0.30) 0.99   44725.6   10410.00
     17    29895.50  115.18    0.817  0.30( 0.30) 0.99   45804.9   12231.00
     18    29603.07  118.17    0.807  0.30( 0.30) 0.99   46497.0   12101.10
     19    29130.07  122.45    0.795  0.30( 0.30) 0.99   47357.6   10400.00
     20    28765.30  125.10    0.789  0.30( 0.30) 0.99   47811.8   10200.00
     21    27859.89  131.53    0.775  0.30( 0.30) 0.99   48804.1   12010.00
     22    26981.30  136.65    0.764  0.30( 0.30) 0.99   49066.6   10210.00
     23    26433.44  140.54    0.756  0.30( 0.30) 0.99   49213.5   12000.00
     24    23441.50  165.84    0.701  0.30( 0.30) 0.99   49826.4   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   31676.21  Tc(MIN.) =   83.88
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
```

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33323.12

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1
----------
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 4F25EVRL.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 1022.10 | 10.03 | 0.30( 0.24) | 0.79 | 378.2 | 940.00 |
| 2 | 1028.54 | 10.26 | 0.30( 0.24) | 0.79 | 385.2 | 930.00 |
| 3 | 1049.87 | 13.05 | 0.30( 0.25) | 0.82 | 462.2 | 910.00 |
| 4 | 1022.23 | 16.66 | 0.30( 0.25) | 0.85 | 548.8 | 920.00 |
| 5 | 1000.92 | 17.37 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 974.91 | 17.97 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

TOTAL AREA(ACRES) = 553.8

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11
----------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 16864.99 | 13.27 | 2.737 | 0.30( 0.29) | 0.97 | 3021.2 | 800.00 |
| 2 | 18216.67 | 16.72 | 2.319 | 0.30( 0.29) | 0.98 | 4103.8 | 818.00 |
| 3 | 18400.09 | 17.85 | 2.221 | 0.30( 0.29) | 0.98 | 4447.0 | 810.00 |
| 4 | 19461.16 | 22.54 | 1.902 | 0.30( 0.29) | 0.98 | 5867.4 | 600.00 |
| 5 | 23028.08 | 40.39 | 1.348 | 0.30( 0.30) | 0.99 | 11884.0 | 40100.00 |
| 6 | 24776.11 | 48.53 | 1.224 | 0.30( 0.30) | 0.99 | 14658.6 | 11801.00 |
| 7 | 27356.49 | 59.76 | 1.080 | 0.30( 0.30) | 0.99 | 19189.1 | 11530.00 |
| 8 | 28814.38 | 68.70 | 1.028 | 0.30( 0.30) | 0.99 | 23845.9 | 11910.00 |
| 9 | 31012.69 | 79.05 | 0.970 | 0.30( 0.30) | 0.99 | 30148.9 | 11350.00 |
| 10 | 31676.21 | 83.88 | 0.943 | 0.30( 0.30) | 0.99 | 33323.1 | 11130.00 |
| 11 | 31604.68 | 89.91 | 0.909 | 0.30( 0.30) | 0.99 | 36249.7 | 12300.00 |
| 12 | 31547.87 | 93.78 | 0.895 | 0.30( 0.30) | 0.99 | 38310.6 | 11620.00 |
| 13 | 31276.53 | 98.57 | 0.878 | 0.30( 0.30) | 0.99 | 40510.3 | 12400.00 |
| 14 | 31036.11 | 101.80 | 0.866 | 0.30( 0.30) | 0.99 | 41825.7 | 11111.00 |
| 15 | 30608.64 | 107.90 | 0.844 | 0.30( 0.30) | 0.99 | 43911.9 | 12201.00 |
| 16 | 30279.36 | 110.91 | 0.833 | 0.30( 0.30) | 0.99 | 44725.6 | 10410.00 |
| 17 | 29895.50 | 115.18 | 0.817 | 0.30( 0.30) | 0.99 | 45804.9 | 12231.00 |
| 18 | 29603.07 | 118.17 | 0.807 | 0.30( 0.30) | 0.99 | 46497.0 | 12101.10 |
| 19 | 29130.07 | 122.45 | 0.795 | 0.30( 0.30) | 0.99 | 47357.6 | 10400.00 |
| 20 | 28765.30 | 125.10 | 0.789 | 0.30( 0.30) | 0.99 | 47811.8 | 10200.00 |
| 21 | 27859.89 | 131.53 | 0.775 | 0.30( 0.30) | 0.99 | 48804.1 | 12010.00 |
| 22 | 26981.30 | 136.65 | 0.764 | 0.30( 0.30) | 0.99 | 49066.6 | 10210.00 |
| 23 | 26433.44 | 140.54 | 0.756 | 0.30( 0.30) | 0.99 | 49213.5 | 12000.00 |
| 24 | 23441.50 | 165.84 | 0.701 | 0.30( 0.30) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1022.10 | 10.03 | 3.239 | 0.30( 0.24) | 0.79 | 378.2 | 940.00 |
| 2 | 1028.54 | 10.26 | 3.203 | 0.30( 0.24) | 0.79 | 385.2 | 930.00 |
| 3 | 1049.87 | 13.05 | 2.770 | 0.30( 0.25) | 0.82 | 462.2 | 910.00 |
| 4 | 1022.23 | 16.66 | 2.324 | 0.30( 0.25) | 0.85 | 548.8 | 920.00 |
| 5 | 1000.92 | 17.37 | 2.263 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 974.91 | 17.97 | 2.211 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 16384.56 | 10.03 | 3.239 | 0.30( 0.28) | 0.94 | 2661.2 | 940.00 |
| 2 | 16555.00 | 10.26 | 3.203 | 0.30( 0.28) | 0.94 | 2721.2 | 930.00 |
| 3 | 17868.20 | 13.05 | 2.770 | 0.30( 0.28) | 0.95 | 3435.0 | 910.00 |
| 4 | 17913.23 | 13.27 | 2.737 | 0.30( 0.28) | 0.95 | 3488.5 | 800.00 |
| 5 | 19215.48 | 16.66 | 2.324 | 0.30( 0.29) | 0.96 | 4633.9 | 920.00 |
| 6 | 19237.09 | 16.72 | 2.319 | 0.30( 0.29) | 0.96 | 4653.0 | 818.00 |
| 7 | 19322.05 | 17.37 | 2.263 | 0.30( 0.29) | 0.96 | 4853.0 | 950.00 |
| 8 | 19380.14 | 17.85 | 2.221 | 0.30( 0.29) | 0.96 | 5000.8 | 810.00 |
| 9 | 19402.01 | 17.97 | 2.211 | 0.30( 0.29) | 0.96 | 5036.9 | 900.00 |
| 10 | 20282.22 | 22.54 | 1.902 | 0.30( 0.29) | 0.97 | 6421.2 | 600.00 |
| 11 | 23573.02 | 40.39 | 1.348 | 0.30( 0.29) | 0.98 | 12437.8 | 40100.00 |
| 12 | 25258.98 | 48.53 | 1.224 | 0.30( 0.29) | 0.98 | 15212.4 | 11801.00 |
| 13 | 27767.82 | 59.76 | 1.080 | 0.30( 0.30) | 0.99 | 19742.9 | 11530.00 |
| 14 | 29199.96 | 68.70 | 1.028 | 0.30( 0.30) | 0.99 | 24399.7 | 11910.00 |
| 15 | 31369.36 | 79.05 | 0.970 | 0.30( 0.30) | 0.99 | 30702.7 | 11350.00 |
| 16 | 32019.41 | 83.88 | 0.943 | 0.30( 0.30) | 0.99 | 33876.9 | 11130.00 |
| 17 | 31931.04 | 89.91 | 0.909 | 0.30( 0.30) | 0.99 | 36803.5 | 12300.00 |
| 18 | 31867.14 | 93.78 | 0.895 | 0.30( 0.30) | 0.99 | 38864.4 | 11620.00 |
| 19 | 31587.12 | 98.57 | 0.878 | 0.30( 0.30) | 0.99 | 41064.1 | 12400.00 |
| 20 | 31340.85 | 101.80 | 0.866 | 0.30( 0.30) | 0.99 | 42379.5 | 11111.00 |
| 21 | 30902.34 | 107.90 | 0.844 | 0.30( 0.30) | 0.99 | 44465.7 | 12201.00 |
| 22 | 30567.61 | 110.91 | 0.833 | 0.30( 0.30) | 0.99 | 45279.4 | 10410.00 |
| 23 | 30176.00 | 115.18 | 0.817 | 0.30( 0.30) | 0.99 | 46358.7 | 12231.00 |
| 24 | 29878.17 | 118.17 | 0.807 | 0.30( 0.30) | 0.99 | 47050.8 | 12101.10 |
| 25 | 29399.21 | 122.45 | 0.795 | 0.30( 0.30) | 0.99 | 47911.4 | 10400.00 |
| 26 | 29031.57 | 125.10 | 0.789 | 0.30( 0.30) | 0.99 | 48365.6 | 10200.00 |
| 27 | 28119.22 | 131.53 | 0.775 | 0.30( 0.30) | 0.99 | 49357.9 | 12010.00 |
| 28 | 27235.10 | 136.65 | 0.764 | 0.30( 0.30) | 0.99 | 49620.4 | 10210.00 |
| 29 | 26683.05 | 140.54 | 0.756 | 0.30( 0.30) | 0.99 | 49767.3 | 12000.00 |
| 30 | 23663.78 | 165.84 | 0.701 | 0.30( 0.30) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 32019.41 Tc(MIN.) = 83.880
EFFECTIVE AREA(ACRES) = 33876.92 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 83.88
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ | SCS SOIL | AREA | Fp | Ap | SCS |
|---|---|---|---|---|---|

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.60      0.30     1.000    72
  COMMERCIAL                 B        1.10      0.30     0.100    56
  PUBLIC PARK                B        0.80      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.666
  SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =    2.34
  EFFECTIVE AREA(ACRES) =  33880.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50383.7       PEAK FLOW RATE(CFS) =   32019.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   83.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.50      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.80      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    4.92
  EFFECTIVE AREA(ACRES) =  33888.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50392.2       PEAK FLOW RATE(CFS) =   32019.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   83.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
```



```
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.30      0.30     1.000    66
  PUBLIC PARK                B        3.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        3.90      0.30     1.000    72
  PUBLIC PARK                B        5.90      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.969
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =   27.31
  EFFECTIVE AREA(ACRES) =  33935.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50438.7       PEAK FLOW RATE(CFS) =   32019.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    50438.7  TC(MIN.) =     83.88
  EFFECTIVE AREA(ACRES) =  33935.42  AREA-AVERAGED Fm(INCH/HR)=  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.990
  PEAK FLOW RATE(CFS)   =   32019.41

  ** PEAK FLOW RATE TABLE **
   STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    16384.56   10.03    3.239  0.30( 0.28) 0.94    2719.7     940.00
      2    16555.00   10.26    3.203  0.30( 0.28) 0.94    2779.7     930.00
      3    17868.20   13.05    2.770  0.30( 0.28) 0.95    3493.5     910.00
      4    17913.23   13.27    2.737  0.30( 0.28) 0.95    3547.0     800.00
      5    19215.48   16.66    2.324  0.30( 0.29) 0.96    4692.4     920.00
      6    19237.09   16.72    2.319  0.30( 0.29) 0.96    4711.5     818.00
      7    19322.05   17.37    2.263  0.30( 0.29) 0.96    4911.5     950.00
      8    19380.14   17.85    2.221  0.30( 0.29) 0.96    5059.3     810.00
      9    19402.01   17.97    2.211  0.30( 0.29) 0.96    5095.4     900.00
     10    20282.22   22.54    1.902  0.30( 0.29) 0.97    6479.7     600.00
     11    23573.02   40.39    1.348  0.30( 0.29) 0.98   12496.3   40100.00
     12    25258.98   48.53    1.224  0.30( 0.29) 0.98   15270.9   11801.00
     13    27767.82   59.76    1.080  0.30( 0.30) 0.99   19801.4   11530.00
     14    29199.96   68.70    1.028  0.30( 0.30) 0.99   24458.2   11910.00
     15    31369.36   79.05    0.970  0.30( 0.30) 0.99   30761.2   11350.00
     16    32019.41   83.88    0.943  0.30( 0.30) 0.99   33935.4   11130.00
     17    31931.04   89.91    0.909  0.30( 0.30) 0.99   36862.0   12300.00
     18    31867.14   93.78    0.895  0.30( 0.30) 0.99   38922.9   11620.00
     19    31587.12   98.57    0.878  0.30( 0.30) 0.99   41122.6   12400.00
     20    31340.85  101.80    0.866  0.30( 0.30) 0.99   42438.0   11111.00
     21    30902.34  107.90    0.844  0.30( 0.30) 0.99   44524.2   12201.00
     22    30567.61  110.91    0.833  0.30( 0.30) 0.99   45337.9   10410.00
     23    30176.00  115.18    0.817  0.30( 0.30) 0.99   46417.2   12231.00
     24    29878.17  118.17    0.807  0.30( 0.30) 0.99   47109.3   12101.10
     25    29399.21  122.45    0.795  0.30( 0.30) 0.99   47969.9   10400.00
     26    29031.57  125.10    0.789  0.30( 0.30) 0.99   48424.1   10200.00
     27    28119.22  131.53    0.775  0.30( 0.30) 0.99   49416.4   12010.00
     28    27235.10  136.65    0.764  0.30( 0.30) 0.99   49678.9   10210.00
     29    26683.05  140.54    0.756  0.30( 0.30) 0.99   49825.8   12000.00
     30    23663.78  165.84    0.701  0.30( 0.30) 0.99   50438.7   10100.00
============================================================================
```

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV FEB 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI25EV27.DAT
  TIME/DATE OF STUDY: 10:09 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.933
   2)   10.00;  3.214
   3)   15.00;  2.451
   4)   20.00;  2.024
   5)   25.00;  1.763
   6)   30.00;  1.547
   7)   40.00;  1.347
   8)   50.00;  1.194
   9)   60.00;  1.070
  10)   90.00;  0.902
  11)  120.00;  0.792
  12)  180.00;  0.662
  13)  360.00;  0.490
  14) 1200.00;  0.216
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: ri25ev26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    17913.23   13.27  0.30( 0.28) 0.95    3547.0     800.00
      2    19402.01   17.97  0.30( 0.29) 0.96    5095.4     900.00
      3    20282.22   22.54  0.30( 0.29) 0.97    6479.7     600.00
      4    23573.02   40.39  0.30( 0.29) 0.98   12496.3   40100.00
      5    25258.98   48.53  0.30( 0.29) 0.98   15270.9   11801.00
      6    27767.82   59.76  0.30( 0.30) 0.99   19801.4   11530.00
      7    29199.96   68.70  0.30( 0.30) 0.99   24458.2   11910.00
      8    31369.36   79.05  0.30( 0.30) 0.99   30761.2   11350.00
      9    32019.41   83.88  0.30( 0.30) 0.99   33935.4   11130.00
     10    31931.04   89.91  0.30( 0.30) 0.99   36862.0   12300.00
     11    31867.14   93.78  0.30( 0.30) 0.99   38922.9   11620.00
     12    31587.12   98.57  0.30( 0.30) 0.99   41122.6   12400.00
     13    30902.34  107.90  0.30( 0.30) 0.99   44524.2   12201.00
     14    30567.61  110.91  0.30( 0.30) 0.99   45337.9   10410.00
     15    30176.00  115.18  0.30( 0.30) 0.99   46417.2   12231.00
     16    29399.21  122.45  0.30( 0.30) 0.99   47969.9   10400.00
     17    28119.22  131.53  0.30( 0.30) 0.99   49416.4   12010.00
     18    27235.10  136.65  0.30( 0.30) 0.99   49678.9   10210.00
     19    26683.05  140.54  0.30( 0.30) 0.99   49825.8   12000.00
     20    23663.78  165.84  0.30( 0.30) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =    50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    17913.23   13.27  0.30( 0.28) 0.95    3547.0     800.00
      2    19402.01   17.97  0.30( 0.29) 0.96    5095.4     900.00
      3    20282.22   22.54  0.30( 0.29) 0.97    6479.7     600.00
      4    23573.02   40.39  0.30( 0.29) 0.98   12496.3   40100.00
      5    25258.98   48.53  0.30( 0.29) 0.98   15270.9   11801.00
      6    27767.82   59.76  0.30( 0.30) 0.99   19801.4   11530.00
      7    29199.96   68.70  0.30( 0.30) 0.99   24458.2   11910.00
      8    31369.36   79.05  0.30( 0.30) 0.99   30761.2   11350.00
      9    32019.41   83.88  0.30( 0.30) 0.99   33935.4   11130.00
     10    31931.04   89.91  0.30( 0.30) 0.99   36862.0   12300.00
     11    31867.14   93.78  0.30( 0.30) 0.99   38922.9   11620.00
     12    31587.12   98.57  0.30( 0.30) 0.99   41122.6   12400.00
     13    30902.34  107.90  0.30( 0.30) 0.99   44524.2   12201.00
```

```
    14    30567.61  110.91  0.30( 0.30) 0.99   45337.9   10410.00
    15    30176.00  115.18  0.30( 0.30) 0.99   46417.2   12231.00
    16    29399.21  122.45  0.30( 0.30) 0.99   47969.9   10400.00
    17    28119.22  131.53  0.30( 0.30) 0.99   49416.4   12010.00
    18    27235.10  136.65  0.30( 0.30) 0.99   49678.9   10210.00
    19    26683.05  140.54  0.30( 0.30) 0.99   49825.8   12000.00
    20    23663.78  165.84  0.30( 0.30) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.929
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   32030.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.14
  AVERAGE FLOW DEPTH(FEET) =   8.23   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   85.18
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   21.80
  EFFECTIVE AREA(ACRES) =  33971.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =   32019.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.23   FLOW VELOCITY(FEET/SEC.) =  16.14
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17913.23   14.85    2.474  0.30( 0.28) 0.95    3583.1     800.00
      2    19402.01   19.51    2.066  0.30( 0.29) 0.96    5131.5     900.00
      3    20282.22   24.06    1.812  0.30( 0.29) 0.97    6515.8     600.00
```



```
      4    23573.02   41.83    1.319  0.30( 0.29) 0.98   12532.4   40100.00
      5    25258.98   49.94    1.195  0.30( 0.29) 0.98   15307.0   11801.00
      6    27767.82   61.12    1.064  0.30( 0.30) 0.99   19837.5   11530.00
      7    29199.96   70.04    1.014  0.30( 0.30) 0.99   24494.3   11910.00
      8    31369.36   80.37    0.956  0.30( 0.30) 0.99   30797.3   11350.00
      9    32019.41   85.18    0.929  0.30( 0.30) 0.99   33971.5   11130.00
     10    31931.04   91.22    0.898  0.30( 0.30) 0.99   36898.1   12300.00
     11    31867.14   95.09    0.883  0.30( 0.30) 0.99   38959.0   11620.00
     12    31587.12   99.88    0.866  0.30( 0.30) 0.99   41158.7   12400.00
     13    30902.34  109.22    0.832  0.30( 0.30) 0.99   44560.3   12201.00
     14    30567.61  112.23    0.820  0.30( 0.30) 0.99   45374.0   10410.00
     15    30176.00  116.51    0.805  0.30( 0.30) 0.99   46453.3   12231.00
     16    29399.21  123.79    0.784  0.30( 0.30) 0.99   48006.0   10400.00
     17    28119.22  132.89    0.764  0.30( 0.30) 0.99   49452.5   12010.00
     18    27235.10  138.03    0.753  0.30( 0.30) 0.99   49715.0   10210.00
     19    26683.05  141.92    0.745  0.30( 0.30) 0.99   49861.9   12000.00
     20    23663.78  167.28    0.690  0.30( 0.30) 0.99   50474.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   32019.41  Tc(MIN.) =   85.18
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   33971.52

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.61
  CHANNEL FLOW THRU SUBAREA(CFS) =   32019.41
  FLOW VELOCITY(FEET/SEC.) =  15.30   FLOW DEPTH(FEET) =   8.61
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =   85.34
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17913.23   15.05    2.447  0.30( 0.28) 0.95    3583.1     800.00
      2    19402.01   19.70    2.049  0.30( 0.29) 0.96    5131.5     900.00
      3    20282.22   24.24    1.802  0.30( 0.29) 0.97    6515.8     600.00
      4    23573.02   42.01    1.316  0.30( 0.29) 0.98   12532.4   40100.00
      5    25258.98   50.11    1.193  0.30( 0.29) 0.98   15307.0   11801.00
      6    27767.82   61.29    1.063  0.30( 0.30) 0.99   19837.5   11530.00
      7    29199.96   70.20    1.013  0.30( 0.30) 0.99   24494.3   11910.00
      8    31369.36   80.53    0.955  0.30( 0.30) 0.99   30797.3   11350.00
      9    32019.41   85.34    0.928  0.30( 0.30) 0.99   33971.5   11130.00
     10    31931.04   91.38    0.897  0.30( 0.30) 0.99   36898.1   12300.00
     11    31867.14   95.25    0.883  0.30( 0.30) 0.99   38959.0   11620.00
     12    31587.12  100.04    0.865  0.30( 0.30) 0.99   41158.7   12400.00
     13    30902.34  109.38    0.831  0.30( 0.30) 0.99   44560.3   12201.00
     14    30567.61  112.39    0.820  0.30( 0.30) 0.99   45374.0   10410.00
     15    30176.00  116.68    0.804  0.30( 0.30) 0.99   46453.3   12231.00
     16    29399.21  123.95    0.783  0.30( 0.30) 0.99   48006.0   10400.00
     17    28119.22  133.06    0.764  0.30( 0.30) 0.99   49452.5   12010.00
```

```
    18    27235.10  138.20    0.753  0.30( 0.30) 0.99   49715.0   10210.00
    19    26683.05  142.09    0.744  0.30( 0.30) 0.99   49861.9   12000.00
    20    23663.78  167.46    0.689  0.30( 0.30) 0.99   50474.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   32019.41  Tc(MIN.) =   85.34
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   33971.52

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   85.34
  RAINFALL INTENSITY(INCH/HR) =   0.93
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33971.52
  TOTAL STREAM AREA(ACRES) =   50474.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   32019.41

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.617
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.68
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     13.68

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.335
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.94      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.22
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   2.45
  Tc(MIN.) =   16.36
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   49.35
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      61.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   6.11
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.128
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.73      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.03
  AVERAGE FLOW DEPTH(FEET) =   0.89   TRAVEL TIME(MIN.) =   2.43
  Tc(MIN.) =   18.79
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   24.23
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      79.33
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   7.21
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.965
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B      105.64      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     158.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.20
  AVERAGE FLOW DEPTH(FEET) =   1.49   TRAVEL TIME(MIN.) =   2.34
  Tc(MIN.) =   21.12
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  158.34
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     230.62
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.83   FLOW VELOCITY(FEET/SEC.) =   9.20
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.838
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B      127.13      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     318.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.02
  AVERAGE FLOW DEPTH(FEET) =   2.39   TRAVEL TIME(MIN.) =   2.43
  Tc(MIN.) =   23.55
```



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  SUBAREA AREA(ACRES) =   127.13       SUBAREA RUNOFF(CFS) =  176.03
  EFFECTIVE AREA(ACRES) =    281.00     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      281.0         PEAK FLOW RATE(CFS) =     389.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.66   FLOW VELOCITY(FEET/SEC.) =   9.55
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12720.00 =    5198.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.55
  RAINFALL INTENSITY(INCH/HR) =   1.84
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     281.00
  TOTAL STREAM AREA(ACRES) =     281.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     389.08

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    17913.23   15.05    2.447  0.30( 0.28) 0.95    3583.1     800.00
      1    19402.01   19.70    2.049  0.30( 0.29) 0.96    5131.5     900.00
      1    20282.22   24.24    1.802  0.30( 0.29) 0.97    6515.8     600.00
      1    23573.02   42.01    1.316  0.30( 0.29) 0.98   12532.4   40100.00
      1    25258.98   50.11    1.193  0.30( 0.29) 0.98   15307.0   11801.00
      1    27767.82   61.29    1.063  0.30( 0.30) 0.99   19837.5   11530.00
      1    29199.96   70.20    1.013  0.30( 0.30) 0.99   24494.3   11910.00
      1    31369.36   80.53    0.955  0.30( 0.30) 0.99   30797.3   11350.00
      1    32019.41   85.34    0.928  0.30( 0.30) 0.99   33971.5   11130.00
      1    31931.04   91.38    0.897  0.30( 0.30) 0.99   36898.1   12300.00
      1    31867.14   95.25    0.883  0.30( 0.30) 0.99   38959.0   11620.00
      1    31587.12  100.04    0.865  0.30( 0.30) 0.99   41158.7   12400.00
      1    30902.34  109.38    0.831  0.30( 0.30) 0.99   44560.3   12201.00
      1    30567.61  112.39    0.820  0.30( 0.30) 0.99   45374.0   10410.00
      1    30176.00  116.68    0.804  0.30( 0.30) 0.99   46453.3   12231.00
      1    29399.21  123.95    0.783  0.30( 0.30) 0.99   48006.0   10400.00
      1    28119.22  133.06    0.764  0.30( 0.30) 0.99   49452.5   12010.00
      1    27235.10  138.20    0.753  0.30( 0.30) 0.99   49715.0   10210.00
      1    26683.05  142.09    0.744  0.30( 0.30) 0.99   49861.9   12000.00
      1    23663.78  167.46    0.689  0.30( 0.30) 0.99   50474.8   10100.00
      2      389.08   23.55    1.838  0.30( 0.30) 1.00     281.0   12710.00

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

  ** PEAK FLOW RATE TABLE **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18260.10 | 15.05 | 2.447 | 0.30( 0.29) | 0.95 | 3762.6 | 800.00 |
| 2 | 19772.09 | 19.70 | 2.049 | 0.30( 0.29) | 0.96 | 5366.6 | 900.00 |
| 3 | 20537.59 | 23.55 | 1.838 | 0.30( 0.29) | 0.97 | 6586.5 | 12710.00 |
| 4 | 20662.19 | 24.24 | 1.802 | 0.30( 0.29) | 0.97 | 6796.8 | 600.00 |
| 5 | 23830.03 | 42.01 | 1.316 | 0.30( 0.29) | 0.98 | 12813.4 | 40100.00 |
| 6 | 25484.72 | 50.11 | 1.193 | 0.30( 0.29) | 0.98 | 15588.0 | 11801.00 |
| 7 | 27960.72 | 61.29 | 1.063 | 0.30( 0.30) | 0.99 | 20118.5 | 11530.00 |
| 8 | 29380.24 | 70.20 | 1.013 | 0.30( 0.30) | 0.99 | 24775.3 | 11910.00 |
| 9 | 31535.02 | 80.53 | 0.955 | 0.30( 0.30) | 0.99 | 31078.3 | 11350.00 |
| 10 | 32178.25 | 85.34 | 0.928 | 0.30( 0.30) | 0.99 | 34252.5 | 11130.00 |
| 11 | 32082.00 | 91.38 | 0.897 | 0.30( 0.30) | 0.99 | 37179.1 | 12300.00 |
| 12 | 32014.52 | 95.25 | 0.883 | 0.30( 0.30) | 0.99 | 39240.0 | 11620.00 |
| 13 | 31730.05 | 100.04 | 0.865 | 0.30( 0.30) | 0.99 | 41439.7 | 12400.00 |
| 14 | 31036.61 | 109.38 | 0.831 | 0.30( 0.30) | 0.99 | 44841.3 | 12201.00 |
| 15 | 30699.09 | 112.39 | 0.820 | 0.30( 0.30) | 0.99 | 45655.0 | 10410.00 |
| 16 | 30303.51 | 116.68 | 0.804 | 0.30( 0.30) | 0.99 | 46734.3 | 12231.00 |
| 17 | 29521.47 | 123.95 | 0.783 | 0.30( 0.30) | 0.99 | 48287.0 | 10400.00 |
| 18 | 28236.50 | 133.06 | 0.764 | 0.30( 0.30) | 0.99 | 49733.5 | 12010.00 |
| 19 | 27349.55 | 138.20 | 0.753 | 0.30( 0.30) | 0.99 | 49996.0 | 10210.00 |
| 20 | 26795.37 | 142.09 | 0.744 | 0.30( 0.30) | 0.99 | 50142.9 | 12000.00 |
| 21 | 23762.20 | 167.46 | 0.689 | 0.30( 0.30) | 0.99 | 50755.8 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 32178.25 Tc(MIN.) = 85.34
EFFECTIVE AREA(ACRES) = 34252.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

**********
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.79
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.911
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 0.20 | 0.30 | 1.000 | 66 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.30 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.30 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |
| "MEADOWS" | B | 0.50 | 0.30 | 1.000 | 70 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30



SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.841
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32178.75
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.01
AVERAGE FLOW DEPTH(FEET) = 8.79 TRAVEL TIME(MIN.) = 2.96
Tc(MIN.) = 88.31
SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 1.01
EFFECTIVE AREA(ACRES) = 34254.22 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50757.5 PEAK FLOW RATE(CFS) = 32178.25
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.79 FLOW VELOCITY(FEET/SEC.) = 15.01
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18260.10 | 18.63 | 2.141 | 0.30( 0.29) | 0.95 | 3764.3 | 800.00 |
| 2 | 19772.09 | 23.19 | 1.857 | 0.30( 0.29) | 0.96 | 5368.3 | 900.00 |
| 3 | 20537.59 | 27.00 | 1.677 | 0.30( 0.29) | 0.97 | 6588.2 | 12710.00 |
| 4 | 20662.19 | 27.68 | 1.647 | 0.30( 0.29) | 0.97 | 6798.5 | 600.00 |
| 5 | 23830.03 | 45.29 | 1.266 | 0.30( 0.29) | 0.98 | 12815.1 | 40100.00 |
| 6 | 25484.72 | 53.32 | 1.153 | 0.30( 0.29) | 0.98 | 15589.7 | 11801.00 |
| 7 | 27960.72 | 64.40 | 1.045 | 0.30( 0.30) | 0.99 | 20120.2 | 11530.00 |
| 8 | 29380.24 | 73.26 | 0.996 | 0.30( 0.30) | 0.99 | 24777.0 | 11910.00 |
| 9 | 31535.02 | 83.51 | 0.938 | 0.30( 0.30) | 0.99 | 31080.0 | 11350.00 |
| 10 | 32178.25 | 88.31 | 0.911 | 0.30( 0.30) | 0.99 | 34254.2 | 11130.00 |
| 11 | 32082.00 | 94.34 | 0.886 | 0.30( 0.30) | 0.99 | 37180.8 | 12300.00 |
| 12 | 32014.52 | 98.21 | 0.872 | 0.30( 0.30) | 0.99 | 39241.7 | 11620.00 |
| 13 | 31730.05 | 103.02 | 0.854 | 0.30( 0.30) | 0.99 | 41441.4 | 12400.00 |
| 14 | 31036.61 | 112.38 | 0.820 | 0.30( 0.30) | 0.99 | 44843.0 | 12201.00 |
| 15 | 30699.09 | 115.40 | 0.809 | 0.30( 0.30) | 0.99 | 45656.7 | 10410.00 |
| 16 | 30303.51 | 119.70 | 0.793 | 0.30( 0.30) | 0.99 | 46736.0 | 12231.00 |
| 17 | 29521.47 | 127.00 | 0.777 | 0.30( 0.30) | 0.99 | 48288.7 | 10400.00 |
| 18 | 28236.50 | 136.15 | 0.757 | 0.30( 0.30) | 0.99 | 49735.2 | 12010.00 |
| 19 | 27349.55 | 141.33 | 0.746 | 0.30( 0.30) | 0.99 | 49997.7 | 10210.00 |
| 20 | 26795.37 | 145.24 | 0.737 | 0.30( 0.30) | 0.99 | 50144.6 | 12000.00 |
| 21 | 23762.20 | 170.74 | 0.682 | 0.30( 0.30) | 0.99 | 50757.5 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 32178.25 Tc(MIN.) = 88.31
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 34254.22

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 88.31
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.911
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| PUBLIC PARK | B | 0.50 | 0.30 | 0.850 | 56 |

```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  COMMERCIAL                 B        1.40      0.30     0.100    56
  COMMERCIAL                 B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =    9.56
  EFFECTIVE AREA(ACRES) =  34269.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =   32178.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.31
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.911
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   34.18
  EFFECTIVE AREA(ACRES) =  34332.02   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =   32178.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3C25EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     2069.21   12.77  0.30( 0.13) 0.42     862.7     410.00
      2     2079.16   14.13  0.30( 0.13) 0.42     939.6     420.00
      3     2133.99   18.15  0.30( 0.13) 0.42    1153.1     310.00
      4     2129.38   18.69  0.30( 0.13) 0.42    1175.6     400.00
      5     2062.03   21.16  0.30( 0.13) 0.42    1244.4     430.00
      6     2047.36   21.85  0.30( 0.13) 0.42    1263.1     300.00
      7     2043.43   22.04  0.30( 0.13) 0.42    1267.4     320.00
```



```
      8     1751.75   27.95  0.30( 0.13) 0.43    1292.3     390.00
    TOTAL AREA(ACRES) =     1292.3

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18260.10   18.63    2.141  0.30( 0.29) 0.95    3842.1     800.00
      2    19772.09   23.19    1.857  0.30( 0.29) 0.96    5446.1     900.00
      3    20537.59   27.00    1.677  0.30( 0.29) 0.97    6666.1   12710.00
      4    20662.19   27.68    1.647  0.30( 0.29) 0.97    6876.3     600.00
      5    23830.03   45.29    1.266  0.30( 0.29) 0.98   12892.9   40100.00
      6    25484.72   53.32    1.153  0.30( 0.29) 0.98   15667.5   11801.00
      7    27960.72   64.40    1.045  0.30( 0.30) 0.99   20198.0   11530.00
      8    29380.24   73.26    0.996  0.30( 0.30) 0.99   24854.8   11910.00
      9    31535.02   83.51    0.938  0.30( 0.30) 0.99   31157.8   11350.00
     10    32178.25   88.31    0.911  0.30( 0.30) 0.99   34332.0   11130.00
     11    32082.00   94.34    0.886  0.30( 0.30) 0.99   37258.6   12300.00
     12    32014.52   98.21    0.872  0.30( 0.30) 0.99   39319.5   11620.00
     13    31730.05  103.02    0.854  0.30( 0.30) 0.99   41519.2   12400.00
     14    31036.61  112.38    0.820  0.30( 0.30) 0.99   44920.8   12201.00
     15    30699.09  115.40    0.809  0.30( 0.30) 0.99   45734.5   10410.00
     16    30303.51  119.70    0.793  0.30( 0.30) 0.99   46813.8   12231.00
     17    29521.47  127.00    0.777  0.30( 0.30) 0.99   48366.5   10400.00
     18    28236.50  136.15    0.757  0.30( 0.30) 0.99   49813.0   12010.00
     19    27349.55  141.33    0.746  0.30( 0.30) 0.99   50075.5   10210.00
     20    26795.37  145.24    0.737  0.30( 0.30) 0.99   50222.4   12000.00
     21    23762.20  170.74    0.682  0.30( 0.30) 0.99   50835.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2069.21   12.77    2.791  0.30( 0.13) 0.42     862.7     410.00
      2     2079.16   14.13    2.584  0.30( 0.13) 0.42     939.6     420.00
      3     2133.99   18.15    2.182  0.30( 0.13) 0.42    1153.1     310.00
      4     2129.38   18.69    2.135  0.30( 0.13) 0.42    1175.6     400.00
      5     2062.03   21.16    1.963  0.30( 0.13) 0.42    1244.4     430.00
      6     2047.36   21.85    1.927  0.30( 0.13) 0.42    1263.1     300.00
      7     2043.43   22.04    1.918  0.30( 0.13) 0.42    1267.4     320.00
      8     1751.75   27.95    1.635  0.30( 0.13) 0.43    1292.3     390.00
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE  12720.50 =   13248.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18972.33   12.77    2.791  0.30( 0.25) 0.82    3496.6     410.00
      2    19232.21   14.13    2.584  0.30( 0.25) 0.82    3852.3     420.00
      3    20316.65   18.15    2.182  0.30( 0.25) 0.83    4896.1     310.00
      4    20390.01   18.63    2.141  0.30( 0.25) 0.83    5015.1     800.00
      5    20410.07   18.69    2.135  0.30( 0.25) 0.83    5039.5     400.00
      6    21161.48   21.16    1.963  0.30( 0.25) 0.85    5976.9     430.00
      7    21375.19   21.85    1.927  0.30( 0.26) 0.85    6237.9     300.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | 21431.72 | 22.04 | 1.918 | 0.30( 0.26) | 0.85 | 6306.3 | 320.00 |
| 9 | 21758.46 | 23.19 | 1.857 | 0.30( 0.26) | 0.86 | 6718.4 | 900.00 |
| 10 | 22336.38 | 27.00 | 1.677 | 0.30( 0.26) | 0.88 | 7954.3 | 12710.00 |
| 11 | 22427.36 | 27.68 | 1.647 | 0.30( 0.27) | 0.88 | 8167.5 | 600.00 |
| 12 | 22462.91 | 27.95 | 1.635 | 0.30( 0.27) | 0.89 | 8261.6 | 390.00 |
| 13 | 25152.19 | 45.29 | 1.266 | 0.30( 0.28) | 0.93 | 14185.2 | 40100.00 |
| 14 | 26675.19 | 53.32 | 1.153 | 0.30( 0.28) | 0.94 | 16959.8 | 11801.00 |
| 15 | 29026.14 | 64.40 | 1.045 | 0.30( 0.29) | 0.95 | 21490.3 | 11530.00 |
| 16 | 30387.94 | 73.26 | 0.996 | 0.30( 0.29) | 0.96 | 26147.1 | 11910.00 |
| 17 | 32475.95 | 83.51 | 0.938 | 0.30( 0.29) | 0.97 | 32450.1 | 11350.00 |
| 18 | 33087.95 | 88.31 | 0.911 | 0.30( 0.29) | 0.97 | 35624.3 | 11130.00 |
| 19 | 32962.14 | 94.34 | 0.886 | 0.30( 0.29) | 0.97 | 38550.9 | 12300.00 |
| 20 | 32878.15 | 98.21 | 0.872 | 0.30( 0.29) | 0.97 | 40611.8 | 11620.00 |
| 21 | 32573.19 | 103.02 | 0.854 | 0.30( 0.29) | 0.97 | 42811.5 | 12400.00 |
| 22 | 31839.85 | 112.38 | 0.820 | 0.30( 0.29) | 0.97 | 46213.1 | 12201.00 |
| 23 | 31489.43 | 115.40 | 0.809 | 0.30( 0.29) | 0.97 | 47026.8 | 10410.00 |
| 24 | 31075.52 | 119.70 | 0.793 | 0.30( 0.29) | 0.97 | 48106.1 | 12231.00 |
| 25 | 30274.55 | 127.00 | 0.777 | 0.30( 0.29) | 0.97 | 49658.8 | 10400.00 |
| 26 | 28966.53 | 136.15 | 0.757 | 0.30( 0.29) | 0.97 | 51105.3 | 12010.00 |
| 27 | 28066.54 | 141.33 | 0.746 | 0.30( 0.29) | 0.98 | 51367.8 | 10210.00 |
| 28 | 27502.50 | 145.24 | 0.737 | 0.30( 0.29) | 0.98 | 51514.7 | 12000.00 |
| 29 | 24405.08 | 170.74 | 0.682 | 0.30( 0.29) | 0.98 | 52127.6 | 10100.00 |

TOTAL AREA(ACRES) = 52127.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33087.95 Tc(MIN.) = 88.305
EFFECTIVE AREA(ACRES) = 35624.32 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88
TOTAL AREA(ACRES) = 52127.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.80
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.901
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| PUBLIC PARK | B | 0.10 | 0.30 | 0.850 | 56 |
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 0.10 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 0.20 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |



| | | | | | |
|---|---|---|---|---|---|
| "GRASS" | B | 0.30 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 0.30 | 0.30 | 1.000 | 66 |
| COMMERCIAL | B | 0.40 | 0.30 | 0.100 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33088.38
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.83
AVERAGE FLOW DEPTH(FEET) = 11.80 TRAVEL TIME(MIN.) = 1.95
Tc(MIN.) = 90.26
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 0.86
EFFECTIVE AREA(ACRES) = 35625.72 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52129.0 PEAK FLOW RATE(CFS) = 33087.95
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.80 FLOW VELOCITY(FEET/SEC.) = 10.83
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18972.33 | 15.11 | 2.442 | 0.30( 0.25) | 0.82 | 3498.0 | 410.00 |
| 2 | 19232.21 | 16.45 | 2.327 | 0.30( 0.25) | 0.82 | 3853.7 | 420.00 |
| 3 | 20316.65 | 20.44 | 2.001 | 0.30( 0.25) | 0.83 | 4897.5 | 310.00 |
| 4 | 20390.01 | 20.92 | 1.976 | 0.30( 0.25) | 0.83 | 5016.5 | 800.00 |
| 5 | 20410.07 | 20.98 | 1.973 | 0.30( 0.25) | 0.83 | 5040.9 | 400.00 |
| 6 | 21161.48 | 23.42 | 1.846 | 0.30( 0.25) | 0.85 | 5978.3 | 430.00 |
| 7 | 21375.19 | 24.10 | 1.810 | 0.30( 0.26) | 0.85 | 6239.3 | 300.00 |
| 8 | 21431.72 | 24.28 | 1.801 | 0.30( 0.26) | 0.85 | 6307.7 | 320.00 |
| 9 | 21758.46 | 25.43 | 1.745 | 0.30( 0.26) | 0.86 | 6719.8 | 900.00 |
| 10 | 22336.38 | 29.21 | 1.581 | 0.30( 0.26) | 0.88 | 7955.7 | 12710.00 |
| 11 | 22427.36 | 29.89 | 1.552 | 0.30( 0.27) | 0.88 | 8168.9 | 600.00 |
| 12 | 22462.91 | 30.16 | 1.544 | 0.30( 0.27) | 0.89 | 8263.0 | 390.00 |
| 13 | 25152.19 | 47.42 | 1.234 | 0.30( 0.28) | 0.93 | 14186.6 | 40100.00 |
| 14 | 26675.19 | 55.41 | 1.127 | 0.30( 0.28) | 0.94 | 16961.2 | 11801.00 |
| 15 | 29026.14 | 66.43 | 1.034 | 0.30( 0.29) | 0.95 | 21491.7 | 11530.00 |
| 16 | 30387.94 | 75.26 | 0.985 | 0.30( 0.29) | 0.96 | 26148.5 | 11910.00 |
| 17 | 32475.95 | 85.47 | 0.927 | 0.30( 0.29) | 0.97 | 32451.5 | 11350.00 |
| 18 | 33087.95 | 90.26 | 0.901 | 0.30( 0.29) | 0.97 | 35625.7 | 11130.00 |
| 19 | 32962.14 | 96.30 | 0.879 | 0.30( 0.29) | 0.97 | 38552.3 | 12300.00 |
| 20 | 32878.15 | 100.17 | 0.865 | 0.30( 0.29) | 0.97 | 40613.2 | 11620.00 |
| 21 | 32573.19 | 104.98 | 0.847 | 0.30( 0.29) | 0.97 | 42812.9 | 12400.00 |
| 22 | 31839.85 | 114.35 | 0.813 | 0.30( 0.29) | 0.97 | 46214.5 | 12201.00 |
| 23 | 31489.43 | 117.38 | 0.802 | 0.30( 0.29) | 0.97 | 47028.2 | 10410.00 |
| 24 | 31075.52 | 121.69 | 0.788 | 0.30( 0.29) | 0.97 | 48107.5 | 12231.00 |
| 25 | 30274.55 | 129.01 | 0.772 | 0.30( 0.29) | 0.97 | 49660.2 | 10400.00 |
| 26 | 28966.53 | 138.19 | 0.753 | 0.30( 0.29) | 0.97 | 51106.7 | 12010.00 |
| 27 | 28066.54 | 143.38 | 0.741 | 0.30( 0.29) | 0.98 | 51369.2 | 10210.00 |
| 28 | 27502.50 | 147.31 | 0.733 | 0.30( 0.29) | 0.98 | 51516.1 | 12000.00 |
| 29 | 24405.08 | 172.89 | 0.677 | 0.30( 0.29) | 0.98 | 52129.0 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 33087.95 Tc(MIN.) = 90.26
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

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  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   35625.72

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        0.60      0.30     1.000    86
  COMMERCIAL                B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    2.54
  EFFECTIVE AREA(ACRES) =  35629.92   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52133.2       PEAK FLOW RATE(CFS) =   33087.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                 B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   10.93
  EFFECTIVE AREA(ACRES) =  35650.12   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52153.4       PEAK FLOW RATE(CFS) =   33087.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
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----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.898
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        0.10      0.30     1.000    81
  PUBLIC PARK               B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                   B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.20      0.30     1.000    65
  COMMERCIAL                B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   33089.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.63
  AVERAGE FLOW DEPTH(FEET) =   9.76   TRAVEL TIME(MIN.) =   0.76
  Tc(MIN.) =   91.02
  SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    2.86
  EFFECTIVE AREA(ACRES) =  35654.72     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52158.0         PEAK FLOW RATE(CFS) =   33087.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.76   FLOW VELOCITY(FEET/SEC.) =  13.62
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    18972.33   16.03    2.363  0.30( 0.25) 0.82    3527.0     410.00
      2    19232.21   17.37    2.249  0.30( 0.25) 0.82    3882.7     420.00
      3    20316.65   21.33    1.954  0.30( 0.25) 0.83    4926.5     310.00
      4    20390.01   21.81    1.929  0.30( 0.25) 0.83    5045.5     800.00
      5    20410.07   21.87    1.926  0.30( 0.25) 0.83    5069.9     400.00
      6    21161.48   24.30    1.799  0.30( 0.25) 0.85    6007.3     430.00
      7    21375.19   24.98    1.764  0.30( 0.26) 0.85    6268.3     300.00
      8    21431.72   25.16    1.756  0.30( 0.26) 0.85    6336.7     320.00
      9    21758.46   26.30    1.707  0.30( 0.26) 0.86    6748.8     900.00
     10    22336.38   30.08    1.545  0.30( 0.26) 0.88    7984.7   12710.00
     11    22427.36   30.76    1.532  0.30( 0.27) 0.88    8197.9     600.00
     12    22462.91   31.03    1.526  0.30( 0.27) 0.89    8292.0     390.00
     13    25152.19   48.25    1.221  0.30( 0.28) 0.93   14215.6   40100.00
```

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    14    26675.19   56.23    1.117  0.30( 0.28) 0.94   16990.2   11801.00
    15    29026.14   67.23    1.030  0.30( 0.29) 0.95   21520.7   11530.00
    16    30387.94   76.05    0.980  0.30( 0.29) 0.96   26177.5   11910.00
    17    32475.95   86.24    0.923  0.30( 0.29) 0.97   32480.5   11350.00
    18    33087.95   91.02    0.898  0.30( 0.29) 0.97   35654.7   11130.00
    19    32962.14   97.06    0.876  0.30( 0.29) 0.97   38581.3   12300.00
    20    32878.15  100.94    0.862  0.30( 0.29) 0.97   40642.2   11620.00
    21    32573.19  105.75    0.844  0.30( 0.29) 0.97   42841.9   12400.00
    22    31839.85  115.13    0.810  0.30( 0.29) 0.97   46243.5   12201.00
    23    31489.43  118.16    0.799  0.30( 0.29) 0.97   47057.2   10410.00
    24    31075.52  122.47    0.787  0.30( 0.29) 0.97   48136.5   12231.00
    25    30274.55  129.80    0.771  0.30( 0.29) 0.97   49689.2   10400.00
    26    28966.53  138.98    0.751  0.30( 0.29) 0.97   51135.7   12010.00
    27    28066.54  144.19    0.740  0.30( 0.29) 0.98   51398.2   10210.00
    28    27502.50  148.12    0.731  0.30( 0.29) 0.98   51545.1   12000.00
    29    24405.08  173.73    0.676  0.30( 0.29) 0.98   52158.0   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   33087.95  Tc(MIN.) =   91.02
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   35654.72

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.898
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   14.61
  EFFECTIVE AREA(ACRES) =  35680.72   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52184.0       PEAK FLOW RATE(CFS) =   33087.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.898
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   21.00
  EFFECTIVE AREA(ACRES) =  35719.72   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52223.0       PEAK FLOW RATE(CFS) =   33087.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   91.02
  RAINFALL INTENSITY(INCH/HR) =   0.90
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =   35719.72
  TOTAL STREAM AREA(ACRES) =   52222.99
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   33087.95

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.631
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.28
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     13.28

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

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  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.257
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.70
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   3.45
  Tc(MIN.) =   17.27
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   60.97
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      72.12
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   5.53
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.007
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.52      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.32
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =   20.32
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =   91.45
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     154.37
```



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  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.68   FLOW VELOCITY(FEET/SEC.) =   6.86
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.786
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       64.05      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.52
  AVERAGE FLOW DEPTH(FEET) =   2.12   TRAVEL TIME(MIN.) =   4.23
  Tc(MIN.) =   24.55
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   85.69
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     220.10
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.25   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.615
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

NATURAL FAIR COVER
"OPEN BRUSH" B 26.02 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 235.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.08
AVERAGE FLOW DEPTH(FEET) = 2.06 TRAVEL TIME(MIN.) = 3.88
Tc(MIN.) = 28.43
SUBAREA AREA(ACRES) = 26.02 SUBAREA RUNOFF(CFS) = 30.79
EFFECTIVE AREA(ACRES) = 190.54 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 190.5 PEAK FLOW RATE(CFS) = 225.48
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.02 FLOW VELOCITY(FEET/SEC.) = 7.97
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

**********
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 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.) = 28.43
RAINFALL INTENSITY(INCH/HR) = 1.61
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 190.54
TOTAL STREAM AREA(ACRES) = 190.54
PEAK FLOW RATE(CFS) AT CONFLUENCE = 225.48

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18972.33 | 16.03 | 2.363 | 0.30( 0.25) | 0.82 | 3592.0 | 410.00 |
| 1 | 19232.21 | 17.37 | 2.249 | 0.30( 0.25) | 0.82 | 3947.7 | 420.00 |
| 1 | 20316.65 | 21.33 | 1.954 | 0.30( 0.25) | 0.83 | 4991.5 | 310.00 |
| 1 | 20390.01 | 21.81 | 1.929 | 0.30( 0.25) | 0.83 | 5110.5 | 800.00 |
| 1 | 20410.07 | 21.87 | 1.926 | 0.30( 0.25) | 0.83 | 5134.9 | 400.00 |
| 1 | 21161.48 | 24.30 | 1.799 | 0.30( 0.25) | 0.85 | 6072.3 | 430.00 |
| 1 | 21375.19 | 24.98 | 1.764 | 0.30( 0.26) | 0.85 | 6333.3 | 300.00 |
| 1 | 21431.72 | 25.16 | 1.756 | 0.30( 0.26) | 0.85 | 6401.7 | 320.00 |
| 1 | 21758.46 | 26.30 | 1.707 | 0.30( 0.26) | 0.86 | 6813.8 | 900.00 |
| 1 | 22336.38 | 30.08 | 1.545 | 0.30( 0.26) | 0.88 | 8049.7 | 12710.00 |
| 1 | 22427.36 | 30.76 | 1.532 | 0.30( 0.27) | 0.89 | 8262.9 | 600.00 |
| 1 | 22462.91 | 31.03 | 1.526 | 0.30( 0.27) | 0.89 | 8357.0 | 390.00 |
| 1 | 25152.19 | 48.25 | 1.221 | 0.30( 0.28) | 0.93 | 14280.6 | 40100.00 |
| 1 | 26675.19 | 56.23 | 1.117 | 0.30( 0.28) | 0.94 | 17055.2 | 11801.00 |
| 1 | 29026.14 | 67.23 | 1.030 | 0.30( 0.29) | 0.95 | 21585.7 | 11530.00 |
| 1 | 30387.94 | 76.05 | 0.980 | 0.30( 0.29) | 0.96 | 26242.5 | 11910.00 |
| 1 | 32475.95 | 86.24 | 0.923 | 0.30( 0.29) | 0.97 | 32545.5 | 11350.00 |
| 1 | 33087.95 | 91.02 | 0.898 | 0.30( 0.29) | 0.97 | 35719.7 | 11130.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 32962.14 | 97.06 | 0.876 | 0.30( 0.29) | 0.97 | 38646.3 | 12300.00 |
| 1 | 32878.15 | 100.94 | 0.862 | 0.30( 0.29) | 0.97 | 40707.2 | 11620.00 |
| 1 | 32573.19 | 105.75 | 0.844 | 0.30( 0.29) | 0.97 | 42906.9 | 12400.00 |
| 1 | 31839.85 | 115.13 | 0.810 | 0.30( 0.29) | 0.97 | 46308.5 | 12201.00 |
| 1 | 31489.43 | 118.16 | 0.799 | 0.30( 0.29) | 0.97 | 47122.2 | 10410.00 |
| 1 | 31075.52 | 122.47 | 0.787 | 0.30( 0.29) | 0.97 | 48201.5 | 12231.00 |
| 1 | 30274.55 | 129.80 | 0.771 | 0.30( 0.29) | 0.97 | 49754.2 | 10400.00 |
| 1 | 28966.53 | 138.98 | 0.751 | 0.30( 0.29) | 0.97 | 51200.7 | 12010.00 |
| 1 | 28066.54 | 144.19 | 0.740 | 0.30( 0.29) | 0.98 | 51463.2 | 10210.00 |
| 1 | 27502.50 | 148.12 | 0.731 | 0.30( 0.29) | 0.98 | 51610.1 | 12000.00 |
| 1 | 24405.08 | 173.73 | 0.676 | 0.30( 0.29) | 0.98 | 52223.0 | 10100.00 |
| 2 | 225.48 | 28.43 | 1.615 | 0.30( 0.30) | 1.00 | 190.5 | 12730.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 19171.80 | 16.03 | 2.363 | 0.30( 0.25) | 0.83 | 3699.5 | 410.00 |
| 2 | 19436.37 | 17.37 | 2.249 | 0.30( 0.25) | 0.83 | 4064.1 | 420.00 |
| 3 | 20529.55 | 21.33 | 1.954 | 0.30( 0.25) | 0.83 | 5134.5 | 310.00 |
| 4 | 20604.38 | 21.81 | 1.929 | 0.30( 0.25) | 0.83 | 5256.6 | 800.00 |
| 5 | 20624.63 | 21.87 | 1.926 | 0.30( 0.25) | 0.83 | 5281.5 | 400.00 |
| 6 | 21381.28 | 24.30 | 1.799 | 0.30( 0.26) | 0.85 | 6235.2 | 430.00 |
| 7 | 21595.79 | 24.98 | 1.764 | 0.30( 0.26) | 0.86 | 6500.7 | 300.00 |
| 8 | 21652.70 | 25.16 | 1.756 | 0.30( 0.26) | 0.86 | 6570.4 | 320.00 |
| 9 | 21981.64 | 26.30 | 1.707 | 0.30( 0.26) | 0.87 | 6990.0 | 900.00 |
| 10 | 22309.11 | 28.43 | 1.615 | 0.30( 0.26) | 0.88 | 7699.7 | 12730.00 |
| 11 | 22549.95 | 30.08 | 1.545 | 0.30( 0.27) | 0.88 | 8240.3 | 12710.00 |
| 12 | 22638.59 | 30.76 | 1.532 | 0.30( 0.27) | 0.89 | 8453.4 | 600.00 |
| 13 | 22673.21 | 31.03 | 1.526 | 0.30( 0.27) | 0.89 | 8547.6 | 390.00 |
| 14 | 25310.09 | 48.25 | 1.221 | 0.30( 0.28) | 0.93 | 14471.2 | 40100.00 |
| 15 | 26815.26 | 56.23 | 1.117 | 0.30( 0.28) | 0.94 | 17245.7 | 11801.00 |
| 16 | 29151.24 | 67.23 | 1.030 | 0.30( 0.29) | 0.95 | 21776.3 | 11530.00 |
| 17 | 30504.57 | 76.05 | 0.980 | 0.30( 0.29) | 0.96 | 26433.1 | 11910.00 |
| 18 | 32582.80 | 86.24 | 0.923 | 0.30( 0.29) | 0.97 | 32736.0 | 11350.00 |
| 19 | 33190.55 | 91.02 | 0.898 | 0.30( 0.29) | 0.97 | 35910.3 | 11130.00 |
| 20 | 33060.94 | 97.06 | 0.876 | 0.30( 0.29) | 0.97 | 38836.8 | 12300.00 |
| 21 | 32974.51 | 100.94 | 0.862 | 0.30( 0.29) | 0.97 | 40897.7 | 11620.00 |
| 22 | 32666.53 | 105.75 | 0.844 | 0.30( 0.29) | 0.97 | 43097.4 | 12400.00 |
| 23 | 31927.28 | 115.13 | 0.810 | 0.30( 0.29) | 0.97 | 46499.0 | 12201.00 |
| 24 | 31574.96 | 118.16 | 0.799 | 0.30( 0.29) | 0.97 | 47312.7 | 10410.00 |
| 25 | 31158.97 | 122.47 | 0.787 | 0.30( 0.29) | 0.97 | 48392.0 | 12231.00 |
| 26 | 30355.28 | 129.80 | 0.771 | 0.30( 0.29) | 0.97 | 49944.8 | 10400.00 |
| 27 | 29043.84 | 138.98 | 0.751 | 0.30( 0.29) | 0.98 | 51391.2 | 12010.00 |
| 28 | 28141.92 | 144.19 | 0.740 | 0.30( 0.29) | 0.98 | 51653.8 | 10210.00 |
| 29 | 27576.42 | 148.12 | 0.731 | 0.30( 0.29) | 0.98 | 51800.6 | 12000.00 |
| 30 | 24469.48 | 173.73 | 0.676 | 0.30( 0.29) | 0.98 | 52413.5 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33190.55 Tc(MIN.) = 91.02
EFFECTIVE AREA(ACRES) = 35910.26 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52413.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.96 FEET.

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 FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    252.10  DOWNSTREAM(FEET) =    240.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0099
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.88
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.894
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.30      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
 COMMERCIAL                 B        0.40      0.30     0.100    56
 COMMERCIAL                 B        0.60      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.50      0.30     1.000    66
 PUBLIC PARK                B        3.20      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.784
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   33192.45
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.58
 AVERAGE FLOW DEPTH(FEET) =   7.88   TRAVEL TIME(MIN.) =   1.16
 Tc(MIN.) =   92.18
 SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    3.79
 EFFECTIVE AREA(ACRES) =  35916.66     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
 TOTAL AREA(ACRES) =    52419.9         PEAK FLOW RATE(CFS) =   33190.55
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.88

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.88   FLOW VELOCITY(FEET/SEC.) =  17.58
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19171.80   17.42    2.244  0.30( 0.25) 0.83    3705.9     410.00
     2    19436.37   18.75    2.130  0.30( 0.25) 0.83    4070.5     420.00
     3    20529.55   22.70    1.883  0.30( 0.25) 0.83    5140.9     310.00
     4    20604.38   23.17    1.859  0.30( 0.25) 0.83    5263.0     800.00
     5    20624.63   23.23    1.855  0.30( 0.25) 0.83    5287.9     400.00
     6    21381.28   25.65    1.735  0.30( 0.26) 0.85    6241.6     430.00
     7    21595.79   26.32    1.706  0.30( 0.26) 0.86    6507.1     300.00
     8    21652.70   26.50    1.698  0.30( 0.26) 0.86    6576.8     320.00
     9    21981.64   27.63    1.649  0.30( 0.26) 0.87    6996.4     900.00
    10    22309.11   29.75    1.558  0.30( 0.26) 0.88    7706.1   12730.00
    11    22549.95   31.40    1.519  0.30( 0.27) 0.88    8246.7   12710.00
    12    22638.59   32.08    1.505  0.30( 0.27) 0.89    8459.8     600.00
    13    22673.21   32.35    1.500  0.30( 0.27) 0.89    8554.0     390.00
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    14    25310.09   49.52    1.201  0.30( 0.28) 0.93   14477.6   40100.00
    15    26815.26   57.47    1.101  0.30( 0.28) 0.94   17252.1   11801.00
    16    29151.24   68.44    1.023  0.30( 0.29) 0.95   21782.7   11530.00
    17    30504.57   77.24    0.973  0.30( 0.29) 0.96   26439.5   11910.00
    18    32582.80   87.41    0.917  0.30( 0.29) 0.97   32742.4   11350.00
    19    33190.55   92.18    0.894  0.30( 0.29) 0.97   35916.7   11130.00
    20    33060.94   98.22    0.872  0.30( 0.29) 0.97   38843.2   12300.00
    21    32974.51  102.09    0.858  0.30( 0.29) 0.97   40904.1   11620.00
    22    32666.53  106.91    0.840  0.30( 0.29) 0.97   43103.8   12400.00
    23    31927.28  116.30    0.806  0.30( 0.29) 0.97   46505.4   12201.00
    24    31574.96  119.34    0.794  0.30( 0.29) 0.97   47319.1   10410.00
    25    31158.97  123.65    0.784  0.30( 0.29) 0.97   48398.4   12231.00
    26    30355.28  130.99    0.768  0.30( 0.29) 0.97   49951.2   10400.00
    27    29043.84  140.19    0.748  0.30( 0.29) 0.97   51397.6   12010.00
    28    28141.92  145.41    0.737  0.30( 0.29) 0.98   51660.2   10210.00
    29    27576.42  149.35    0.728  0.30( 0.29) 0.98   51807.0   12000.00
    30    24469.48  175.01    0.673  0.30( 0.29) 0.98   52419.9   10100.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =   33190.55  Tc(MIN.) =   92.18
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   35916.66

****************************************************************************
 FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   92.18
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.894
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                    B        3.90      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        8.70      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B       10.30      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   22.90      SUBAREA RUNOFF(CFS) =   12.24
 EFFECTIVE AREA(ACRES) =  35939.56   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
 TOTAL AREA(ACRES) =    52442.8       PEAK FLOW RATE(CFS) =   33190.55
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =    52442.8  TC(MIN.) =     92.18
 EFFECTIVE AREA(ACRES) =  35939.56  AREA-AVERAGED Fm(INCH/HR)=  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.969
 PEAK FLOW RATE(CFS)   =   33190.55

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19171.80   17.42    2.244  0.30( 0.25) 0.83    3728.8     410.00
     2    19436.37   18.75    2.130  0.30( 0.25) 0.83    4093.4     420.00
     3    20529.55   22.70    1.883  0.30( 0.25) 0.83    5163.8     310.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 | 20604.38 | 23.17 | 1.859 | 0.30( 0.25) | 0.83 | 5285.9 | 800.00 |
| 5 | 20624.63 | 23.23 | 1.855 | 0.30( 0.25) | 0.83 | 5310.8 | 400.00 |
| 6 | 21381.28 | 25.65 | 1.735 | 0.30( 0.26) | 0.85 | 6264.5 | 430.00 |
| 7 | 21595.79 | 26.32 | 1.706 | 0.30( 0.26) | 0.86 | 6530.0 | 300.00 |
| 8 | 21652.70 | 26.50 | 1.698 | 0.30( 0.26) | 0.86 | 6599.7 | 320.00 |
| 9 | 21981.64 | 27.63 | 1.649 | 0.30( 0.26) | 0.87 | 7019.3 | 900.00 |
| 10 | 22309.11 | 29.75 | 1.558 | 0.30( 0.26) | 0.88 | 7729.0 | 12730.00 |
| 11 | 22549.95 | 31.40 | 1.519 | 0.30( 0.27) | 0.89 | 8269.6 | 12710.00 |
| 12 | 22638.59 | 32.08 | 1.505 | 0.30( 0.27) | 0.89 | 8482.7 | 600.00 |
| 13 | 22673.21 | 32.35 | 1.500 | 0.30( 0.27) | 0.89 | 8576.9 | 390.00 |
| 14 | 25310.09 | 49.52 | 1.201 | 0.30( 0.28) | 0.93 | 14500.5 | 40100.00 |
| 15 | 26815.26 | 57.47 | 1.101 | 0.30( 0.28) | 0.94 | 17275.0 | 11801.00 |
| 16 | 29151.24 | 68.44 | 1.023 | 0.30( 0.29) | 0.95 | 21805.6 | 11530.00 |
| 17 | 30504.57 | 77.24 | 0.973 | 0.30( 0.29) | 0.96 | 26462.4 | 11910.00 |
| 18 | 32582.80 | 87.41 | 0.917 | 0.30( 0.29) | 0.97 | 32765.3 | 11350.00 |
| 19 | 33190.55 | 92.18 | 0.894 | 0.30( 0.29) | 0.97 | 35939.6 | 11130.00 |
| 20 | 33060.94 | 98.22 | 0.872 | 0.30( 0.29) | 0.97 | 38866.1 | 12300.00 |
| 21 | 32974.51 | 102.09 | 0.858 | 0.30( 0.29) | 0.97 | 40927.0 | 11620.00 |
| 22 | 32666.53 | 106.91 | 0.840 | 0.30( 0.29) | 0.97 | 43126.7 | 12400.00 |
| 23 | 31927.28 | 116.30 | 0.806 | 0.30( 0.29) | 0.97 | 46528.3 | 12201.00 |
| 24 | 31574.96 | 119.34 | 0.794 | 0.30( 0.29) | 0.97 | 47342.0 | 10410.00 |
| 25 | 31158.97 | 123.65 | 0.784 | 0.30( 0.29) | 0.97 | 48421.3 | 12231.00 |
| 26 | 30355.28 | 130.99 | 0.768 | 0.30( 0.29) | 0.97 | 49974.1 | 10400.00 |
| 27 | 29043.84 | 140.19 | 0.748 | 0.30( 0.29) | 0.97 | 51420.5 | 12010.00 |
| 28 | 28141.92 | 145.41 | 0.737 | 0.30( 0.29) | 0.98 | 51683.1 | 10210.00 |
| 29 | 27576.42 | 149.35 | 0.728 | 0.30( 0.29) | 0.98 | 51829.9 | 12000.00 |
| 30 | 24469.48 | 175.01 | 0.673 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI25EV28.DAT
  TIME/DATE OF STUDY: 10:09 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.933
   2)   10.00;  3.214
   3)   15.00;  2.451
   4)   20.00;  2.024
   5)   25.00;  1.763
   6)   30.00;  1.547
   7)   40.00;  1.347
   8)   50.00;  1.194
   9)   60.00;  1.070
  10)   90.00;  0.902
  11)  120.00;  0.792
  12)  180.00;  0.662
  13)  360.00;  0.490
  14) 1200.00;  0.216
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV27.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    19436.37   18.75  0.30( 0.25) 0.83    4093.4     420.00
      2    20624.63   23.23  0.30( 0.25) 0.83    5310.8     400.00
      3    22673.21   32.35  0.30( 0.27) 0.89    8576.9     390.00
      4    25310.09   49.52  0.30( 0.28) 0.93   14500.5   40100.00
      5    26815.26   57.47  0.30( 0.28) 0.94   17275.0   11801.00
      6    29151.24   68.44  0.30( 0.29) 0.95   21805.6   11530.00
      7    30504.57   77.24  0.30( 0.29) 0.96   26462.4   11910.00
      8    32582.80   87.41  0.30( 0.29) 0.97   32765.3   11350.00
      9    33190.55   92.18  0.30( 0.29) 0.97   35939.6   11130.00
     10    33060.94   98.22  0.30( 0.29) 0.97   38866.1   12300.00
     11    32974.51  102.09  0.30( 0.29) 0.97   40927.0   11620.00
     12    32666.53  106.91  0.30( 0.29) 0.97   43126.7   12400.00
     13    31927.28  116.30  0.30( 0.29) 0.97   46528.3   12201.00
     14    31574.96  119.34  0.30( 0.29) 0.97   47342.0   10410.00
     15    31158.97  123.65  0.30( 0.29) 0.97   48421.3   12231.00
     16    30355.28  130.99  0.30( 0.29) 0.97   49974.1   10400.00
     17    29043.84  140.19  0.30( 0.29) 0.97   51420.5   12010.00
     18    28141.92  145.41  0.30( 0.29) 0.98   51683.1   10210.00
     19    27576.42  149.35  0.30( 0.29) 0.98   51829.9   12000.00
     20    24469.48  175.01  0.30( 0.29) 0.98   52442.8   10100.00
    TOTAL AREA(ACRES) =    52442.8

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501W.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1339.03   26.38  0.30( 0.29) 0.98    1025.9   50120.00
      2     1307.01   27.68  0.30( 0.29) 0.98    1041.3   50150.00
      3     1190.23   31.24  0.30( 0.29) 0.98    1063.4   50100.00
    TOTAL AREA(ACRES) =     1063.4

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|
| 1 | 19436.37 | 18.75 | 0.30( 0.25) | 0.83 | 4093.4 | 420.00 |
| 2 | 20624.63 | 23.23 | 0.30( 0.25) | 0.83 | 5310.8 | 400.00 |
| 3 | 22673.21 | 32.35 | 0.30( 0.27) | 0.89 | 8576.9 | 390.00 |
| 4 | 25310.09 | 49.52 | 0.30( 0.28) | 0.93 | 14500.5 | 40100.00 |
| 5 | 26815.26 | 57.47 | 0.30( 0.28) | 0.94 | 17275.0 | 11801.00 |
| 6 | 29151.24 | 68.44 | 0.30( 0.29) | 0.95 | 21805.6 | 11530.00 |
| 7 | 30504.57 | 77.24 | 0.30( 0.29) | 0.96 | 26462.4 | 11910.00 |
| 8 | 32582.80 | 87.41 | 0.30( 0.29) | 0.97 | 32765.3 | 11350.00 |
| 9 | 33190.55 | 92.18 | 0.30( 0.29) | 0.97 | 35939.6 | 11130.00 |
| 10 | 33060.94 | 98.22 | 0.30( 0.29) | 0.97 | 38866.1 | 12300.00 |
| 11 | 32974.51 | 102.09 | 0.30( 0.29) | 0.97 | 40927.0 | 11620.00 |
| 12 | 32666.53 | 106.91 | 0.30( 0.29) | 0.97 | 43126.7 | 12400.00 |
| 13 | 31927.28 | 116.30 | 0.30( 0.29) | 0.97 | 46528.3 | 12201.00 |
| 14 | 31574.96 | 119.34 | 0.30( 0.29) | 0.97 | 47342.0 | 10410.00 |
| 15 | 31158.97 | 123.65 | 0.30( 0.29) | 0.97 | 48421.3 | 12231.00 |
| 16 | 30355.28 | 130.99 | 0.30( 0.29) | 0.97 | 49974.1 | 10400.00 |
| 17 | 29043.84 | 140.19 | 0.30( 0.29) | 0.97 | 51420.5 | 12010.00 |
| 18 | 28141.92 | 145.41 | 0.30( 0.29) | 0.98 | 51683.1 | 10210.00 |
| 19 | 27576.42 | 149.35 | 0.30( 0.29) | 0.98 | 51829.9 | 12000.00 |
| 20 | 24469.48 | 175.01 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

TOTAL AREA(ACRES) = 52442.8

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 19436.37 | 18.75 | 2.130 | 0.30( 0.25) | | 0.83 | 4093.4 | 420.00 |
| 2 | 20624.63 | 23.23 | 1.855 | 0.30( 0.25) | | 0.83 | 5310.8 | 400.00 |
| 3 | 22673.21 | 32.35 | 1.500 | 0.30( 0.27) | | 0.89 | 8576.9 | 390.00 |
| 4 | 25310.09 | 49.52 | 1.201 | 0.30( 0.28) | | 0.93 | 14500.5 | 40100.00 |
| 5 | 26815.26 | 57.47 | 1.101 | 0.30( 0.28) | | 0.94 | 17275.0 | 11801.00 |
| 6 | 29151.24 | 68.44 | 1.023 | 0.30( 0.29) | | 0.95 | 21805.6 | 11530.00 |
| 7 | 30504.57 | 77.24 | 0.973 | 0.30( 0.29) | | 0.96 | 26462.4 | 11910.00 |
| 8 | 32582.80 | 87.41 | 0.917 | 0.30( 0.29) | | 0.97 | 32765.3 | 11350.00 |
| 9 | 33190.55 | 92.18 | 0.894 | 0.30( 0.29) | | 0.97 | 35939.6 | 11130.00 |
| 10 | 33060.94 | 98.22 | 0.872 | 0.30( 0.29) | | 0.97 | 38866.1 | 12300.00 |
| 11 | 32974.51 | 102.09 | 0.858 | 0.30( 0.29) | | 0.97 | 40927.0 | 11620.00 |
| 12 | 32666.53 | 106.91 | 0.840 | 0.30( 0.29) | | 0.97 | 43126.7 | 12400.00 |
| 13 | 31927.28 | 116.30 | 0.806 | 0.30( 0.29) | | 0.97 | 46528.3 | 12201.00 |
| 14 | 31574.96 | 119.34 | 0.794 | 0.30( 0.29) | | 0.97 | 47342.0 | 10410.00 |
| 15 | 31158.97 | 123.65 | 0.784 | 0.30( 0.29) | | 0.97 | 48421.3 | 12231.00 |
| 16 | 30355.28 | 130.99 | 0.768 | 0.30( 0.29) | | 0.97 | 49974.1 | 10400.00 |
| 17 | 29043.84 | 140.19 | 0.748 | 0.30( 0.29) | | 0.97 | 51420.5 | 12010.00 |
| 18 | 28141.92 | 145.41 | 0.737 | 0.30( 0.29) | | 0.98 | 51683.1 | 10210.00 |
| 19 | 27576.42 | 149.35 | 0.728 | 0.30( 0.29) | | 0.98 | 51829.9 | 12000.00 |
| 20 | 24469.48 | 175.01 | 0.673 | 0.30( 0.29) | | 0.98 | 52442.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 1339.03 | 26.38 | 1.703 | 0.30( 0.29) | | 0.98 | 1025.9 | 50120.00 |
| 2 | 1307.01 | 27.68 | 1.647 | 0.30( 0.29) | | 0.98 | 1041.3 | 50150.00 |
| 3 | 1190.23 | 31.24 | 1.522 | 0.30( 0.29) | | 0.98 | 1063.4 | 50100.00 |

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 20676.75 | 18.75 | 2.130 | 0.30( 0.26) | | 0.85 | 4822.6 | 420.00 |
| 2 | 21930.94 | 23.23 | 1.855 | 0.30( 0.26) | | 0.86 | 6214.1 | 400.00 |
| 3 | 22672.25 | 26.38 | 1.703 | 0.30( 0.26) | | 0.87 | 7466.4 | 50120.00 |
| 4 | 22931.31 | 27.68 | 1.647 | 0.30( 0.26) | | 0.88 | 7945.9 | 50150.00 |
| 5 | 23613.57 | 31.24 | 1.522 | 0.30( 0.27) | | 0.89 | 9241.9 | 50100.00 |
| 6 | 23841.89 | 32.35 | 1.500 | 0.30( 0.27) | | 0.90 | 9640.3 | 390.00 |
| 7 | 26189.22 | 49.52 | 1.201 | 0.30( 0.28) | | 0.94 | 15563.8 | 40100.00 |
| 8 | 27597.48 | 57.47 | 1.101 | 0.30( 0.28) | | 0.94 | 18338.4 | 11801.00 |
| 9 | 29857.22 | 68.44 | 1.023 | 0.30( 0.29) | | 0.95 | 22868.9 | 11530.00 |
| 10 | 31162.78 | 77.24 | 0.973 | 0.30( 0.29) | | 0.96 | 27525.8 | 11910.00 |
| 11 | 33185.82 | 87.41 | 0.917 | 0.30( 0.29) | | 0.97 | 33828.7 | 11350.00 |
| 12 | 33771.74 | 92.18 | 0.894 | 0.30( 0.29) | | 0.97 | 37002.9 | 11130.00 |
| 13 | 33620.66 | 98.22 | 0.872 | 0.30( 0.29) | | 0.97 | 39929.5 | 12300.00 |
| 14 | 33520.46 | 102.09 | 0.858 | 0.30( 0.29) | | 0.97 | 41990.4 | 11620.00 |
| 15 | 33195.36 | 106.91 | 0.840 | 0.30( 0.29) | | 0.97 | 44190.1 | 12400.00 |
| 16 | 32422.75 | 116.30 | 0.806 | 0.30( 0.29) | | 0.97 | 47591.7 | 12201.00 |
| 17 | 32059.62 | 119.34 | 0.794 | 0.30( 0.29) | | 0.97 | 48405.4 | 10410.00 |
| 18 | 31633.61 | 123.65 | 0.784 | 0.30( 0.29) | | 0.97 | 49484.7 | 12231.00 |
| 19 | 30814.50 | 130.99 | 0.768 | 0.30( 0.29) | | 0.97 | 51037.5 | 10400.00 |
| 20 | 29483.74 | 140.19 | 0.748 | 0.30( 0.29) | | 0.98 | 52483.9 | 12010.00 |
| 21 | 28570.86 | 145.41 | 0.737 | 0.30( 0.29) | | 0.98 | 52746.5 | 10210.00 |
| 22 | 27997.07 | 149.35 | 0.728 | 0.30( 0.29) | | 0.98 | 52893.3 | 12000.00 |
| 23 | 24836.24 | 175.01 | 0.673 | 0.30( 0.29) | | 0.98 | 53506.2 | 10100.00 |

TOTAL AREA(ACRES) = 53506.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 33771.74 Tc(MIN.) = 92.178

EFFECTIVE AREA(ACRES) = 37002.95 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 53506.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53506.2 TC(MIN.) = 92.18

EFFECTIVE AREA(ACRES) = 37002.95 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970

PEAK FLOW RATE(CFS) = 33771.74

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 20676.75 | 18.75 | 2.130 | 0.30( 0.26) | | 0.85 | 4822.6 | 420.00 |
| 2 | 21930.94 | 23.23 | 1.855 | 0.30( 0.26) | | 0.86 | 6214.1 | 400.00 |
| 3 | 22672.25 | 26.38 | 1.703 | 0.30( 0.26) | | 0.87 | 7466.4 | 50120.00 |
| 4 | 22931.31 | 27.68 | 1.647 | 0.30( 0.26) | | 0.88 | 7945.9 | 50150.00 |
| 5 | 23613.57 | 31.24 | 1.522 | 0.30( 0.27) | | 0.89 | 9241.9 | 50100.00 |
| 6 | 23841.89 | 32.35 | 1.500 | 0.30( 0.27) | | 0.90 | 9640.3 | 390.00 |
| 7 | 26189.22 | 49.52 | 1.201 | 0.30( 0.28) | | 0.94 | 15563.8 | 40100.00 |
| 8 | 27597.48 | 57.47 | 1.101 | 0.30( 0.28) | | 0.94 | 18338.4 | 11801.00 |
| 9 | 29857.22 | 68.44 | 1.023 | 0.30( 0.29) | | 0.95 | 22868.9 | 11530.00 |
| 10 | 31162.78 | 77.24 | 0.973 | 0.30( 0.29) | | 0.96 | 27525.8 | 11910.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 33185.82 | 87.41 | 0.917 | 0.30( 0.29) | 0.97 | 33828.7 | 11350.00 |
| 12 | 33771.74 | 92.18 | 0.894 | 0.30( 0.29) | 0.97 | 37002.9 | 11130.00 |
| 13 | 33620.66 | 98.22 | 0.872 | 0.30( 0.29) | 0.97 | 39929.5 | 12300.00 |
| 14 | 33520.46 | 102.09 | 0.858 | 0.30( 0.29) | 0.97 | 41990.4 | 11620.00 |
| 15 | 33195.36 | 106.91 | 0.840 | 0.30( 0.29) | 0.97 | 44190.1 | 12400.00 |
| 16 | 32422.75 | 116.30 | 0.806 | 0.30( 0.29) | 0.97 | 47591.7 | 12201.00 |
| 17 | 32059.62 | 119.34 | 0.794 | 0.30( 0.29) | 0.97 | 48405.4 | 10410.00 |
| 18 | 31633.61 | 123.65 | 0.784 | 0.30( 0.29) | 0.97 | 49484.7 | 12231.00 |
| 19 | 30814.50 | 130.99 | 0.768 | 0.30( 0.29) | 0.97 | 51037.5 | 10400.00 |
| 20 | 29483.74 | 140.19 | 0.748 | 0.30( 0.29) | 0.98 | 52483.9 | 12010.00 |
| 21 | 28570.86 | 145.41 | 0.737 | 0.30( 0.29) | 0.98 | 52746.5 | 10210.00 |
| 22 | 27997.07 | 149.35 | 0.728 | 0.30( 0.29) | 0.98 | 52893.3 | 12000.00 |
| 23 | 24836.24 | 175.01 | 0.673 | 0.30( 0.29) | 0.98 | 53506.2 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI25EV29.DAT
  TIME/DATE OF STUDY: 10:30 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.920
   2)   10.00;  3.206
   3)   15.00;  2.446
   4)   20.00;  2.021
   5)   25.00;  1.761
   6)   30.00;  1.545
   7)   40.00;  1.345
   8)   50.00;  1.192
   9)   60.00;  1.068
  10)   90.00;  0.900
  11)  120.00;  0.790
  12)  180.00;  0.660
  13)  360.00;  0.488
  14) 1200.00;  0.215
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20676.75   18.75  0.30( 0.26) 0.85    4822.6     420.00
      2    21930.94   23.23  0.30( 0.26) 0.86    6214.1     400.00
      3    22931.31   27.68  0.30( 0.26) 0.88    7945.9   50150.00
      4    23841.89   32.35  0.30( 0.27) 0.90    9640.3     390.00
      5    26189.22   49.52  0.30( 0.28) 0.94   15563.8   40100.00
      6    27597.48   57.47  0.30( 0.28) 0.94   18338.4   11801.00
      7    29857.22   68.44  0.30( 0.29) 0.95   22868.9   11530.00
      8    31162.78   77.24  0.30( 0.29) 0.96   27525.8   11910.00
      9    33185.82   87.41  0.30( 0.29) 0.97   33828.7   11350.00
     10    33771.74   92.18  0.30( 0.29) 0.97   37002.9   11130.00
     11    33620.66   98.22  0.30( 0.29) 0.97   39929.5   12300.00
     12    33520.46  102.09  0.30( 0.29) 0.97   41990.4   11620.00
     13    33195.36  106.91  0.30( 0.29) 0.97   44190.1   12400.00
     14    32422.75  116.30  0.30( 0.29) 0.97   47591.7   12201.00
     15    31633.61  123.65  0.30( 0.29) 0.97   49484.7   12231.00
     16    30814.50  130.99  0.30( 0.29) 0.97   51037.5   10400.00
     17    29483.74  140.19  0.30( 0.29) 0.98   52483.9   12010.00
     18    28570.86  145.41  0.30( 0.29) 0.98   52746.5   10210.00
     19    27997.07  149.35  0.30( 0.29) 0.98   52893.3   12000.00
     20    24836.24  175.01  0.30( 0.29) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =    53506.2

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20676.75   18.75  0.30( 0.26) 0.85    4822.6     420.00
      2    21930.94   23.23  0.30( 0.26) 0.86    6214.1     400.00
      3    22931.31   27.68  0.30( 0.26) 0.88    7945.9   50150.00
      4    23841.89   32.35  0.30( 0.27) 0.90    9640.3     390.00
      5    26189.22   49.52  0.30( 0.28) 0.94   15563.8   40100.00
      6    27597.48   57.47  0.30( 0.28) 0.94   18338.4   11801.00
      7    29857.22   68.44  0.30( 0.29) 0.95   22868.9   11530.00
      8    31162.78   77.24  0.30( 0.29) 0.96   27525.8   11910.00
      9    33185.82   87.41  0.30( 0.29) 0.97   33828.7   11350.00
     10    33771.74   92.18  0.30( 0.29) 0.97   37002.9   11130.00
     11    33620.66   98.22  0.30( 0.29) 0.97   39929.5   12300.00
     12    33520.46  102.09  0.30( 0.29) 0.97   41990.4   11620.00
     13    33195.36  106.91  0.30( 0.29) 0.97   44190.1   12400.00
```

```
    14    32422.75  116.30  0.30( 0.29) 0.97   47591.7   12201.00
    15    31633.61  123.65  0.30( 0.29) 0.97   49484.7   12231.00
    16    30814.50  130.99  0.30( 0.29) 0.97   51037.5   10400.00
    17    29483.74  140.19  0.30( 0.29) 0.98   52483.9   12010.00
    18    28570.86  145.41  0.30( 0.29) 0.98   52746.5   10210.00
    19    27997.07  149.35  0.30( 0.29) 0.98   52893.3   12000.00
    20    24836.24  175.01  0.30( 0.29) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56
  CHANNEL FLOW THRU SUBAREA(CFS) =   33771.74
  FLOW VELOCITY(FEET/SEC.) =  16.26   FLOW DEPTH(FEET) =   8.56
  TRAVEL TIME(MIN.) =   3.20   Tc(MIN.) =   95.38
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20676.75   22.53    1.890  0.30( 0.26) 0.85    4822.6     420.00
      2    21930.94   26.93    1.678  0.30( 0.26) 0.86    6214.1     400.00
      3    22931.31   31.32    1.519  0.30( 0.26) 0.88    7945.9   50150.00
      4    23841.89   35.94    1.426  0.30( 0.27) 0.90    9640.3     390.00
      5    26189.22   53.00    1.155  0.30( 0.28) 0.94   15563.8   40100.00
      6    27597.48   60.89    1.063  0.30( 0.28) 0.94   18338.4   11801.00
      7    29857.22   71.77    1.002  0.30( 0.29) 0.95   22868.9   11530.00
      8    31162.78   80.53    0.953  0.30( 0.29) 0.96   27525.8   11910.00
      9    33185.82   90.62    0.898  0.30( 0.29) 0.97   33828.7   11350.00
     10    33771.74   95.38    0.880  0.30( 0.29) 0.97   37002.9   11130.00
     11    33620.66  101.43    0.858  0.30( 0.29) 0.97   39929.5   12300.00
     12    33520.46  105.30    0.844  0.30( 0.29) 0.97   41990.4   11620.00
     13    33195.36  110.13    0.826  0.30( 0.29) 0.97   44190.1   12400.00
     14    32422.75  119.54    0.792  0.30( 0.29) 0.97   47591.7   12201.00
     15    31633.61  126.92    0.775  0.30( 0.29) 0.97   49484.7   12231.00
     16    30814.50  134.29    0.759  0.30( 0.29) 0.97   51037.5   10400.00
     17    29483.74  143.54    0.739  0.30( 0.29) 0.98   52483.9   12010.00
     18    28570.86  148.79    0.728  0.30( 0.29) 0.98   52746.5   10210.00
     19    27997.07  152.76    0.719  0.30( 0.29) 0.98   52893.3   12000.00
     20    24836.24  178.56    0.663  0.30( 0.29) 0.98   53506.2   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   33771.74  Tc(MIN.) =   95.38
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   37002.95
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       14.30      0.30     0.100    56
  PUBLIC PARK                 B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   16.23
  EFFECTIVE AREA(ACRES) =  37026.64   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =   33771.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  COMMERCIAL                  B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.92
  EFFECTIVE AREA(ACRES) =  37029.75   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =   33771.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK               B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                   B        1.50      0.30     1.000    69
  COMMERCIAL                B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    5.25
  EFFECTIVE AREA(ACRES) =  37038.95   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =   33771.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   19.74
  EFFECTIVE AREA(ACRES) =  37074.45   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =   33771.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   28.46
  EFFECTIVE AREA(ACRES) =  37125.95   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =   33771.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.40
  CHANNEL FLOW THRU SUBAREA(CFS) =   33771.74
  FLOW VELOCITY(FEET/SEC.) =  16.60   FLOW DEPTH(FEET) =   8.40
  TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =   95.50
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20676.75   22.67    1.882  0.30( 0.26) 0.85    4945.6     420.00
      2    21930.94   27.07    1.671  0.30( 0.26) 0.85    6337.1     400.00
      3    22931.31   31.46    1.516  0.30( 0.26) 0.88    8068.9   50150.00
      4    23841.89   36.08    1.423  0.30( 0.27) 0.90    9763.3     390.00
      5    26189.22   53.14    1.153  0.30( 0.28) 0.93   15686.8   40100.00
      6    27597.48   61.02    1.062  0.30( 0.28) 0.94   18461.4   11801.00
      7    29857.22   71.90    1.001  0.30( 0.29) 0.95   22991.9   11530.00
      8    31162.78   80.65    0.952  0.30( 0.29) 0.96   27648.7   11910.00
      9    33185.82   90.75    0.897  0.30( 0.29) 0.97   33951.7   11350.00
     10    33771.74   95.50    0.880  0.30( 0.29) 0.97   37125.9   11130.00
     11    33620.66  101.55    0.858  0.30( 0.29) 0.97   40052.5   12300.00
     12    33520.46  105.43    0.843  0.30( 0.29) 0.97   42113.4   11620.00
     13    33195.36  110.25    0.826  0.30( 0.29) 0.97   44313.1   12400.00
     14    32422.75  119.67    0.791  0.30( 0.29) 0.97   47714.7   12201.00
     15    31633.61  127.05    0.775  0.30( 0.29) 0.97   49607.7   12231.00
     16    30814.50  134.41    0.759  0.30( 0.29) 0.97   51160.5   10400.00
     17    29483.74  143.67    0.739  0.30( 0.29) 0.97   52606.9   12010.00
     18    28570.86  148.92    0.727  0.30( 0.29) 0.97   52869.5   10210.00
     19    27997.07  152.89    0.719  0.30( 0.29) 0.97   53016.3   12000.00
     20    24836.24  178.70    0.663  0.30( 0.29) 0.98   53629.2   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   33771.74  Tc(MIN.) =   95.50
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   37125.95

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
```

```
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XX25.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM        Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
      1        58.93   11.21  0.30( 0.27) 0.91       28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    20676.75   22.67    1.882  0.30( 0.26) 0.85    4945.6     420.00
      2    21930.94   27.07    1.671  0.30( 0.26) 0.85    6337.1     400.00
      3    22931.31   31.46    1.516  0.30( 0.26) 0.88    8068.9   50150.00
      4    23841.89   36.08    1.423  0.30( 0.27) 0.90    9763.3     390.00
      5    26189.22   53.14    1.153  0.30( 0.28) 0.93   15686.8   40100.00
      6    27597.48   61.02    1.062  0.30( 0.28) 0.94   18461.4   11801.00
      7    29857.22   71.90    1.001  0.30( 0.29) 0.95   22991.9   11530.00
      8    31162.78   80.65    0.952  0.30( 0.29) 0.96   27648.7   11910.00
      9    33185.82   90.75    0.897  0.30( 0.29) 0.97   33951.7   11350.00
     10    33771.74   95.50    0.880  0.30( 0.29) 0.97   37125.9   11130.00
     11    33620.66  101.55    0.858  0.30( 0.29) 0.97   40052.5   12300.00
     12    33520.46  105.43    0.843  0.30( 0.29) 0.97   42113.4   11620.00
     13    33195.36  110.25    0.826  0.30( 0.29) 0.97   44313.1   12400.00
     14    32422.75  119.67    0.791  0.30( 0.29) 0.97   47714.7   12201.00
     15    31633.61  127.05    0.775  0.30( 0.29) 0.97   49607.7   12231.00
     16    30814.50  134.41    0.759  0.30( 0.29) 0.97   51160.5   10400.00
     17    29483.74  143.67    0.739  0.30( 0.29) 0.97   52606.9   12010.00
     18    28570.86  148.92    0.727  0.30( 0.29) 0.97   52869.5   10210.00
     19    27997.07  152.89    0.719  0.30( 0.29) 0.97   53016.3   12000.00
     20    24836.24  178.70    0.663  0.30( 0.29) 0.98   53629.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       58.93   11.21    3.021  0.30( 0.27) 0.91       28.7   50200.00
  LONGEST FLOWPATH FROM NODE  50200.00 TO NODE  12902.00 =    1426.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    17449.38   11.21    3.021  0.30( 0.26) 0.85    2474.9   50200.00
      2    20711.25   22.67    1.882  0.30( 0.26) 0.85    4974.3     420.00
      3    21960.92   27.07    1.671  0.30( 0.26) 0.85    6365.8     400.00
      4    22957.96   31.46    1.516  0.30( 0.26) 0.88    8097.6   50150.00
      5    23866.55   36.08    1.423  0.30( 0.27) 0.90    9792.0     390.00
      6    26208.09   53.14    1.153  0.30( 0.28) 0.93   15715.5   40100.00
      7    27614.40   61.02    1.062  0.30( 0.28) 0.94   18490.1   11801.00
      8    29872.84   71.90    1.001  0.30( 0.29) 0.95   23020.6   11530.00
```



```
      9    31177.35   80.65    0.952  0.30( 0.29) 0.96   27677.4   11910.00
     10    33199.20   90.75    0.897  0.30( 0.29) 0.97   33980.4   11350.00
     11    33784.75   95.50    0.880  0.30( 0.29) 0.97   37154.6   11130.00
     12    33633.19  101.55    0.858  0.30( 0.29) 0.97   40081.2   12300.00
     13    33532.69  105.43    0.843  0.30( 0.29) 0.97   42142.1   11620.00
     14    33207.21  110.25    0.826  0.30( 0.29) 0.97   44341.8   12400.00
     15    32433.86  119.67    0.791  0.30( 0.29) 0.97   47743.4   12201.00
     16    31644.37  127.05    0.775  0.30( 0.29) 0.97   49636.4   12231.00
     17    30824.92  134.41    0.759  0.30( 0.29) 0.97   51189.2   10400.00
     18    29493.72  143.67    0.739  0.30( 0.29) 0.97   52635.6   12010.00
     19    28580.60  148.92    0.727  0.30( 0.29) 0.97   52898.2   10210.00
     20    28006.63  152.89    0.719  0.30( 0.29) 0.97   53045.0   12000.00
     21    24844.60  178.70    0.663  0.30( 0.29) 0.98   53657.9   10100.00
   TOTAL AREA(ACRES) =     53657.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    33784.75  Tc(MIN.) =   95.500
  EFFECTIVE AREA(ACRES) =  37154.64  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53657.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E503XX25.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM        Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
      1      430.88   25.25  0.30( 0.30) 0.99      366.4   50300.00
    TOTAL AREA(ACRES) =       366.4

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    17449.38   11.21    3.021  0.30( 0.26) 0.85    2474.9   50200.00
      2    20711.25   22.67    1.882  0.30( 0.26) 0.85    4974.3     420.00
      3    21960.92   27.07    1.671  0.30( 0.26) 0.85    6365.8     400.00
      4    22957.96   31.46    1.516  0.30( 0.26) 0.88    8097.6   50150.00
      5    23866.55   36.08    1.423  0.30( 0.27) 0.90    9792.0     390.00
      6    26208.09   53.14    1.153  0.30( 0.28) 0.93   15715.5   40100.00
      7    27614.40   61.02    1.062  0.30( 0.28) 0.94   18490.1   11801.00
      8    29872.84   71.90    1.001  0.30( 0.29) 0.95   23020.6   11530.00
      9    31177.35   80.65    0.952  0.30( 0.29) 0.96   27677.4   11910.00
```

```
    10    33199.20   90.75    0.897  0.30( 0.29) 0.97   33980.4   11350.00
    11    33784.75   95.50    0.880  0.30( 0.29) 0.97   37154.6   11130.00
    12    33633.19  101.55    0.858  0.30( 0.29) 0.97   40081.2   12300.00
    13    33532.69  105.43    0.843  0.30( 0.29) 0.97   42142.1   11620.00
    14    33207.21  110.25    0.826  0.30( 0.29) 0.97   44341.8   12400.00
    15    32433.86  119.67    0.791  0.30( 0.29) 0.97   47743.4   12201.00
    16    31644.37  127.05    0.775  0.30( 0.29) 0.97   49636.4   12231.00
    17    30824.92  134.41    0.759  0.30( 0.29) 0.97   51189.2   10400.00
    18    29493.72  143.67    0.739  0.30( 0.29) 0.97   52635.6   12010.00
    19    28580.60  148.92    0.727  0.30( 0.29) 0.97   52898.2   10210.00
    20    28006.63  152.89    0.719  0.30( 0.29) 0.97   53045.0   12000.00
    21    24844.60  178.70    0.663  0.30( 0.29) 0.98   53657.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      430.88   25.25    1.750  0.30( 0.30) 0.99     366.4   50300.00
  LONGEST FLOWPATH FROM NODE  50300.00 TO NODE  12902.00 =    8614.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17807.99   11.21    3.021  0.30( 0.26) 0.86    2637.6   50200.00
      2    21133.22   22.67    1.882  0.30( 0.26) 0.86    5303.4     420.00
      3    21872.81   25.25    1.750  0.30( 0.26) 0.86    6154.3   50300.00
      4    22368.41   27.07    1.671  0.30( 0.26) 0.86    6732.2     400.00
      5    23319.35   31.46    1.516  0.30( 0.26) 0.88    8464.0   50150.00
      6    24200.58   36.08    1.423  0.30( 0.27) 0.90   10158.4     390.00
      7    26462.08   53.14    1.153  0.30( 0.28) 0.94   16081.9   40100.00
      8    27841.49   61.02    1.062  0.30( 0.28) 0.94   18856.5   11801.00
      9    30081.89   71.90    1.001  0.30( 0.29) 0.95   23387.0   11530.00
     10    31371.88   80.65    0.952  0.30( 0.29) 0.96   28043.8   11910.00
     11    33377.41   90.75    0.897  0.30( 0.29) 0.97   34346.8   11350.00
     12    33957.81   95.50    0.880  0.30( 0.29) 0.97   37521.0   11130.00
     13    33799.68  101.55    0.858  0.30( 0.29) 0.97   40447.6   12300.00
     14    33694.96  105.43    0.843  0.30( 0.29) 0.97   42508.5   11620.00
     15    33364.24  110.25    0.826  0.30( 0.29) 0.97   44708.2   12400.00
     16    32580.67  119.67    0.791  0.30( 0.29) 0.97   48109.8   12201.00
     17    31786.30  127.05    0.775  0.30( 0.29) 0.97   50002.8   12231.00
     18    30962.12  134.41    0.759  0.30( 0.29) 0.97   51555.6   10400.00
     19    29624.98  143.67    0.739  0.30( 0.29) 0.97   53002.0   12010.00
     20    28708.49  148.92    0.727  0.30( 0.29) 0.97   53264.6   10210.00
     21    28131.97  152.89    0.719  0.30( 0.29) 0.97   53411.4   12000.00
     22    24953.38  178.70    0.663  0.30( 0.29) 0.98   54024.3   10100.00
    TOTAL AREA(ACRES) =     54024.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    33957.81  Tc(MIN.) =   95.500
  EFFECTIVE AREA(ACRES) =  37521.04  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54024.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
```



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

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.71
  CHANNEL FLOW THRU SUBAREA(CFS) =   33957.81
  FLOW VELOCITY(FEET/SEC.) =   8.44   FLOW DEPTH(FEET) =  14.71
  TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =   97.27
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17807.99   13.38    2.692  0.30( 0.26) 0.86    2637.6   50200.00
      2    21133.22   24.72    1.775  0.30( 0.26) 0.86    5303.4     420.00
      3    21872.81   27.27    1.663  0.30( 0.26) 0.86    6154.3   50300.00
      4    22368.41   29.09    1.584  0.30( 0.26) 0.86    6732.2     400.00
      5    23319.35   33.45    1.476  0.30( 0.26) 0.88    8464.0   50150.00
      6    24200.58   38.05    1.384  0.30( 0.27) 0.90   10158.4     390.00
      7    26462.08   55.05    1.129  0.30( 0.28) 0.94   16081.9   40100.00
      8    27841.49   62.90    1.052  0.30( 0.28) 0.94   18856.5   11801.00
      9    30081.89   73.74    0.991  0.30( 0.29) 0.95   23387.0   11530.00
     10    31371.88   82.47    0.942  0.30( 0.29) 0.96   28043.8   11910.00
     11    33377.41   92.53    0.891  0.30( 0.29) 0.97   34346.8   11350.00
     12    33957.81   97.27    0.873  0.30( 0.29) 0.97   37521.0   11130.00
     13    33799.68  103.32    0.851  0.30( 0.29) 0.97   40447.6   12300.00
     14    33694.96  107.20    0.837  0.30( 0.29) 0.97   42508.5   11620.00
     15    33364.24  112.03    0.819  0.30( 0.29) 0.97   44708.2   12400.00
     16    32580.67  121.46    0.787  0.30( 0.29) 0.97   48109.8   12201.00
     17    31786.30  128.85    0.771  0.30( 0.29) 0.97   50002.8   12231.00
     18    30962.12  136.23    0.755  0.30( 0.29) 0.97   51555.6   10400.00
     19    29624.98  145.52    0.735  0.30( 0.29) 0.97   53002.0   12010.00
     20    28708.49  150.79    0.723  0.30( 0.29) 0.97   53264.6   10210.00
     21    28131.97  154.77    0.715  0.30( 0.29) 0.97   53411.4   12000.00
     22    24953.38  180.65    0.659  0.30( 0.29) 0.98   54024.3   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   33957.81  Tc(MIN.) =   97.27
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   37521.04

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XX25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      108.86   17.34  0.30( 0.29) 0.97      70.5   50400.00
```

TOTAL AREA(ACRES) = 70.5

**********
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 17807.99 | 13.38 | 2.692 | 0.30( 0.26) | 0.86 | 2637.6 | 50200.00 |
| 2 | 21133.22 | 24.72 | 1.775 | 0.30( 0.26) | 0.86 | 5303.4 | 420.00 |
| 3 | 21872.81 | 27.27 | 1.663 | 0.30( 0.26) | 0.86 | 6154.3 | 50300.00 |
| 4 | 22368.41 | 29.09 | 1.584 | 0.30( 0.26) | 0.86 | 6732.2 | 400.00 |
| 5 | 23319.35 | 33.45 | 1.476 | 0.30( 0.26) | 0.88 | 8464.0 | 50150.00 |
| 6 | 24200.58 | 38.05 | 1.384 | 0.30( 0.27) | 0.90 | 10158.4 | 390.00 |
| 7 | 26462.08 | 55.05 | 1.129 | 0.30( 0.28) | 0.94 | 16081.9 | 40100.00 |
| 8 | 27841.49 | 62.90 | 1.052 | 0.30( 0.28) | 0.94 | 18856.5 | 11801.00 |
| 9 | 30081.89 | 73.74 | 0.991 | 0.30( 0.29) | 0.95 | 23387.0 | 11530.00 |
| 10 | 31371.88 | 82.47 | 0.942 | 0.30( 0.29) | 0.96 | 28043.8 | 11910.00 |
| 11 | 33377.41 | 92.53 | 0.891 | 0.30( 0.29) | 0.97 | 34346.8 | 11350.00 |
| 12 | 33957.81 | 97.27 | 0.873 | 0.30( 0.29) | 0.97 | 37521.0 | 11130.00 |
| 13 | 33799.68 | 103.32 | 0.851 | 0.30( 0.29) | 0.97 | 40447.6 | 12300.00 |
| 14 | 33694.96 | 107.20 | 0.837 | 0.30( 0.29) | 0.97 | 42508.5 | 11620.00 |
| 15 | 33364.24 | 112.03 | 0.819 | 0.30( 0.29) | 0.97 | 44708.2 | 12400.00 |
| 16 | 32580.67 | 121.46 | 0.787 | 0.30( 0.29) | 0.97 | 48109.8 | 12201.00 |
| 17 | 31786.30 | 128.85 | 0.771 | 0.30( 0.29) | 0.97 | 50002.8 | 12231.00 |
| 18 | 30962.12 | 136.23 | 0.755 | 0.30( 0.29) | 0.97 | 51555.6 | 10400.00 |
| 19 | 29624.98 | 145.52 | 0.735 | 0.30( 0.29) | 0.97 | 53002.0 | 12010.00 |
| 20 | 28708.49 | 150.79 | 0.723 | 0.30( 0.29) | 0.97 | 53264.6 | 10210.00 |
| 21 | 28131.97 | 154.77 | 0.715 | 0.30( 0.29) | 0.97 | 53411.4 | 12000.00 |
| 22 | 24953.38 | 180.65 | 0.659 | 0.30( 0.29) | 0.98 | 54024.3 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 108.86 | 17.34 | 2.247 | 0.30( 0.29) | 0.97 | 70.5 | 50400.00 |

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 17911.10 | 13.38 | 2.692 | 0.30( 0.26) | 0.86 | 2692.0 | 50200.00 |
| 2 | 19077.04 | 17.34 | 2.247 | 0.30( 0.26) | 0.86 | 3638.2 | 50400.00 |
| 3 | 21215.84 | 24.72 | 1.775 | 0.30( 0.26) | 0.86 | 5373.9 | 420.00 |
| 4 | 21949.16 | 27.27 | 1.663 | 0.30( 0.26) | 0.86 | 6224.8 | 50300.00 |
| 5 | 22440.41 | 29.09 | 1.584 | 0.30( 0.26) | 0.86 | 6802.7 | 400.00 |
| 6 | 23385.31 | 33.45 | 1.476 | 0.30( 0.26) | 0.88 | 8534.5 | 50150.00 |
| 7 | 24261.43 | 38.05 | 1.384 | 0.30( 0.27) | 0.90 | 10228.9 | 390.00 |
| 8 | 26508.77 | 55.05 | 1.129 | 0.30( 0.28) | 0.94 | 16152.4 | 40100.00 |
| 9 | 27883.86 | 62.90 | 1.052 | 0.30( 0.28) | 0.94 | 18927.0 | 11801.00 |
| 10 | 30120.88 | 73.74 | 0.991 | 0.30( 0.29) | 0.95 | 23457.5 | 11530.00 |
| 11 | 31408.16 | 82.47 | 0.942 | 0.30( 0.29) | 0.96 | 28114.3 | 11910.00 |
| 12 | 33410.83 | 92.53 | 0.891 | 0.30( 0.29) | 0.97 | 34417.3 | 11350.00 |
| 13 | 33990.25 | 97.27 | 0.873 | 0.30( 0.29) | 0.97 | 37591.5 | 11130.00 |
| 14 | 33830.89 | 103.32 | 0.851 | 0.30( 0.29) | 0.97 | 40518.1 | 12300.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 33725.39 | 107.20 | 0.837 | 0.30( 0.29) | 0.97 | 42579.0 | 11620.00 |
| 16 | 33393.68 | 112.03 | 0.819 | 0.30( 0.29) | 0.97 | 44778.7 | 12400.00 |
| 17 | 32608.30 | 121.46 | 0.787 | 0.30( 0.29) | 0.97 | 48180.3 | 12201.00 |
| 18 | 31813.04 | 128.85 | 0.771 | 0.30( 0.29) | 0.97 | 50073.3 | 12231.00 |
| 19 | 30987.97 | 136.23 | 0.755 | 0.30( 0.29) | 0.97 | 51626.1 | 10400.00 |
| 20 | 29649.72 | 145.52 | 0.735 | 0.30( 0.29) | 0.97 | 53072.5 | 12010.00 |
| 21 | 28732.59 | 150.79 | 0.723 | 0.30( 0.29) | 0.97 | 53335.1 | 10210.00 |
| 22 | 28155.59 | 154.77 | 0.715 | 0.30( 0.29) | 0.97 | 53481.9 | 12000.00 |
| 23 | 24973.93 | 180.65 | 0.659 | 0.30( 0.29) | 0.98 | 54094.8 | 10100.00 |

TOTAL AREA(ACRES) = 54094.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33990.25 Tc(MIN.) = 97.269
EFFECTIVE AREA(ACRES) = 37591.54 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 54094.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

**********
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.12
CHANNEL FLOW THRU SUBAREA(CFS) = 33990.25
FLOW VELOCITY(FEET/SEC.) = 8.90 FLOW DEPTH(FEET) = 14.12
TRAVEL TIME(MIN.) = 1.44 Tc(MIN.) = 98.71
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 17911.10 | 15.14 | 2.434 | 0.30( 0.26) | 0.86 | 2692.0 | 50200.00 |
| 2 | 19077.04 | 19.06 | 2.100 | 0.30( 0.26) | 0.86 | 3638.2 | 50400.00 |
| 3 | 21215.84 | 26.39 | 1.701 | 0.30( 0.26) | 0.86 | 5373.9 | 420.00 |
| 4 | 21949.16 | 28.92 | 1.592 | 0.30( 0.26) | 0.86 | 6224.8 | 50300.00 |
| 5 | 22440.41 | 30.73 | 1.530 | 0.30( 0.26) | 0.86 | 6802.7 | 400.00 |
| 6 | 23385.31 | 35.07 | 1.444 | 0.30( 0.26) | 0.88 | 8534.5 | 50150.00 |
| 7 | 24261.43 | 39.64 | 1.352 | 0.30( 0.27) | 0.90 | 10228.9 | 390.00 |
| 8 | 26508.77 | 56.60 | 1.110 | 0.30( 0.28) | 0.94 | 16152.4 | 40100.00 |
| 9 | 27883.86 | 64.43 | 1.043 | 0.30( 0.28) | 0.94 | 18927.0 | 11801.00 |
| 10 | 30120.88 | 75.23 | 0.983 | 0.30( 0.29) | 0.95 | 23457.5 | 11530.00 |
| 11 | 31408.16 | 83.94 | 0.934 | 0.30( 0.29) | 0.96 | 28114.3 | 11910.00 |
| 12 | 33410.83 | 93.97 | 0.885 | 0.30( 0.29) | 0.97 | 34417.3 | 11350.00 |
| 13 | 33990.25 | 98.71 | 0.868 | 0.30( 0.29) | 0.97 | 37591.5 | 11130.00 |
| 14 | 33830.89 | 104.76 | 0.846 | 0.30( 0.29) | 0.97 | 40518.1 | 12300.00 |
| 15 | 33725.39 | 108.64 | 0.832 | 0.30( 0.29) | 0.97 | 42579.0 | 11620.00 |

```
    16    33393.68  113.48    0.814  0.30( 0.29) 0.97   44778.7   12400.00
    17    32608.30  122.91    0.784  0.30( 0.29) 0.97   48180.3   12201.00
    18    31813.04  130.32    0.768  0.30( 0.29) 0.97   50073.3   12231.00
    19    30987.97  137.71    0.752  0.30( 0.29) 0.97   51626.1   10400.00
    20    29649.72  147.02    0.731  0.30( 0.29) 0.97   53072.5   12010.00
    21    28732.59  152.30    0.720  0.30( 0.29) 0.97   53335.1   10210.00
    22    28155.59  156.29    0.711  0.30( 0.29) 0.97   53481.9   12000.00
    23    24973.93  182.23    0.658  0.30( 0.29) 0.98   54094.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   33990.25  Tc(MIN.) =   98.71
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   37591.54

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3B25EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      381.89   16.87  0.30( 0.13) 0.43     196.7     203.00
      2      375.34   19.31  0.30( 0.13) 0.43     213.7     210.00
    TOTAL AREA(ACRES) =      213.7

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17911.10   15.14    2.434  0.30( 0.26) 0.86    2692.0   50200.00
      2    19077.04   19.06    2.100  0.30( 0.26) 0.86    3638.2   50400.00
      3    21215.84   26.39    1.701  0.30( 0.26) 0.86    5373.9     420.00
      4    21949.16   28.92    1.592  0.30( 0.26) 0.86    6224.8   50300.00
      5    22440.41   30.73    1.530  0.30( 0.26) 0.86    6802.7     400.00
      6    23385.31   35.07    1.444  0.30( 0.26) 0.88    8534.5   50150.00
      7    24261.43   39.64    1.352  0.30( 0.27) 0.90   10228.9     390.00
      8    26508.77   56.60    1.110  0.30( 0.28) 0.94   16152.4   40100.00
      9    27883.86   64.43    1.043  0.30( 0.28) 0.94   18927.0   11801.00
     10    30120.88   75.23    0.983  0.30( 0.29) 0.95   23457.5   11530.00
     11    31408.16   83.94    0.934  0.30( 0.29) 0.96   28114.3   11910.00
     12    33410.83   93.97    0.885  0.30( 0.29) 0.97   34417.3   11350.00
     13    33990.25   98.71    0.868  0.30( 0.29) 0.97   37591.5   11130.00
     14    33830.89  104.76    0.846  0.30( 0.29) 0.97   40518.1   12300.00
     15    33725.39  108.64    0.832  0.30( 0.29) 0.97   42579.0   11620.00
     16    33393.68  113.48    0.814  0.30( 0.29) 0.97   44778.7   12400.00
     17    32608.30  122.91    0.784  0.30( 0.29) 0.97   48180.3   12201.00
     18    31813.04  130.32    0.768  0.30( 0.29) 0.97   50073.3   12231.00
     19    30987.97  137.71    0.752  0.30( 0.29) 0.97   51626.1   10400.00
     20    29649.72  147.02    0.731  0.30( 0.29) 0.97   53072.5   12010.00
     21    28732.59  152.30    0.720  0.30( 0.29) 0.97   53335.1   10210.00
     22    28155.59  156.29    0.711  0.30( 0.29) 0.97   53481.9   12000.00
     23    24973.93  182.23    0.658  0.30( 0.29) 0.98   54094.8   10100.00
```



```
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      381.89   16.87    2.287  0.30( 0.13) 0.43     196.7     203.00
      2      375.34   19.31    2.079  0.30( 0.13) 0.43     213.7     210.00
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE  12904.00 =    7986.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18277.20   15.14    2.434  0.30( 0.25) 0.84    2868.6   50200.00
      2    18807.33   16.87    2.287  0.30( 0.25) 0.84    3306.2     203.00
      3    19453.05   19.06    2.100  0.30( 0.25) 0.84    3850.2   50400.00
      4    19524.54   19.31    2.079  0.30( 0.25) 0.84    3910.5     210.00
      5    21518.36   26.39    1.701  0.30( 0.25) 0.84    5587.6     420.00
      6    22230.65   28.92    1.592  0.30( 0.25) 0.85    6438.5   50300.00
      7    22710.16   30.73    1.530  0.30( 0.25) 0.85    7016.4     400.00
      8    23638.37   35.07    1.444  0.30( 0.26) 0.87    8748.2   50150.00
      9    24496.88   39.64    1.352  0.30( 0.27) 0.89   10442.6     390.00
     10    26697.67   56.60    1.110  0.30( 0.28) 0.93   16366.1   40100.00
     11    28059.88   64.43    1.043  0.30( 0.28) 0.94   19140.7   11801.00
     12    30285.28   75.23    0.983  0.30( 0.28) 0.95   23671.2   11530.00
     13    31563.18   83.94    0.934  0.30( 0.29) 0.96   28328.0   11910.00
     14    33556.52   93.97    0.885  0.30( 0.29) 0.96   34631.0   11350.00
     15    34132.60   98.71    0.868  0.30( 0.29) 0.97   37805.2   11130.00
     16    33968.97  104.76    0.846  0.30( 0.29) 0.97   40731.8   12300.00
     17    33860.73  108.64    0.832  0.30( 0.29) 0.97   42792.7   11620.00
     18    33525.61  113.48    0.814  0.30( 0.29) 0.97   44992.4   12400.00
     19    32734.42  122.91    0.784  0.30( 0.29) 0.97   48394.0   12201.00
     20    31936.07  130.32    0.768  0.30( 0.29) 0.97   50287.0   12231.00
     21    31107.92  137.71    0.752  0.30( 0.29) 0.97   51839.8   10400.00
     22    29765.79  147.02    0.731  0.30( 0.29) 0.97   53286.2   12010.00
     23    28846.46  152.30    0.720  0.30( 0.29) 0.97   53548.8   10210.00
     24    28267.80  156.29    0.711  0.30( 0.29) 0.97   53695.6   12000.00
     25    25075.85  182.23    0.658  0.30( 0.29) 0.97   54308.5   10100.00
    TOTAL AREA(ACRES) =     54308.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    34132.60  Tc(MIN.) =   98.707
  EFFECTIVE AREA(ACRES) =  37805.24  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    54308.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.868
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.10      0.30      0.900    56
```

```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  COMMERCIAL                 B        1.20      0.30     0.100    56
  COMMERCIAL                 B        1.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.641
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    4.14
  EFFECTIVE AREA(ACRES) =  37812.04   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54315.3       PEAK FLOW RATE(CFS) =   34132.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.868
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.60      0.30     1.000    69
  PUBLIC PARK                B       15.10      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B       20.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.941
  SUBAREA AREA(ACRES) =   38.70      SUBAREA RUNOFF(CFS) =   20.40
  EFFECTIVE AREA(ACRES) =  37850.74   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54354.0       PEAK FLOW RATE(CFS) =   34132.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    54354.0  TC(MIN.) =     98.71
  EFFECTIVE AREA(ACRES) =  37850.74  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.966
  PEAK FLOW RATE(CFS)   =   34132.60

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18277.20   15.14    2.434  0.30( 0.25) 0.84    2914.1   50200.00
      2    18807.33   16.87    2.287  0.30( 0.25) 0.84    3351.7     203.00
      3    19453.05   19.06    2.100  0.30( 0.25) 0.84    3895.7   50400.00
      4    19524.54   19.31    2.079  0.30( 0.25) 0.84    3956.0     210.00
      5    21518.36   26.39    1.701  0.30( 0.25) 0.85    5633.1     420.00
      6    22230.65   28.92    1.592  0.30( 0.25) 0.85    6484.0   50300.00
      7    22710.16   30.73    1.530  0.30( 0.25) 0.85    7061.9     400.00
      8    23638.37   35.07    1.444  0.30( 0.26) 0.87    8793.7   50150.00
      9    24496.88   39.64    1.352  0.30( 0.27) 0.89   10488.1     390.00
     10    26697.67   56.60    1.110  0.30( 0.28) 0.93   16411.6   40100.00
```



```
     11    28059.88   64.43    1.043  0.30( 0.28) 0.94   19186.2   11801.00
     12    30285.28   75.23    0.983  0.30( 0.28) 0.95   23716.7   11530.00
     13    31563.18   83.94    0.934  0.30( 0.29) 0.96   28373.5   11910.00
     14    33556.52   93.97    0.885  0.30( 0.29) 0.96   34676.5   11350.00
     15    34132.60   98.71    0.868  0.30( 0.29) 0.97   37850.7   11130.00
     16    33968.97  104.76    0.846  0.30( 0.29) 0.97   40777.3   12300.00
     17    33860.73  108.64    0.832  0.30( 0.29) 0.97   42838.2   11620.00
     18    33525.61  113.48    0.814  0.30( 0.29) 0.97   45037.9   12400.00
     19    32734.42  122.91    0.784  0.30( 0.29) 0.97   48439.5   12201.00
     20    31936.07  130.32    0.768  0.30( 0.29) 0.97   50332.5   12231.00
     21    31107.92  137.71    0.752  0.30( 0.29) 0.97   51885.3   10400.00
     22    29765.79  147.02    0.731  0.30( 0.29) 0.97   53331.7   12010.00
     23    28846.46  152.30    0.720  0.30( 0.29) 0.97   53594.3   10210.00
     24    28267.80  156.29    0.711  0.30( 0.29) 0.97   53741.1   12000.00
     25    25075.85  182.23    0.658  0.30( 0.29) 0.97   54354.0   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV MAY 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI25EV33.DAT
  TIME/DATE OF STUDY: 07:56 05/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.829
   2)   10.00;  3.154
   3)   15.00;  2.415
   4)   20.00;  2.000
   5)   25.00;  1.745
   6)   30.00;  1.534
   7)   40.00;  1.333
   8)   50.00;  1.181
   9)   60.00;  1.055
  10)   90.00;  0.886
  11)  120.00;  0.775
  12)  180.00;  0.646
  13)  360.00;  0.475
  14) 1200.00;  0.208
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X25.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     2430.28   35.90  0.30( 0.24) 0.81    2511.7   13100.00
      2     2369.04   61.85  0.30( 0.24) 0.81    3776.9   13000.00
      3     2335.36   64.17  0.30( 0.24) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1123.08   33.84  0.30( 0.25) 0.83    1121.8   13210.00
      2     1123.47   34.10  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =     1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1123.08   33.84  0.30( 0.25) 0.83    1121.8   13210.00
      2     1123.47   34.10  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =      1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1123.08   33.84    1.457  0.30( 0.25) 0.83    1121.8   13210.00
      2     1123.47   34.10    1.452  0.30( 0.25) 0.83    1127.6   13200.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      2430.28   35.90    1.415  0.30( 0.24) 0.81    2511.7   13100.00
     2      2369.04   61.85    1.045  0.30( 0.24) 0.81    3776.9   13000.00
     3      2335.36   64.17    1.032  0.30( 0.24) 0.81    3796.8   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1      3494.81   33.84    1.457  0.30( 0.24) 0.82    3489.4   13210.00
     2      3503.14   34.10    1.452  0.30( 0.24) 0.82    3513.4   13200.00
     3      3520.00   35.90    1.415  0.30( 0.24) 0.82    3639.3   13100.00
     4      3112.52   61.85    1.045  0.30( 0.24) 0.81    4904.5   13000.00
     5      3066.60   64.17    1.032  0.30( 0.24) 0.81    4924.4   13010.00
   TOTAL AREA(ACRES) =      4924.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     3520.00  Tc(MIN.) =   35.896
 EFFECTIVE AREA(ACRES) =   3639.28  AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     4924.4
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.63
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       15.60      0.30     1.000    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
 AGRICULTURAL POOR COVER
```



```
 "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 COMMERCIAL                 B       22.60      0.30     0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3544.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.99
 AVERAGE FLOW DEPTH(FEET) =   4.63   TRAVEL TIME(MIN.) =   3.52
 Tc(MIN.) =   39.42
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   48.34
 EFFECTIVE AREA(ACRES) =   3684.48     AREA-AVERAGED Fm(INCH/HR) =   0.24
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.81
 TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    3651.68
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.71

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.71   FLOW VELOCITY(FEET/SEC.) =  12.09
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.42
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        7.40      0.30     0.100    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   17.31
 EFFECTIVE AREA(ACRES) =   3700.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    3668.99

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.42
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL POOR COVER
  "BARREN"                  B        1.30      0.30     1.000    86
  COMMERCIAL                B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    7.48
  EFFECTIVE AREA(ACRES) =   3708.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    3676.47

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   20.68
  EFFECTIVE AREA(ACRES) =   3730.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    3697.16

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"              B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   14.10
  EFFECTIVE AREA(ACRES) =   3745.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    3711.26

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.609
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.28
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.28

****************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.69
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   0.34
  Tc(MIN.) =    8.98
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    3.74
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       6.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   7.29
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.91
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   0.43
  Tc(MIN.) =    9.40
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    6.32
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      12.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   8.44
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.114
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.17
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   0.87
  Tc(MIN.) =   10.27
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    9.12
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      21.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.04   FLOW VELOCITY(FEET/SEC.) =   6.47
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.73
  AVERAGE FLOW DEPTH(FEET) =   1.19   TRAVEL TIME(MIN.) =   0.71
  Tc(MIN.) =   10.99
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   15.60
```

```
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      35.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.30   FLOW VELOCITY(FEET/SEC.) =   7.07
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.900
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.80
  AVERAGE FLOW DEPTH(FEET) =   1.44   TRAVEL TIME(MIN.) =   0.73
  Tc(MIN.) =   11.72
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   25.27
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      59.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



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  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.695
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.47
  AVERAGE FLOW DEPTH(FEET) =   1.84   TRAVEL TIME(MIN.) =   1.38
  Tc(MIN.) =   13.10
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   32.55
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      87.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.94   FLOW VELOCITY(FEET/SEC.) =   7.75
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.56
  AVERAGE FLOW DEPTH(FEET) =   2.16   TRAVEL TIME(MIN.) =   0.83
  Tc(MIN.) =   13.93
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   37.43
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     120.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.27   FLOW VELOCITY(FEET/SEC.) =   7.79
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.59
  AVERAGE FLOW DEPTH(FEET) =   2.28   TRAVEL TIME(MIN.) =   1.01
  Tc(MIN.) =   14.94
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   27.90
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     140.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   8.68
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



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============================================================================
  MAINLINE Tc(MIN.) =   14.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   62.69
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     203.16

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     210.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
  AVERAGE FLOW DEPTH(FEET) =   2.78   TRAVEL TIME(MIN.) =   2.61
  Tc(MIN.) =   17.56
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   14.22
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```

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  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     203.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.75   FLOW VELOCITY(FEET/SEC.) =   8.96
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   37.35
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     233.61

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
```



```
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     246.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.07
  AVERAGE FLOW DEPTH(FEET) =   3.19   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   21.37
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   26.57
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     233.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.13   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      233.61   21.37    1.930  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3695.91   37.37    1.386  0.30( 0.24) 0.81    3596.0   13210.00
      2     3703.77   37.63    1.381  0.30( 0.24) 0.81    3620.0   13200.00
      3     3711.26   39.42    1.345  0.30( 0.24) 0.81    3745.9   13100.00
      4     3521.51   65.51    1.024  0.30( 0.24) 0.81    5011.1   13000.00
      5     3475.89   67.86    1.011  0.30( 0.24) 0.81    5031.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3354.49   21.37    1.930  0.30( 0.25) 0.83    2211.0   31100.00
      2     3851.54   37.37    1.386  0.30( 0.25) 0.82    3750.5   13210.00
      3     3858.66   37.63    1.381  0.30( 0.25) 0.82    3774.5   13200.00
      4     3860.99   39.42    1.345  0.30( 0.25) 0.82    3900.4   13100.00
      5     3625.28   65.51    1.024  0.30( 0.24) 0.82    5165.6   13000.00
      6     3577.77   67.86    1.011  0.30( 0.24) 0.82    5185.5   13010.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3860.99  Tc(MIN.) =   39.418
  EFFECTIVE AREA(ACRES) =   3900.38  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5185.5
```

```
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.54
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        1.20      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
 NATURAL POOR COVER
 "BARREN"                   B        0.90      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.80      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3865.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.49
 AVERAGE FLOW DEPTH(FEET) =   6.54   TRAVEL TIME(MIN.) =   2.24
 Tc(MIN.) =   41.66
 SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    8.53
 EFFECTIVE AREA(ACRES) =   3909.78     AREA-AVERAGED Fm(INCH/HR) =   0.25
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
 TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    3860.99
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.54

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  6.54   FLOW VELOCITY(FEET/SEC.) =   8.49
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13302.00 =   35800.91 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   41.66
```



```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B       13.80      0.30     1.000    86
 NATURAL POOR COVER
 "BARREN"                   B        2.60      0.30     1.000    86
 COMMERCIAL                 B        1.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
 SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   25.85
 EFFECTIVE AREA(ACRES) =   3937.88   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    3860.99
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   41.66
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
 COMMERCIAL                 B        0.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
 SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.90
 EFFECTIVE AREA(ACRES) =   3940.98   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    3860.99
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   41.66
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL POOR COVER
  "BARREN"                  B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   18.32
  EFFECTIVE AREA(ACRES) =   3961.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    3860.99
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   41.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       11.60      0.30     1.000    79
  APARTMENTS                B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   69.38
  EFFECTIVE AREA(ACRES) =   4037.58   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    3860.99
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   41.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"      B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =  103.96
  EFFECTIVE AREA(ACRES) =   4152.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    3955.93

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.94
  CHANNEL FLOW THRU SUBAREA(CFS) =    3955.93
  FLOW VELOCITY(FEET/SEC.) =   9.82   FLOW DEPTH(FEET) =   5.94
  TRAVEL TIME(MIN.) =   3.72   Tc(MIN.) =   45.38
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13303.00 =   37994.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        0.80      0.30     1.000    86
  COMMERCIAL                B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                   B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    6.85
```

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  EFFECTIVE AREA(ACRES) =   4159.78   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  COMMERCIAL                 B        3.60      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        4.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   13.54
  EFFECTIVE AREA(ACRES) =   4174.58   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =   21.06
  EFFECTIVE AREA(ACRES) =   4199.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



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****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.60      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B       31.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
  SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =   30.31
  EFFECTIVE AREA(ACRES) =   4234.48   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    9.47
  EFFECTIVE AREA(ACRES) =   4244.98   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =   10.19
  EFFECTIVE AREA(ACRES) =   4256.58   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3958.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   6.86   TRAVEL TIME(MIN.) =   1.88
  Tc(MIN.) =   47.27
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    5.56
  EFFECTIVE AREA(ACRES) =   4263.28     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.86   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   47.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    5.89
  EFFECTIVE AREA(ACRES) =   4270.38   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   47.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
```

```
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   18.93
  EFFECTIVE AREA(ACRES) =   4293.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   47.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    2.83
  EFFECTIVE AREA(ACRES) =   4296.58   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.54
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
```



```
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3959.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.74
  AVERAGE FLOW DEPTH(FEET) =   5.54   TRAVEL TIME(MIN.) =   4.60
  Tc(MIN.) =   51.87
  SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =   4305.78     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.53   FLOW VELOCITY(FEET/SEC.) =  10.73
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   14.04
  EFFECTIVE AREA(ACRES) =   4323.98   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   42.00
  EFFECTIVE AREA(ACRES) =   4377.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   22.34
  EFFECTIVE AREA(ACRES) =   4404.78   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   20.03
  EFFECTIVE AREA(ACRES) =   4430.48   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    8.81
  EFFECTIVE AREA(ACRES) =   4441.18   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   51.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    6.93
  EFFECTIVE AREA(ACRES) =   4449.88   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    3955.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A25EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      985.44   13.67  0.30( 0.13) 0.43     435.7     120.00
      2      984.77   13.72  0.30( 0.13) 0.43     436.5     110.00
      3      831.39   20.84  0.30( 0.13) 0.43     504.3     100.00
      4      778.32   23.57  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3453.21   34.36    1.446  0.30( 0.26) 0.85    2760.5   31100.00
      2     3931.18   49.85    1.183  0.30( 0.25) 0.84    4300.0   13210.00
      3     3936.42   50.10    1.180  0.30( 0.25) 0.84    4324.0   13200.00
      4     3955.93   51.87    1.157  0.30( 0.25) 0.84    4449.9   13100.00
      5     3724.08   78.20    0.952  0.30( 0.25) 0.83    5715.1   13000.00
      6     3673.15   80.60    0.939  0.30( 0.25) 0.83    5735.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      985.44   13.67    2.612  0.30( 0.13) 0.43     435.7     120.00
      2      984.77   13.72    2.604  0.30( 0.13) 0.43     436.5     110.00
      3      831.39   20.84    1.957  0.30( 0.13) 0.43     504.3     100.00
```



```
      4      778.32   23.57    1.818  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3703.98   13.67    2.612  0.30( 0.22) 0.73    1533.9     120.00
      2     3704.71   13.72    2.604  0.30( 0.22) 0.73    1538.8     110.00
      3     3824.47   20.84    1.957  0.30( 0.23) 0.75    2178.5     100.00
      4     3886.34   23.57    1.818  0.30( 0.23) 0.76    2403.5     150.00
      5     4060.12   34.36    1.446  0.30( 0.24) 0.79    3270.7   31100.00
      6     4416.80   49.85    1.183  0.30( 0.24) 0.80    4810.2   13210.00
      7     4420.43   50.10    1.180  0.30( 0.24) 0.80    4834.2   13200.00
      8     4429.61   51.87    1.157  0.30( 0.24) 0.80    4960.1   13100.00
      9     4103.28   78.20    0.952  0.30( 0.24) 0.80    6225.3   13000.00
     10     4046.11   80.60    0.939  0.30( 0.24) 0.80    6245.2   13010.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4429.61  Tc(MIN.) =   51.872
  EFFECTIVE AREA(ACRES) =   4960.08  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                    B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                     B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                    B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        4.10      0.30     1.000    63
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4436.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.29
  AVERAGE FLOW DEPTH(FEET) =   5.44   TRAVEL TIME(MIN.) =   5.98
  Tc(MIN.) =   57.85
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =   12.95
  EFFECTIVE AREA(ACRES) =   4978.48     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.44   FLOW VELOCITY(FEET/SEC.) =  12.29
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   34.91
  EFFECTIVE AREA(ACRES) =   5028.08   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.56
  EFFECTIVE AREA(ACRES) =   5028.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.94
  EFFECTIVE AREA(ACRES) =   5030.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
```

```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    5.71
  EFFECTIVE AREA(ACRES) =   5037.78   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   37.89
  EFFECTIVE AREA(ACRES) =   5085.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   40.95
  EFFECTIVE AREA(ACRES) =   5143.56   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    4429.61
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.37
  CHANNEL FLOW THRU SUBAREA(CFS) =    4429.61
  FLOW VELOCITY(FEET/SEC.) =  12.48   FLOW DEPTH(FEET) =   5.37
  TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =   59.91
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   59.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.056
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    5.36
  EFFECTIVE AREA(ACRES) =   5151.26   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   59.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.056
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
```

```
  NATURAL FAIR COVER
  "GRASS"                    B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    4.15
  EFFECTIVE AREA(ACRES) =   5157.36   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.41
  CHANNEL FLOW THRU SUBAREA(CFS) =    4429.61
  FLOW VELOCITY(FEET/SEC.) =   9.98   FLOW DEPTH(FEET) =   6.41
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =   61.46
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13308.00 =   48763.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.00      0.30     1.000    65
  COMMERCIAL                 B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    7.16
  EFFECTIVE AREA(ACRES) =   5166.86   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
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```
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  COMMERCIAL                 B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   61.06
  EFFECTIVE AREA(ACRES) =   5242.46   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.90      0.30     1.000    79
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       13.20      0.30     1.000    65
  APARTMENTS                 B        0.50      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
  SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =   10.63
  EFFECTIVE AREA(ACRES) =   5258.06   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B       17.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       16.80      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.60      0.30     0.200    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.50      0.30     0.400    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       10.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   62.65
  EFFECTIVE AREA(ACRES) =   5338.46   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.70
  EFFECTIVE AREA(ACRES) =   5339.46   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
```



```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.41
  EFFECTIVE AREA(ACRES) =   5341.56   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   61.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  PUBLIC PARK                B        1.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    7.87
  EFFECTIVE AREA(ACRES) =   5353.17   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    4429.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 19524.54 | 19.31 | 0.30( 0.25) | 0.84 | 3956.0 | 210.00 | |
| 2 | 21518.36 | 26.39 | 0.30( 0.25) | 0.85 | 5633.1 | 420.00 | |
| 3 | 22710.16 | 30.73 | 0.30( 0.25) | 0.85 | 7061.9 | 400.00 | |
| 4 | 23638.37 | 35.07 | 0.30( 0.26) | 0.87 | 8793.7 | 50150.00 | |
| 5 | 24496.88 | 39.64 | 0.30( 0.27) | 0.89 | 10488.1 | 390.00 | |
| 6 | 26697.67 | 56.60 | 0.30( 0.28) | 0.93 | 16411.6 | 40100.00 | |
| 7 | 28059.88 | 64.43 | 0.30( 0.28) | 0.94 | 19186.2 | 11801.00 | |
| 8 | 30285.28 | 75.23 | 0.30( 0.28) | 0.95 | 23716.7 | 11530.00 | |
| 9 | 31563.18 | 83.94 | 0.30( 0.29) | 0.96 | 28373.5 | 11910.00 | |
| 10 | 33556.52 | 93.97 | 0.30( 0.29) | 0.96 | 34676.5 | 11350.00 | |
| 11 | 34132.60 | 98.71 | 0.30( 0.29) | 0.97 | 37850.7 | 11130.00 | |
| 12 | 33968.97 | 104.76 | 0.30( 0.29) | 0.97 | 40777.3 | 12300.00 | |
| 13 | 33525.61 | 113.48 | 0.30( 0.29) | 0.97 | 45037.9 | 12400.00 | |
| 14 | 32734.42 | 122.91 | 0.30( 0.29) | 0.97 | 48439.5 | 12201.00 | |
| 15 | 31936.07 | 130.32 | 0.30( 0.29) | 0.97 | 50332.5 | 12231.00 | |
| 16 | 31107.92 | 137.71 | 0.30( 0.29) | 0.97 | 51885.3 | 10400.00 | |
| 17 | 29765.79 | 147.02 | 0.30( 0.29) | 0.97 | 53331.7 | 12010.00 | |
| 18 | 28846.46 | 152.30 | 0.30( 0.29) | 0.97 | 53594.3 | 10210.00 | |
| 19 | 28267.80 | 156.29 | 0.30( 0.29) | 0.97 | 53741.1 | 12000.00 | |
| 20 | 25075.85 | 182.23 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 | |

TOTAL AREA(ACRES) = 54354.0

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********************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
--------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
================================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 19524.54 | 19.31 | 0.30( 0.25) | 0.84 | 3956.0 | 210.00 |
| 2 | 21518.36 | 26.39 | 0.30( 0.25) | 0.85 | 5633.1 | 420.00 |
| 3 | 22710.16 | 30.73 | 0.30( 0.25) | 0.85 | 7061.9 | 400.00 |
| 4 | 23638.37 | 35.07 | 0.30( 0.26) | 0.87 | 8793.7 | 50150.00 |
| 5 | 24496.88 | 39.64 | 0.30( 0.27) | 0.89 | 10488.1 | 390.00 |
| 6 | 26697.67 | 56.60 | 0.30( 0.28) | 0.93 | 16411.6 | 40100.00 |
| 7 | 28059.88 | 64.43 | 0.30( 0.28) | 0.94 | 19186.2 | 11801.00 |
| 8 | 30285.28 | 75.23 | 0.30( 0.28) | 0.95 | 23716.7 | 11530.00 |
| 9 | 31563.18 | 83.94 | 0.30( 0.29) | 0.96 | 28373.5 | 11910.00 |
| 10 | 33556.52 | 93.97 | 0.30( 0.29) | 0.96 | 34676.5 | 11350.00 |
| 11 | 34132.60 | 98.71 | 0.30( 0.29) | 0.97 | 37850.7 | 11130.00 |
| 12 | 33968.97 | 104.76 | 0.30( 0.29) | 0.97 | 40777.3 | 12300.00 |
| 13 | 33525.61 | 113.48 | 0.30( 0.29) | 0.97 | 45037.9 | 12400.00 |
| 14 | 32734.42 | 122.91 | 0.30( 0.29) | 0.97 | 48439.5 | 12201.00 |
| 15 | 31936.07 | 130.32 | 0.30( 0.29) | 0.97 | 50332.5 | 12231.00 |
| 16 | 31107.92 | 137.71 | 0.30( 0.29) | 0.97 | 51885.3 | 10400.00 |
| 17 | 29765.79 | 147.02 | 0.30( 0.29) | 0.97 | 53331.7 | 12010.00 |
| 18 | 28846.46 | 152.30 | 0.30( 0.29) | 0.97 | 53594.3 | 10210.00 |
| 19 | 28267.80 | 156.29 | 0.30( 0.29) | 0.97 | 53741.1 | 12000.00 |
| 20 | 25075.85 | 182.23 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

TOTAL AREA(ACRES) = 54354.0

```
********************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```



```
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.63
  CHANNEL FLOW THRU SUBAREA(CFS) =   34132.60
  FLOW VELOCITY(FEET/SEC.) =   7.25   FLOW DEPTH(FEET) =  16.63
  TRAVEL TIME(MIN.) =   3.19   Tc(MIN.) =  101.90
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 19524.54 | 23.11 | 1.842 | 0.30( 0.25) | 0.84 | 3956.0 | 210.00 |
| 2 | 21518.36 | 30.07 | 1.533 | 0.30( 0.25) | 0.85 | 5633.1 | 420.00 |
| 3 | 22710.16 | 34.34 | 1.447 | 0.30( 0.25) | 0.85 | 7061.9 | 400.00 |
| 4 | 23638.37 | 38.64 | 1.360 | 0.30( 0.26) | 0.87 | 8793.7 | 50150.00 |
| 5 | 24496.88 | 43.18 | 1.285 | 0.30( 0.27) | 0.89 | 10488.1 | 390.00 |
| 6 | 26697.67 | 60.04 | 1.055 | 0.30( 0.28) | 0.93 | 16411.6 | 40100.00 |
| 7 | 28059.88 | 67.82 | 1.011 | 0.30( 0.28) | 0.94 | 19186.2 | 11801.00 |
| 8 | 30285.28 | 78.54 | 0.951 | 0.30( 0.28) | 0.95 | 23716.7 | 11530.00 |
| 9 | 31563.18 | 87.21 | 0.902 | 0.30( 0.29) | 0.96 | 28373.5 | 11910.00 |
| 10 | 33556.52 | 97.18 | 0.859 | 0.30( 0.29) | 0.96 | 34676.5 | 11350.00 |
| 11 | 34132.60 | 101.90 | 0.842 | 0.30( 0.29) | 0.97 | 37850.7 | 11130.00 |
| 12 | 33968.97 | 107.96 | 0.820 | 0.30( 0.29) | 0.97 | 40777.3 | 12300.00 |
| 13 | 33525.61 | 116.69 | 0.787 | 0.30( 0.29) | 0.97 | 45037.9 | 12400.00 |
| 14 | 32734.42 | 126.15 | 0.762 | 0.30( 0.29) | 0.97 | 48439.5 | 12201.00 |
| 15 | 31936.07 | 133.58 | 0.746 | 0.30( 0.29) | 0.97 | 50332.5 | 12231.00 |
| 16 | 31107.92 | 141.00 | 0.730 | 0.30( 0.29) | 0.97 | 51885.3 | 10400.00 |
| 17 | 29765.79 | 150.35 | 0.710 | 0.30( 0.29) | 0.97 | 53331.7 | 12010.00 |
| 18 | 28846.46 | 155.66 | 0.698 | 0.30( 0.29) | 0.97 | 53594.3 | 10210.00 |
| 19 | 28267.80 | 159.67 | 0.690 | 0.30( 0.29) | 0.97 | 53741.1 | 12000.00 |
| 20 | 25075.85 | 185.74 | 0.641 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 3703.98 | 23.80 | 1.806 | 0.30( 0.22) | 0.74 | 1926.9 | 120.00 |
| 2 | 3704.71 | 23.85 | 1.804 | 0.30( 0.22) | 0.74 | 1931.9 | 110.00 |
| 3 | 3824.47 | 30.87 | 1.517 | 0.30( 0.23) | 0.76 | 2571.6 | 100.00 |
| 4 | 3886.34 | 33.55 | 1.463 | 0.30( 0.23) | 0.76 | 2796.6 | 150.00 |
| 5 | 4060.12 | 44.21 | 1.269 | 0.30( 0.24) | 0.79 | 3663.8 | 31100.00 |
| 6 | 4416.80 | 59.45 | 1.062 | 0.30( 0.24) | 0.79 | 5203.3 | 13210.00 |
| 7 | 4420.43 | 59.69 | 1.059 | 0.30( 0.24) | 0.79 | 5227.3 | 13200.00 |
| 8 | 4429.61 | 61.46 | 1.047 | 0.30( 0.24) | 0.79 | 5353.2 | 13100.00 |
| 9 | 4103.28 | 88.02 | 0.897 | 0.30( 0.24) | 0.80 | 6618.4 | 13000.00 |
| 10 | 4046.11 | 90.46 | 0.884 | 0.30( 0.24) | 0.80 | 6638.3 | 13010.00 |

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23200.87 | 23.11 | 1.842 | 0.30( 0.24) | 0.81 | 5826.8 | 210.00 |
| 2 | 23427.09 | 23.80 | 1.806 | 0.30( 0.24) | 0.81 | 6050.0 | 120.00 |
| 3 | 23441.68 | 23.85 | 1.804 | 0.30( 0.24) | 0.81 | 6066.5 | 110.00 |
| 4 | 25329.27 | 30.07 | 1.533 | 0.30( 0.25) | 0.82 | 8132.2 | 420.00 |
| 5 | 25564.59 | 30.87 | 1.517 | 0.30( 0.25) | 0.82 | 8470.5 | 100.00 |
| 6 | 26374.32 | 33.55 | 1.463 | 0.30( 0.25) | 0.82 | 9592.1 | 150.00 |
| 7 | 26609.49 | 34.34 | 1.447 | 0.30( 0.25) | 0.83 | 9923.2 | 400.00 |
| 8 | 27607.75 | 38.64 | 1.360 | 0.30( 0.25) | 0.84 | 12004.6 | 50150.00 |
| 9 | 28540.27 | 43.18 | 1.285 | 0.30( 0.26) | 0.86 | 14068.4 | 390.00 |
| 10 | 28690.82 | 44.21 | 1.269 | 0.30( 0.26) | 0.87 | 14512.0 | 31100.00 |
| 11 | 31036.44 | 59.45 | 1.062 | 0.30( 0.27) | 0.89 | 21404.9 | 13210.00 |
| 12 | 31071.61 | 59.69 | 1.059 | 0.30( 0.27) | 0.90 | 21513.8 | 13200.00 |
| 13 | 31119.95 | 60.04 | 1.055 | 0.30( 0.27) | 0.90 | 21664.2 | 40100.00 |
| 14 | 31375.04 | 61.46 | 1.047 | 0.30( 0.27) | 0.90 | 22269.4 | 13100.00 |
| 15 | 32411.30 | 67.82 | 1.011 | 0.30( 0.27) | 0.91 | 24842.5 | 11801.00 |
| 16 | 34505.00 | 78.54 | 0.951 | 0.30( 0.28) | 0.92 | 29883.7 | 11530.00 |
| 17 | 35676.38 | 87.21 | 0.902 | 0.30( 0.28) | 0.93 | 34953.5 | 11910.00 |
| 18 | 35827.86 | 88.02 | 0.897 | 0.30( 0.28) | 0.93 | 35502.3 | 13000.00 |
| 19 | 36259.57 | 90.46 | 0.884 | 0.30( 0.28) | 0.93 | 37068.1 | 13010.00 |
| 20 | 37446.81 | 97.18 | 0.859 | 0.30( 0.28) | 0.94 | 41314.8 | 11350.00 |
| 21 | 37913.45 | 101.90 | 0.842 | 0.30( 0.28) | 0.94 | 44489.1 | 11130.00 |
| 22 | 37609.34 | 107.96 | 0.820 | 0.30( 0.28) | 0.94 | 47415.6 | 12300.00 |
| 23 | 36963.57 | 116.69 | 0.787 | 0.30( 0.28) | 0.95 | 51676.2 | 12400.00 |
| 24 | 36012.71 | 126.15 | 0.762 | 0.30( 0.28) | 0.95 | 55077.8 | 12201.00 |
| 25 | 35114.25 | 133.58 | 0.746 | 0.30( 0.29) | 0.95 | 56970.8 | 12231.00 |
| 26 | 34186.11 | 141.00 | 0.730 | 0.30( 0.29) | 0.95 | 58523.6 | 10400.00 |
| 27 | 32718.03 | 150.35 | 0.710 | 0.30( 0.29) | 0.95 | 59970.0 | 12010.00 |
| 28 | 31727.03 | 155.66 | 0.698 | 0.30( 0.29) | 0.95 | 60232.6 | 10210.00 |
| 29 | 31094.33 | 159.67 | 0.690 | 0.30( 0.29) | 0.95 | 60379.4 | 12000.00 |
| 30 | 27594.33 | 185.74 | 0.641 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

TOTAL AREA(ACRES) = 60992.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37913.45 Tc(MIN.) = 101.901
EFFECTIVE AREA(ACRES) = 44489.05 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 60992.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60992.3 TC(MIN.) = 101.90
EFFECTIVE AREA(ACRES) = 44489.05 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 37913.45

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23200.87 | 23.11 | 1.842 | 0.30( 0.24) | 0.81 | 5826.8 | 210.00 |
| 2 | 23427.09 | 23.80 | 1.806 | 0.30( 0.24) | 0.81 | 6050.0 | 120.00 |
| 3 | 23441.68 | 23.85 | 1.804 | 0.30( 0.24) | 0.81 | 6066.5 | 110.00 |
| 4 | 25329.27 | 30.07 | 1.533 | 0.30( 0.25) | 0.82 | 8132.2 | 420.00 |
| 5 | 25564.59 | 30.87 | 1.517 | 0.30( 0.25) | 0.82 | 8470.5 | 100.00 |
| 6 | 26374.32 | 33.55 | 1.463 | 0.30( 0.25) | 0.82 | 9592.1 | 150.00 |
| 7 | 26609.49 | 34.34 | 1.447 | 0.30( 0.25) | 0.83 | 9923.2 | 400.00 |
| 8 | 27607.75 | 38.64 | 1.360 | 0.30( 0.25) | 0.84 | 12004.6 | 50150.00 |
| 9 | 28540.27 | 43.18 | 1.285 | 0.30( 0.26) | 0.86 | 14068.4 | 390.00 |
| 10 | 28690.82 | 44.21 | 1.269 | 0.30( 0.26) | 0.87 | 14512.0 | 31100.00 |
| 11 | 31036.44 | 59.45 | 1.062 | 0.30( 0.27) | 0.89 | 21404.9 | 13210.00 |
| 12 | 31071.61 | 59.69 | 1.059 | 0.30( 0.27) | 0.90 | 21513.8 | 13200.00 |
| 13 | 31119.95 | 60.04 | 1.055 | 0.30( 0.27) | 0.90 | 21664.2 | 40100.00 |
| 14 | 31375.04 | 61.46 | 1.047 | 0.30( 0.27) | 0.90 | 22269.4 | 13100.00 |
| 15 | 32411.30 | 67.82 | 1.011 | 0.30( 0.27) | 0.91 | 24842.5 | 11801.00 |
| 16 | 34505.00 | 78.54 | 0.951 | 0.30( 0.28) | 0.92 | 29883.7 | 11530.00 |
| 17 | 35676.38 | 87.21 | 0.902 | 0.30( 0.28) | 0.93 | 34953.5 | 11910.00 |
| 18 | 35827.86 | 88.02 | 0.897 | 0.30( 0.28) | 0.93 | 35502.3 | 13000.00 |
| 19 | 36259.57 | 90.46 | 0.884 | 0.30( 0.28) | 0.93 | 37068.1 | 13010.00 |
| 20 | 37446.81 | 97.18 | 0.859 | 0.30( 0.28) | 0.94 | 41314.8 | 11350.00 |
| 21 | 37913.45 | 101.90 | 0.842 | 0.30( 0.28) | 0.94 | 44489.1 | 11130.00 |
| 22 | 37609.34 | 107.96 | 0.820 | 0.30( 0.28) | 0.94 | 47415.6 | 12300.00 |
| 23 | 36963.57 | 116.69 | 0.787 | 0.30( 0.28) | 0.95 | 51676.2 | 12400.00 |
| 24 | 36012.71 | 126.15 | 0.762 | 0.30( 0.28) | 0.95 | 55077.8 | 12201.00 |
| 25 | 35114.25 | 133.58 | 0.746 | 0.30( 0.29) | 0.95 | 56970.8 | 12231.00 |
| 26 | 34186.11 | 141.00 | 0.730 | 0.30( 0.29) | 0.95 | 58523.6 | 10400.00 |
| 27 | 32718.03 | 150.35 | 0.710 | 0.30( 0.29) | 0.95 | 59970.0 | 12010.00 |
| 28 | 31727.03 | 155.66 | 0.698 | 0.30( 0.29) | 0.95 | 60232.6 | 10210.00 |
| 29 | 31094.33 | 159.67 | 0.690 | 0.30( 0.29) | 0.95 | 60379.4 | 12000.00 |
| 30 | 27594.33 | 185.74 | 0.641 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV AUG 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI25EV34.DAT
  TIME/DATE OF STUDY: 13:42 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.808
   2)   10.00;  3.143
   3)   15.00;  2.408
   4)   20.00;  1.996
   5)   25.00;  1.742
   6)   30.00;  1.531
   7)   40.00;  1.331
   8)   50.00;  1.178
   9)   60.00;  1.052
  10)   90.00;  0.883
  11)  120.00;  0.772
  12)  180.00;  0.643
  13)  360.00;  0.472
  14) 1200.00;  0.207
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    23441.68   23.85  0.30( 0.24) 0.81    6066.5     110.00
      2    25564.59   30.87  0.30( 0.25) 0.82    8470.5     100.00
      3    26609.49   34.34  0.30( 0.25) 0.83    9923.2     400.00
      4    27607.75   38.64  0.30( 0.25) 0.84   12004.6   50150.00
      5    28690.82   44.21  0.30( 0.26) 0.87   14512.0   31100.00
      6    31375.04   61.46  0.30( 0.27) 0.90   22269.4   13100.00
      7    32411.30   67.82  0.30( 0.27) 0.91   24842.5   11801.00
      8    34505.00   78.54  0.30( 0.28) 0.92   29883.7   11530.00
      9    36259.57   90.46  0.30( 0.28) 0.93   37068.1   13010.00
     10    37446.81   97.18  0.30( 0.28) 0.94   41314.8   11350.00
     11    37913.45  101.90  0.30( 0.28) 0.94   44489.1   11130.00
     12    37609.34  107.96  0.30( 0.28) 0.94   47415.6   12300.00
     13    36963.57  116.69  0.30( 0.28) 0.95   51676.2   12400.00
     14    36012.71  126.15  0.30( 0.28) 0.95   55077.8   12201.00
     15    35114.25  133.58  0.30( 0.29) 0.95   56970.8   12231.00
     16    34186.11  141.00  0.30( 0.29) 0.95   58523.6   10400.00
     17    32718.03  150.35  0.30( 0.29) 0.95   59970.0   12010.00
     18    31727.03  155.66  0.30( 0.29) 0.95   60232.6   10210.00
     19    31094.33  159.67  0.30( 0.29) 0.95   60379.4   12000.00
     20    27594.33  185.74  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    23441.68   23.85  0.30( 0.24) 0.81    6066.5     110.00
      2    25564.59   30.87  0.30( 0.25) 0.82    8470.5     100.00
      3    26609.49   34.34  0.30( 0.25) 0.83    9923.2     400.00
      4    27607.75   38.64  0.30( 0.25) 0.84   12004.6   50150.00
      5    28690.82   44.21  0.30( 0.26) 0.87   14512.0   31100.00
      6    31375.04   61.46  0.30( 0.27) 0.90   22269.4   13100.00
      7    32411.30   67.82  0.30( 0.27) 0.91   24842.5   11801.00
      8    34505.00   78.54  0.30( 0.28) 0.92   29883.7   11530.00
      9    36259.57   90.46  0.30( 0.28) 0.93   37068.1   13010.00
     10    37446.81   97.18  0.30( 0.28) 0.94   41314.8   11350.00
     11    37913.45  101.90  0.30( 0.28) 0.94   44489.1   11130.00
     12    37609.34  107.96  0.30( 0.28) 0.94   47415.6   12300.00
     13    36963.57  116.69  0.30( 0.28) 0.95   51676.2   12400.00
```

```
    14    36012.71  126.15  0.30( 0.28) 0.95   55077.8   12201.00
    15    35114.25  133.58  0.30( 0.29) 0.95   56970.8   12231.00
    16    34186.11  141.00  0.30( 0.29) 0.95   58523.6   10400.00
    17    32718.03  150.35  0.30( 0.29) 0.95   59970.0   12010.00
    18    31727.03  155.66  0.30( 0.29) 0.95   60232.6   10210.00
    19    31094.33  159.67  0.30( 0.29) 0.95   60379.4   12000.00
    20    27594.33  185.74  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.43
  CHANNEL FLOW THRU SUBAREA(CFS) =   37913.45
  FLOW VELOCITY(FEET/SEC.) =  14.41   FLOW DEPTH(FEET) =  10.43
  TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  102.62
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505W.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     233.86   20.08  0.30( 0.30) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23441.68   24.69    1.758  0.30( 0.24) 0.81    6066.5     110.00
      2    25564.59   31.69    1.497  0.30( 0.25) 0.82    8470.5     100.00
      3    26609.49   35.15    1.428  0.30( 0.25) 0.83    9923.2     400.00
      4    27607.75   39.44    1.342  0.30( 0.25) 0.84   12004.6   50150.00
      5    28690.82   44.99    1.255  0.30( 0.26) 0.87   14512.0   31100.00
      6    31375.04   62.22    1.039  0.30( 0.27) 0.90   22269.4   13100.00
      7    32411.30   68.58    1.004  0.30( 0.27) 0.91   24842.5   11801.00
      8    34505.00   79.28    0.943  0.30( 0.28) 0.92   29883.7   11530.00
      9    36259.57   91.19    0.879  0.30( 0.28) 0.93   37068.1   13010.00
     10    37446.81   97.91    0.854  0.30( 0.28) 0.94   41314.8   11350.00
     11    37913.45  102.62    0.836  0.30( 0.28) 0.94   44489.1   11130.00
     12    37609.34  108.68    0.814  0.30( 0.28) 0.94   47415.6   12300.00
```



```
    13    36963.57  117.41    0.782  0.30( 0.28) 0.95   51676.2   12400.00
    14    36012.71  126.88    0.757  0.30( 0.28) 0.95   55077.8   12201.00
    15    35114.25  134.32    0.741  0.30( 0.29) 0.95   56970.8   12231.00
    16    34186.11  141.74    0.725  0.30( 0.29) 0.95   58523.6   10400.00
    17    32718.03  151.10    0.705  0.30( 0.29) 0.95   59970.0   12010.00
    18    31727.03  156.43    0.694  0.30( 0.29) 0.95   60232.6   10210.00
    19    31094.33  160.44    0.685  0.30( 0.29) 0.95   60379.4   12000.00
    20    27594.33  186.54    0.637  0.30( 0.29) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     233.86   20.08    1.992  0.30( 0.30) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22245.12   20.08    1.992  0.30( 0.24) 0.81    5087.0   50500.00
      2    23643.25   24.69    1.758  0.30( 0.24) 0.81    6219.7     110.00
      3    25730.25   31.69    1.497  0.30( 0.25) 0.82    8623.7     100.00
      4    26765.59   35.15    1.428  0.30( 0.25) 0.83   10076.4     400.00
      5    27752.03   39.44    1.342  0.30( 0.25) 0.85   12157.8   50150.00
      6    28823.02   44.99    1.255  0.30( 0.26) 0.87   14665.2   31100.00
      7    31477.58   62.22    1.039  0.30( 0.27) 0.90   22422.6   13100.00
      8    32508.90   68.58    1.004  0.30( 0.27) 0.91   24995.7   11801.00
      9    34594.28   79.28    0.943  0.30( 0.28) 0.92   30036.9   11530.00
     10    36339.92   91.19    0.879  0.30( 0.28) 0.93   37221.2   13010.00
     11    37523.74   97.91    0.854  0.30( 0.28) 0.94   41468.0   11350.00
     12    37987.98  102.62    0.836  0.30( 0.28) 0.94   44642.2   11130.00
     13    37680.77  108.68    0.814  0.30( 0.28) 0.94   47568.8   12300.00
     14    37030.54  117.41    0.782  0.30( 0.28) 0.95   51829.4   12400.00
     15    36076.32  126.88    0.757  0.30( 0.28) 0.95   55231.0   12201.00
     16    35175.66  134.32    0.741  0.30( 0.29) 0.95   57124.0   12231.00
     17    34245.32  141.74    0.725  0.30( 0.29) 0.95   58676.7   10400.00
     18    32774.47  151.10    0.705  0.30( 0.29) 0.95   60123.2   12010.00
     19    31781.89  156.43    0.694  0.30( 0.29) 0.95   60385.7   10210.00
     20    31148.00  160.44    0.685  0.30( 0.29) 0.95   60532.6   12000.00
     21    27641.35  186.54    0.637  0.30( 0.29) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    37987.98  Tc(MIN.) =  102.622
  EFFECTIVE AREA(ACRES) =  44642.23  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 10.30
CHANNEL FLOW THRU SUBAREA(CFS) = 37987.98
FLOW VELOCITY(FEET/SEC.) = 14.67 FLOW DEPTH(FEET) = 10.30
TRAVEL TIME(MIN.) = 0.45 Tc(MIN.) = 103.07
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
>>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
PEAK FLOWRATE TABLE FILE NAME: 0610506W.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 84.62 | 17.59 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

TOTAL AREA(ACRES) = 49.6

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22245.12 | 20.62 | 1.965 | 0.30( 0.24) | 0.81 | 5087.0 | 50500.00 |
| 2 | 23643.25 | 25.22 | 1.733 | 0.30( 0.24) | 0.81 | 6219.7 | 110.00 |
| 3 | 25730.25 | 32.20 | 1.487 | 0.30( 0.25) | 0.82 | 8623.7 | 100.00 |
| 4 | 26765.59 | 35.66 | 1.418 | 0.30( 0.25) | 0.83 | 10076.4 | 400.00 |
| 5 | 27752.03 | 39.94 | 1.332 | 0.30( 0.25) | 0.85 | 12157.8 | 50150.00 |
| 6 | 28823.02 | 45.49 | 1.247 | 0.30( 0.26) | 0.87 | 14665.2 | 31100.00 |
| 7 | 31477.58 | 62.70 | 1.037 | 0.30( 0.27) | 0.90 | 22422.6 | 13100.00 |
| 8 | 32508.90 | 69.05 | 1.001 | 0.30( 0.27) | 0.91 | 24995.7 | 11801.00 |
| 9 | 34594.28 | 79.75 | 0.941 | 0.30( 0.28) | 0.92 | 30036.9 | 11530.00 |
| 10 | 36339.92 | 91.65 | 0.877 | 0.30( 0.28) | 0.93 | 37221.2 | 13010.00 |
| 11 | 37523.74 | 98.36 | 0.852 | 0.30( 0.28) | 0.94 | 41468.0 | 11350.00 |
| 12 | 37987.98 | 103.07 | 0.835 | 0.30( 0.28) | 0.94 | 44642.2 | 11130.00 |
| 13 | 37680.77 | 109.13 | 0.812 | 0.30( 0.28) | 0.94 | 47568.8 | 12300.00 |
| 14 | 37030.54 | 117.87 | 0.780 | 0.30( 0.28) | 0.95 | 51829.4 | 12400.00 |
| 15 | 36076.32 | 127.34 | 0.756 | 0.30( 0.28) | 0.95 | 55231.0 | 12201.00 |
| 16 | 35175.66 | 134.78 | 0.740 | 0.30( 0.29) | 0.95 | 57124.0 | 12231.00 |
| 17 | 34245.32 | 142.21 | 0.724 | 0.30( 0.29) | 0.95 | 58676.7 | 10400.00 |
| 18 | 32774.47 | 151.57 | 0.704 | 0.30( 0.29) | 0.95 | 60123.2 | 12010.00 |
| 19 | 31781.89 | 156.90 | 0.693 | 0.30( 0.29) | 0.95 | 60385.7 | 10210.00 |
| 20 | 31148.00 | 160.92 | 0.684 | 0.30( 0.29) | 0.95 | 60532.6 | 12000.00 |
| 21 | 27641.35 | 187.03 | 0.636 | 0.30( 0.29) | 0.95 | 61145.5 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 84.62 | 17.59 | 2.195 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.

** PEAK FLOW RATE TABLE **



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21598.33 | 17.59 | 2.195 | 0.30( 0.24) | 0.82 | 4388.6 | 50600.00 |
| 2 | 22319.45 | 20.62 | 1.965 | 0.30( 0.24) | 0.82 | 5136.6 | 50500.00 |
| 3 | 23707.23 | 25.22 | 1.733 | 0.30( 0.24) | 0.81 | 6269.3 | 110.00 |
| 4 | 25783.26 | 32.20 | 1.487 | 0.30( 0.25) | 0.82 | 8673.3 | 100.00 |
| 5 | 26815.51 | 35.66 | 1.418 | 0.30( 0.25) | 0.83 | 10126.0 | 400.00 |
| 6 | 27798.12 | 39.94 | 1.332 | 0.30( 0.25) | 0.85 | 12207.4 | 50150.00 |
| 7 | 28865.31 | 45.49 | 1.247 | 0.30( 0.26) | 0.87 | 14714.8 | 31100.00 |
| 8 | 31510.48 | 62.70 | 1.037 | 0.30( 0.27) | 0.90 | 22472.2 | 13100.00 |
| 9 | 32540.20 | 69.05 | 1.001 | 0.30( 0.27) | 0.91 | 25045.3 | 11801.00 |
| 10 | 34622.89 | 79.75 | 0.941 | 0.30( 0.28) | 0.92 | 30086.5 | 11530.00 |
| 11 | 36365.68 | 91.65 | 0.877 | 0.30( 0.28) | 0.93 | 37270.8 | 13010.00 |
| 12 | 37548.39 | 98.36 | 0.852 | 0.30( 0.28) | 0.94 | 41517.6 | 11350.00 |
| 13 | 38011.85 | 103.07 | 0.835 | 0.30( 0.28) | 0.94 | 44691.8 | 11130.00 |
| 14 | 37703.64 | 109.13 | 0.812 | 0.30( 0.28) | 0.94 | 47618.4 | 12300.00 |
| 15 | 37051.97 | 117.87 | 0.780 | 0.30( 0.28) | 0.95 | 51879.0 | 12400.00 |
| 16 | 36096.70 | 127.34 | 0.756 | 0.30( 0.28) | 0.95 | 55280.6 | 12201.00 |
| 17 | 35195.32 | 134.78 | 0.740 | 0.30( 0.29) | 0.95 | 57173.6 | 12231.00 |
| 18 | 34264.27 | 142.21 | 0.724 | 0.30( 0.29) | 0.95 | 58726.3 | 10400.00 |
| 19 | 32792.52 | 151.57 | 0.704 | 0.30( 0.29) | 0.95 | 60172.8 | 12010.00 |
| 20 | 31799.43 | 156.90 | 0.693 | 0.30( 0.29) | 0.95 | 60435.3 | 10210.00 |
| 21 | 31165.15 | 160.92 | 0.684 | 0.30( 0.29) | 0.95 | 60582.2 | 12000.00 |
| 22 | 27656.37 | 187.03 | 0.636 | 0.30( 0.29) | 0.95 | 61195.1 | 10100.00 |

TOTAL AREA(ACRES) = 61195.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38011.85 Tc(MIN.) = 103.071
EFFECTIVE AREA(ACRES) = 44691.83 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 61195.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.22
CHANNEL FLOW THRU SUBAREA(CFS) = 38011.85
FLOW VELOCITY(FEET/SEC.) = 16.75 FLOW DEPTH(FEET) = 9.22
TRAVEL TIME(MIN.) = 1.59 Tc(MIN.) = 104.67
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120708.25 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 104.67
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.829
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ | SCS SOIL | AREA | Fp | Ap | SCS |
|---|---|---|---|---|---|

```
     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                  B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                  B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                  B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"             B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"             B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW" B        1.80      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =    9.66
  EFFECTIVE AREA(ACRES) =  44712.13   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61215.4       PEAK FLOW RATE(CFS) =   38011.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  104.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW" B        3.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"         B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"         B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"         B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =    7.90
  EFFECTIVE AREA(ACRES) =  44728.73   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61232.0       PEAK FLOW RATE(CFS) =   38011.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
```



```
  PEAK FLOWRATE TABLE FILE NAME: 2p25evbb.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)           (ACRES)     NODE
      1      676.18    9.97  0.30( 0.11) 0.38      243.5     429.00
      2      719.57   11.48  0.30( 0.11) 0.38      280.3     425.00
      3      729.64   11.90  0.30( 0.11) 0.38      290.5     400.00
      4      756.99   13.36  0.30( 0.11) 0.38      326.6     300.00
      5      801.01   18.55  0.30( 0.11) 0.38      439.8     210.00
      6      788.68   20.66  0.30( 0.11) 0.38      466.8     410.00
      7      782.25   21.72  0.30( 0.11) 0.38      480.1     200.00
      8      780.36   22.29  0.30( 0.11) 0.38      486.6     230.00
      9      762.79   23.40  0.30( 0.11) 0.37      491.2     220.50
    TOTAL AREA(ACRES) =      491.2

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    21598.33   19.51    2.036  0.30( 0.25) 0.82     4425.5    50600.00
      2    22319.45   22.52    1.868  0.30( 0.24) 0.82     5173.5    50500.00
      3    23707.23   27.08    1.654  0.30( 0.24) 0.81     6306.2      110.00
      4    25783.26   34.01    1.451  0.30( 0.25) 0.82     8710.2      100.00
      5    26815.51   37.45    1.382  0.30( 0.25) 0.83    10162.9      400.00
      6    27798.12   41.71    1.305  0.30( 0.25) 0.85    12244.3    50150.00
      7    28865.31   47.23    1.220  0.30( 0.26) 0.87    14751.7    31100.00
      8    31510.48   64.40    1.027  0.30( 0.27) 0.90    22509.1    13100.00
      9    32540.20   70.73    0.992  0.30( 0.27) 0.91    25082.2    11801.00
     10    34622.89   81.39    0.931  0.30( 0.28) 0.92    30123.4    11530.00
     11    36365.68   93.27    0.871  0.30( 0.28) 0.93    37307.7    13010.00
     12    37548.39   99.96    0.846  0.30( 0.28) 0.94    41554.5    11350.00
     13    38011.85  104.67    0.829  0.30( 0.28) 0.94    44728.7    11130.00
     14    37703.64  110.73    0.806  0.30( 0.28) 0.94    47655.3    12300.00
     15    37051.97  119.47    0.774  0.30( 0.28) 0.95    51915.9    12400.00
     16    36096.70  128.96    0.753  0.30( 0.28) 0.95    55317.5    12201.00
     17    35195.32  136.41    0.737  0.30( 0.29) 0.95    57210.5    12231.00
     18    34264.27  143.86    0.721  0.30( 0.29) 0.95    58763.2    10400.00
     19    32792.52  153.25    0.701  0.30( 0.29) 0.95    60209.7    12010.00
     20    31799.43  158.59    0.689  0.30( 0.29) 0.95    60472.2    10210.00
     21    31165.15  162.62    0.680  0.30( 0.29) 0.95    60619.1    12000.00
     22    27656.37  188.81    0.635  0.30( 0.29) 0.95    61232.0    10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      676.18    9.97    3.155  0.30( 0.11) 0.38      243.5     429.00
      2      719.57   11.48    2.926  0.30( 0.11) 0.38      280.3     425.00
      3      729.64   11.90    2.864  0.30( 0.11) 0.38      290.5     400.00
      4      756.99   13.36    2.648  0.30( 0.11) 0.38      326.6     300.00
      5      801.01   18.55    2.115  0.30( 0.11) 0.38      439.8     210.00
      6      788.68   20.66    1.962  0.30( 0.11) 0.38      466.8     410.00
      7      782.25   21.72    1.909  0.30( 0.11) 0.38      480.1     200.00
```

```
     8      780.36   22.29    1.880  0.30( 0.11) 0.38     486.6     230.00
     9      762.79   23.40    1.823  0.30( 0.11) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18594.37    9.97    3.155  0.30( 0.23) 0.77    2503.7     429.00
      2    19734.47   11.48    2.926  0.30( 0.23) 0.77    2883.6     425.00
      3    19986.28   11.90    2.864  0.30( 0.23) 0.77    2989.0     400.00
      4    20606.91   13.36    2.648  0.30( 0.23) 0.77    3357.9     300.00
      5    22243.45   18.55    2.115  0.30( 0.23) 0.78    4647.4     210.00
      6    22393.73   19.51    2.036  0.30( 0.23) 0.78    4877.6   50600.00
      7    22662.99   20.66    1.962  0.30( 0.23) 0.78    5178.5     410.00
      8    22910.10   21.72    1.909  0.30( 0.23) 0.78    5454.8     200.00
      9    23043.83   22.29    1.880  0.30( 0.23) 0.78    5602.0     230.00
     10    23096.12   22.52    1.868  0.30( 0.23) 0.78    5661.1   50500.00
     11    23349.72   23.40    1.823  0.30( 0.23) 0.78    5883.0     220.50
     12    24394.61   27.08    1.654  0.30( 0.23) 0.78    6797.4     110.00
     13    26379.98   34.01    1.451  0.30( 0.24) 0.80    9201.4     100.00
     14    27381.60   37.45    1.382  0.30( 0.24) 0.81   10654.1     400.00
     15    28329.80   41.71    1.305  0.30( 0.25) 0.83   12735.5   50150.00
     16    29359.29   47.23    1.220  0.30( 0.26) 0.85   15242.9   31100.00
     17    31918.35   64.40    1.027  0.30( 0.27) 0.89   23000.3   13100.00
     18    32932.16   70.73    0.992  0.30( 0.27) 0.90   25573.4   11801.00
     19    34988.08   81.39    0.931  0.30( 0.27) 0.91   30614.6   11530.00
     20    36703.86   93.27    0.871  0.30( 0.28) 0.92   37798.9   13010.00
     21    37875.53   99.96    0.846  0.30( 0.28) 0.93   42045.7   11350.00
     22    38331.22  104.67    0.829  0.30( 0.28) 0.93   45219.9   11130.00
     23    38013.01  110.73    0.806  0.30( 0.28) 0.94   48146.5   12300.00
     24    37346.91  119.47    0.774  0.30( 0.28) 0.94   52407.1   12400.00
     25    36382.18  128.96    0.753  0.30( 0.28) 0.94   55808.7   12201.00
     26    35473.66  136.41    0.737  0.30( 0.28) 0.95   57701.7   12231.00
     27    34535.47  143.86    0.721  0.30( 0.28) 0.95   59254.4   10400.00
     28    33054.72  153.25    0.701  0.30( 0.28) 0.95   60700.9   12010.00
     29    32056.50  158.59    0.689  0.30( 0.28) 0.95   60963.4   10210.00
     30    31418.37  162.62    0.680  0.30( 0.28) 0.95   61110.3   12000.00
     31    27889.19  188.81    0.635  0.30( 0.28) 0.95   61723.2   10100.00
    TOTAL AREA(ACRES) =     61723.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    38331.22  Tc(MIN.) =  104.665
  EFFECTIVE AREA(ACRES) =  45219.93  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    61723.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.23
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.819
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.00      0.30      1.000     -
  USER-DEFINED               -        3.30      0.30      1.000     -
  USER-DEFINED               -        0.40      0.30      0.100     -
  USER-DEFINED               -        1.40      0.30      1.000     -
  USER-DEFINED               -        0.30      0.30      0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   38334.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.93
  AVERAGE FLOW DEPTH(FEET) =  10.23   TRAVEL TIME(MIN.) =   2.74
  Tc(MIN.) =  107.41
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    5.96
  EFFECTIVE AREA(ACRES) =  45232.33     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    61735.6         PEAK FLOW RATE(CFS) =   38331.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.23   FLOW VELOCITY(FEET/SEC.) =  14.93
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610507W.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      358.70   20.30  0.30( 0.30) 0.99     236.8   50700.00
    TOTAL AREA(ACRES) =      236.8

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18594.37   13.45    2.635  0.30( 0.23) 0.78    2516.1     429.00
      2    19734.47   14.90    2.423  0.30( 0.23) 0.77    2896.0     425.00
      3    19986.28   15.30    2.383  0.30( 0.23) 0.77    3001.4     400.00
```

```
     4    20606.91   16.73    2.265  0.30( 0.23) 0.77    3370.3     300.00
     5    22243.45   21.83    1.903  0.30( 0.23) 0.78    4659.8     210.00
     6    22393.73   22.79    1.854  0.30( 0.23) 0.78    4890.0   50600.00
     7    22662.99   23.93    1.797  0.30( 0.23) 0.78    5190.9     410.00
     8    22910.10   24.97    1.743  0.30( 0.23) 0.78    5467.2     200.00
     9    23043.83   25.53    1.719  0.30( 0.23) 0.78    5614.4     230.00
    10    23096.12   25.76    1.710  0.30( 0.23) 0.78    5673.5   50500.00
    11    23349.72   26.63    1.673  0.30( 0.23) 0.78    5895.4     220.50
    12    24394.61   30.27    1.526  0.30( 0.23) 0.78    6809.8     110.00
    13    26379.98   37.11    1.389  0.30( 0.24) 0.80    9213.8     100.00
    14    27381.60   40.51    1.323  0.30( 0.24) 0.81   10666.5     400.00
    15    28329.80   44.73    1.259  0.30( 0.25) 0.83   12747.9   50150.00
    16    29359.29   50.23    1.175  0.30( 0.26) 0.85   15255.3   31100.00
    17    31918.35   67.31    1.011  0.30( 0.27) 0.89   23012.7   13100.00
    18    32932.16   73.61    0.975  0.30( 0.27) 0.90   25585.8   11801.00
    19    34988.08   84.22    0.916  0.30( 0.27) 0.91   30627.0   11530.00
    20    36703.86   96.05    0.861  0.30( 0.28) 0.92   37811.3   13010.00
    21    37875.53  102.71    0.836  0.30( 0.28) 0.93   42058.1   11350.00
    22    38331.22  107.41    0.819  0.30( 0.28) 0.93   45232.3   11130.00
    23    38013.01  113.48    0.796  0.30( 0.28) 0.94   48158.9   12300.00
    24    37346.91  122.24    0.767  0.30( 0.28) 0.94   52419.5   12400.00
    25    36382.18  131.75    0.747  0.30( 0.28) 0.94   55821.1   12201.00
    26    35473.66  139.23    0.731  0.30( 0.28) 0.95   57714.1   12231.00
    27    34535.47  146.70    0.715  0.30( 0.28) 0.95   59266.8   10400.00
    28    33054.72  156.13    0.694  0.30( 0.28) 0.95   60713.3   12010.00
    29    32056.50  161.50    0.683  0.30( 0.28) 0.95   60975.8   10210.00
    30    31418.37  165.55    0.674  0.30( 0.28) 0.95   61122.7   12000.00
    31    27889.19  191.85    0.632  0.30( 0.28) 0.95   61735.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       358.70   20.30    1.981  0.30( 0.30) 0.99     236.8   50700.00
LONGEST FLOWPATH FROM NODE  50700.00 TO NODE  13408.00 =    7903.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    18924.54   13.45    2.635  0.30( 0.24) 0.79    2673.0     429.00
    2    20066.88   14.90    2.423  0.30( 0.24) 0.79    3069.7     425.00
    3    20321.29   15.30    2.383  0.30( 0.24) 0.79    3179.9     400.00
    4    20952.54   16.73    2.265  0.30( 0.24) 0.79    3565.4     300.00
    5    22111.04   20.30    1.981  0.30( 0.24) 0.79    4509.6   50700.00
    6    22585.58   21.83    1.903  0.30( 0.24) 0.79    4896.6     210.00
    7    22725.53   22.79    1.854  0.30( 0.24) 0.79    5126.8   50600.00
    8    22982.45   23.93    1.797  0.30( 0.24) 0.79    5427.7     410.00
    9    23218.24   24.97    1.743  0.30( 0.24) 0.79    5704.0     200.00
   10    23346.87   25.53    1.719  0.30( 0.24) 0.79    5851.2     230.00
   11    23397.10   25.76    1.710  0.30( 0.24) 0.79    5910.3   50500.00
   12    23642.90   26.63    1.673  0.30( 0.24) 0.79    6132.2     220.50
   13    24656.34   30.27    1.526  0.30( 0.24) 0.79    7046.6     110.00
   14    26612.54   37.11    1.389  0.30( 0.24) 0.80    9450.6     100.00
   15    27600.18   40.51    1.323  0.30( 0.24) 0.81   10903.3     400.00
   16    28534.60   44.73    1.259  0.30( 0.25) 0.83   12984.7   50150.00
   17    29546.30   50.23    1.175  0.30( 0.26) 0.85   15492.1   31100.00
   18    32070.34   67.31    1.011  0.30( 0.27) 0.89   23249.5   13100.00
   19    33076.59   73.61    0.975  0.30( 0.27) 0.90   25822.6   11801.00
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   20    35119.77   84.22    0.916  0.30( 0.27) 0.91   30863.7   11530.00
   21    36823.83   96.05    0.861  0.30( 0.28) 0.92   38048.1   13010.00
   22    37990.25  102.71    0.836  0.30( 0.28) 0.93   42294.9   11350.00
   23    38442.24  107.41    0.819  0.30( 0.28) 0.94   45469.1   11130.00
   24    38119.23  113.48    0.796  0.30( 0.28) 0.94   48395.7   12300.00
   25    37446.98  122.24    0.767  0.30( 0.28) 0.94   52656.3   12400.00
   26    36477.89  131.75    0.747  0.30( 0.28) 0.95   56057.9   12201.00
   27    35565.94  139.23    0.731  0.30( 0.28) 0.95   57950.9   12231.00
   28    34624.33  146.70    0.715  0.30( 0.28) 0.95   59503.6   10400.00
   29    33139.25  156.13    0.694  0.30( 0.28) 0.95   60950.1   12010.00
   30    32138.57  161.50    0.683  0.30( 0.28) 0.95   61212.6   10210.00
   31    31498.58  165.55    0.674  0.30( 0.28) 0.95   61359.4   12000.00
   32    27960.39  191.85    0.632  0.30( 0.28) 0.95   61972.4   10100.00
  TOTAL AREA(ACRES) =     61972.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    38442.24  Tc(MIN.) =  107.410
 EFFECTIVE AREA(ACRES) =  45469.11  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    61972.4
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    182.00  DOWNSTREAM(FEET) =    178.72
 CHANNEL LENGTH THRU SUBAREA(FEET) =   952.73   CHANNEL SLOPE =  0.0034
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  11.55
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.814
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       0.40      0.30     1.000     -
 USER-DEFINED               -       2.90      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   38443.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.92
 AVERAGE FLOW DEPTH(FEET) =  11.55   TRAVEL TIME(MIN.) =   1.23
 Tc(MIN.) =  108.64
 SUBAREA AREA(ACRES) =     3.30       SUBAREA RUNOFF(CFS) =    1.53
 EFFECTIVE AREA(ACRES) =  45472.41     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    61975.7         PEAK FLOW RATE(CFS) =   38442.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  11.55

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 11.55   FLOW VELOCITY(FEET/SEC.) =  12.92
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)    NODE
      1     2146.96   28.56  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.71   30.95  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.12   32.23  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.47   35.30  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.96   48.91  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.37   54.60  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93  0.30( 0.28) 0.93    3859.7   13500.00
    TOTAL AREA(ACRES) =     3859.7

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    18924.54   15.00    2.408  0.30( 0.24) 0.79    2676.3     429.00
      2    20066.88   16.42    2.291  0.30( 0.24) 0.79    3073.0     425.00
      3    20321.29   16.81    2.258  0.30( 0.24) 0.79    3183.2     400.00
      4    20952.54   18.23    2.142  0.30( 0.24) 0.79    3568.7     300.00
      5    22111.04   21.77    1.906  0.30( 0.24) 0.79    4512.9   50700.00
      6    22585.58   23.29    1.829  0.30( 0.24) 0.79    4899.9     210.00
      7    22725.53   24.24    1.780  0.30( 0.24) 0.79    5130.1   50600.00
      8    22982.45   25.38    1.726  0.30( 0.24) 0.79    5431.0     410.00
      9    23218.24   26.42    1.682  0.30( 0.24) 0.79    5707.3     200.00
     10    23346.87   26.98    1.659  0.30( 0.24) 0.79    5854.5     230.00
     11    23397.10   27.21    1.649  0.30( 0.24) 0.79    5913.6   50500.00
     12    23642.90   28.07    1.612  0.30( 0.24) 0.79    6135.5     220.50
     13    24656.34   31.69    1.497  0.30( 0.24) 0.79    7049.9     110.00
     14    26612.54   38.50    1.361  0.30( 0.24) 0.80    9453.9     100.00
     15    27600.18   41.88    1.302  0.30( 0.24) 0.81   10906.6     400.00
     16    28534.60   46.09    1.238  0.30( 0.25) 0.83   12988.0   50150.00
     17    29546.30   51.56    1.158  0.30( 0.26) 0.85   15495.4   31100.00
     18    32070.34   68.61    1.003  0.30( 0.27) 0.89   23252.8   13100.00
     19    33076.59   74.90    0.968  0.30( 0.27) 0.90   25825.9   11801.00
     20    35119.77   85.48    0.908  0.30( 0.27) 0.91   30867.0   11530.00
     21    36823.83   97.30    0.856  0.30( 0.28) 0.92   38051.4   13010.00
     22    37990.25  103.95    0.831  0.30( 0.28) 0.93   42298.2   11350.00
     23    38442.24  108.64    0.814  0.30( 0.28) 0.94   45472.4   11130.00
     24    38119.23  114.71    0.792  0.30( 0.28) 0.94   48399.0   12300.00
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     25    37446.98  123.48    0.765  0.30( 0.28) 0.94   52659.6   12400.00
     26    36477.89  133.00    0.744  0.30( 0.28) 0.95   56061.2   12201.00
     27    35565.94  140.49    0.728  0.30( 0.28) 0.95   57954.2   12231.00
     28    34624.33  147.97    0.712  0.30( 0.28) 0.95   59506.9   10400.00
     29    33139.25  157.42    0.692  0.30( 0.28) 0.95   60953.4   12010.00
     30    32138.57  162.80    0.680  0.30( 0.28) 0.95   61215.9   10210.00
     31    31498.58  166.86    0.671  0.30( 0.28) 0.95   61362.8   12000.00
     32    27960.39  193.21    0.630  0.30( 0.28) 0.95   61975.7   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1     2146.96   28.56    1.592  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.71   30.95    1.512  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.12   32.23    1.486  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.47   35.30    1.425  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.96   48.91    1.195  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.37   54.60    1.120  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42    0.878  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93    0.843  0.30( 0.28) 0.93    3859.7   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    20748.87   15.00    2.408  0.30( 0.24) 0.81    3446.9     429.00
      2    21954.29   16.42    2.291  0.30( 0.24) 0.81    3916.2     425.00
      3    22223.13   16.81    2.258  0.30( 0.24) 0.81    4046.9     400.00
      4    22893.51   18.23    2.142  0.30( 0.24) 0.81    4505.1     300.00
      5    24136.99   21.77    1.906  0.30( 0.24) 0.81    5631.3   50700.00
      6    24650.63   23.29    1.829  0.30( 0.24) 0.81    6096.4     210.00
      7    24808.25   24.24    1.780  0.30( 0.24) 0.81    6375.4   50600.00
      8    25084.10   25.38    1.726  0.30( 0.24) 0.81    6734.6     410.00
      9    25340.06   26.42    1.682  0.30( 0.24) 0.81    7064.4     200.00
     10    25477.37   26.98    1.659  0.30( 0.24) 0.81    7240.3     230.00
     11    25530.71   27.21    1.649  0.30( 0.24) 0.81    7311.1   50500.00
     12    25786.02   28.07    1.612  0.30( 0.24) 0.81    7577.3     220.50
     13    25928.21   28.56    1.592  0.30( 0.24) 0.81    7727.5     110.00
     14    26661.02   30.95    1.512  0.30( 0.24) 0.81    8497.6     100.00
     15    26865.14   31.69    1.497  0.30( 0.24) 0.81    8727.8     110.00
     16    27021.04   32.23    1.486  0.30( 0.24) 0.81    8953.9     100.00
     17    27935.79   35.30    1.425  0.30( 0.25) 0.82   10210.9     130.00
     18    28876.98   38.50    1.361  0.30( 0.25) 0.82   11514.5     100.00
     19    29887.83   41.88    1.302  0.30( 0.25) 0.83   13151.1     400.00
     20    30851.16   46.09    1.238  0.30( 0.25) 0.85   15461.5   50150.00
     21    31392.34   48.91    1.195  0.30( 0.26) 0.86   16908.3   20100.00
     22    31861.46   51.56    1.158  0.30( 0.26) 0.87   18209.8   31100.00
     23    32286.81   54.60    1.120  0.30( 0.26) 0.87   19690.0   13600.00
     24    34285.16   68.61    1.003  0.30( 0.27) 0.89   26439.8   13100.00
     25    35257.05   74.90    0.968  0.30( 0.27) 0.90   29180.2   11801.00
     26    37242.47   85.48    0.908  0.30( 0.27) 0.91   34502.8   11530.00
     27    38066.60   91.42    0.878  0.30( 0.28) 0.92   38272.1   13510.00
     28    38845.91   97.30    0.856  0.30( 0.28) 0.92   41885.9   13010.00
     29    39440.36  100.93    0.843  0.30( 0.28) 0.93   44228.8   13500.00
     30    39930.85  103.95    0.831  0.30( 0.28) 0.93   46157.9   11350.00
     31    40321.73  108.64    0.814  0.30( 0.28) 0.94   49332.1   11130.00
     32    39919.61  114.71    0.792  0.30( 0.28) 0.94   52258.7   12300.00
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     33    39152.17  123.48    0.765  0.30( 0.28) 0.94   56519.3   12400.00
     34    38111.05  133.00    0.744  0.30( 0.28) 0.94   59920.9   12201.00
     35    37142.45  140.49    0.728  0.30( 0.28) 0.95   61813.9   12231.00
     36    36144.23  147.97    0.712  0.30( 0.28) 0.95   63366.6   10400.00
     37    34587.66  157.42    0.692  0.30( 0.28) 0.95   64813.0   12010.00
     38    33546.20  162.80    0.680  0.30( 0.28) 0.95   65075.6   10210.00
     39    32875.51  166.86    0.671  0.30( 0.28) 0.95   65222.4   12000.00
     40    29193.72  193.21    0.630  0.30( 0.28) 0.95   65835.4   10100.00
    TOTAL AREA(ACRES) =     65835.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    40321.73  Tc(MIN.) =  108.639
  EFFECTIVE AREA(ACRES) =  49332.10  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    65835.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.65
  CHANNEL FLOW THRU SUBAREA(CFS) =   40321.73
  FLOW VELOCITY(FEET/SEC.) =  19.15   FLOW DEPTH(FEET) =   8.65
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =  108.79
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101d.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      518.50   38.19  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20748.87   15.19    2.393  0.30( 0.24) 0.81    3446.9     429.00
    2    21954.29   16.60    2.276  0.30( 0.24) 0.81    3916.2     425.00
    3    22223.13   17.00    2.244  0.30( 0.24) 0.81    4046.9     400.00
    4    22893.51   18.41    2.127  0.30( 0.24) 0.81    4505.1     300.00
    5    24136.99   21.95    1.897  0.30( 0.24) 0.81    5631.3   50700.00
    6    24650.63   23.47    1.820  0.30( 0.24) 0.81    6096.4     210.00
    7    24808.25   24.42    1.772  0.30( 0.24) 0.81    6375.4   50600.00
    8    25084.10   25.55    1.719  0.30( 0.24) 0.81    6734.6     410.00
    9    25340.06   26.59    1.675  0.30( 0.24) 0.81    7064.4     200.00
   10    25477.37   27.15    1.651  0.30( 0.24) 0.81    7240.3     230.00
   11    25530.71   27.38    1.642  0.30( 0.24) 0.81    7311.1   50500.00
   12    25786.02   28.24    1.605  0.30( 0.24) 0.81    7577.3     220.50
   13    25928.21   28.73    1.584  0.30( 0.24) 0.81    7727.5     110.00
   14    26661.02   31.12    1.509  0.30( 0.24) 0.81    8497.6     100.00
   15    26865.14   31.85    1.494  0.30( 0.24) 0.81    8727.8     110.00
   16    27021.04   32.40    1.483  0.30( 0.24) 0.81    8953.9     100.00
   17    27935.79   35.46    1.422  0.30( 0.25) 0.82   10210.9     130.00
   18    28876.98   38.66    1.358  0.30( 0.25) 0.82   11514.5     100.00
   19    29887.83   42.04    1.300  0.30( 0.25) 0.83   13151.1     400.00
   20    30851.16   46.25    1.235  0.30( 0.25) 0.85   15461.5   50150.00
   21    31392.34   49.07    1.192  0.30( 0.26) 0.86   16908.3   20100.00
   22    31861.46   51.72    1.156  0.30( 0.26) 0.87   18209.8   31100.00
   23    32286.81   54.76    1.118  0.30( 0.26) 0.87   19690.0   13600.00
   24    34285.16   68.77    1.003  0.30( 0.27) 0.89   26439.8   13100.00
   25    35257.05   75.06    0.967  0.30( 0.27) 0.90   29180.2   11801.00
   26    37242.47   85.63    0.908  0.30( 0.27) 0.91   34502.8   11530.00
   27    38066.60   91.57    0.877  0.30( 0.28) 0.92   38272.1   13510.00
   28    38845.91   97.45    0.855  0.30( 0.28) 0.92   41885.9   13010.00
   29    39440.36  101.07    0.842  0.30( 0.28) 0.93   44228.8   13500.00
   30    39930.85  104.10    0.831  0.30( 0.28) 0.93   46157.9   11350.00
   31    40321.73  108.79    0.813  0.30( 0.28) 0.94   49332.1   11130.00
   32    39919.61  114.86    0.791  0.30( 0.28) 0.94   52258.7   12300.00
   33    39152.17  123.63    0.764  0.30( 0.28) 0.94   56519.3   12400.00
   34    38111.05  133.15    0.744  0.30( 0.28) 0.94   59920.9   12201.00
   35    37142.45  140.64    0.728  0.30( 0.28) 0.95   61813.9   12231.00
   36    36144.23  148.12    0.712  0.30( 0.28) 0.95   63366.6   10400.00
   37    34587.66  157.57    0.691  0.30( 0.28) 0.95   64813.0   12010.00
   38    33546.20  162.96    0.680  0.30( 0.28) 0.95   65075.6   10210.00
   39    32875.51  167.02    0.671  0.30( 0.28) 0.95   65222.4   12000.00
   40    29193.72  193.38    0.630  0.30( 0.28) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      518.50   38.19    1.367  0.30( 0.30) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    21152.26   15.19    2.393  0.30( 0.25) 0.82    3681.9     429.00
    2    22370.71   16.60    2.276  0.30( 0.25) 0.82    4173.0     425.00
    3    22642.48   17.00    2.244  0.30( 0.25) 0.82    4309.9     400.00
    4    23320.59   18.41    2.127  0.30( 0.25) 0.82    4790.0     300.00
    5    24582.24   21.95    1.897  0.30( 0.25) 0.82    5971.0   50700.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | 25103.76 | 23.47 | 1.820 | 0.30( 0.25) | 0.82 | 6459.6 | 210.00 |
| 7 | 25264.81 | 24.42 | 1.772 | 0.30( 0.25) | 0.82 | 6753.3 | 50600.00 |
| 8 | 25544.75 | 25.55 | 1.719 | 0.30( 0.25) | 0.82 | 7130.0 | 410.00 |
| 9 | 25804.68 | 26.59 | 1.675 | 0.30( 0.25) | 0.82 | 7475.9 | 200.00 |
| 10 | 25943.65 | 27.15 | 1.651 | 0.30( 0.25) | 0.82 | 7660.5 | 230.00 |
| 11 | 25997.57 | 27.38 | 1.642 | 0.30( 0.25) | 0.82 | 7734.8 | 50500.00 |
| 12 | 26254.57 | 28.24 | 1.605 | 0.30( 0.25) | 0.82 | 8014.4 | 220.50 |
| 13 | 26397.36 | 28.73 | 1.584 | 0.30( 0.25) | 0.82 | 8172.2 | 110.00 |
| 14 | 27139.28 | 31.12 | 1.509 | 0.30( 0.25) | 0.82 | 8979.3 | 100.00 |
| 15 | 27348.74 | 31.85 | 1.494 | 0.30( 0.25) | 0.82 | 9220.8 | 110.00 |
| 16 | 27508.44 | 32.40 | 1.483 | 0.30( 0.25) | 0.82 | 9455.3 | 100.00 |
| 17 | 28441.76 | 35.46 | 1.422 | 0.30( 0.25) | 0.83 | 10759.7 | 130.00 |
| 18 | 29256.79 | 38.19 | 1.367 | 0.30( 0.25) | 0.83 | 11913.4 | 10100.00 |
| 19 | 29390.92 | 38.66 | 1.358 | 0.30( 0.25) | 0.83 | 12105.5 | 100.00 |
| 20 | 30373.73 | 42.04 | 1.300 | 0.30( 0.25) | 0.84 | 13742.1 | 400.00 |
| 21 | 31305.92 | 46.25 | 1.235 | 0.30( 0.26) | 0.85 | 16052.5 | 50150.00 |
| 22 | 31826.21 | 49.07 | 1.192 | 0.30( 0.26) | 0.86 | 17499.3 | 20100.00 |
| 23 | 32277.96 | 51.72 | 1.156 | 0.30( 0.26) | 0.87 | 18800.8 | 31100.00 |
| 24 | 32684.83 | 54.76 | 1.118 | 0.30( 0.26) | 0.87 | 20281.0 | 13600.00 |
| 25 | 34627.34 | 68.77 | 1.003 | 0.30( 0.27) | 0.90 | 27030.8 | 13100.00 |
| 26 | 35582.10 | 75.06 | 0.967 | 0.30( 0.27) | 0.90 | 29771.2 | 11801.00 |
| 27 | 37538.70 | 85.63 | 0.908 | 0.30( 0.27) | 0.91 | 35093.8 | 11530.00 |
| 28 | 38348.13 | 91.57 | 0.877 | 0.30( 0.28) | 0.92 | 38863.1 | 13510.00 |
| 29 | 39116.93 | 97.45 | 0.855 | 0.30( 0.28) | 0.92 | 42476.9 | 13010.00 |
| 30 | 39704.89 | 101.07 | 0.842 | 0.30( 0.28) | 0.93 | 44819.8 | 13500.00 |
| 31 | 40189.97 | 104.10 | 0.831 | 0.30( 0.28) | 0.93 | 46748.9 | 11350.00 |
| 32 | 40572.45 | 108.79 | 0.813 | 0.30( 0.28) | 0.94 | 49923.1 | 11130.00 |
| 33 | 40159.46 | 114.86 | 0.791 | 0.30( 0.28) | 0.94 | 52849.7 | 12300.00 |
| 34 | 39379.06 | 123.63 | 0.764 | 0.30( 0.28) | 0.94 | 57110.3 | 12400.00 |
| 35 | 38328.04 | 133.15 | 0.744 | 0.30( 0.28) | 0.94 | 60511.9 | 12201.00 |
| 36 | 37351.65 | 140.64 | 0.728 | 0.30( 0.28) | 0.95 | 62404.9 | 12231.00 |
| 37 | 36345.66 | 148.12 | 0.712 | 0.30( 0.28) | 0.95 | 63957.6 | 10400.00 |
| 38 | 34779.26 | 157.57 | 0.691 | 0.30( 0.28) | 0.95 | 65404.0 | 12010.00 |
| 39 | 33732.20 | 162.96 | 0.680 | 0.30( 0.28) | 0.95 | 65666.6 | 10210.00 |
| 40 | 33057.29 | 167.02 | 0.671 | 0.30( 0.28) | 0.95 | 65813.4 | 12000.00 |
| 41 | 29355.85 | 193.38 | 0.630 | 0.30( 0.28) | 0.95 | 66426.4 | 10100.00 |

TOTAL AREA(ACRES) = 66426.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40572.45 Tc(MIN.) = 108.787
EFFECTIVE AREA(ACRES) = 49923.10 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 66426.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

**********
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0266
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.66
CHANNEL FLOW THRU SUBAREA(CFS) = 40572.45
FLOW VELOCITY(FEET/SEC.) = 26.10 FLOW DEPTH(FEET) = 6.66



TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 108.95
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0610508W.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 194.47 | 21.06 | 0.30( 0.30) | 0.99 | 131.3 | 50800.00 |

TOTAL AREA(ACRES) = 131.3

**********
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21152.26 | 15.40 | 2.375 | 0.30( 0.25) | 0.82 | 3681.9 | 429.00 |
| 2 | 22370.71 | 16.80 | 2.260 | 0.30( 0.25) | 0.82 | 4173.0 | 425.00 |
| 3 | 22642.48 | 17.20 | 2.227 | 0.30( 0.25) | 0.82 | 4309.9 | 400.00 |
| 4 | 23320.59 | 18.61 | 2.111 | 0.30( 0.25) | 0.82 | 4790.0 | 300.00 |
| 5 | 24582.24 | 22.15 | 1.887 | 0.30( 0.25) | 0.82 | 5971.0 | 50700.00 |
| 6 | 25103.76 | 23.66 | 1.810 | 0.30( 0.25) | 0.82 | 6459.6 | 210.00 |
| 7 | 25264.81 | 24.61 | 1.762 | 0.30( 0.25) | 0.82 | 6753.3 | 50600.00 |
| 8 | 25544.75 | 25.75 | 1.710 | 0.30( 0.25) | 0.82 | 7130.0 | 410.00 |
| 9 | 25804.68 | 26.79 | 1.667 | 0.30( 0.25) | 0.82 | 7475.9 | 200.00 |
| 10 | 25943.65 | 27.34 | 1.643 | 0.30( 0.25) | 0.82 | 7660.5 | 230.00 |
| 11 | 25997.57 | 27.57 | 1.633 | 0.30( 0.25) | 0.82 | 7734.8 | 50500.00 |
| 12 | 26254.57 | 28.43 | 1.597 | 0.30( 0.25) | 0.82 | 8014.4 | 220.50 |
| 13 | 26397.36 | 28.93 | 1.576 | 0.30( 0.25) | 0.82 | 8172.2 | 110.00 |
| 14 | 27139.28 | 31.31 | 1.505 | 0.30( 0.25) | 0.82 | 8979.3 | 100.00 |
| 15 | 27348.74 | 32.05 | 1.490 | 0.30( 0.25) | 0.82 | 9220.8 | 110.00 |
| 16 | 27508.44 | 32.59 | 1.479 | 0.30( 0.25) | 0.82 | 9455.3 | 100.00 |
| 17 | 28441.76 | 35.65 | 1.418 | 0.30( 0.25) | 0.83 | 10759.7 | 130.00 |
| 18 | 29256.79 | 38.38 | 1.363 | 0.30( 0.25) | 0.83 | 11913.4 | 10100.00 |
| 19 | 29390.92 | 38.85 | 1.354 | 0.30( 0.25) | 0.83 | 12105.5 | 100.00 |
| 20 | 30373.73 | 42.22 | 1.297 | 0.30( 0.25) | 0.84 | 13742.1 | 400.00 |
| 21 | 31305.92 | 46.43 | 1.233 | 0.30( 0.26) | 0.85 | 16052.5 | 50150.00 |
| 22 | 31826.21 | 49.25 | 1.189 | 0.30( 0.26) | 0.86 | 17499.3 | 20100.00 |
| 23 | 32277.96 | 51.90 | 1.154 | 0.30( 0.26) | 0.87 | 18800.8 | 31100.00 |
| 24 | 32684.83 | 54.94 | 1.116 | 0.30( 0.26) | 0.87 | 20281.0 | 13600.00 |
| 25 | 34627.34 | 68.94 | 1.002 | 0.30( 0.27) | 0.90 | 27030.8 | 13100.00 |
| 26 | 35582.10 | 75.23 | 0.966 | 0.30( 0.27) | 0.90 | 29771.2 | 11801.00 |
| 27 | 37538.70 | 85.80 | 0.907 | 0.30( 0.27) | 0.91 | 35093.8 | 11530.00 |
| 28 | 38348.13 | 91.74 | 0.877 | 0.30( 0.28) | 0.92 | 38863.1 | 13510.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 29 | 39116.93 | 97.61 | 0.855 | 0.30( 0.28) | 0.92 | 42476.9 | 13010.00 |
| 30 | 39704.89 | 101.24 | 0.841 | 0.30( 0.28) | 0.93 | 44819.8 | 13500.00 |
| 31 | 40189.97 | 104.26 | 0.830 | 0.30( 0.28) | 0.93 | 46748.9 | 11350.00 |
| 32 | 40572.45 | 108.95 | 0.813 | 0.30( 0.28) | 0.94 | 49923.1 | 11130.00 |
| 33 | 40159.46 | 115.03 | 0.790 | 0.30( 0.28) | 0.94 | 52849.7 | 12300.00 |
| 34 | 39379.06 | 123.80 | 0.764 | 0.30( 0.28) | 0.94 | 57110.3 | 12400.00 |
| 35 | 38328.04 | 133.32 | 0.743 | 0.30( 0.28) | 0.94 | 60511.9 | 12201.00 |
| 36 | 37351.65 | 140.81 | 0.727 | 0.30( 0.28) | 0.95 | 62404.9 | 12231.00 |
| 37 | 36345.66 | 148.29 | 0.711 | 0.30( 0.28) | 0.95 | 63957.6 | 10400.00 |
| 38 | 34779.26 | 157.75 | 0.691 | 0.30( 0.28) | 0.95 | 65404.0 | 12010.00 |
| 39 | 33732.20 | 163.14 | 0.679 | 0.30( 0.28) | 0.95 | 65666.6 | 10210.00 |
| 40 | 33057.29 | 167.20 | 0.671 | 0.30( 0.28) | 0.95 | 65813.4 | 12000.00 |
| 41 | 29355.85 | 193.56 | 0.630 | 0.30( 0.28) | 0.95 | 66426.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 194.47 | 21.06 | 1.942 | 0.30( 0.30) | 0.99 | 131.3 | 50800.00 |

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21331.87 | 15.40 | 2.375 | 0.30( 0.25) | 0.83 | 3777.9 | 429.00 |
| 2 | 22555.79 | 16.80 | 2.260 | 0.30( 0.25) | 0.83 | 4277.7 | 425.00 |
| 3 | 22828.78 | 17.20 | 2.227 | 0.30( 0.25) | 0.83 | 4417.1 | 400.00 |
| 4 | 23510.03 | 18.61 | 2.111 | 0.30( 0.25) | 0.83 | 4906.0 | 300.00 |
| 5 | 24387.70 | 21.06 | 1.942 | 0.30( 0.25) | 0.82 | 5738.1 | 50800.00 |
| 6 | 24770.17 | 22.15 | 1.887 | 0.30( 0.25) | 0.82 | 6102.3 | 50700.00 |
| 7 | 25282.58 | 23.66 | 1.810 | 0.30( 0.25) | 0.82 | 6590.8 | 210.00 |
| 8 | 25437.92 | 24.61 | 1.762 | 0.30( 0.25) | 0.82 | 6884.6 | 50600.00 |
| 9 | 25711.83 | 25.75 | 1.710 | 0.30( 0.25) | 0.82 | 7261.3 | 410.00 |
| 10 | 25966.57 | 26.79 | 1.667 | 0.30( 0.25) | 0.82 | 7607.2 | 200.00 |
| 11 | 26102.76 | 27.34 | 1.643 | 0.30( 0.25) | 0.82 | 7791.7 | 230.00 |
| 12 | 26155.54 | 27.57 | 1.633 | 0.30( 0.25) | 0.82 | 7866.0 | 50500.00 |
| 13 | 26408.25 | 28.43 | 1.597 | 0.30( 0.25) | 0.82 | 8145.6 | 220.50 |
| 14 | 26548.58 | 28.93 | 1.576 | 0.30( 0.25) | 0.82 | 8303.4 | 110.00 |
| 15 | 27282.04 | 31.31 | 1.505 | 0.30( 0.25) | 0.82 | 9110.5 | 100.00 |
| 16 | 27489.78 | 32.05 | 1.490 | 0.30( 0.25) | 0.82 | 9352.0 | 110.00 |
| 17 | 27648.19 | 32.59 | 1.479 | 0.30( 0.25) | 0.82 | 9586.6 | 100.00 |
| 18 | 28574.27 | 35.65 | 1.418 | 0.30( 0.25) | 0.83 | 10890.9 | 130.00 |
| 19 | 29382.86 | 38.38 | 1.363 | 0.30( 0.25) | 0.83 | 12044.7 | 10100.00 |
| 20 | 29515.88 | 38.85 | 1.354 | 0.30( 0.25) | 0.83 | 12236.8 | 100.00 |
| 21 | 30491.96 | 42.22 | 1.297 | 0.30( 0.25) | 0.84 | 13873.3 | 400.00 |
| 22 | 31416.54 | 46.43 | 1.233 | 0.30( 0.26) | 0.85 | 16183.7 | 50150.00 |
| 23 | 31931.72 | 49.25 | 1.189 | 0.30( 0.26) | 0.86 | 17630.6 | 20100.00 |
| 24 | 32379.29 | 51.90 | 1.154 | 0.30( 0.26) | 0.87 | 18932.0 | 31100.00 |
| 25 | 32781.64 | 54.94 | 1.116 | 0.30( 0.26) | 0.87 | 20412.2 | 13600.00 |
| 26 | 34710.66 | 68.94 | 1.002 | 0.30( 0.27) | 0.90 | 27162.1 | 13100.00 |
| 27 | 35661.23 | 75.23 | 0.966 | 0.30( 0.27) | 0.90 | 29902.5 | 11801.00 |
| 28 | 37610.80 | 85.80 | 0.907 | 0.30( 0.27) | 0.91 | 35225.1 | 11530.00 |
| 29 | 38416.68 | 91.74 | 0.877 | 0.30( 0.28) | 0.92 | 38994.4 | 13510.00 |
| 30 | 39182.90 | 97.61 | 0.855 | 0.30( 0.28) | 0.93 | 42608.2 | 13010.00 |
| 31 | 39769.28 | 101.24 | 0.841 | 0.30( 0.28) | 0.93 | 44951.1 | 13500.00 |
| 32 | 40253.04 | 104.26 | 0.830 | 0.30( 0.28) | 0.93 | 46880.1 | 11350.00 |
| 33 | 40633.47 | 108.95 | 0.813 | 0.30( 0.28) | 0.94 | 50054.4 | 11130.00 |
| 34 | 40217.82 | 115.03 | 0.790 | 0.30( 0.28) | 0.94 | 52980.9 | 12300.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 35 | 39434.28 | 123.80 | 0.764 | 0.30( 0.28) | 0.94 | 57241.5 | 12400.00 |
| 36 | 38380.84 | 133.32 | 0.743 | 0.30( 0.28) | 0.94 | 60643.1 | 12201.00 |
| 37 | 37402.55 | 140.81 | 0.727 | 0.30( 0.28) | 0.95 | 62536.1 | 12231.00 |
| 38 | 36394.66 | 148.29 | 0.711 | 0.30( 0.28) | 0.95 | 64088.9 | 10400.00 |
| 39 | 34825.86 | 157.75 | 0.691 | 0.30( 0.28) | 0.95 | 65535.3 | 12010.00 |
| 40 | 33777.42 | 163.14 | 0.679 | 0.30( 0.28) | 0.95 | 65797.9 | 10210.00 |
| 41 | 33101.49 | 167.20 | 0.671 | 0.30( 0.28) | 0.95 | 65944.7 | 12000.00 |
| 42 | 29395.27 | 193.56 | 0.630 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

TOTAL AREA(ACRES) = 66557.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40633.47 Tc(MIN.) = 108.953
EFFECTIVE AREA(ACRES) = 50054.36 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 66557.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66557.6 TC(MIN.) = 108.95
EFFECTIVE AREA(ACRES) = 50054.36 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.936
PEAK FLOW RATE(CFS) = 40633.47

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21331.87 | 15.40 | 2.375 | 0.30( 0.25) | 0.83 | 3777.9 | 429.00 |
| 2 | 22555.79 | 16.80 | 2.260 | 0.30( 0.25) | 0.83 | 4277.7 | 425.00 |
| 3 | 22828.78 | 17.20 | 2.227 | 0.30( 0.25) | 0.83 | 4417.1 | 400.00 |
| 4 | 23510.03 | 18.61 | 2.111 | 0.30( 0.25) | 0.83 | 4906.0 | 300.00 |
| 5 | 24387.70 | 21.06 | 1.942 | 0.30( 0.25) | 0.82 | 5738.1 | 50800.00 |
| 6 | 24770.17 | 22.15 | 1.887 | 0.30( 0.25) | 0.82 | 6102.3 | 50700.00 |
| 7 | 25282.58 | 23.66 | 1.810 | 0.30( 0.25) | 0.82 | 6590.8 | 210.00 |
| 8 | 25437.92 | 24.61 | 1.762 | 0.30( 0.25) | 0.82 | 6884.6 | 50600.00 |
| 9 | 25711.83 | 25.75 | 1.710 | 0.30( 0.25) | 0.82 | 7261.3 | 410.00 |
| 10 | 25966.57 | 26.79 | 1.667 | 0.30( 0.25) | 0.82 | 7607.2 | 200.00 |
| 11 | 26102.76 | 27.34 | 1.643 | 0.30( 0.25) | 0.82 | 7791.7 | 230.00 |
| 12 | 26155.54 | 27.57 | 1.633 | 0.30( 0.25) | 0.82 | 7866.0 | 50500.00 |
| 13 | 26408.25 | 28.43 | 1.597 | 0.30( 0.25) | 0.82 | 8145.6 | 220.50 |
| 14 | 26548.58 | 28.93 | 1.576 | 0.30( 0.25) | 0.82 | 8303.4 | 110.00 |
| 15 | 27282.04 | 31.31 | 1.505 | 0.30( 0.25) | 0.82 | 9110.5 | 100.00 |
| 16 | 27489.78 | 32.05 | 1.490 | 0.30( 0.25) | 0.82 | 9352.0 | 110.00 |
| 17 | 27648.19 | 32.59 | 1.479 | 0.30( 0.25) | 0.82 | 9586.6 | 100.00 |
| 18 | 28574.27 | 35.65 | 1.418 | 0.30( 0.25) | 0.83 | 10890.9 | 130.00 |
| 19 | 29382.86 | 38.38 | 1.363 | 0.30( 0.25) | 0.83 | 12044.7 | 10100.00 |
| 20 | 29515.88 | 38.85 | 1.354 | 0.30( 0.25) | 0.83 | 12236.8 | 100.00 |
| 21 | 30491.96 | 42.22 | 1.297 | 0.30( 0.25) | 0.84 | 13873.3 | 400.00 |
| 22 | 31416.54 | 46.43 | 1.233 | 0.30( 0.26) | 0.85 | 16183.7 | 50150.00 |
| 23 | 31931.72 | 49.25 | 1.189 | 0.30( 0.26) | 0.86 | 17630.6 | 20100.00 |
| 24 | 32379.29 | 51.90 | 1.154 | 0.30( 0.26) | 0.87 | 18932.0 | 31100.00 |
| 25 | 32781.64 | 54.94 | 1.116 | 0.30( 0.26) | 0.87 | 20412.2 | 13600.00 |
| 26 | 34710.66 | 68.94 | 1.002 | 0.30( 0.27) | 0.90 | 27162.1 | 13100.00 |
| 27 | 35661.23 | 75.23 | 0.966 | 0.30( 0.27) | 0.90 | 29902.5 | 11801.00 |
| 28 | 37610.80 | 85.80 | 0.907 | 0.30( 0.27) | 0.91 | 35225.1 | 11530.00 |
| 29 | 38416.68 | 91.74 | 0.877 | 0.30( 0.28) | 0.92 | 38994.4 | 13510.00 |
| 30 | 39182.90 | 97.61 | 0.855 | 0.30( 0.28) | 0.93 | 42608.2 | 13010.00 |
| 31 | 39769.28 | 101.24 | 0.841 | 0.30( 0.28) | 0.93 | 44951.1 | 13500.00 |
| 32 | 40253.04 | 104.26 | 0.830 | 0.30( 0.28) | 0.93 | 46880.1 | 11350.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 40633.47 | 108.95 | 0.813 | 0.30( 0.28) | 0.94 | 50054.4 | 11130.00 |
| 34 | 40217.82 | 115.03 | 0.790 | 0.30( 0.28) | 0.94 | 52980.9 | 12300.00 |
| 35 | 39434.28 | 123.80 | 0.764 | 0.30( 0.28) | 0.94 | 57241.5 | 12400.00 |
| 36 | 38380.84 | 133.32 | 0.743 | 0.30( 0.28) | 0.94 | 60643.1 | 12201.00 |
| 37 | 37402.55 | 140.81 | 0.727 | 0.30( 0.28) | 0.95 | 62536.1 | 12231.00 |
| 38 | 36394.66 | 148.29 | 0.711 | 0.30( 0.28) | 0.95 | 64088.9 | 10400.00 |
| 39 | 34825.86 | 157.75 | 0.691 | 0.30( 0.28) | 0.95 | 65535.3 | 12010.00 |
| 40 | 33777.42 | 163.14 | 0.679 | 0.30( 0.28) | 0.95 | 65797.9 | 10210.00 |
| 41 | 33101.49 | 167.20 | 0.671 | 0.30( 0.28) | 0.95 | 65944.7 | 12000.00 |
| 42 | 29395.27 | 193.56 | 0.630 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 25-YR EV FEB 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI25EV36.DAT
  TIME/DATE OF STUDY: 10:21 02/15/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.766
   2)   10.00;  3.119
   3)   15.00;  2.394
   4)   20.00;  1.986
   5)   25.00;  1.734
   6)   30.00;  1.526
   7)   40.00;  1.325
   8)   50.00;  1.173
   9)   60.00;  1.046
  10)   90.00;  0.877
  11)  120.00;  0.765
  12)  180.00;  0.636
  13)  360.00;  0.466
  14) 1200.00;  0.204
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.975
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    69   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.16
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      8.16

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.77
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.85
  Tc(MIN.) =   12.85
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   16.13
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      23.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.364
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.14
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   2.52
  Tc(MIN.) =   15.37
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   57.52
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      77.65
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.09   FLOW VELOCITY(FEET/SEC.) =   5.82
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.102
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      96.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.15
  AVERAGE FLOW DEPTH(FEET) =   1.26   TRAVEL TIME(MIN.) =   3.22
  Tc(MIN.) =   18.58
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   37.88
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     105.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.32   FLOW VELOCITY(FEET/SEC.) =   6.32
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.99
  AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   2.39
  Tc(MIN.) =   20.98
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   31.29
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     127.28
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.59   FLOW VELOCITY(FEET/SEC.) =   6.07
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1006.57   54.62  0.30( 0.28) 0.95    1513.9   13510.00
      2      918.88   63.50  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1006.57   54.62  0.30( 0.28) 0.95    1513.9   13510.00
      2      918.88   63.50  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1015.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.82
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.32   TRAVEL TIME(MIN.) =   2.91
  Tc(MIN.) =   57.52
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   18.55
  EFFECTIVE AREA(ACRES) =   1540.42     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1099.65
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.43   FLOW VELOCITY(FEET/SEC.) =  12.13
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1099.65   57.52    1.077  0.30( 0.28) 0.95    1540.4   13510.00
      2     1049.31   66.50    1.009  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1099.65  Tc(MIN.) =   57.52
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1540.42

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.01
  EFFECTIVE AREA(ACRES) =   1541.87   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1100.66

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1100.66   57.52    1.077  0.30( 0.28) 0.95    1541.9   13510.00
      2     1050.24   66.50    1.009  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      127.28   20.98    1.937  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      963.50   20.98    1.937  0.30( 0.29) 0.95      648.7   13600.00
     2     1161.12   57.52    1.077  0.30( 0.29) 0.95     1628.3   13510.00
     3     1105.40   66.50    1.009  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1161.12  Tc(MIN.) =   57.525
 EFFECTIVE AREA(ACRES) =   1628.27  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.053
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1179.61
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.19
 AVERAGE FLOW DEPTH(FEET) =   2.57   TRAVEL TIME(MIN.) =   1.89
 Tc(MIN.) =   59.42
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   36.97
 EFFECTIVE AREA(ACRES) =   1682.79     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1162.87
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.54

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =  12.15
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 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      980.22   22.97    1.836  0.30( 0.29) 0.96      703.2   13600.00
     2     1162.87   59.42    1.053  0.30( 0.29) 0.95     1682.8   13510.00
     3     1123.20   68.42    0.999  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1162.87  Tc(MIN.) =   59.42
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1682.79

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   59.42
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.053
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   39.58
 EFFECTIVE AREA(ACRES) =   1741.15   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1202.45

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XX25.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
     1      210.74   17.33  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1     1060.91   22.97    1.836  0.30( 0.29) 0.96      761.5   13600.00
     2     1202.45   59.42    1.053  0.30( 0.29) 0.95     1741.1   13510.00
     3     1159.89   68.42    0.999  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      210.74   17.33    2.204  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1201.19   17.33    2.204  0.30( 0.28) 0.94     708.3   20100.00
     2     1231.87   22.97    1.836  0.30( 0.28) 0.95     895.3   13600.00
     3     1288.70   59.42    1.053  0.30( 0.28) 0.95    1874.9   13510.00
     4     1240.21   68.42    0.999  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1288.70  Tc(MIN.) =   59.417
 EFFECTIVE AREA(ACRES) =   1874.95  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.44
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1310.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.46
 AVERAGE FLOW DEPTH(FEET) =   3.44   TRAVEL TIME(MIN.) =   5.28
 Tc(MIN.) =   64.70
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   43.77
 EFFECTIVE AREA(ACRES) =   1942.53     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1288.70
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.41
```



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 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.41   FLOW VELOCITY(FEET/SEC.) =   9.40
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1201.19   22.69    1.851  0.30( 0.28) 0.95     775.9   20100.00
     2     1231.87   28.30    1.597  0.30( 0.28) 0.95     962.9   13600.00
     3     1288.70   64.70    1.020  0.30( 0.28) 0.95    1942.5   13510.00
     4     1240.21   73.77    0.968  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1288.70  Tc(MIN.) =   64.70
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1942.53

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.70
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   67.81
 EFFECTIVE AREA(ACRES) =   2047.23   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1352.90

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.70
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    5.20
 EFFECTIVE AREA(ACRES) =   2055.26   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1358.10
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1426.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.20
  AVERAGE FLOW DEPTH(FEET) =   3.76   TRAVEL TIME(MIN.) =   5.10
  Tc(MIN.) =   69.79
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  136.33
  EFFECTIVE AREA(ACRES) =   2274.51     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1441.31
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.78   FLOW VELOCITY(FEET/SEC.) =   9.23
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1323.69   27.83    1.616  0.30( 0.29) 0.96    1107.9   20100.00
      2     1361.42   33.44    1.457  0.30( 0.29) 0.96    1294.9   13600.00
      3     1441.31   69.79    0.991  0.30( 0.29) 0.96    2274.5   13510.00
      4     1375.80   78.93    0.939  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1441.31  Tc(MIN.) =   69.79
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2274.51

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   69.79
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  133.96
  EFFECTIVE AREA(ACRES) =   2489.94   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1575.27

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1578.91   27.83    1.616  0.30( 0.29) 0.97    1323.3   20100.00
      2     1585.73   33.44    1.457  0.30( 0.29) 0.97    1510.3   13600.00
      3     1575.27   69.79    0.991  0.30( 0.29) 0.96    2489.9   13510.00
      4     1499.78   78.93    0.939  0.30( 0.29) 0.96    2555.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1585.73  Tc(MIN.) =   33.44
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1510.33

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.457
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   17.41
  EFFECTIVE AREA(ACRES) =   1527.05   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1603.14

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
```

```
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.90
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       0.22      0.30     1.000     -
 USER-DEFINED               -       2.17      0.30     1.000     -
 USER-DEFINED               -       9.19      0.30     1.000     -
 USER-DEFINED               -      67.57      0.30     1.000     -
 USER-DEFINED               -      35.19      0.30     1.000     -
 USER-DEFINED               -      30.67      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1672.45
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.30
 AVERAGE FLOW DEPTH(FEET) =   3.90   TRAVEL TIME(MIN.) =   4.72
 Tc(MIN.) =   38.16
 SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =  138.61
 EFFECTIVE AREA(ACRES) =   1672.06     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
 TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    1611.49
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.82

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.82   FLOW VELOCITY(FEET/SEC.) =  10.18
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1598.72   32.55    1.475  0.30( 0.29) 0.97    1485.0   20100.00
     2     1611.49   38.16    1.362  0.30( 0.29) 0.97    1672.1   13600.00
     3     1611.93   74.55    0.964  0.30( 0.29) 0.96    2651.7   13510.00
     4     1526.38   83.75    0.912  0.30( 0.29) 0.96    2717.6   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1611.93  Tc(MIN.) =   74.55
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2651.67

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   74.55
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       0.89      0.30     1.000     -
 USER-DEFINED               -      20.65      0.30     1.000     -
 USER-DEFINED               -       2.69      0.30     1.000     -
 USER-DEFINED               -       8.45      0.30     1.000     -
 USER-DEFINED               -      96.93      0.30     1.000     -
```



```
 USER-DEFINED               -      13.19      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =   85.35
 EFFECTIVE AREA(ACRES) =   2794.47   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
 TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    1697.29

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1732.49   32.55    1.475  0.30( 0.29) 0.97    1627.8   20100.00
     2     1747.99   38.16    1.362  0.30( 0.29) 0.97    1814.9   13600.00
     3     1697.29   74.55    0.964  0.30( 0.29) 0.96    2794.5   13510.00
     4     1605.07   83.75    0.912  0.30( 0.29) 0.96    2860.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1747.99  Tc(MIN.) =   38.16
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1814.86

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.16
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       42.54      0.30     1.000     -
 USER-DEFINED               -       16.96      0.30     1.000     -
 USER-DEFINED               -       80.60      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -        2.00      0.30     1.000     -
 USER-DEFINED               -        3.11      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  140.30
 EFFECTIVE AREA(ACRES) =   1961.63   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    1888.28

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.77
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1913.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.30
  AVERAGE FLOW DEPTH(FEET) =   3.77   TRAVEL TIME(MIN.) =   2.16
  Tc(MIN.) =   40.31
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   49.86
  EFFECTIVE AREA(ACRES) =   2015.93     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    1888.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.74   FLOW VELOCITY(FEET/SEC.) =  12.24
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1887.68   34.70    1.432  0.30( 0.29) 0.98    1828.9   20100.00
      2     1888.28   40.31    1.320  0.30( 0.29) 0.98    2015.9   13600.00
      3     1785.01   76.74    0.952  0.30( 0.29) 0.97    2995.5   13510.00
      4     1685.95   85.99    0.900  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1888.28  Tc(MIN.) =   40.31
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    2015.93

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.31
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.67      0.30     1.000     -
  USER-DEFINED                -        9.52      0.30     1.000     -
  USER-DEFINED                -        0.71      0.30     1.000     -
  USER-DEFINED                -        0.22      0.30     1.000     -
  USER-DEFINED                -       39.42      0.30     1.000     -
  USER-DEFINED                -        0.62      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   46.98
  EFFECTIVE AREA(ACRES) =   2067.09   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
```



```
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    1911.34

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1925.95   34.70    1.432  0.30( 0.29) 0.98    1880.1   20100.00
      2     1911.34   40.31    1.320  0.30( 0.29) 0.98    2067.1   13600.00
      3     1814.12   76.74    0.952  0.30( 0.29) 0.97    3046.7   13510.00
      4     1708.80   85.99    0.900  0.30( 0.29) 0.97    3112.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1925.95  Tc(MIN.) =   34.70
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1880.06

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.432
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.11      0.30     1.000     -
  USER-DEFINED                -        0.77      0.30     1.000     -
  USER-DEFINED                -        0.22      0.30     1.000     -
  USER-DEFINED                -        2.69      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    3.86
  EFFECTIVE AREA(ACRES) =   1883.85   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    1929.81

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P25EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      479.23   14.36  0.30( 0.11) 0.36     173.1     110.00
      2      481.39   16.87  0.30( 0.11) 0.37     203.9     100.00
      3      473.65   18.15  0.30( 0.11) 0.38     213.8     100.00
      4      419.54   21.27  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN 102.0 INCH PIPE IS  76.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  42.20
  ESTIMATED PIPE DIAMETER(INCH) = 102.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    1929.81
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   35.05
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1929.81   35.05    1.425  0.30( 0.29) 0.98    1883.8   20100.00
      2     1914.82   40.66    1.315  0.30( 0.29) 0.98    2070.9   13600.00
      3     1816.34   77.09    0.950  0.30( 0.29) 0.97    3050.5   13510.00
      4     1710.85   86.35    0.898  0.30( 0.29) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      479.23   14.36    2.487  0.30( 0.11) 0.36     173.1     110.00
      2      481.39   16.87    2.242  0.30( 0.11) 0.37     203.9     100.00
      3      473.65   18.15    2.137  0.30( 0.11) 0.38     213.8     100.00
      4      419.54   21.27    1.922  0.30( 0.12) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2012.39   14.36    2.487  0.30( 0.26) 0.87     945.0     110.00
      2     2080.98   16.87    2.242  0.30( 0.26) 0.87    1110.5     100.00
      3     2102.39   18.15    2.137  0.30( 0.26) 0.87    1189.4     100.00
      4     2105.76   21.27    1.922  0.30( 0.27) 0.88    1364.4     130.00
      5     2233.52   35.05    1.425  0.30( 0.28) 0.92    2104.9   20100.00
      6     2193.00   40.66    1.315  0.30( 0.28) 0.92    2292.0   13600.00
      7     2009.48   77.09    0.950  0.30( 0.28) 0.93    3271.6   13510.00
      8     1891.84   86.35    0.898  0.30( 0.28) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2233.52  Tc(MIN.) =   35.049
  EFFECTIVE AREA(ACRES) =   2104.95  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

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



```
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   35.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.425
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.11      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.44      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.49      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        1.70      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.09      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   24.69
  EFFECTIVE AREA(ACRES) =   2129.35   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2233.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   35.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.425
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.19      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   49.35
  EFFECTIVE AREA(ACRES) =   2178.11   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2251.51

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        9.23      0.30     1.000     -
  USER-DEFINED               -        0.54      0.30     1.000     -
  USER-DEFINED               -        5.66      0.30     1.000     -
  USER-DEFINED               -        3.66      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2261.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.00
  AVERAGE FLOW DEPTH(FEET) =   5.02   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =   36.60
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   19.66
  EFFECTIVE AREA(ACRES) =   2198.09     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.01   FLOW VELOCITY(FEET/SEC.) =   9.99
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2038.12   15.96    2.316  0.30( 0.26) 0.88    1038.1     110.00
      2     2108.29   18.45    2.112  0.30( 0.26) 0.88    1203.7     100.00
      3     2128.99   19.73    2.008  0.30( 0.26) 0.88    1282.5     100.00
      4     2141.14   22.85    1.842  0.30( 0.27) 0.89    1457.6     130.00
      5     2251.51   36.60    1.393  0.30( 0.28) 0.92    2198.1   20100.00
      6     2209.48   42.23    1.291  0.30( 0.28) 0.92    2385.1   13600.00
      7     2018.73   78.70    0.941  0.30( 0.28) 0.93    3364.7   13510.00
      8     1899.14   87.98    0.888  0.30( 0.28) 0.93    3430.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2251.51  Tc(MIN.) =   36.60
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2198.09

********************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
================================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        9.40      0.30     1.000     -
  USER-DEFINED               -        2.76      0.30     1.000     -
  USER-DEFINED               -       17.38      0.30     1.000     -
  USER-DEFINED               -        2.46      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   38.49
  EFFECTIVE AREA(ACRES) =   2237.21   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.65      0.30     1.000     -
  USER-DEFINED               -        1.70      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    2.31
  EFFECTIVE AREA(ACRES) =   2239.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
--------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.29      0.30     1.000     -
  USER-DEFINED               -       31.25      0.30     1.000     -
```

```
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        6.26      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   42.62
  EFFECTIVE AREA(ACRES) =   2282.87   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    2293.29

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   42.14
  EFFECTIVE AREA(ACRES) =   2322.03   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    2335.43

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.52
  EFFECTIVE AREA(ACRES) =   2322.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    2335.96

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2341.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.93
  AVERAGE FLOW DEPTH(FEET) =   4.82   TRAVEL TIME(MIN.) =   4.36
  Tc(MIN.) =   40.96
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =   10.61
  EFFECTIVE AREA(ACRES) =   2334.23     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    2335.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.81   FLOW VELOCITY(FEET/SEC.) =  10.93
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.96   20.42    1.965  0.30( 0.26) 0.88    1174.3     110.00
      2     2209.71   22.88    1.841  0.30( 0.26) 0.88    1339.8     100.00
      3     2208.12   24.16    1.776  0.30( 0.26) 0.88    1418.7     100.00
      4     2242.47   27.26    1.640  0.30( 0.27) 0.89    1593.7     130.00
      5     2335.96   40.96    1.310  0.30( 0.28) 0.92    2334.2   20100.00
      6     2291.37   46.61    1.225  0.30( 0.28) 0.92    2521.3   13600.00
      7     2078.40   83.21    0.915  0.30( 0.28) 0.93    3500.9   13510.00
      8     1950.98   92.58    0.867  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2335.96  Tc(MIN.) =   40.96
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2334.23

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   79.99
  EFFECTIVE AREA(ACRES) =   2422.19   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    2335.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        0.18      0.30     1.000     -
  USER-DEFINED               -        0.38      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        7.73      0.30     1.000     -
  USER-DEFINED               -        4.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   11.72
  EFFECTIVE AREA(ACRES) =   2435.08   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    2335.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.57      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.97      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.98      0.30     1.000    69
```



```
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.39      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.67      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   11.44
  EFFECTIVE AREA(ACRES) =   2447.66   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    2335.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.44      0.30     1.000    66
  PUBLIC PARK                B        2.65      0.30     0.850    56
  PUBLIC PARK                B        1.16      0.30     0.850    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   23.17
  EFFECTIVE AREA(ACRES) =   2472.87   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    2335.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   40.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.30     1.000     -
  USER-DEFINED               -        6.75      0.30     1.000     -
  USER-DEFINED               -        0.02      0.30     1.000     -
  USER-DEFINED               -        0.93      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   13.44
  EFFECTIVE AREA(ACRES) =   2487.65   AREA-AVERAGED Fm(INCH/HR) =  0.28
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 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.49      0.30     1.000     -
 USER-DEFINED               -       13.31      0.30     1.000     -
 USER-DEFINED               -        0.87      0.30     1.000     -
 USER-DEFINED               -       20.26      0.30     1.000     -
 USER-DEFINED               -        1.21      0.30     1.000     -
 USER-DEFINED               -        0.05      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2354.81
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.24
 AVERAGE FLOW DEPTH(FEET) =   5.08   TRAVEL TIME(MIN.) =   4.11
 Tc(MIN.) =   45.08
 SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   37.70
 EFFECTIVE AREA(ACRES) =   2531.84     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.06

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.06   FLOW VELOCITY(FEET/SEC.) =  10.21
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2146.96   24.64    1.752  0.30( 0.27) 0.90    1371.9     110.00
     2     2209.71   27.06    1.648  0.30( 0.27) 0.89    1537.4     100.00
     3     2208.12   28.34    1.595  0.30( 0.27) 0.90    1616.3     100.00
     4     2242.47   31.42    1.497  0.30( 0.27) 0.90    1791.3     130.00
     5     2335.96   45.08    1.248  0.30( 0.28) 0.93    2531.8   20100.00
     6     2291.37   50.75    1.164  0.30( 0.28) 0.93    2718.9   13600.00
     7     2090.26   87.46    0.891  0.30( 0.28) 0.93    3698.5   13510.00
     8     1968.40   96.91    0.851  0.30( 0.28) 0.93    3764.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2335.96  Tc(MIN.) =   45.08
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
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 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2531.84

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.08
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       12.56      0.30     1.000     -
 USER-DEFINED               -        0.81      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.11      0.30     1.000     -
 USER-DEFINED               -        0.59      0.30     1.000     -
 USER-DEFINED               -        3.04      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =   15.46
 EFFECTIVE AREA(ACRES) =   2549.96   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.08
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
 PUBLIC PARK                B        1.30      0.30     0.850    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
 PUBLIC PARK                B        1.70      0.30     0.850    56
 PUBLIC PARK                B        0.10      0.30     0.850    56
 PUBLIC PARK                B        2.90      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
 SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    5.56
 EFFECTIVE AREA(ACRES) =   2556.16   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.08
```

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.10      0.30     0.500    56
 CONDOMINIUMS               B        0.10      0.30     0.350    56
 PUBLIC PARK                B        6.90      0.30     0.850    56
 PUBLIC PARK                B        0.40      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
 SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    6.72
 EFFECTIVE AREA(ACRES) =   2563.66   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
 ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.08
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        2.55      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        0.01      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.35      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        0.44      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        0.67      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.06      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    5.19
 EFFECTIVE AREA(ACRES) =   2569.74   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



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============================================================================
 MAINLINE Tc(MIN.) =   45.08
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.16      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.45      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        6.15      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   29.59
 EFFECTIVE AREA(ACRES) =   2604.43   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   45.08
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   12.21
 EFFECTIVE AREA(ACRES) =   2618.74   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    2335.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.54
  CHANNEL FLOW THRU SUBAREA(CFS) =    2335.96
  FLOW VELOCITY(FEET/SEC.) =  16.22   FLOW DEPTH(FEET) =   3.54
  TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =   45.38
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.96   24.94    1.737  0.30( 0.27) 0.90    1458.8     110.00
      2     2209.71   27.36    1.636  0.30( 0.27) 0.90    1624.3     100.00
      3     2208.12   28.64    1.583  0.30( 0.27) 0.90    1703.2     100.00
      4     2242.47   31.72    1.491  0.30( 0.27) 0.91    1878.2     130.00
      5     2335.96   45.38    1.243  0.30( 0.28) 0.93    2618.7   20100.00
      6     2291.37   51.04    1.160  0.30( 0.28) 0.93    2805.8   13600.00
      7     2090.26   87.77    0.890  0.30( 0.28) 0.93    3785.4   13510.00
      8     1979.94   97.22    0.850  0.30( 0.28) 0.93    3851.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2335.96  Tc(MIN.) =   45.38
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2618.74

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.190
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.23      0.30     1.000     -
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -        0.06      0.30     1.000     -
  USER-DEFINED               -        0.13      0.30     1.000     -
  USER-DEFINED               -        6.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2339.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.69
  AVERAGE FLOW DEPTH(FEET) =   5.71   TRAVEL TIME(MIN.) =   3.54
  Tc(MIN.) =   48.91
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    6.72
  EFFECTIVE AREA(ACRES) =   2627.13     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    2335.96
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  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.70   FLOW VELOCITY(FEET/SEC.) =   8.69
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.96   28.56    1.586  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.71   30.95    1.507  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.12   32.23    1.481  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.47   35.30    1.420  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.96   48.91    1.190  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.37   54.60    1.115  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42    0.872  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93    0.836  0.30( 0.28) 0.93    3859.7   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2335.96  Tc(MIN.) =   48.91
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2627.13
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     3859.7  TC(MIN.) =     48.91
  EFFECTIVE AREA(ACRES) =   2627.13  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.927
  PEAK FLOW RATE(CFS)   =    2335.96

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.96   28.56    1.586  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.71   30.95    1.507  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.12   32.23    1.481  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.47   35.30    1.420  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.96   48.91    1.190  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.37   54.60    1.115  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42    0.872  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93    0.836  0.30( 0.28) 0.93    3859.7   13500.00
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 25-YR EV AUG 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RI25EV37.DAT
  TIME/DATE OF STUDY: 13:44 08/09/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.753
   2)   10.00;  3.112
   3)   15.00;  2.390
   4)   20.00;  1.984
   5)   25.00;  1.732
   6)   30.00;  1.524
   7)   40.00;  1.323
   8)   50.00;  1.171
   9)   60.00;  1.045
  10)   90.00;  0.875
  11)  120.00;  0.763
  12)  180.00;  0.634
  13)  360.00;  0.464
  14) 1200.00;  0.203
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    24770.17   22.15  0.30( 0.25) 0.82    6102.3   50700.00
      2    26548.58   28.93  0.30( 0.25) 0.82    8303.4     110.00
      3    30491.96   42.22  0.30( 0.25) 0.84   13873.3     400.00
      4    32781.64   54.94  0.30( 0.26) 0.87   20412.2   13600.00
      5    34710.66   68.94  0.30( 0.27) 0.90   27162.1   13100.00
      6    35661.23   75.23  0.30( 0.27) 0.90   29902.5   11801.00
      7    37610.80   85.80  0.30( 0.27) 0.91   35225.1   11530.00
      8    38416.68   91.74  0.30( 0.28) 0.92   38994.4   13510.00
      9    39182.90   97.61  0.30( 0.28) 0.93   42608.2   13010.00
     10    40253.04  104.26  0.30( 0.28) 0.93   46880.1   11350.00
     11    40633.47  108.95  0.30( 0.28) 0.94   50054.4   11130.00
     12    40217.82  115.03  0.30( 0.28) 0.94   52980.9   12300.00
     13    39434.28  123.80  0.30( 0.28) 0.94   57241.5   12400.00
     14    38380.84  133.32  0.30( 0.28) 0.94   60643.1   12201.00
     15    37402.55  140.81  0.30( 0.28) 0.95   62536.1   12231.00
     16    36394.66  148.29  0.30( 0.28) 0.95   64088.9   10400.00
     17    34825.86  157.75  0.30( 0.28) 0.95   65535.3   12010.00
     18    33777.42  163.14  0.30( 0.28) 0.95   65797.9   10210.00
     19    33101.49  167.20  0.30( 0.28) 0.95   65944.7   12000.00
     20    29395.27  193.56  0.30( 0.28) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    24770.17   22.15  0.30( 0.25) 0.82    6102.3   50700.00
      2    26548.58   28.93  0.30( 0.25) 0.82    8303.4     110.00
      3    30491.96   42.22  0.30( 0.25) 0.84   13873.3     400.00
      4    32781.64   54.94  0.30( 0.26) 0.87   20412.2   13600.00
      5    34710.66   68.94  0.30( 0.27) 0.90   27162.1   13100.00
      6    35661.23   75.23  0.30( 0.27) 0.90   29902.5   11801.00
      7    37610.80   85.80  0.30( 0.27) 0.91   35225.1   11530.00
      8    38416.68   91.74  0.30( 0.28) 0.92   38994.4   13510.00
      9    39182.90   97.61  0.30( 0.28) 0.93   42608.2   13010.00
     10    40253.04  104.26  0.30( 0.28) 0.93   46880.1   11350.00
     11    40633.47  108.95  0.30( 0.28) 0.94   50054.4   11130.00
     12    40217.82  115.03  0.30( 0.28) 0.94   52980.9   12300.00
     13    39434.28  123.80  0.30( 0.28) 0.94   57241.5   12400.00
```

```
     14    38380.84  133.32  0.30( 0.28) 0.94   60643.1   12201.00
     15    37402.55  140.81  0.30( 0.28) 0.95   62536.1   12231.00
     16    36394.66  148.29  0.30( 0.28) 0.95   64088.9   10400.00
     17    34825.86  157.75  0.30( 0.28) 0.95   65535.3   12010.00
     18    33777.42  163.14  0.30( 0.28) 0.95   65797.9   10210.00
     19    33101.49  167.20  0.30( 0.28) 0.95   65944.7   12000.00
     20    29395.27  193.56  0.30( 0.28) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.20
  CHANNEL FLOW THRU SUBAREA(CFS) =   40633.47
  FLOW VELOCITY(FEET/SEC.) =  11.57   FLOW DEPTH(FEET) =  13.20
  TRAVEL TIME(MIN.) =   2.73   Tc(MIN.) =  111.68
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      321.17   15.37  0.30( 0.29) 0.96     192.9   10230.00
      2      293.25   24.48  0.30( 0.29) 0.95     241.2   10200.00
      3      292.00   24.71  0.30( 0.29) 0.95     241.7   10250.00
      4      266.33   28.63  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24770.17   25.34    1.718  0.30( 0.25) 0.82    6102.3   50700.00
      2    26548.58   32.05    1.483  0.30( 0.25) 0.82    8303.4     110.00
      3    30491.96   45.21    1.244  0.30( 0.25) 0.84   13873.3     400.00
```



```
      4    32781.64   57.85    1.072  0.30( 0.26) 0.87   20412.2   13600.00
      5    34710.66   71.81    0.978  0.30( 0.27) 0.90   27162.1   13100.00
      6    35661.23   78.07    0.943  0.30( 0.27) 0.90   29902.5   11801.00
      7    37610.80   88.60    0.883  0.30( 0.27) 0.91   35225.1   11530.00
      8    38416.68   94.51    0.858  0.30( 0.28) 0.92   38994.4   13510.00
      9    39182.90  100.37    0.836  0.30( 0.28) 0.93   42608.2   13010.00
     10    40253.04  107.00    0.812  0.30( 0.28) 0.93   46880.1   11350.00
     11    40633.47  111.68    0.794  0.30( 0.28) 0.94   50054.4   11130.00
     12    40217.82  117.76    0.771  0.30( 0.28) 0.94   52980.9   12300.00
     13    39434.28  126.55    0.749  0.30( 0.28) 0.94   57241.5   12400.00
     14    38380.84  136.09    0.728  0.30( 0.28) 0.94   60643.1   12201.00
     15    37402.55  143.61    0.712  0.30( 0.28) 0.95   62536.1   12231.00
     16    36394.66  151.11    0.696  0.30( 0.28) 0.95   64088.9   10400.00
     17    34825.86  160.61    0.676  0.30( 0.28) 0.95   65535.3   12010.00
     18    33777.42  166.03    0.664  0.30( 0.28) 0.95   65797.9   10210.00
     19    33101.49  170.10    0.655  0.30( 0.28) 0.95   65944.7   12000.00
     20    29395.27  196.58    0.618  0.30( 0.28) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      321.17   15.37    2.360  0.30( 0.29) 0.96     192.9   10230.00
    2      293.25   24.48    1.758  0.30( 0.29) 0.95     241.2   10200.00
    3      292.00   24.71    1.747  0.30( 0.29) 0.95     241.7   10250.00
    4      266.33   28.63    1.581  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    21905.01   15.37    2.360  0.30( 0.25) 0.83    3894.5   10230.00
    2    24879.88   24.48    1.758  0.30( 0.25) 0.83    6136.8   10200.00
    3    24919.75   24.71    1.747  0.30( 0.25) 0.83    6193.4   10250.00
    4    25058.07   25.34    1.718  0.30( 0.25) 0.83    6344.7   50700.00
    5    25908.84   28.63    1.581  0.30( 0.25) 0.83    7428.2   10220.00
    6    26794.72   32.05    1.483  0.30( 0.25) 0.83    8549.7     110.00
    7    30688.94   45.21    1.244  0.30( 0.25) 0.84   14119.6     400.00
    8    32943.29   57.85    1.072  0.30( 0.26) 0.88   20658.5   13600.00
    9    34852.98   71.81    0.978  0.30( 0.27) 0.90   27408.4   13100.00
   10    35796.26   78.07    0.943  0.30( 0.27) 0.90   30148.8   11801.00
   11    37733.55   88.60    0.883  0.30( 0.27) 0.91   35471.4   11530.00
   12    38534.33   94.51    0.858  0.30( 0.28) 0.92   39240.6   13510.00
   13    39296.06  100.37    0.836  0.30( 0.28) 0.93   42854.5   13010.00
   14    40361.11  107.00    0.812  0.30( 0.28) 0.93   47126.4   11350.00
   15    40737.94  111.68    0.794  0.30( 0.28) 0.94   50300.6   11130.00
   16    40317.62  117.76    0.771  0.30( 0.28) 0.94   53227.2   12300.00
   17    39529.47  126.55    0.749  0.30( 0.28) 0.94   57487.8   12400.00
   18    38471.81  136.09    0.728  0.30( 0.28) 0.94   60889.4   12201.00
   19    37490.20  143.61    0.712  0.30( 0.28) 0.95   62782.4   12231.00
   20    36478.99  151.11    0.696  0.30( 0.28) 0.95   64335.1   10400.00
   21    34905.99  160.61    0.676  0.30( 0.28) 0.95   65781.6   12010.00
   22    33855.16  166.03    0.664  0.30( 0.28) 0.95   66044.1   10210.00
   23    33177.42  170.10    0.655  0.30( 0.28) 0.95   66191.0   12000.00
   24    29463.61  196.58    0.618  0.30( 0.28) 0.95   66803.9   10100.00
  TOTAL AREA(ACRES) =     66803.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    40737.94  Tc(MIN.) =  111.679
  EFFECTIVE AREA(ACRES) =  50300.62  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.56
  CHANNEL FLOW THRU SUBAREA(CFS) =   40737.94
  FLOW VELOCITY(FEET/SEC.) =  11.22   FLOW DEPTH(FEET) =  13.56
  TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  114.75
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      651.40   18.38  0.30( 0.23) 0.76     399.7   10300.00
      2      652.99   19.22  0.30( 0.23) 0.76     413.6   10380.00
      3      641.00   21.63  0.30( 0.23) 0.76     440.0   10320.00
      4      618.06   23.73  0.30( 0.23) 0.76     451.6   10360.00
      5      581.15   26.62  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21905.01   19.11    2.056  0.30( 0.25) 0.83    3894.5   10230.00
      2    24879.88   28.07    1.604  0.30( 0.25) 0.83    6136.8   10200.00
      3    24919.75   28.30    1.595  0.30( 0.25) 0.83    6193.4   10250.00
      4    25058.07   28.92    1.569  0.30( 0.25) 0.83    6344.7   50700.00
      5    25908.84   32.17    1.480  0.30( 0.25) 0.83    7428.2   10220.00
```



```
      6    26794.72   35.55    1.412  0.30( 0.25) 0.83    8549.7     110.00
      7    30688.94   48.56    1.193  0.30( 0.25) 0.84   14119.6     400.00
      8    32943.29   61.13    1.039  0.30( 0.26) 0.88   20658.5   13600.00
      9    34852.98   75.03    0.960  0.30( 0.27) 0.90   27408.4   13100.00
     10    35796.26   81.27    0.924  0.30( 0.27) 0.90   30148.8   11801.00
     11    37733.55   91.74    0.868  0.30( 0.27) 0.91   35471.4   11530.00
     12    38534.33   97.64    0.846  0.30( 0.28) 0.92   39240.6   13510.00
     13    39296.06  103.48    0.825  0.30( 0.28) 0.93   42854.5   13010.00
     14    40361.11  110.08    0.800  0.30( 0.28) 0.93   47126.4   11350.00
     15    40737.94  114.75    0.783  0.30( 0.28) 0.94   50300.6   11130.00
     16    40317.62  120.85    0.761  0.30( 0.28) 0.94   53227.2   12300.00
     17    39529.47  129.65    0.742  0.30( 0.28) 0.94   57487.8   12400.00
     18    38471.81  139.22    0.722  0.30( 0.28) 0.94   60889.4   12201.00
     19    37490.20  146.76    0.705  0.30( 0.28) 0.95   62782.4   12231.00
     20    36478.99  154.29    0.689  0.30( 0.28) 0.95   64335.1   10400.00
     21    34905.99  163.83    0.669  0.30( 0.28) 0.95   65781.6   12010.00
     22    33855.16  169.28    0.657  0.30( 0.28) 0.95   66044.1   10210.00
     23    33177.42  173.38    0.648  0.30( 0.28) 0.95   66191.0   12000.00
     24    29463.61  199.98    0.615  0.30( 0.28) 0.95   66803.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      651.40   18.38    2.116  0.30( 0.23) 0.76     399.7   10300.00
      2      652.99   19.22    2.047  0.30( 0.23) 0.76     413.6   10380.00
      3      641.00   21.63    1.902  0.30( 0.23) 0.76     440.0   10320.00
      4      618.06   23.73    1.796  0.30( 0.23) 0.76     451.6   10360.00
      5      581.15   26.62    1.665  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22410.40   18.38    2.116  0.30( 0.25) 0.82    4145.1   10300.00
      2    22557.79   19.11    2.056  0.30( 0.25) 0.82    4306.3   10230.00
      3    22593.50   19.22    2.047  0.30( 0.25) 0.82    4334.9   10380.00
      4    23384.05   21.63    1.902  0.30( 0.25) 0.82    4966.2   10320.00
      5    24057.79   23.73    1.796  0.30( 0.25) 0.82    5502.9   10360.00
      6    24979.86   26.62    1.665  0.30( 0.25) 0.82    6234.9   10340.00
      7    25436.63   28.07    1.604  0.30( 0.25) 0.82    6597.6   10200.00
      8    25472.62   28.30    1.595  0.30( 0.25) 0.82    6654.2   10250.00
      9    25600.50   28.92    1.569  0.30( 0.25) 0.82    6805.5   50700.00
     10    26415.41   32.17    1.480  0.30( 0.25) 0.82    7889.0   10220.00
     11    27273.77   35.55    1.412  0.30( 0.25) 0.82    9010.5     110.00
     12    31079.10   48.56    1.193  0.30( 0.25) 0.84   14580.4     400.00
     13    33271.00   61.13    1.039  0.30( 0.26) 0.87   21119.3   13600.00
     14    35148.81   75.03    0.960  0.30( 0.27) 0.89   27869.2   13100.00
     15    36077.79   81.27    0.924  0.30( 0.27) 0.90   30609.6   11801.00
     16    37992.42   91.74    0.868  0.30( 0.27) 0.91   35932.2   11530.00
     17    38784.28   97.64    0.846  0.30( 0.28) 0.92   39701.4   13510.00
     18    39537.19  103.48    0.825  0.30( 0.28) 0.92   43315.3   13010.00
     19    40592.26  110.08    0.800  0.30( 0.28) 0.93   47587.2   11350.00
     20    40962.03  114.75    0.783  0.30( 0.28) 0.93   50761.4   11130.00
     21    40533.04  120.85    0.761  0.30( 0.28) 0.94   53688.0   12300.00
     22    39737.23  129.65    0.742  0.30( 0.28) 0.94   57948.6   12400.00
     23    38671.24  139.22    0.722  0.30( 0.28) 0.94   61350.2   12201.00
     24    37683.07  146.76    0.705  0.30( 0.28) 0.94   63243.2   12231.00
```

```
    25    36665.30  154.29    0.689  0.30( 0.28) 0.95   64795.9   10400.00
    26    35084.00  163.83    0.669  0.30( 0.28) 0.95   66242.4   12010.00
    27    34028.42  169.28    0.657  0.30( 0.28) 0.95   66504.9   10210.00
    28    33347.12  173.38    0.648  0.30( 0.28) 0.95   66651.8   12000.00
    29    29619.90  199.98    0.615  0.30( 0.28) 0.95   67264.7   10100.00
   TOTAL AREA(ACRES) =     67264.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    40962.03  Tc(MIN.) =  114.751
  EFFECTIVE AREA(ACRES) =  50761.42  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    67264.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.88
  CHANNEL FLOW THRU SUBAREA(CFS) =   40962.03
  FLOW VELOCITY(FEET/SEC.) =  39.55   FLOW DEPTH(FEET) =   7.88
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =  114.90
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       65.97   19.78  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22410.40   18.57    2.100  0.30( 0.25) 0.82    4145.1   10300.00
```



```
    2    22557.79   19.30    2.041  0.30( 0.25) 0.82    4306.3   10230.00
    3    22593.50   19.40    2.032  0.30( 0.25) 0.82    4334.9   10380.00
    4    23384.05   21.82    1.892  0.30( 0.25) 0.82    4966.2   10320.00
    5    24057.79   23.91    1.787  0.30( 0.25) 0.82    5502.9   10360.00
    6    24979.86   26.80    1.657  0.30( 0.25) 0.82    6234.9   10340.00
    7    25436.63   28.25    1.597  0.30( 0.25) 0.82    6597.6   10200.00
    8    25472.62   28.48    1.587  0.30( 0.25) 0.82    6654.2   10250.00
    9    25600.50   29.10    1.562  0.30( 0.25) 0.82    6805.5   50700.00
   10    26415.41   32.35    1.477  0.30( 0.25) 0.82    7889.0   10220.00
   11    27273.77   35.73    1.409  0.30( 0.25) 0.82    9010.5     110.00
   12    31079.10   48.73    1.190  0.30( 0.25) 0.84   14580.4     400.00
   13    33271.00   61.30    1.038  0.30( 0.26) 0.87   21119.3   13600.00
   14    35148.81   75.19    0.959  0.30( 0.27) 0.89   27869.2   13100.00
   15    36077.79   81.43    0.924  0.30( 0.27) 0.90   30609.6   11801.00
   16    37992.42   91.90    0.868  0.30( 0.27) 0.91   35932.2   11530.00
   17    38784.28   97.79    0.846  0.30( 0.28) 0.92   39701.4   13510.00
   18    39537.19  103.63    0.824  0.30( 0.28) 0.92   43315.3   13010.00
   19    40592.26  110.23    0.799  0.30( 0.28) 0.93   47587.2   11350.00
   20    40962.03  114.90    0.782  0.30( 0.28) 0.93   50761.4   11130.00
   21    40533.04  121.00    0.761  0.30( 0.28) 0.94   53688.0   12300.00
   22    39737.23  129.81    0.742  0.30( 0.28) 0.94   57948.6   12400.00
   23    38671.24  139.38    0.721  0.30( 0.28) 0.94   61350.2   12201.00
   24    37683.07  146.92    0.705  0.30( 0.28) 0.94   63243.2   12231.00
   25    36665.30  154.45    0.689  0.30( 0.28) 0.95   64795.9   10400.00
   26    35084.00  163.99    0.668  0.30( 0.28) 0.95   66242.4   12010.00
   27    34028.42  169.44    0.657  0.30( 0.28) 0.95   66504.9   10210.00
   28    33347.12  173.54    0.648  0.30( 0.28) 0.95   66651.8   12000.00
   29    29619.90  200.15    0.615  0.30( 0.28) 0.95   67264.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       65.97   19.78    2.002  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    22475.79   18.57    2.100  0.30( 0.25) 0.82    4186.7   10300.00
    2    22623.59   19.30    2.041  0.30( 0.25) 0.82    4349.6   10230.00
    3    22659.34   19.40    2.032  0.30( 0.25) 0.82    4378.3   10380.00
    4    22782.29   19.78    2.002  0.30( 0.25) 0.82    4477.2   10400.00
    5    23445.92   21.82    1.892  0.30( 0.25) 0.82    5010.5   10320.00
    6    24115.71   23.91    1.787  0.30( 0.25) 0.82    5547.2   10360.00
    7    25032.93   26.80    1.657  0.30( 0.25) 0.82    6279.2   10340.00
    8    25487.44   28.25    1.597  0.30( 0.25) 0.82    6641.9   10200.00
    9    25523.07   28.48    1.587  0.30( 0.25) 0.82    6698.5   10250.00
   10    25649.98   29.10    1.562  0.30( 0.25) 0.82    6849.8   50700.00
   11    26461.72   32.35    1.477  0.30( 0.25) 0.82    7933.3   10220.00
   12    27317.54   35.73    1.409  0.30( 0.25) 0.82    9054.8     110.00
   13    31114.69   48.73    1.190  0.30( 0.25) 0.84   14624.7     400.00
   14    33300.88   61.30    1.038  0.30( 0.26) 0.87   21163.6   13600.00
   15    35175.74   75.19    0.959  0.30( 0.27) 0.89   27913.5   13100.00
   16    36103.39   81.43    0.924  0.30( 0.27) 0.90   30653.9   11801.00
   17    38015.95   91.90    0.868  0.30( 0.27) 0.91   35976.5   11530.00
   18    38806.98   97.79    0.846  0.30( 0.28) 0.92   39745.7   13510.00
   19    39559.07  103.63    0.824  0.30( 0.28) 0.92   43359.6   13010.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 20 | 40613.22 | 110.23 | 0.799 | 0.30( 0.28) | 0.93 | 47631.5 | 11350.00 |
| 21 | 40982.34 | 114.90 | 0.782 | 0.30( 0.28) | 0.93 | 50805.7 | 11130.00 |
| 22 | 40552.56 | 121.00 | 0.761 | 0.30( 0.28) | 0.94 | 53732.3 | 12300.00 |
| 23 | 39756.04 | 129.81 | 0.742 | 0.30( 0.28) | 0.94 | 57992.9 | 12400.00 |
| 24 | 38689.28 | 139.38 | 0.721 | 0.30( 0.28) | 0.94 | 61394.5 | 12201.00 |
| 25 | 37700.50 | 146.92 | 0.705 | 0.30( 0.28) | 0.94 | 63287.5 | 12231.00 |
| 26 | 36682.12 | 154.45 | 0.689 | 0.30( 0.28) | 0.95 | 64840.2 | 10400.00 |
| 27 | 35100.06 | 163.99 | 0.668 | 0.30( 0.28) | 0.95 | 66286.7 | 12010.00 |
| 28 | 34044.04 | 169.44 | 0.657 | 0.30( 0.28) | 0.95 | 66549.2 | 10210.00 |
| 29 | 33362.41 | 173.54 | 0.648 | 0.30( 0.28) | 0.95 | 66696.0 | 12000.00 |
| 30 | 29633.96 | 200.15 | 0.615 | 0.30( 0.28) | 0.95 | 67309.0 | 10100.00 |

TOTAL AREA(ACRES) = 67309.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40982.34 Tc(MIN.) = 114.904
EFFECTIVE AREA(ACRES) = 50805.72 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67309.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

**********
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.00
CHANNEL FLOW THRU SUBAREA(CFS) = 40982.34
FLOW VELOCITY(FEET/SEC.) = 15.62 FLOW DEPTH(FEET) = 16.00
TRAVEL TIME(MIN.) = 1.64 Tc(MIN.) = 116.54
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105K.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 355.73 | 14.74 | 0.30( 0.27) | 0.90 | 206.7 | 10520.00 |
| 2 | 414.68 | 31.61 | 0.30( 0.28) | 0.93 | 403.6 | 10500.00 |

TOTAL AREA(ACRES) = 403.6

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11
---



>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22475.79 | 20.51 | 1.958 | 0.30( 0.25) | 0.82 | 4186.7 | 10300.00 |
| 2 | 22623.59 | 21.24 | 1.922 | 0.30( 0.25) | 0.82 | 4349.6 | 10230.00 |
| 3 | 22659.34 | 21.35 | 1.916 | 0.30( 0.25) | 0.82 | 4378.3 | 10380.00 |
| 4 | 22782.29 | 21.72 | 1.897 | 0.30( 0.25) | 0.82 | 4477.2 | 10400.00 |
| 5 | 23445.92 | 23.74 | 1.795 | 0.30( 0.25) | 0.82 | 5010.5 | 10320.00 |
| 6 | 24115.71 | 25.82 | 1.698 | 0.30( 0.25) | 0.82 | 5547.2 | 10360.00 |
| 7 | 25032.93 | 28.69 | 1.579 | 0.30( 0.25) | 0.82 | 6279.2 | 10340.00 |
| 8 | 25487.44 | 30.12 | 1.522 | 0.30( 0.25) | 0.82 | 6641.9 | 10200.00 |
| 9 | 25523.07 | 30.35 | 1.517 | 0.30( 0.25) | 0.82 | 6698.5 | 10250.00 |
| 10 | 25649.98 | 30.97 | 1.504 | 0.30( 0.25) | 0.82 | 6849.8 | 50700.00 |
| 11 | 26461.72 | 34.20 | 1.440 | 0.30( 0.25) | 0.82 | 7933.3 | 10220.00 |
| 12 | 27317.54 | 37.56 | 1.372 | 0.30( 0.25) | 0.82 | 9054.8 | 110.00 |
| 13 | 31114.69 | 50.50 | 1.165 | 0.30( 0.25) | 0.84 | 14624.7 | 400.00 |
| 14 | 33300.88 | 63.03 | 1.028 | 0.30( 0.26) | 0.87 | 21163.6 | 13600.00 |
| 15 | 35175.74 | 76.90 | 0.949 | 0.30( 0.27) | 0.89 | 27913.5 | 13100.00 |
| 16 | 36103.39 | 83.12 | 0.914 | 0.30( 0.27) | 0.90 | 30653.9 | 11801.00 |
| 17 | 38015.95 | 93.57 | 0.862 | 0.30( 0.27) | 0.91 | 35976.5 | 11530.00 |
| 18 | 38806.98 | 99.46 | 0.840 | 0.30( 0.28) | 0.92 | 39745.7 | 13510.00 |
| 19 | 39559.07 | 105.28 | 0.818 | 0.30( 0.28) | 0.92 | 43359.6 | 13010.00 |
| 20 | 40613.22 | 111.87 | 0.793 | 0.30( 0.28) | 0.93 | 47631.5 | 11350.00 |
| 21 | 40982.34 | 116.54 | 0.776 | 0.30( 0.28) | 0.93 | 50805.7 | 11130.00 |
| 22 | 40552.56 | 122.64 | 0.757 | 0.30( 0.28) | 0.94 | 53732.3 | 12300.00 |
| 23 | 39756.04 | 131.46 | 0.738 | 0.30( 0.28) | 0.94 | 57992.9 | 12400.00 |
| 24 | 38689.28 | 141.04 | 0.718 | 0.30( 0.28) | 0.94 | 61394.5 | 12201.00 |
| 25 | 37700.50 | 148.59 | 0.702 | 0.30( 0.28) | 0.94 | 63287.5 | 12231.00 |
| 26 | 36682.12 | 156.14 | 0.685 | 0.30( 0.28) | 0.95 | 64840.2 | 10400.00 |
| 27 | 35100.06 | 165.70 | 0.665 | 0.30( 0.28) | 0.95 | 66286.7 | 12010.00 |
| 28 | 34044.04 | 171.17 | 0.653 | 0.30( 0.28) | 0.95 | 66549.2 | 10210.00 |
| 29 | 33362.41 | 175.28 | 0.644 | 0.30( 0.28) | 0.95 | 66696.0 | 12000.00 |
| 30 | 29633.96 | 201.95 | 0.613 | 0.30( 0.28) | 0.95 | 67309.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 355.73 | 14.74 | 2.428 | 0.30( 0.27) | 0.90 | 206.7 | 10520.00 |
| 2 | 414.68 | 31.61 | 1.492 | 0.30( 0.28) | 0.93 | 403.6 | 10500.00 |

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20936.47 | 14.74 | 2.428 | 0.30( 0.25) | 0.83 | 3214.7 | 10520.00 |
| 2 | 22851.69 | 20.51 | 1.958 | 0.30( 0.25) | 0.83 | 4460.8 | 10300.00 |
| 3 | 23002.03 | 21.24 | 1.922 | 0.30( 0.25) | 0.83 | 4632.1 | 10230.00 |
| 4 | 23038.16 | 21.35 | 1.916 | 0.30( 0.25) | 0.83 | 4662.1 | 10380.00 |
| 5 | 23162.40 | 21.72 | 1.897 | 0.30( 0.25) | 0.83 | 4765.4 | 10400.00 |
| 6 | 23833.10 | 23.74 | 1.795 | 0.30( 0.25) | 0.83 | 5322.2 | 10320.00 |
| 7 | 24510.15 | 25.82 | 1.698 | 0.30( 0.25) | 0.83 | 5883.2 | 10360.00 |
| 8 | 25437.38 | 28.69 | 1.579 | 0.30( 0.25) | 0.83 | 6648.6 | 10340.00 |
| 9 | 25896.91 | 30.12 | 1.522 | 0.30( 0.25) | 0.83 | 7028.1 | 10200.00 |
| 10 | 25933.34 | 30.35 | 1.517 | 0.30( 0.25) | 0.83 | 7087.3 | 10250.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 11 | 26062.42 | 30.97 | 1.504 | 0.30( 0.25) | 0.83 | 7245.9 | 50700.00 |
| 12 | 26226.37 | 31.61 | 1.492 | 0.30( 0.25) | 0.83 | 7469.2 | 10500.00 |
| 13 | 26858.63 | 34.20 | 1.440 | 0.30( 0.25) | 0.83 | 8336.9 | 10220.00 |
| 14 | 27691.36 | 37.56 | 1.372 | 0.30( 0.25) | 0.83 | 9458.4 | 110.00 |
| 15 | 31417.68 | 50.50 | 1.165 | 0.30( 0.25) | 0.84 | 15028.3 | 400.00 |
| 16 | 33557.10 | 63.03 | 1.028 | 0.30( 0.26) | 0.87 | 21567.2 | 13600.00 |
| 17 | 35405.10 | 76.90 | 0.949 | 0.30( 0.27) | 0.89 | 28317.1 | 13100.00 |
| 18 | 36320.71 | 83.12 | 0.914 | 0.30( 0.27) | 0.90 | 31057.5 | 11801.00 |
| 19 | 38215.39 | 93.57 | 0.862 | 0.30( 0.27) | 0.91 | 36380.1 | 11530.00 |
| 20 | 38998.92 | 99.46 | 0.840 | 0.30( 0.28) | 0.92 | 40149.3 | 13510.00 |
| 21 | 39743.57 | 105.28 | 0.818 | 0.30( 0.28) | 0.92 | 43763.2 | 13010.00 |
| 22 | 40789.32 | 111.87 | 0.793 | 0.30( 0.28) | 0.93 | 48035.1 | 11350.00 |
| 23 | 41152.48 | 116.54 | 0.776 | 0.30( 0.28) | 0.93 | 51209.3 | 11130.00 |
| 24 | 40716.35 | 122.64 | 0.757 | 0.30( 0.28) | 0.94 | 54135.9 | 12300.00 |
| 25 | 39913.35 | 131.46 | 0.738 | 0.30( 0.28) | 0.94 | 58396.5 | 12400.00 |
| 26 | 38839.55 | 141.04 | 0.718 | 0.30( 0.28) | 0.94 | 61798.1 | 12201.00 |
| 27 | 37845.22 | 148.59 | 0.702 | 0.30( 0.28) | 0.94 | 63691.1 | 12231.00 |
| 28 | 36821.30 | 156.14 | 0.685 | 0.30( 0.28) | 0.95 | 65243.8 | 10400.00 |
| 29 | 35232.22 | 165.70 | 0.665 | 0.30( 0.28) | 0.95 | 66690.3 | 12010.00 |
| 30 | 34172.18 | 171.17 | 0.653 | 0.30( 0.28) | 0.95 | 66952.8 | 10210.00 |
| 31 | 33487.52 | 175.28 | 0.644 | 0.30( 0.28) | 0.95 | 67099.6 | 12000.00 |
| 32 | 29748.53 | 201.95 | 0.613 | 0.30( 0.28) | 0.95 | 67712.6 | 10100.00 |

TOTAL AREA(ACRES) = 67712.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41152.48 Tc(MIN.) = 116.541
EFFECTIVE AREA(ACRES) = 51209.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 67712.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 134.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0000
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 46.23
CHANNEL FLOW THRU SUBAREA(CFS) = 41152.48
FLOW VELOCITY(FEET/SEC.) = 3.12 FLOW DEPTH(FEET) = 46.23
TRAVEL TIME(MIN.) = 1.11 Tc(MIN.) = 117.65
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

**********
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 117.65
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.772
SUBAREA LOSS RATE DATA(AMC II):

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



| | | | | | |
|---|---|---|---|---|---|
| "1 DWELLING/ACRE" | B | 48.80 | 0.30 | 0.800 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.800
SUBAREA AREA(ACRES) = 48.80 SUBAREA RUNOFF(CFS) = 23.36
EFFECTIVE AREA(ACRES) = 51258.12 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67761.4 PEAK FLOW RATE(CFS) = 41152.48
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506106D.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 59.23 | 17.66 | 0.30( 0.20) | 0.67 | 36.9 | 10600.00 |

TOTAL AREA(ACRES) = 36.9

**********
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20936.47 | 16.05 | 2.304 | 0.30( 0.25) | 0.83 | 3263.5 | 10520.00 |
| 2 | 22851.69 | 21.80 | 1.893 | 0.30( 0.25) | 0.83 | 4509.6 | 10300.00 |
| 3 | 23002.03 | 22.52 | 1.857 | 0.30( 0.25) | 0.83 | 4680.9 | 10230.00 |
| 4 | 23038.16 | 22.63 | 1.851 | 0.30( 0.25) | 0.83 | 4710.9 | 10380.00 |
| 5 | 23162.40 | 23.00 | 1.833 | 0.30( 0.25) | 0.83 | 4814.2 | 10400.00 |
| 6 | 23833.10 | 25.01 | 1.731 | 0.30( 0.25) | 0.83 | 5371.0 | 10320.00 |
| 7 | 24510.15 | 27.09 | 1.645 | 0.30( 0.25) | 0.83 | 5932.0 | 10360.00 |
| 8 | 25437.38 | 29.94 | 1.527 | 0.30( 0.25) | 0.83 | 6697.4 | 10340.00 |
| 9 | 25896.91 | 31.37 | 1.496 | 0.30( 0.25) | 0.83 | 7076.9 | 10200.00 |
| 10 | 25933.34 | 31.60 | 1.492 | 0.30( 0.25) | 0.83 | 7136.1 | 10250.00 |
| 11 | 26062.42 | 32.21 | 1.479 | 0.30( 0.25) | 0.83 | 7294.7 | 50700.00 |
| 12 | 26226.37 | 32.86 | 1.467 | 0.30( 0.25) | 0.83 | 7518.0 | 10500.00 |
| 13 | 26858.63 | 35.44 | 1.415 | 0.30( 0.25) | 0.83 | 8385.7 | 10220.00 |
| 14 | 27691.36 | 38.79 | 1.347 | 0.30( 0.25) | 0.83 | 9507.2 | 110.00 |
| 15 | 31417.68 | 51.69 | 1.150 | 0.30( 0.25) | 0.84 | 15077.1 | 400.00 |
| 16 | 33557.10 | 64.20 | 1.021 | 0.30( 0.26) | 0.87 | 21616.0 | 13600.00 |
| 17 | 35405.10 | 78.05 | 0.943 | 0.30( 0.27) | 0.89 | 28365.9 | 13100.00 |
| 18 | 36320.71 | 84.27 | 0.907 | 0.30( 0.27) | 0.90 | 31106.3 | 11801.00 |
| 19 | 38215.39 | 94.70 | 0.857 | 0.30( 0.27) | 0.91 | 36428.9 | 11530.00 |
| 20 | 38998.92 | 100.58 | 0.836 | 0.30( 0.28) | 0.92 | 40198.1 | 13510.00 |
| 21 | 39743.57 | 106.40 | 0.814 | 0.30( 0.28) | 0.92 | 43812.0 | 13010.00 |
| 22 | 40789.32 | 112.98 | 0.789 | 0.30( 0.28) | 0.93 | 48083.9 | 11350.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 23 | 41152.48 | 117.65 | 0.772 | 0.30( 0.28) | 0.93 | 51258.1 | 11130.00 |
| 24 | 40716.35 | 123.75 | 0.755 | 0.30( 0.28) | 0.94 | 54184.7 | 12300.00 |
| 25 | 39913.35 | 132.57 | 0.736 | 0.30( 0.28) | 0.94 | 58445.3 | 12400.00 |
| 26 | 38839.55 | 142.16 | 0.715 | 0.30( 0.28) | 0.94 | 61846.9 | 12201.00 |
| 27 | 37845.22 | 149.72 | 0.699 | 0.30( 0.28) | 0.94 | 63739.9 | 12231.00 |
| 28 | 36821.30 | 157.28 | 0.683 | 0.30( 0.28) | 0.95 | 65292.6 | 10400.00 |
| 29 | 35232.22 | 166.85 | 0.662 | 0.30( 0.28) | 0.95 | 66739.1 | 12010.00 |
| 30 | 34172.18 | 172.33 | 0.650 | 0.30( 0.28) | 0.95 | 67001.6 | 10210.00 |
| 31 | 33487.52 | 176.44 | 0.642 | 0.30( 0.28) | 0.95 | 67148.4 | 12000.00 |
| 32 | 29748.53 | 203.15 | 0.612 | 0.30( 0.28) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 59.23 | 17.66 | 2.174 | 0.30( 0.20) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20993.88 | 16.05 | 2.304 | 0.30( 0.25) | 0.83 | 3297.0 | 10520.00 |
| 2 | 21530.15 | 17.66 | 2.174 | 0.30( 0.25) | 0.83 | 3648.1 | 10600.00 |
| 3 | 22902.49 | 21.80 | 1.893 | 0.30( 0.25) | 0.83 | 4546.5 | 10300.00 |
| 4 | 23051.73 | 22.52 | 1.857 | 0.30( 0.25) | 0.83 | 4717.8 | 10230.00 |
| 5 | 23087.70 | 22.63 | 1.851 | 0.30( 0.25) | 0.83 | 4747.8 | 10380.00 |
| 6 | 23211.39 | 23.00 | 1.833 | 0.30( 0.25) | 0.83 | 4851.1 | 10400.00 |
| 7 | 23879.04 | 25.01 | 1.731 | 0.30( 0.25) | 0.83 | 5407.9 | 10320.00 |
| 8 | 24553.51 | 27.09 | 1.645 | 0.30( 0.25) | 0.83 | 5968.9 | 10360.00 |
| 9 | 25477.17 | 29.94 | 1.527 | 0.30( 0.25) | 0.83 | 6734.3 | 10340.00 |
| 10 | 25935.80 | 31.37 | 1.496 | 0.30( 0.25) | 0.83 | 7113.8 | 10200.00 |
| 11 | 25972.10 | 31.60 | 1.492 | 0.30( 0.25) | 0.83 | 7173.0 | 10250.00 |
| 12 | 26100.79 | 32.21 | 1.479 | 0.30( 0.25) | 0.83 | 7331.6 | 50700.00 |
| 13 | 26264.37 | 32.86 | 1.467 | 0.30( 0.25) | 0.83 | 7554.9 | 10500.00 |
| 14 | 26895.06 | 35.44 | 1.415 | 0.30( 0.25) | 0.83 | 8422.6 | 10220.00 |
| 15 | 27725.77 | 38.79 | 1.347 | 0.30( 0.25) | 0.83 | 9544.1 | 110.00 |
| 16 | 31446.16 | 51.69 | 1.150 | 0.30( 0.25) | 0.84 | 15114.0 | 400.00 |
| 17 | 33581.72 | 64.20 | 1.021 | 0.30( 0.26) | 0.87 | 21652.9 | 13600.00 |
| 18 | 35427.36 | 78.05 | 0.943 | 0.30( 0.27) | 0.89 | 28402.8 | 13100.00 |
| 19 | 36341.92 | 84.27 | 0.907 | 0.30( 0.27) | 0.90 | 31143.2 | 11801.00 |
| 20 | 38235.10 | 94.70 | 0.857 | 0.30( 0.27) | 0.91 | 36465.8 | 11530.00 |
| 21 | 39017.96 | 100.58 | 0.836 | 0.30( 0.28) | 0.92 | 40235.0 | 13510.00 |
| 22 | 39761.96 | 106.40 | 0.814 | 0.30( 0.28) | 0.92 | 43848.9 | 13010.00 |
| 23 | 40806.98 | 112.98 | 0.789 | 0.30( 0.28) | 0.93 | 48120.8 | 11350.00 |
| 24 | 41169.62 | 117.65 | 0.772 | 0.30( 0.28) | 0.93 | 51295.0 | 11130.00 |
| 25 | 40732.98 | 123.75 | 0.755 | 0.30( 0.28) | 0.94 | 54221.6 | 12300.00 |
| 26 | 39929.41 | 132.57 | 0.736 | 0.30( 0.28) | 0.94 | 58482.2 | 12400.00 |
| 27 | 38854.99 | 142.16 | 0.715 | 0.30( 0.28) | 0.94 | 61883.8 | 12201.00 |
| 28 | 37860.18 | 149.72 | 0.699 | 0.30( 0.28) | 0.94 | 63776.8 | 12231.00 |
| 29 | 36835.76 | 157.28 | 0.683 | 0.30( 0.28) | 0.95 | 65329.5 | 10400.00 |
| 30 | 35246.07 | 166.85 | 0.662 | 0.30( 0.28) | 0.95 | 66776.0 | 12010.00 |
| 31 | 34185.67 | 172.33 | 0.650 | 0.30( 0.28) | 0.95 | 67038.5 | 10210.00 |
| 32 | 33500.75 | 176.44 | 0.642 | 0.30( 0.28) | 0.95 | 67185.3 | 12000.00 |
| 33 | 29760.87 | 203.15 | 0.612 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41169.62 Tc(MIN.) = 117.646



EFFECTIVE AREA(ACRES) = 51295.02 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 117.65
EFFECTIVE AREA(ACRES) = 51295.02 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.934
PEAK FLOW RATE(CFS) = 41169.62

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20993.88 | 16.05 | 2.304 | 0.30( 0.25) | 0.83 | 3297.0 | 10520.00 |
| 2 | 21530.15 | 17.66 | 2.174 | 0.30( 0.25) | 0.83 | 3648.1 | 10600.00 |
| 3 | 22902.49 | 21.80 | 1.893 | 0.30( 0.25) | 0.83 | 4546.5 | 10300.00 |
| 4 | 23051.73 | 22.52 | 1.857 | 0.30( 0.25) | 0.83 | 4717.8 | 10230.00 |
| 5 | 23087.70 | 22.63 | 1.851 | 0.30( 0.25) | 0.83 | 4747.8 | 10380.00 |
| 6 | 23211.39 | 23.00 | 1.833 | 0.30( 0.25) | 0.83 | 4851.1 | 10400.00 |
| 7 | 23879.04 | 25.01 | 1.731 | 0.30( 0.25) | 0.83 | 5407.9 | 10320.00 |
| 8 | 24553.51 | 27.09 | 1.645 | 0.30( 0.25) | 0.83 | 5968.9 | 10360.00 |
| 9 | 25477.17 | 29.94 | 1.527 | 0.30( 0.25) | 0.83 | 6734.3 | 10340.00 |
| 10 | 25935.80 | 31.37 | 1.496 | 0.30( 0.25) | 0.83 | 7113.8 | 10200.00 |
| 11 | 25972.10 | 31.60 | 1.492 | 0.30( 0.25) | 0.83 | 7173.0 | 10250.00 |
| 12 | 26100.79 | 32.21 | 1.479 | 0.30( 0.25) | 0.83 | 7331.6 | 50700.00 |
| 13 | 26264.37 | 32.86 | 1.467 | 0.30( 0.25) | 0.83 | 7554.9 | 10500.00 |
| 14 | 26895.06 | 35.44 | 1.415 | 0.30( 0.25) | 0.83 | 8422.6 | 10220.00 |
| 15 | 27725.77 | 38.79 | 1.347 | 0.30( 0.25) | 0.83 | 9544.1 | 110.00 |
| 16 | 31446.16 | 51.69 | 1.150 | 0.30( 0.25) | 0.84 | 15114.0 | 400.00 |
| 17 | 33581.72 | 64.20 | 1.021 | 0.30( 0.26) | 0.87 | 21652.9 | 13600.00 |
| 18 | 35427.36 | 78.05 | 0.943 | 0.30( 0.27) | 0.89 | 28402.8 | 13100.00 |
| 19 | 36341.92 | 84.27 | 0.907 | 0.30( 0.27) | 0.90 | 31143.2 | 11801.00 |
| 20 | 38235.10 | 94.70 | 0.857 | 0.30( 0.27) | 0.91 | 36465.8 | 11530.00 |
| 21 | 39017.96 | 100.58 | 0.836 | 0.30( 0.28) | 0.92 | 40235.0 | 13510.00 |
| 22 | 39761.96 | 106.40 | 0.814 | 0.30( 0.28) | 0.92 | 43848.9 | 13010.00 |
| 23 | 40806.98 | 112.98 | 0.789 | 0.30( 0.28) | 0.93 | 48120.8 | 11350.00 |
| 24 | 41169.62 | 117.65 | 0.772 | 0.30( 0.28) | 0.93 | 51295.0 | 11130.00 |
| 25 | 40732.98 | 123.75 | 0.755 | 0.30( 0.28) | 0.94 | 54221.6 | 12300.00 |
| 26 | 39929.41 | 132.57 | 0.736 | 0.30( 0.28) | 0.94 | 58482.2 | 12400.00 |
| 27 | 38854.99 | 142.16 | 0.715 | 0.30( 0.28) | 0.94 | 61883.8 | 12201.00 |
| 28 | 37860.18 | 149.72 | 0.699 | 0.30( 0.28) | 0.94 | 63776.8 | 12231.00 |
| 29 | 36835.76 | 157.28 | 0.683 | 0.30( 0.28) | 0.95 | 65329.5 | 10400.00 |
| 30 | 35246.07 | 166.85 | 0.662 | 0.30( 0.28) | 0.95 | 66776.0 | 12010.00 |
| 31 | 34185.67 | 172.33 | 0.650 | 0.30( 0.28) | 0.95 | 67038.5 | 10210.00 |
| 32 | 33500.75 | 176.44 | 0.642 | 0.30( 0.28) | 0.95 | 67185.3 | 12000.00 |
| 33 | 29760.87 | 203.15 | 0.612 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 25-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RI25EV38.DAT
  TIME/DATE OF STUDY: 13:45 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.741
   2)   10.00;  3.104
   3)   15.00;  2.386
   4)   20.00;  1.981
   5)   25.00;  1.730
   6)   30.00;  1.523
   7)   40.00;  1.322
   8)   50.00;  1.169
   9)   60.00;  1.043
  10)   90.00;  0.873
  11)  120.00;  0.761
  12)  180.00;  0.632
  13)  360.00;  0.462
  14) 1200.00;  0.202
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    21530.15   17.66  0.30( 0.25) 0.83    3648.1   10600.00
      2    27725.77   38.79  0.30( 0.25) 0.83    9544.1     110.00
      3    31446.16   51.69  0.30( 0.25) 0.84   15114.0     400.00
      4    33581.72   64.20  0.30( 0.26) 0.87   21652.9   13600.00
      5    35427.36   78.05  0.30( 0.27) 0.89   28402.8   13100.00
      6    36341.92   84.27  0.30( 0.27) 0.90   31143.2   11801.00
      7    38235.10   94.70  0.30( 0.27) 0.91   36465.8   11530.00
      8    39017.96  100.58  0.30( 0.28) 0.92   40235.0   13510.00
      9    39761.96  106.40  0.30( 0.28) 0.92   43848.9   13010.00
     10    40806.98  112.98  0.30( 0.28) 0.93   48120.8   11350.00
     11    41169.62  117.65  0.30( 0.28) 0.93   51295.0   11130.00
     12    40732.98  123.75  0.30( 0.28) 0.94   54221.6   12300.00
     13    39929.41  132.57  0.30( 0.28) 0.94   58482.2   12400.00
     14    38854.99  142.16  0.30( 0.28) 0.94   61883.8   12201.00
     15    37860.18  149.72  0.30( 0.28) 0.94   63776.8   12231.00
     16    36835.76  157.28  0.30( 0.28) 0.95   65329.5   10400.00
     17    35246.07  166.85  0.30( 0.28) 0.95   66776.0   12010.00
     18    34185.67  172.33  0.30( 0.28) 0.95   67038.5   10210.00
     19    33500.75  176.44  0.30( 0.28) 0.95   67185.3   12000.00
     20    29760.87  203.15  0.30( 0.28) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    21530.15   17.66  0.30( 0.25) 0.83    3648.1   10600.00
      2    27725.77   38.79  0.30( 0.25) 0.83    9544.1     110.00
      3    31446.16   51.69  0.30( 0.25) 0.84   15114.0     400.00
      4    33581.72   64.20  0.30( 0.26) 0.87   21652.9   13600.00
      5    35427.36   78.05  0.30( 0.27) 0.89   28402.8   13100.00
      6    36341.92   84.27  0.30( 0.27) 0.90   31143.2   11801.00
      7    38235.10   94.70  0.30( 0.27) 0.91   36465.8   11530.00
      8    39017.96  100.58  0.30( 0.28) 0.92   40235.0   13510.00
      9    39761.96  106.40  0.30( 0.28) 0.92   43848.9   13010.00
     10    40806.98  112.98  0.30( 0.28) 0.93   48120.8   11350.00
     11    41169.62  117.65  0.30( 0.28) 0.93   51295.0   11130.00
     12    40732.98  123.75  0.30( 0.28) 0.94   54221.6   12300.00
     13    39929.41  132.57  0.30( 0.28) 0.94   58482.2   12400.00
```

```
     14    38854.99  142.16  0.30( 0.28) 0.94   61883.8   12201.00
     15    37860.18  149.72  0.30( 0.28) 0.94   63776.8   12231.00
     16    36835.76  157.28  0.30( 0.28) 0.95   65329.5   10400.00
     17    35246.07  166.85  0.30( 0.28) 0.95   66776.0   12010.00
     18    34185.67  172.33  0.30( 0.28) 0.95   67038.5   10210.00
     19    33500.75  176.44  0.30( 0.28) 0.95   67185.3   12000.00
     20    29760.87  203.15  0.30( 0.28) 0.95   67798.3   10100.00
    TOTAL AREA(ACRES) =     67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  22.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.764
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41176.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.78
  AVERAGE FLOW DEPTH(FEET) =  22.27   TRAVEL TIME(MIN.) =   1.58
  Tc(MIN.) =  119.23
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   13.27
  EFFECTIVE AREA(ACRES) =  51326.46     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =   41169.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  22.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 22.27   FLOW VELOCITY(FEET/SEC.) =   9.78
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =  119.23
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   51326.46
  TOTAL STREAM AREA(ACRES) =   67829.72
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41169.62

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.775
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     12.43
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     12.43

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.00
  AVERAGE FLOW DEPTH(FEET) =   0.42   TRAVEL TIME(MIN.) =   1.93
  Tc(MIN.) =   14.23
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   29.25
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4         PEAK FLOW RATE(CFS) =      40.28
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.53   FLOW VELOCITY(FEET/SEC.) =   6.88
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.261
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   2.31
  Tc(MIN.) =   16.54
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   32.50
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      68.45
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   5.21
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.027
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      90.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.39
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   2.89
  Tc(MIN.) =   19.43
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   44.38
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     104.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.11   FLOW VELOCITY(FEET/SEC.) =   7.72
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  22.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.06
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     104.66
  PIPE TRAVEL TIME(MIN.) =   1.82    Tc(MIN.) =   21.26
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  131.50
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     229.62

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   21.26
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
```

TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 229.62

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21530.15 | 19.55 | 2.018 | 0.30( 0.25) | 0.83 | 3679.6 | 10600.00 |
| 1 | 27725.77 | 40.55 | 1.314 | 0.30( 0.25) | 0.83 | 9575.5 | 110.00 |
| 1 | 31446.16 | 53.39 | 1.126 | 0.30( 0.25) | 0.84 | 15145.4 | 400.00 |
| 1 | 33581.72 | 65.87 | 1.010 | 0.30( 0.26) | 0.87 | 21684.3 | 13600.00 |
| 1 | 35427.36 | 79.70 | 0.931 | 0.30( 0.27) | 0.89 | 28434.2 | 13100.00 |
| 1 | 36341.92 | 85.90 | 0.896 | 0.30( 0.27) | 0.90 | 31174.6 | 11801.00 |
| 1 | 38235.10 | 96.31 | 0.849 | 0.30( 0.27) | 0.91 | 36497.2 | 11530.00 |
| 1 | 39017.96 | 102.18 | 0.828 | 0.30( 0.28) | 0.92 | 40266.5 | 13510.00 |
| 1 | 39761.96 | 107.99 | 0.806 | 0.30( 0.28) | 0.92 | 43880.3 | 13010.00 |
| 1 | 40806.98 | 114.56 | 0.781 | 0.30( 0.28) | 0.93 | 48152.2 | 11350.00 |
| 1 | 41169.62 | 119.23 | 0.764 | 0.30( 0.28) | 0.93 | 51326.5 | 11130.00 |
| 1 | 40732.98 | 125.33 | 0.750 | 0.30( 0.28) | 0.94 | 54253.0 | 12300.00 |
| 1 | 39929.41 | 134.16 | 0.731 | 0.30( 0.28) | 0.94 | 58513.6 | 12400.00 |
| 1 | 38854.99 | 143.77 | 0.710 | 0.30( 0.28) | 0.94 | 61915.2 | 12201.00 |
| 1 | 37860.18 | 151.34 | 0.694 | 0.30( 0.28) | 0.94 | 63808.2 | 12231.00 |
| 1 | 36835.76 | 158.91 | 0.677 | 0.30( 0.28) | 0.95 | 65361.0 | 10400.00 |
| 1 | 35246.07 | 168.50 | 0.657 | 0.30( 0.28) | 0.95 | 66807.4 | 12010.00 |
| 1 | 34185.67 | 173.99 | 0.645 | 0.30( 0.28) | 0.95 | 67070.0 | 10210.00 |
| 1 | 33500.75 | 178.11 | 0.636 | 0.30( 0.28) | 0.95 | 67216.8 | 12000.00 |
| 1 | 29760.87 | 204.88 | 0.609 | 0.30( 0.28) | 0.95 | 67829.7 | 10100.00 |
| 2 | 229.62 | 21.26 | 1.918 | 0.30( 0.22) | 0.73 | 150.3 | 13810.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21753.72 | 19.55 | 2.018 | 0.30( 0.25) | 0.82 | 3817.8 | 10600.00 |
| 2 | 22264.01 | 21.26 | 1.918 | 0.30( 0.25) | 0.82 | 4309.7 | 13810.00 |
| 3 | 27873.65 | 40.55 | 1.314 | 0.30( 0.25) | 0.83 | 9725.8 | 110.00 |
| 4 | 31568.72 | 53.39 | 1.126 | 0.30( 0.25) | 0.84 | 15295.7 | 400.00 |
| 5 | 33688.50 | 65.87 | 1.010 | 0.30( 0.26) | 0.87 | 21834.6 | 13600.00 |
| 6 | 35523.55 | 79.70 | 0.931 | 0.30( 0.27) | 0.89 | 28584.5 | 13100.00 |
| 7 | 36433.35 | 85.90 | 0.896 | 0.30( 0.27) | 0.90 | 31324.9 | 11801.00 |
| 8 | 38320.20 | 96.31 | 0.849 | 0.30( 0.27) | 0.91 | 36647.5 | 11530.00 |
| 9 | 39100.11 | 102.18 | 0.828 | 0.30( 0.27) | 0.92 | 40416.8 | 13510.00 |
| 10 | 39841.17 | 107.99 | 0.806 | 0.30( 0.28) | 0.92 | 44030.6 | 13010.00 |
| 11 | 40882.87 | 114.56 | 0.781 | 0.30( 0.28) | 0.93 | 48302.5 | 11350.00 |
| 12 | 41243.15 | 119.23 | 0.764 | 0.30( 0.28) | 0.93 | 51476.8 | 11130.00 |
| 13 | 40804.57 | 125.33 | 0.750 | 0.30( 0.28) | 0.94 | 54403.3 | 12300.00 |
| 14 | 39998.43 | 134.16 | 0.731 | 0.30( 0.28) | 0.94 | 58663.9 | 12400.00 |
| 15 | 38921.22 | 143.77 | 0.710 | 0.30( 0.28) | 0.94 | 62065.5 | 12201.00 |
| 16 | 37924.20 | 151.34 | 0.694 | 0.30( 0.28) | 0.94 | 63958.5 | 12231.00 |
| 17 | 36897.59 | 158.91 | 0.677 | 0.30( 0.28) | 0.94 | 65511.3 | 10400.00 |
| 18 | 35305.11 | 168.50 | 0.657 | 0.30( 0.28) | 0.95 | 66957.7 | 12010.00 |
| 19 | 34243.11 | 173.99 | 0.645 | 0.30( 0.28) | 0.95 | 67220.2 | 10210.00 |
| 20 | 33557.00 | 178.11 | 0.636 | 0.30( 0.28) | 0.95 | 67367.1 | 12000.00 |
| 21 | 29813.39 | 204.88 | 0.609 | 0.30( 0.28) | 0.95 | 67980.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41243.15 Tc(MIN.) = 119.23



EFFECTIVE AREA(ACRES) = 51476.75 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67980.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.95
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.760
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 31.60 | 0.30 | 0.683 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41251.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.51
AVERAGE FLOW DEPTH(FEET) = 16.95 TRAVEL TIME(MIN.) = 1.45
Tc(MIN.) = 120.67
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 15.78
EFFECTIVE AREA(ACRES) = 51508.36 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68011.6 PEAK FLOW RATE(CFS) = 41243.15
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 16.94 FLOW VELOCITY(FEET/SEC.) = 14.51
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 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.) = 120.67
RAINFALL INTENSITY(INCH/HR) = 0.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93
EFFECTIVE STREAM AREA(ACRES) = 51508.36
TOTAL STREAM AREA(ACRES) = 68011.61
PEAK FLOW RATE(CFS) AT CONFLUENCE = 41243.15

**********
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.550
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.25
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     10.25

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.219
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.60
  AVERAGE FLOW DEPTH(FEET) =   0.61   TRAVEL TIME(MIN.) =   3.21
  Tc(MIN.) =   17.06
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   56.25
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      64.99
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.83   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.928
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.85
  AVERAGE FLOW DEPTH(FEET) =   0.95   TRAVEL TIME(MIN.) =   4.00
  Tc(MIN.) =   21.06
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   47.22
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     102.34
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   8.27
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.01
  AVERAGE FLOW DEPTH(FEET) =   1.22   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =   23.03
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   37.86
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     134.01
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.29   FLOW VELOCITY(FEET/SEC.) =   8.24
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.673
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     192.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   1.74   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =   26.38
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  116.41
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     236.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.95   FLOW VELOCITY(FEET/SEC.) =   8.73
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.531
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     366.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.28
  AVERAGE FLOW DEPTH(FEET) =   2.83   TRAVEL TIME(MIN.) =   3.42
  Tc(MIN.) =   29.80
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  258.52
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     470.85
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.22

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.22   FLOW VELOCITY(FEET/SEC.) =   8.89
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.421
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     540.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   3.83   TRAVEL TIME(MIN.) =   5.28
  Tc(MIN.) =   35.08
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  140.27
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     568.89
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.93   FLOW VELOCITY(FEET/SEC.) =   8.09
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
```

DEPTH OF FLOW IN 63.0 INCH PIPE IS 46.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 33.24
ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 568.89
PIPE TRAVEL TIME(MIN.) = 0.58 Tc(MIN.) = 35.65
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

**********
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 35.65
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.409
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 5.97 | 0.30 | 0.622 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622
SUBAREA AREA(ACRES) = 5.97 SUBAREA RUNOFF(CFS) = 6.57
EFFECTIVE AREA(ACRES) = 565.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 565.5 PEAK FLOW RATE(CFS) = 569.62

**********
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 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.) = 35.65
RAINFALL INTENSITY(INCH/HR) = 1.41
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 565.50
TOTAL STREAM AREA(ACRES) = 565.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 569.62

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21753.72 | 21.29 | 1.916 | 0.30( 0.25) | 0.82 | 3849.4 | 10600.00 |
| 1 | 22264.01 | 22.99 | 1.831 | 0.30( 0.25) | 0.82 | 4341.3 | 13810.00 |
| 1 | 27873.65 | 42.17 | 1.289 | 0.30( 0.25) | 0.82 | 9757.4 | 110.00 |
| 1 | 31568.72 | 54.95 | 1.107 | 0.30( 0.25) | 0.84 | 15327.3 | 400.00 |
| 1 | 33688.50 | 67.40 | 1.001 | 0.30( 0.26) | 0.87 | 21866.2 | 13600.00 |
| 1 | 35523.55 | 81.21 | 0.923 | 0.30( 0.27) | 0.89 | 28616.1 | 13100.00 |
| 1 | 36433.35 | 87.40 | 0.888 | 0.30( 0.27) | 0.90 | 31356.5 | 11801.00 |
| 1 | 38320.20 | 97.79 | 0.844 | 0.30( 0.27) | 0.91 | 36679.1 | 11530.00 |
| 1 | 39100.11 | 103.65 | 0.822 | 0.30( 0.27) | 0.92 | 40448.4 | 13510.00 |
| 1 | 39841.17 | 109.46 | 0.800 | 0.30( 0.28) | 0.92 | 44062.2 | 13010.00 |
| 1 | 40882.87 | 116.01 | 0.776 | 0.30( 0.28) | 0.93 | 48334.1 | 11350.00 |
| 1 | 41243.15 | 120.67 | 0.760 | 0.30( 0.28) | 0.93 | 51508.4 | 11130.00 |
| 1 | 40804.57 | 126.79 | 0.746 | 0.30( 0.28) | 0.94 | 54434.9 | 12300.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 39998.43 | 135.63 | 0.727 | 0.30( 0.28) | 0.94 | 58695.5 | 12400.00 |
| 1 | 38921.22 | 145.24 | 0.707 | 0.30( 0.28) | 0.94 | 62097.1 | 12201.00 |
| 1 | 37924.20 | 152.82 | 0.690 | 0.30( 0.28) | 0.94 | 63990.1 | 12231.00 |
| 1 | 36897.59 | 160.40 | 0.674 | 0.30( 0.28) | 0.94 | 65542.9 | 10400.00 |
| 1 | 35305.11 | 170.01 | 0.653 | 0.30( 0.28) | 0.95 | 66989.3 | 12010.00 |
| 1 | 34243.11 | 175.52 | 0.642 | 0.30( 0.28) | 0.95 | 67251.9 | 10210.00 |
| 1 | 33557.00 | 179.65 | 0.633 | 0.30( 0.28) | 0.95 | 67398.7 | 12000.00 |
| 1 | 29813.39 | 206.46 | 0.607 | 0.30( 0.28) | 0.95 | 68011.6 | 10100.00 |
| 2 | 569.62 | 35.65 | 1.409 | 0.30( 0.29) | 0.97 | 565.5 | 13830.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22247.89 | 21.29 | 1.916 | 0.30( 0.25) | 0.83 | 4187.0 | 10600.00 |
| 2 | 22769.63 | 22.99 | 1.831 | 0.30( 0.25) | 0.83 | 4705.9 | 13810.00 |
| 3 | 26537.78 | 35.65 | 1.409 | 0.30( 0.25) | 0.83 | 8483.2 | 13830.00 |
| 4 | 28381.91 | 42.17 | 1.289 | 0.30( 0.25) | 0.83 | 10322.9 | 110.00 |
| 5 | 31984.27 | 54.95 | 1.107 | 0.30( 0.25) | 0.84 | 15892.8 | 400.00 |
| 6 | 34050.31 | 67.40 | 1.001 | 0.30( 0.26) | 0.87 | 22431.7 | 13600.00 |
| 7 | 35845.54 | 81.21 | 0.923 | 0.30( 0.27) | 0.89 | 29181.6 | 13100.00 |
| 8 | 36737.48 | 87.40 | 0.888 | 0.30( 0.27) | 0.90 | 31922.0 | 11801.00 |
| 9 | 38602.04 | 97.79 | 0.844 | 0.30( 0.27) | 0.91 | 37244.6 | 11530.00 |
| 10 | 39370.80 | 103.65 | 0.822 | 0.30( 0.28) | 0.92 | 41013.9 | 13510.00 |
| 11 | 40100.83 | 109.46 | 0.800 | 0.30( 0.28) | 0.92 | 44627.7 | 13010.00 |
| 12 | 41130.07 | 116.01 | 0.776 | 0.30( 0.28) | 0.93 | 48899.6 | 11350.00 |
| 13 | 41482.04 | 120.67 | 0.760 | 0.30( 0.28) | 0.93 | 52073.9 | 11130.00 |
| 14 | 41036.77 | 126.79 | 0.746 | 0.30( 0.28) | 0.94 | 55000.4 | 12300.00 |
| 15 | 40220.96 | 135.63 | 0.727 | 0.30( 0.28) | 0.94 | 59261.0 | 12400.00 |
| 16 | 39133.23 | 145.24 | 0.707 | 0.30( 0.28) | 0.94 | 62662.6 | 12201.00 |
| 17 | 38127.92 | 152.82 | 0.690 | 0.30( 0.28) | 0.94 | 64555.6 | 12231.00 |
| 18 | 37093.01 | 160.40 | 0.674 | 0.30( 0.28) | 0.94 | 66108.4 | 10400.00 |
| 19 | 35490.01 | 170.01 | 0.653 | 0.30( 0.28) | 0.95 | 67554.8 | 12010.00 |
| 20 | 34422.00 | 175.52 | 0.642 | 0.30( 0.28) | 0.95 | 67817.4 | 10210.00 |
| 21 | 33731.36 | 179.65 | 0.633 | 0.30( 0.28) | 0.95 | 67964.2 | 12000.00 |
| 22 | 29974.64 | 206.46 | 0.607 | 0.30( 0.28) | 0.95 | 68577.1 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41482.04 Tc(MIN.) = 120.67
EFFECTIVE AREA(ACRES) = 52073.86 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68577.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 15.45
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.758

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.61      0.30     0.975     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41483.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.59
  AVERAGE FLOW DEPTH(FEET) =  15.45   TRAVEL TIME(MIN.) =   0.66
  Tc(MIN.) =  121.33
  SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    2.77
  EFFECTIVE AREA(ACRES) =  52080.46     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68583.7         PEAK FLOW RATE(CFS) =   41482.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 15.45   FLOW VELOCITY(FEET/SEC.) =  16.59
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 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.) =  121.33
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52080.46
  TOTAL STREAM AREA(ACRES) =   68583.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41482.04

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  SUBAREA RUNOFF(CFS) =     11.12
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     11.12

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.23
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   1.38
  Tc(MIN.) =   13.52
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    8.32
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      18.56
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =   4.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.42
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.93
```

```
  Tc(MIN.) =   15.45
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   13.22
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      29.77
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOW VELOCITY(FEET/SEC.) =   4.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.63
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
  AVERAGE FLOW DEPTH(FEET) =   0.63   TRAVEL TIME(MIN.) =   1.47
  Tc(MIN.) =   16.92
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   11.74
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      39.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.81
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.87
  AVERAGE FLOW DEPTH(FEET) =   0.79   TRAVEL TIME(MIN.) =   2.73
  Tc(MIN.) =   19.65
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   27.94
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      63.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.87   FLOW VELOCITY(FEET/SEC.) =   6.21
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      90.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.02
  AVERAGE FLOW DEPTH(FEET) =   1.21   TRAVEL TIME(MIN.) =   3.40
  Tc(MIN.) =   23.06
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   54.54
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     111.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =   6.41
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

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

```
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.74
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     111.00
  PIPE TRAVEL TIME(MIN.) =   1.97    Tc(MIN.) =   25.02
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   59.27
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     163.19

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   25.02
  RAINFALL INTENSITY(INCH/HR) =   1.73
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     163.19

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22247.89   22.08    1.877  0.30( 0.25) 0.84    4193.6   10600.00
      1    22769.63   23.77    1.792  0.30( 0.25) 0.83    4712.5   13810.00
      1    26537.78   36.40    1.394  0.30( 0.25) 0.83    8489.8   13830.00
      1    28381.91   42.90    1.278  0.30( 0.25) 0.83   10329.5     110.00
      1    31984.27   55.66    1.098  0.30( 0.25) 0.84   15899.4     400.00
      1    34050.31   68.10    0.997  0.30( 0.26) 0.87   22438.3   13600.00
```



```
      1    35845.54   81.89    0.919  0.30( 0.27) 0.89   29188.2   13100.00
      1    36737.48   88.08    0.884  0.30( 0.27) 0.90   31928.6   11801.00
      1    38602.04   98.46    0.841  0.30( 0.27) 0.91   37251.2   11530.00
      1    39370.80  104.32    0.820  0.30( 0.28) 0.92   41020.5   13510.00
      1    40100.83  110.12    0.798  0.30( 0.28) 0.92   44634.3   13010.00
      1    41130.07  116.67    0.773  0.30( 0.28) 0.93   48906.2   11350.00
      1    41482.04  121.33    0.758  0.30( 0.28) 0.93   52080.5   11130.00
      1    41036.77  127.45    0.745  0.30( 0.28) 0.94   55007.0   12300.00
      1    40220.96  136.29    0.726  0.30( 0.28) 0.94   59267.6   12400.00
      1    39133.23  145.91    0.705  0.30( 0.28) 0.94   62669.2   12201.00
      1    38127.92  153.49    0.689  0.30( 0.28) 0.94   64562.2   12231.00
      1    37093.01  161.08    0.673  0.30( 0.28) 0.94   66115.0   10400.00
      1    35490.01  170.70    0.652  0.30( 0.28) 0.95   67561.4   12010.00
      1    34422.00  176.21    0.640  0.30( 0.28) 0.95   67824.0   10210.00
      1    33731.36  180.35    0.632  0.30( 0.28) 0.95   67970.8   12000.00
      1    29974.64  207.19    0.606  0.30( 0.28) 0.95   68583.7   10100.00
      2      163.19   25.02    1.729  0.30( 0.26) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22406.32   22.08    1.877  0.30( 0.25) 0.84    4302.3   10600.00
      2    22931.26   23.77    1.792  0.30( 0.25) 0.84    4829.5   13810.00
      3    23306.47   25.02    1.729  0.30( 0.25) 0.84    5210.3   13850.00
      4    26663.85   36.40    1.394  0.30( 0.25) 0.83    8613.0   13830.00
      5    28495.03   42.90    1.278  0.30( 0.25) 0.83   10452.8     110.00
      6    32077.44   55.66    1.098  0.30( 0.25) 0.84   16022.6     400.00
      7    34132.32   68.10    0.997  0.30( 0.26) 0.87   22561.5   13600.00
      8    35918.88   81.89    0.919  0.30( 0.27) 0.89   29311.4   13100.00
      9    36806.94   88.08    0.884  0.30( 0.27) 0.90   32051.8   11801.00
     10    38666.79   98.46    0.841  0.30( 0.27) 0.91   37374.4   11530.00
     11    39433.12  104.32    0.820  0.30( 0.28) 0.92   41143.7   13510.00
     12    40160.75  110.12    0.798  0.30( 0.28) 0.92   44757.5   13010.00
     13    41187.28  116.67    0.773  0.30( 0.28) 0.93   49029.5   11350.00
     14    41537.55  121.33    0.758  0.30( 0.28) 0.93   52203.7   11130.00
     15    41090.83  127.45    0.745  0.30( 0.28) 0.94   55130.3   12300.00
     16    40272.91  136.29    0.726  0.30( 0.28) 0.94   59390.9   12400.00
     17    39182.88  145.91    0.705  0.30( 0.28) 0.94   62792.4   12201.00
     18    38175.77  153.49    0.689  0.30( 0.28) 0.94   64685.5   12231.00
     19    37139.05  161.08    0.673  0.30( 0.28) 0.94   66238.2   10400.00
     20    35533.75  170.70    0.652  0.30( 0.28) 0.95   67684.6   12010.00
     21    34464.43  176.21    0.640  0.30( 0.28) 0.95   67947.2   10210.00
     22    33772.84  180.35    0.632  0.30( 0.28) 0.95   68094.0   12000.00
     23    30013.32  207.19    0.606  0.30( 0.28) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   41537.55    Tc(MIN.) =   121.33
  EFFECTIVE AREA(ACRES) =   52203.68   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.757
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41538.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  25.53
  AVERAGE FLOW DEPTH(FEET) =  11.23   TRAVEL TIME(MIN.) =   0.40
  Tc(MIN.) =  121.73
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.01
  EFFECTIVE AREA(ACRES) =  52208.57     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68711.8         PEAK FLOW RATE(CFS) =   41537.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.23   FLOW VELOCITY(FEET/SEC.) =  25.53
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 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.) =  121.73
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52208.57
  TOTAL STREAM AREA(ACRES) =   68711.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41537.55

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```



```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.329
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.37
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     13.37

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.75
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   2.91
  Tc(MIN.) =   18.61
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   21.00
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      32.82
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   5.33
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.895
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.30     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.65
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   3.10
  Tc(MIN.) =   21.70
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   48.06
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      77.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   6.25
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.30     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.12
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   3.12
  Tc(MIN.) =   24.82
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   40.91
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     110.65
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   8.49
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.30     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     155.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.76
  AVERAGE FLOW DEPTH(FEET) =   2.69   TRAVEL TIME(MIN.) =   2.58
  Tc(MIN.) =   27.40
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =   89.62
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     192.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.00   FLOW VELOCITY(FEET/SEC.) =   4.00
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.59
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     192.04
  PIPE TRAVEL TIME(MIN.) =   1.76    Tc(MIN.) =   29.16
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.90      0.30     0.743     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
  SUBAREA AREA(ACRES) =   34.90      SUBAREA RUNOFF(CFS) =   41.93
  EFFECTIVE AREA(ACRES) =    192.83   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =      192.8       PEAK FLOW RATE(CFS) =     223.63

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 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.) =   29.16
  RAINFALL INTENSITY(INCH/HR) =   1.56
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =     192.83
  TOTAL STREAM AREA(ACRES) =     192.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     223.63

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22406.32   22.56    1.853  0.30( 0.25) 0.84    4307.2   10600.00
      1    22931.26   24.25    1.768  0.30( 0.25) 0.84    4834.4   13810.00
      1    23306.47   25.50    1.709  0.30( 0.25) 0.84    5215.1   13850.00
      1    26663.85   36.86    1.385  0.30( 0.25) 0.83    8617.9   13830.00
      1    28495.03   43.35    1.271  0.30( 0.25) 0.83   10457.6     110.00
      1    32077.44   56.09    1.092  0.30( 0.25) 0.84   16027.5     400.00
      1    34132.32   68.52    0.995  0.30( 0.26) 0.87   22566.4   13600.00
      1    35918.88   82.31    0.917  0.30( 0.27) 0.89   29316.3   13100.00
      1    36806.94   88.50    0.882  0.30( 0.27) 0.90   32056.7   11801.00
      1    38666.79   98.87    0.840  0.30( 0.27) 0.91   37379.3   11530.00
      1    39433.12  104.72    0.818  0.30( 0.28) 0.92   41148.6   13510.00
      1    40160.75  110.53    0.796  0.30( 0.28) 0.92   44762.4   13010.00
      1    41187.28  117.07    0.772  0.30( 0.28) 0.93   49034.4   11350.00
      1    41537.55  121.73    0.757  0.30( 0.28) 0.93   52208.6   11130.00
      1    41090.83  127.85    0.744  0.30( 0.28) 0.94   55135.2   12300.00
      1    40272.91  136.69    0.725  0.30( 0.28) 0.94   59395.8   12400.00
      1    39182.88  146.32    0.704  0.30( 0.28) 0.94   62797.3   12201.00
      1    38175.77  153.90    0.688  0.30( 0.28) 0.94   64690.4   12231.00
      1    37139.05  161.49    0.672  0.30( 0.28) 0.94   66243.1   10400.00
      1    35533.75  171.12    0.651  0.30( 0.28) 0.95   67689.5   12010.00
      1    34464.43  176.63    0.639  0.30( 0.28) 0.95   67952.1   10210.00
      1    33772.84  180.77    0.631  0.30( 0.28) 0.95   68098.9   12000.00
      1    30013.32  207.63    0.606  0.30( 0.28) 0.95   68711.8   10100.00
      2      223.63   29.16    1.558  0.30( 0.27) 0.90     192.8   13870.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```



```
      1    22618.90   22.56    1.853  0.30( 0.25) 0.84    4456.4   10600.00
      2    23147.51   24.25    1.768  0.30( 0.25) 0.84    4994.7   13810.00
      3    23525.02   25.50    1.709  0.30( 0.25) 0.84    5383.7   13850.00
      4    24612.93   29.16    1.558  0.30( 0.25) 0.84    6505.4   13870.00
      5    26857.52   36.86    1.385  0.30( 0.25) 0.84    8810.7   13830.00
      6    28668.84   43.35    1.271  0.30( 0.25) 0.83   10650.5     110.00
      7    32220.28   56.09    1.092  0.30( 0.25) 0.84   16220.4     400.00
      8    34258.23   68.52    0.995  0.30( 0.26) 0.88   22759.3   13600.00
      9    36031.23   82.31    0.917  0.30( 0.27) 0.89   29509.1   13100.00
     10    36913.21   88.50    0.882  0.30( 0.27) 0.90   32249.6   11801.00
     11    38765.83   98.87    0.840  0.30( 0.27) 0.91   37572.1   11530.00
     12    39528.38  104.72    0.818  0.30( 0.28) 0.92   41341.4   13510.00
     13    40252.24  110.53    0.796  0.30( 0.28) 0.92   44955.2   13010.00
     14    41274.53  117.07    0.772  0.30( 0.28) 0.93   49227.2   11350.00
     15    41622.26  121.73    0.757  0.30( 0.28) 0.93   52401.4   11130.00
     16    41173.25  127.85    0.744  0.30( 0.28) 0.94   55328.0   12300.00
     17    40352.03  136.69    0.725  0.30( 0.28) 0.94   59588.6   12400.00
     18    39258.41  146.32    0.704  0.30( 0.28) 0.94   62990.2   12201.00
     19    38248.46  153.90    0.688  0.30( 0.28) 0.94   64883.2   12231.00
     20    37208.91  161.49    0.672  0.30( 0.28) 0.94   66435.9   10400.00
     21    35600.03  171.12    0.651  0.30( 0.28) 0.95   67882.3   12010.00
     22    34528.64  176.63    0.639  0.30( 0.28) 0.95   68144.9   10210.00
     23    33835.68  180.77    0.631  0.30( 0.28) 0.95   68291.7   12000.00
     24    30071.76  207.63    0.606  0.30( 0.28) 0.95   68904.7   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   41622.26    Tc(MIN.) =   121.73
  EFFECTIVE AREA(ACRES) =   52401.40   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68904.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    120.57  DOWNSTREAM(FEET) =    119.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1190.21   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  24.59
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.752
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      117.69      0.30     0.724     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.724
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41650.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.54
  AVERAGE FLOW DEPTH(FEET) =  24.58   TRAVEL TIME(MIN.) =   2.32
  Tc(MIN.) =  124.05
  SUBAREA AREA(ACRES) =   117.69       SUBAREA RUNOFF(CFS) =   56.68
  EFFECTIVE AREA(ACRES) =  52519.09     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69022.3         PEAK FLOW RATE(CFS) =   41622.26
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  24.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 24.58   FLOW VELOCITY(FEET/SEC.) =   8.54
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 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.) =  124.05
  RAINFALL INTENSITY(INCH/HR) =   0.75
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52519.09
  TOTAL STREAM AREA(ACRES) =   69022.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41622.26

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.094
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     10.38
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     10.38

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.621
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.03
  AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =    8.42
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   24.30
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =      33.40
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   5.80
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.151
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.69
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =    9.86
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   32.08
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      60.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   8.23
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.847
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.46
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   1.93
  Tc(MIN.) =   11.79
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   36.39
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      90.68
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.87   FLOW VELOCITY(FEET/SEC.) =   8.85
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     119.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.96
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =   13.91
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   57.44
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     137.24
```



```
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =   9.41
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.06
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     137.24
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   15.77
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.324
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   22.45
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     146.34

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   15.77
  RAINFALL INTENSITY(INCH/HR) =   2.32
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     146.34
```

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22618.90 | 25.30 | 1.718 | 0.30( 0.25) | 0.84 | 4574.1 | 10600.00 |
| 1 | 23147.51 | 26.97 | 1.648 | 0.30( 0.25) | 0.83 | 5112.4 | 13810.00 |
| 1 | 23525.02 | 28.21 | 1.597 | 0.30( 0.25) | 0.83 | 5501.4 | 13850.00 |
| 1 | 24612.93 | 31.84 | 1.486 | 0.30( 0.25) | 0.83 | 6623.1 | 13870.00 |
| 1 | 26857.52 | 39.47 | 1.333 | 0.30( 0.25) | 0.83 | 8928.4 | 13830.00 |
| 1 | 28668.84 | 45.92 | 1.231 | 0.30( 0.25) | 0.83 | 10768.2 | 110.00 |
| 1 | 32220.28 | 58.58 | 1.061 | 0.30( 0.25) | 0.84 | 16338.0 | 400.00 |
| 1 | 34258.23 | 70.97 | 0.981 | 0.30( 0.26) | 0.87 | 22876.9 | 13600.00 |
| 1 | 36031.23 | 84.73 | 0.903 | 0.30( 0.27) | 0.89 | 29626.8 | 13100.00 |
| 1 | 36913.21 | 90.89 | 0.870 | 0.30( 0.27) | 0.90 | 32367.2 | 11801.00 |
| 1 | 38765.83 | 101.23 | 0.831 | 0.30( 0.27) | 0.91 | 37689.8 | 11530.00 |
| 1 | 39528.38 | 107.08 | 0.809 | 0.30( 0.27) | 0.92 | 41459.1 | 13510.00 |
| 1 | 40252.24 | 112.87 | 0.788 | 0.30( 0.28) | 0.92 | 45072.9 | 13010.00 |
| 1 | 41274.53 | 119.40 | 0.763 | 0.30( 0.28) | 0.93 | 49344.9 | 11350.00 |
| 1 | 41622.26 | 124.05 | 0.752 | 0.30( 0.28) | 0.93 | 52519.1 | 11130.00 |
| 1 | 41173.25 | 130.18 | 0.739 | 0.30( 0.28) | 0.94 | 55445.7 | 12300.00 |
| 1 | 40352.03 | 139.03 | 0.720 | 0.30( 0.28) | 0.94 | 59706.3 | 12400.00 |
| 1 | 39258.41 | 148.67 | 0.699 | 0.30( 0.28) | 0.94 | 63107.9 | 12201.00 |
| 1 | 38248.46 | 156.28 | 0.683 | 0.30( 0.28) | 0.94 | 65000.9 | 12231.00 |
| 1 | 37208.91 | 163.89 | 0.667 | 0.30( 0.28) | 0.94 | 66553.6 | 10400.00 |
| 1 | 35600.03 | 173.54 | 0.646 | 0.30( 0.28) | 0.95 | 68000.0 | 12010.00 |
| 1 | 34528.64 | 179.08 | 0.634 | 0.30( 0.28) | 0.95 | 68262.6 | 10210.00 |
| 1 | 33835.68 | 183.23 | 0.629 | 0.30( 0.28) | 0.95 | 68409.4 | 12000.00 |
| 1 | 30071.76 | 210.16 | 0.604 | 0.30( 0.28) | 0.95 | 69022.3 | 10100.00 |
| 2 | 146.34 | 15.77 | 2.324 | 0.30( 0.28) | 0.94 | 79.6 | 13889.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20069.73 | 15.77 | 2.324 | 0.30( 0.25) | 0.84 | 2931.0 | 13889.00 |
| 2 | 22721.82 | 25.30 | 1.718 | 0.30( 0.25) | 0.84 | 4653.7 | 10600.00 |
| 3 | 23245.47 | 26.97 | 1.648 | 0.30( 0.25) | 0.84 | 5192.1 | 13810.00 |
| 4 | 23619.31 | 28.21 | 1.597 | 0.30( 0.25) | 0.84 | 5581.1 | 13850.00 |
| 5 | 24699.26 | 31.84 | 1.486 | 0.30( 0.25) | 0.84 | 6702.8 | 13870.00 |
| 6 | 26932.85 | 39.47 | 1.333 | 0.30( 0.25) | 0.84 | 9008.0 | 13830.00 |
| 7 | 28736.93 | 45.92 | 1.231 | 0.30( 0.25) | 0.83 | 10847.8 | 110.00 |
| 8 | 32276.15 | 58.58 | 1.061 | 0.30( 0.25) | 0.84 | 16417.7 | 400.00 |
| 9 | 34308.36 | 70.97 | 0.981 | 0.30( 0.26) | 0.87 | 22956.6 | 13600.00 |
| 10 | 36075.77 | 84.73 | 0.903 | 0.30( 0.27) | 0.89 | 29706.4 | 13100.00 |
| 11 | 36955.37 | 90.89 | 0.870 | 0.30( 0.27) | 0.90 | 32446.9 | 11801.00 |
| 12 | 38805.23 | 101.23 | 0.831 | 0.30( 0.27) | 0.91 | 37769.5 | 11530.00 |
| 13 | 39566.20 | 107.08 | 0.809 | 0.30( 0.27) | 0.92 | 41538.7 | 13510.00 |
| 14 | 40288.52 | 112.87 | 0.788 | 0.30( 0.28) | 0.92 | 45152.5 | 13010.00 |
| 15 | 41309.06 | 119.40 | 0.763 | 0.30( 0.28) | 0.93 | 49424.5 | 11350.00 |
| 16 | 41656.01 | 124.05 | 0.752 | 0.30( 0.28) | 0.93 | 52598.7 | 11130.00 |
| 17 | 41206.05 | 130.18 | 0.739 | 0.30( 0.28) | 0.94 | 55525.3 | 12300.00 |
| 18 | 40383.47 | 139.03 | 0.720 | 0.30( 0.28) | 0.94 | 59785.9 | 12400.00 |
| 19 | 39288.37 | 148.67 | 0.699 | 0.30( 0.28) | 0.94 | 63187.5 | 12201.00 |
| 20 | 38277.25 | 156.28 | 0.683 | 0.30( 0.28) | 0.94 | 65080.5 | 12231.00 |
| 21 | 37236.53 | 163.89 | 0.667 | 0.30( 0.28) | 0.94 | 66633.2 | 10400.00 |
| 22 | 35626.16 | 173.54 | 0.646 | 0.30( 0.28) | 0.95 | 68079.6 | 12010.00 |
| 23 | 34553.91 | 179.08 | 0.634 | 0.30( 0.28) | 0.95 | 68342.2 | 10210.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 33860.59 | 183.23 | 0.629 | 0.30( 0.28) | 0.95 | 68489.0 | 12000.00 |
| 25 | 30094.85 | 210.16 | 0.604 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41656.01 Tc(MIN.) = 124.05
EFFECTIVE AREA(ACRES) = 52598.71 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 124.05
EFFECTIVE AREA(ACRES) = 52598.71 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.933
PEAK FLOW RATE(CFS) = 41656.01

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20069.73 | 15.77 | 2.324 | 0.30( 0.25) | 0.84 | 2931.0 | 13889.00 |
| 2 | 22721.82 | 25.30 | 1.718 | 0.30( 0.25) | 0.84 | 4653.7 | 10600.00 |
| 3 | 23245.47 | 26.97 | 1.648 | 0.30( 0.25) | 0.84 | 5192.1 | 13810.00 |
| 4 | 23619.31 | 28.21 | 1.597 | 0.30( 0.25) | 0.84 | 5581.1 | 13850.00 |
| 5 | 24699.26 | 31.84 | 1.486 | 0.30( 0.25) | 0.84 | 6702.8 | 13870.00 |
| 6 | 26932.85 | 39.47 | 1.333 | 0.30( 0.25) | 0.84 | 9008.0 | 13830.00 |
| 7 | 28736.93 | 45.92 | 1.231 | 0.30( 0.25) | 0.83 | 10847.8 | 110.00 |
| 8 | 32276.15 | 58.58 | 1.061 | 0.30( 0.25) | 0.84 | 16417.7 | 400.00 |
| 9 | 34308.36 | 70.97 | 0.981 | 0.30( 0.26) | 0.87 | 22956.6 | 13600.00 |
| 10 | 36075.77 | 84.73 | 0.903 | 0.30( 0.27) | 0.89 | 29706.4 | 13100.00 |
| 11 | 36955.37 | 90.89 | 0.870 | 0.30( 0.27) | 0.90 | 32446.9 | 11801.00 |
| 12 | 38805.23 | 101.23 | 0.831 | 0.30( 0.27) | 0.91 | 37769.5 | 11530.00 |
| 13 | 39566.20 | 107.08 | 0.809 | 0.30( 0.27) | 0.92 | 41538.7 | 13510.00 |
| 14 | 40288.52 | 112.87 | 0.788 | 0.30( 0.28) | 0.92 | 45152.5 | 13010.00 |
| 15 | 41309.06 | 119.40 | 0.763 | 0.30( 0.28) | 0.93 | 49424.5 | 11350.00 |
| 16 | 41656.01 | 124.05 | 0.752 | 0.30( 0.28) | 0.93 | 52598.7 | 11130.00 |
| 17 | 41206.05 | 130.18 | 0.739 | 0.30( 0.28) | 0.94 | 55525.3 | 12300.00 |
| 18 | 40383.47 | 139.03 | 0.720 | 0.30( 0.28) | 0.94 | 59785.9 | 12400.00 |
| 19 | 39288.37 | 148.67 | 0.699 | 0.30( 0.28) | 0.94 | 63187.5 | 12201.00 |
| 20 | 38277.25 | 156.28 | 0.683 | 0.30( 0.28) | 0.94 | 65080.5 | 12231.00 |
| 21 | 37236.53 | 163.89 | 0.667 | 0.30( 0.28) | 0.94 | 66633.2 | 10400.00 |
| 22 | 35626.16 | 173.54 | 0.646 | 0.30( 0.28) | 0.95 | 68079.6 | 12010.00 |
| 23 | 34553.91 | 179.08 | 0.634 | 0.30( 0.28) | 0.95 | 68342.2 | 10210.00 |
| 24 | 33860.59 | 183.23 | 0.629 | 0.30( 0.28) | 0.95 | 68489.0 | 12000.00 |
| 25 | 30094.85 | 210.16 | 0.604 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

==========

END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 25-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI25EV39.DAT
  TIME/DATE OF STUDY: 13:45 08/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.737
   2)   10.00;  3.102
   3)   15.00;  2.384
   4)   20.00;  1.980
   5)   25.00;  1.729
   6)   30.00;  1.522
   7)   40.00;  1.321
   8)   50.00;  1.169
   9)   60.00;  1.042
  10)   90.00;  0.872
  11)  120.00;  0.761
  12)  180.00;  0.631
  13)  360.00;  0.462
  14) 1200.00;  0.201
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.979
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.64
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      9.64

************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.10
  AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.77
  Tc(MIN.) =   12.63
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   18.48
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      27.21
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =   6.98
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.88
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.26
  Tc(MIN.) =   13.88
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   48.29
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      73.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   9.98
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.45
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      73.48
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =   14.72
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   40.72
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     110.27

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.28
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     110.27
  PIPE TRAVEL TIME(MIN.) =   2.14    Tc(MIN.) =   16.86
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   79.88
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     180.28

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI25EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 20069.73 | 15.77 | 0.30( 0.25) | 0.84 | 2931.0 | 13889.00 |
| 2 | 24699.26 | 31.84 | 0.30( 0.25) | 0.84 | 6702.8 | 13870.00 |
| 3 | 26932.85 | 39.47 | 0.30( 0.25) | 0.84 | 9008.0 | 13830.00 |
| 4 | 28736.93 | 45.92 | 0.30( 0.25) | 0.83 | 10847.8 | 110.00 |
| 5 | 32276.15 | 58.58 | 0.30( 0.25) | 0.84 | 16417.7 | 400.00 |
| 6 | 34308.36 | 70.97 | 0.30( 0.26) | 0.87 | 22956.6 | 13600.00 |
| 7 | 36075.77 | 84.73 | 0.30( 0.27) | 0.89 | 29706.4 | 13100.00 |
| 8 | 36955.37 | 90.89 | 0.30( 0.27) | 0.90 | 32446.9 | 11801.00 |
| 9 | 38805.23 | 101.23 | 0.30( 0.27) | 0.91 | 37769.5 | 11530.00 |
| 10 | 39566.20 | 107.08 | 0.30( 0.27) | 0.92 | 41538.7 | 13510.00 |
| 11 | 40288.52 | 112.87 | 0.30( 0.28) | 0.92 | 45152.5 | 13010.00 |
| 12 | 41656.01 | 124.05 | 0.30( 0.28) | 0.93 | 52598.7 | 11130.00 |
| 13 | 41206.05 | 130.18 | 0.30( 0.28) | 0.94 | 55525.3 | 12300.00 |
| 14 | 40383.47 | 139.03 | 0.30( 0.28) | 0.94 | 59785.9 | 12400.00 |
| 15 | 39288.37 | 148.67 | 0.30( 0.28) | 0.94 | 63187.5 | 12201.00 |
| 16 | 38277.25 | 156.28 | 0.30( 0.28) | 0.94 | 65080.5 | 12231.00 |
| 17 | 37236.53 | 163.89 | 0.30( 0.28) | 0.94 | 66633.2 | 10400.00 |
| 18 | 35626.16 | 173.54 | 0.30( 0.28) | 0.95 | 68079.6 | 12010.00 |
| 19 | 34553.91 | 179.08 | 0.30( 0.28) | 0.95 | 68342.2 | 10210.00 |
| 20 | 30094.85 | 210.16 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

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

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 20069.73 | 15.77 | 0.30( 0.25) | 0.84 | 2931.0 | 13889.00 |
| 2 | 24699.26 | 31.84 | 0.30( 0.25) | 0.84 | 6702.8 | 13870.00 |
| 3 | 26932.85 | 39.47 | 0.30( 0.25) | 0.84 | 9008.0 | 13830.00 |
| 4 | 28736.93 | 45.92 | 0.30( 0.25) | 0.83 | 10847.8 | 110.00 |
| 5 | 32276.15 | 58.58 | 0.30( 0.25) | 0.84 | 16417.7 | 400.00 |
| 6 | 34308.36 | 70.97 | 0.30( 0.26) | 0.87 | 22956.6 | 13600.00 |
| 7 | 36075.77 | 84.73 | 0.30( 0.27) | 0.89 | 29706.4 | 13100.00 |
| 8 | 36955.37 | 90.89 | 0.30( 0.27) | 0.90 | 32446.9 | 11801.00 |
| 9 | 38805.23 | 101.23 | 0.30( 0.27) | 0.91 | 37769.5 | 11530.00 |
| 10 | 39566.20 | 107.08 | 0.30( 0.27) | 0.92 | 41538.7 | 13510.00 |
| 11 | 40288.52 | 112.87 | 0.30( 0.28) | 0.92 | 45152.5 | 13010.00 |
| 12 | 41656.01 | 124.05 | 0.30( 0.28) | 0.93 | 52598.7 | 11130.00 |
| 13 | 41206.05 | 130.18 | 0.30( 0.28) | 0.94 | 55525.3 | 12300.00 |
| 14 | 40383.47 | 139.03 | 0.30( 0.28) | 0.94 | 59785.9 | 12400.00 |
| 15 | 39288.37 | 148.67 | 0.30( 0.28) | 0.94 | 63187.5 | 12201.00 |
| 16 | 38277.25 | 156.28 | 0.30( 0.28) | 0.94 | 65080.5 | 12231.00 |
| 17 | 37236.53 | 163.89 | 0.30( 0.28) | 0.94 | 66633.2 | 10400.00 |
| 18 | 35626.16 | 173.54 | 0.30( 0.28) | 0.95 | 68079.6 | 12010.00 |
| 19 | 34553.91 | 179.08 | 0.30( 0.28) | 0.95 | 68342.2 | 10210.00 |
| 20 | 30094.85 | 210.16 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56



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

>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 21.62

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.747

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 96.09 | 0.30 | 0.535 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41681.39

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.34

AVERAGE FLOW DEPTH(FEET) = 21.61 TRAVEL TIME(MIN.) = 2.22

Tc(MIN.) = 126.27

SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 50.76

EFFECTIVE AREA(ACRES) = 52694.80 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 69198.1 PEAK FLOW RATE(CFS) = 41656.01

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 21.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 21.60 FLOW VELOCITY(FEET/SEC.) = 10.34

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

**********

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20069.73 | 18.49 | 2.102 | 0.30( 0.25) | 0.83 | 3027.1 | 13889.00 |
| 2 | 24699.26 | 34.40 | 1.434 | 0.30( 0.25) | 0.83 | 6798.8 | 13870.00 |
| 3 | 26932.85 | 41.97 | 1.291 | 0.30( 0.25) | 0.83 | 9104.1 | 13830.00 |
| 4 | 28736.93 | 48.37 | 1.194 | 0.30( 0.25) | 0.83 | 10943.9 | 110.00 |
| 5 | 32276.15 | 60.95 | 1.037 | 0.30( 0.25) | 0.84 | 16513.8 | 400.00 |
| 6 | 34308.36 | 73.31 | 0.967 | 0.30( 0.26) | 0.87 | 23052.7 | 13600.00 |
| 7 | 36075.77 | 87.03 | 0.889 | 0.30( 0.27) | 0.89 | 29802.5 | 13100.00 |
| 8 | 36955.37 | 93.18 | 0.860 | 0.30( 0.27) | 0.90 | 32542.9 | 11801.00 |
| 9 | 38805.23 | 103.49 | 0.822 | 0.30( 0.27) | 0.91 | 37865.5 | 11530.00 |
| 10 | 39566.20 | 109.33 | 0.800 | 0.30( 0.27) | 0.92 | 41634.8 | 13510.00 |
| 11 | 40288.52 | 115.11 | 0.779 | 0.30( 0.28) | 0.92 | 45248.6 | 13010.00 |
| 12 | 41656.01 | 126.27 | 0.747 | 0.30( 0.28) | 0.93 | 52694.8 | 11130.00 |
| 13 | 41206.05 | 132.40 | 0.734 | 0.30( 0.28) | 0.94 | 55621.4 | 12300.00 |
| 14 | 40383.47 | 141.27 | 0.715 | 0.30( 0.28) | 0.94 | 59882.0 | 12400.00 |
| 15 | 39288.37 | 150.93 | 0.694 | 0.30( 0.28) | 0.94 | 63283.6 | 12201.00 |
| 16 | 38277.25 | 158.55 | 0.677 | 0.30( 0.28) | 0.94 | 65176.6 | 12231.00 |

```
   17    37236.53  166.17    0.661  0.30( 0.28) 0.94   66729.3   10400.00
   18    35626.16  175.85    0.640  0.30( 0.28) 0.94   68175.7   12010.00
   19    34553.91  181.41    0.630  0.30( 0.28) 0.94   68438.3   10210.00
   20    30094.85  212.59    0.600  0.30( 0.28) 0.95   69198.1   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      180.28   16.86    2.234  0.30( 0.25) 0.84     101.1   13900.00
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19782.26   16.86    2.234  0.30( 0.25) 0.83    2862.1   13900.00
     2    20238.07   18.49    2.102  0.30( 0.25) 0.83    3128.2   13889.00
     3    24806.71   34.40    1.434  0.30( 0.25) 0.83    6900.0   13870.00
     4    27027.33   41.97    1.291  0.30( 0.25) 0.83    9205.3   13830.00
     5    28822.54   48.37    1.194  0.30( 0.25) 0.83   11045.0     110.00
     6    32347.47   60.95    1.037  0.30( 0.25) 0.84   16614.9     400.00
     7    34373.30   73.31    0.967  0.30( 0.26) 0.87   23153.8   13600.00
     8    36133.64   87.03    0.889  0.30( 0.27) 0.89   29903.7   13100.00
     9    37010.63   93.18    0.860  0.30( 0.27) 0.90   32644.1   11801.00
    10    38857.02  103.49    0.822  0.30( 0.27) 0.91   37966.7   11530.00
    11    39616.03  109.33    0.800  0.30( 0.27) 0.92   41736.0   13510.00
    12    40336.40  115.11    0.779  0.30( 0.28) 0.92   45349.8   13010.00
    13    41701.01  126.27    0.747  0.30( 0.28) 0.93   52795.9   11130.00
    14    41249.84  132.40    0.734  0.30( 0.28) 0.94   55722.5   12300.00
    15    40425.51  141.27    0.715  0.30( 0.28) 0.94   59983.1   12400.00
    16    39328.50  150.93    0.694  0.30( 0.28) 0.94   63384.7   12201.00
    17    38315.88  158.55    0.677  0.30( 0.28) 0.94   65277.7   12231.00
    18    37273.65  166.17    0.661  0.30( 0.28) 0.94   66830.5   10400.00
    19    35661.38  175.85    0.640  0.30( 0.28) 0.94   68276.9   12010.00
    20    34588.19  181.41    0.630  0.30( 0.28) 0.94   68539.4   10210.00
    21    30126.46  212.59    0.600  0.30( 0.28) 0.95   69299.2   10100.00
   TOTAL AREA(ACRES) =     69299.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    41701.01  Tc(MIN.) =  126.271
 EFFECTIVE AREA(ACRES) =  52795.95  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =    69299.2
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
 CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  13.36
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.747
 SUBAREA LOSS RATE DATA(AMC  II):
```



```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      134.30      0.30      0.658     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41734.21
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.37
 AVERAGE FLOW DEPTH(FEET) =  13.36   TRAVEL TIME(MIN.) =   0.27
 Tc(MIN.) =  126.55
 SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   66.41
 EFFECTIVE AREA(ACRES) =  52930.25     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =   41701.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  13.35

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 13.35   FLOW VELOCITY(FEET/SEC.) =  20.35
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  12.34
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.745
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       96.27      0.30      0.723     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41723.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.64
 AVERAGE FLOW DEPTH(FEET) =  12.34   TRAVEL TIME(MIN.) =   1.03
 Tc(MIN.) =  127.57
 SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   45.73
 EFFECTIVE AREA(ACRES) =  53026.52     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =   41701.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  12.33

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 12.33   FLOW VELOCITY(FEET/SEC.) =  22.64
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
 END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 69529.8 TC(MIN.) = 127.57
EFFECTIVE AREA(ACRES) = 53026.52 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.931
PEAK FLOW RATE(CFS) = 41701.01

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 19782.26 | 18.49 | 2.102 | 0.30( 0.25) | 0.82 | 3092.7 | 13900.00 |
| 2 | 20238.07 | 20.10 | 1.975 | 0.30( 0.25) | 0.82 | 3358.8 | 13889.00 |
| 3 | 24806.71 | 35.92 | 1.403 | 0.30( 0.25) | 0.83 | 7130.6 | 13870.00 |
| 4 | 27027.33 | 43.45 | 1.269 | 0.30( 0.25) | 0.83 | 9435.8 | 13830.00 |
| 5 | 28822.54 | 49.83 | 1.172 | 0.30( 0.25) | 0.83 | 11275.6 | 110.00 |
| 6 | 32347.47 | 62.36 | 1.029 | 0.30( 0.25) | 0.84 | 16845.5 | 400.00 |
| 7 | 34373.30 | 74.69 | 0.959 | 0.30( 0.26) | 0.87 | 23384.4 | 13600.00 |
| 8 | 36133.64 | 88.39 | 0.881 | 0.30( 0.27) | 0.89 | 30134.2 | 13100.00 |
| 9 | 37010.63 | 94.53 | 0.855 | 0.30( 0.27) | 0.90 | 32874.7 | 11801.00 |
| 10 | 38857.02 | 104.82 | 0.817 | 0.30( 0.27) | 0.91 | 38197.3 | 11530.00 |
| 11 | 39616.03 | 110.65 | 0.796 | 0.30( 0.27) | 0.91 | 41966.5 | 13510.00 |
| 12 | 40336.40 | 116.42 | 0.774 | 0.30( 0.28) | 0.92 | 45580.3 | 13010.00 |
| 13 | 41701.01 | 127.57 | 0.745 | 0.30( 0.28) | 0.93 | 53026.5 | 11130.00 |
| 14 | 41249.84 | 133.71 | 0.731 | 0.30( 0.28) | 0.93 | 55953.1 | 12300.00 |
| 15 | 40425.51 | 142.58 | 0.712 | 0.30( 0.28) | 0.94 | 60213.7 | 12400.00 |
| 16 | 39328.50 | 152.25 | 0.691 | 0.30( 0.28) | 0.94 | 63615.3 | 12201.00 |
| 17 | 38315.88 | 159.88 | 0.675 | 0.30( 0.28) | 0.94 | 65508.3 | 12231.00 |
| 18 | 37273.65 | 167.52 | 0.658 | 0.30( 0.28) | 0.94 | 67061.0 | 10400.00 |
| 19 | 35661.38 | 177.22 | 0.637 | 0.30( 0.28) | 0.94 | 68507.4 | 12010.00 |
| 20 | 34588.19 | 182.79 | 0.628 | 0.30( 0.28) | 0.94 | 68770.0 | 10210.00 |
| 21 | 30126.46 | 214.02 | 0.599 | 0.30( 0.28) | 0.94 | 69529.8 | 10100.00 |

==========
==========

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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             Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:

                        Michael Baker International
                      5 Hutton Centre Drive, Suite 500
                           Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP                                *
* REGIONAL WATERSHED S19 - FREE DRAINING - PHASE CONDITION NO PA5      *
* 50-YR RM EV APRIL 2019 FKAZI                                         *
 ***********************************************************************

  FILE NAME: RI50EV19.DAT
  TIME/DATE OF STUDY: 11:51 04/01/2019
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.535
   2)   10.00;  3.529
   3)   15.00;  2.693
   4)   20.00;  2.246
   5)   25.00;  1.938
   6)   30.00;  1.744
   7)   40.00;  1.475
   8)   50.00;  1.313
   9)   60.00;  1.214
  10)   90.00;  1.010
  11)  120.00;  0.880
  12)  180.00;  0.760
  13)  360.00;  0.566
  14) 1200.00;  0.250
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.651
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"          -        1.62      0.30      0.999    56    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      6.34
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      6.34

******************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.443
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.34
  AVERAGE FLOW DEPTH(FEET) =   0.50   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   10.52
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   23.83
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      28.41
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   3.90
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.65
  AVERAGE FLOW DEPTH(FEET) =   1.20   TRAVEL TIME(MIN.) =   3.33
  Tc(MIN.) =   13.84
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   81.16
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =     104.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.51

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.51   FLOW VELOCITY(FEET/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.451
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     127.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.87
  AVERAGE FLOW DEPTH(FEET) =   2.27   TRAVEL TIME(MIN.) =   3.86
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  Tc(MIN.) =   17.70
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   46.06
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     133.24
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   3.91
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.21
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.067
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     188.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.16
  AVERAGE FLOW DEPTH(FEET) =   2.14   TRAVEL TIME(MIN.) =   5.20
  Tc(MIN.) =   22.91
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =  109.71
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     219.39
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   6.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.86
```

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  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     264.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.57
  AVERAGE FLOW DEPTH(FEET) =   1.83   TRAVEL TIME(MIN.) =   3.04
  Tc(MIN.) =   25.94
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   91.02
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     290.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.93   FLOW VELOCITY(FEET/SEC.) =  10.86
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.797
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     347.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.54
  AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   28.62
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =  114.38
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     385.73
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.77   FLOW VELOCITY(FEET/SEC.) =  16.06
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.70
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.659
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     507.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.43
  AVERAGE FLOW DEPTH(FEET) =   2.67   TRAVEL TIME(MIN.) =   4.52
  Tc(MIN.) =   33.14
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  244.01
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     594.38
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.90   FLOW VELOCITY(FEET/SEC.) =  12.99
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 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.) =   33.14
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     594.38

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
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  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.164
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000    56   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.92
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      8.92

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.35
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.35
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   13.71
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   13.60
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      21.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.41   FLOW VELOCITY(FEET/SEC.) =   4.93
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16
```



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  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.63
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   5.60
  Tc(MIN.) =   19.31
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   98.12
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     114.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.38   FLOW VELOCITY(FEET/SEC.) =   6.54
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.110
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.26
  AVERAGE FLOW DEPTH(FEET) =   1.20   TRAVEL TIME(MIN.) =   2.90
  Tc(MIN.) =   22.21
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =  106.12
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     209.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.37   FLOW VELOCITY(FEET/SEC.) =  12.03
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.69
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.966
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     268.54
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.02
 AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   2.34
 Tc(MIN.) =   24.55
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  117.73
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     310.69
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.81   FLOW VELOCITY(FEET/SEC.) =  12.58
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.42
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.833
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     359.32
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.08
 AVERAGE FLOW DEPTH(FEET) =   2.41   TRAVEL TIME(MIN.) =   3.16
 Tc(MIN.) =   27.70
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   97.25
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
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 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     383.17
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.49   FLOW VELOCITY(FEET/SEC.) =  10.27
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.747
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     534.42
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.62
 AVERAGE FLOW DEPTH(FEET) =   2.45   TRAVEL TIME(MIN.) =   2.22
 Tc(MIN.) =   29.92
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  302.42
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     664.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.75

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.75   FLOW VELOCITY(FEET/SEC.) =  15.57
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.51
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.653
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

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  USER-DEFINED               -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     731.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.30
  AVERAGE FLOW DEPTH(FEET) =   3.50   TRAVEL TIME(MIN.) =   3.47
  Tc(MIN.) =   33.40
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  134.92
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     755.69
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.56   FLOW VELOCITY(FEET/SEC.) =  12.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 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.) =   33.40
  RAINFALL INTENSITY(INCH/HR) =   1.65
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     755.69

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      594.38   33.14    1.659  0.30( 0.30) 0.98     484.1   11900.00
      2      755.69   33.40    1.653  0.30( 0.30) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1348.14   33.14    1.659  0.30( 0.30) 0.99    1100.1   11900.00
      2     1347.14   33.40    1.653  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1348.14    Tc(MIN.) =    33.14
  EFFECTIVE AREA(ACRES) =    1100.13   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.599
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1410.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.52
  AVERAGE FLOW DEPTH(FEET) =   6.06   TRAVEL TIME(MIN.) =   2.25
  Tc(MIN.) =   35.39
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  125.65
  EFFECTIVE AREA(ACRES) =   1207.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1413.99
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.07   FLOW VELOCITY(FEET/SEC.) =  10.52
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1413.99   35.39    1.599  0.30( 0.30) 0.99    1207.6   11900.00
      2     1412.02   35.64    1.592  0.30( 0.30) 0.99    1212.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1413.99  Tc(MIN.) =   35.39
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1207.60

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED                -      344.27      0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1604.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.68
AVERAGE FLOW DEPTH(FEET) =   6.15   TRAVEL TIME(MIN.) =   2.69
Tc(MIN.) =   38.08
SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  380.08
EFFECTIVE AREA(ACRES) =   1551.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1715.40
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) =   6.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  6.35   FLOW VELOCITY(FEET/SEC.) =  11.89
LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1715.40   38.08    1.527  0.30( 0.30) 1.00    1551.9   11900.00
    2     1710.87   38.34    1.520  0.30( 0.30) 1.00    1556.5   11910.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    1715.40  Tc(MIN.) =   38.08
AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1551.87

****************************************************************************
FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) =   6.53
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.442
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -      165.18      0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1800.27
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.01
AVERAGE FLOW DEPTH(FEET) =   6.51   TRAVEL TIME(MIN.) =   3.97
Tc(MIN.) =   42.05
SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  169.74
EFFECTIVE AREA(ACRES) =   1717.05     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1766.60
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
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*ESTIMATED CHANNEL HEIGHT(FEET) =   6.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  6.46   FLOW VELOCITY(FEET/SEC.) =  11.94
LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1766.60   42.05    1.442  0.30( 0.30) 1.00    1717.1   11900.00
    2     1764.86   42.31    1.438  0.30( 0.30) 1.00    1721.7   11910.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    1766.60  Tc(MIN.) =   42.05
AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1717.05

****************************************************************************
FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) =   7.08
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.399
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -      433.73      0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1981.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.61
AVERAGE FLOW DEPTH(FEET) =   7.07   TRAVEL TIME(MIN.) =   2.65
Tc(MIN.) =   44.70
SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  428.97
EFFECTIVE AREA(ACRES) =   2150.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    2129.29
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) =   7.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  7.31   FLOW VELOCITY(FEET/SEC.) =  11.83
LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2129.29   44.70    1.399  0.30( 0.30) 1.00    2150.8   11900.00
    2     2125.66   44.96    1.395  0.30( 0.30) 1.00    2155.4   11910.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    2129.29  Tc(MIN.) =   44.70
AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
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  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2150.78

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.65
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.335
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2252.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.68
  AVERAGE FLOW DEPTH(FEET) =   7.63   TRAVEL TIME(MIN.) =   3.93
  Tc(MIN.) =   48.63
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  247.29
  EFFECTIVE AREA(ACRES) =   2416.20     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    2253.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.63   FLOW VELOCITY(FEET/SEC.) =  11.68
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2253.25   48.63    1.335  0.30( 0.30) 1.00    2416.2   11900.00
      2     2248.30   48.90    1.331  0.30( 0.30) 1.00    2420.9   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   48.63
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2416.20

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.294
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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2296.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.69
  AVERAGE FLOW DEPTH(FEET) =   8.67   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   51.94
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   87.17
  EFFECTIVE AREA(ACRES) =   2513.66     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    2253.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.60   FLOW VELOCITY(FEET/SEC.) =   9.64
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2253.25   51.94    1.294  0.30( 0.30) 1.00    2513.7   11900.00
      2     2248.71   52.21    1.291  0.30( 0.30) 1.00    2518.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   51.94
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2513.66

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.90
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.262
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2276.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.17
  AVERAGE FLOW DEPTH(FEET) =   7.90   TRAVEL TIME(MIN.) =   3.24
  Tc(MIN.) =   55.18
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   46.60
  EFFECTIVE AREA(ACRES) =   2567.49     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
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  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    2253.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.86   FLOW VELOCITY(FEET/SEC.) =  11.14
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2253.25   55.18    1.262  0.30( 0.30) 1.00    2567.5   11900.00
      2     2248.71   55.45    1.259  0.30( 0.30) 1.00    2572.1   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   55.18
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2567.49

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX50.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)         (ACRES)    NODE
      1      850.75   25.74  0.30( 0.30) 1.00     624.8   40130.00
      2      844.35   27.56  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2253.25   55.18    1.262  0.30( 0.30) 1.00    2567.5   11900.00
      2     2248.71   55.45    1.259  0.30( 0.30) 1.00    2572.1   11910.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      850.75   25.74    1.909  0.30( 0.30) 1.00     624.8   40130.00
      2      844.35   27.56    1.839  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2608.92   25.74    1.909  0.30( 0.30) 1.00    1822.6   40130.00
      2     2644.22   27.56    1.839  0.30( 0.30) 1.00    1936.6   40100.00
      3     2781.01   55.18    1.262  0.30( 0.30) 1.00    3221.7   11900.00
      4     2775.02   55.45    1.259  0.30( 0.30) 1.00    3226.4   11910.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2781.01  Tc(MIN.) =   55.180
  EFFECTIVE AREA(ACRES) =   3221.69  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.89
  CHANNEL FLOW THRU SUBAREA(CFS) =    2781.01
  FLOW VELOCITY(FEET/SEC.) =   9.44   FLOW DEPTH(FEET) =   9.89
  TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =   56.92
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2608.92   27.51    1.841  0.30( 0.30) 1.00    1822.6   40130.00
      2     2644.22   29.32    1.770  0.30( 0.30) 1.00    1936.6   40100.00
      3     2781.01   56.92    1.244  0.30( 0.30) 1.00    3221.7   11900.00
      4     2775.02   57.19    1.242  0.30( 0.30) 1.00    3226.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2781.01  Tc(MIN.) =   56.92
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3221.69

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.92
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
```

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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.30      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.90      0.30     1.000    66
 NATURAL FAIR COVER
 "GRASS"                    B        0.60      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    7.14
 EFFECTIVE AREA(ACRES) =   3230.09   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   56.92
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.43
 EFFECTIVE AREA(ACRES) =   3230.59   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   56.92
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
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 "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.70
 EFFECTIVE AREA(ACRES) =   3232.59   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.05
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.237
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2814.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
 AVERAGE FLOW DEPTH(FEET) =   8.05   TRAVEL TIME(MIN.) =   0.80
 Tc(MIN.) =   57.73
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   66.09
 EFFECTIVE AREA(ACRES) =   3310.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    2792.98
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.02   FLOW VELOCITY(FEET/SEC.) =  13.37
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2608.92   28.33    1.809  0.30( 0.30) 1.00    1911.5   40130.00
     2     2644.22   30.14    1.740  0.30( 0.30) 1.00    2025.5   40100.00
     3     2792.98   57.73    1.237  0.30( 0.30) 1.00    3310.6   11900.00
     4     2789.01   57.99    1.234  0.30( 0.30) 1.00    3315.3   11910.00
```

```
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2792.98  Tc(MIN.) =   57.73
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3310.60

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   57.73
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.237
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.43
 EFFECTIVE AREA(ACRES) =   3312.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    2794.41

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.25
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.213
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2797.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.95
 AVERAGE FLOW DEPTH(FEET) =  10.25   TRAVEL TIME(MIN.) =   2.46
 Tc(MIN.) =   60.19
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    6.96
 EFFECTIVE AREA(ACRES) =   3320.48     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    2794.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
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 DEPTH(FEET) = 10.24   FLOW VELOCITY(FEET/SEC.) =   8.95
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2608.92   30.83    1.722  0.30( 0.30) 1.00    1921.4   40130.00
     2     2644.22   32.64    1.673  0.30( 0.30) 1.00    2035.4   40100.00
     3     2794.41   60.19    1.213  0.30( 0.30) 1.00    3320.5   11900.00
     4     2790.44   60.46    1.211  0.30( 0.30) 1.00    3325.1   11910.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2794.41  Tc(MIN.) =   60.19
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3320.48

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.19
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.213
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    2.05
 EFFECTIVE AREA(ACRES) =   3322.98   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    2794.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: S18X50.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
     1    18863.84   37.77  0.30( 0.30) 1.00    7696.5   11831.00
     2    19171.93   40.18  0.30( 0.30) 1.00    8206.0   11801.00
     3    20870.42   51.52  0.30( 0.30) 1.00   11178.6   11530.00
     4    21741.74   56.15  0.30( 0.30) 1.00   12836.1   11701.00
     5    22206.97   58.56  0.30( 0.30) 1.00   13761.0   11000.00
     6    24578.79   68.37  0.30( 0.30) 1.00   18741.7   11330.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7 | 24998.78 | 70.58 | 0.30( 0.30) | 1.00 | 19900.2 | 10800.00 |
| 8 | 25620.24 | 74.96 | 0.30( 0.30) | 1.00 | 22211.8 | 11130.00 |
| 9 | 25459.58 | 83.55 | 0.30( 0.30) | 1.00 | 25307.4 | 11620.00 |
| 10 | 25389.29 | 85.79 | 0.30( 0.30) | 1.00 | 26059.8 | 11600.00 |
| 11 | 25269.09 | 87.43 | 0.30( 0.30) | 1.00 | 26526.1 | 10600.00 |
| 12 | 25052.94 | 92.79 | 0.30( 0.30) | 1.00 | 28070.1 | 11201.00 |
| 13 | 24726.86 | 98.42 | 0.30( 0.30) | 1.00 | 29254.4 | 10710.00 |
| 14 | 24565.08 | 100.41 | 0.30( 0.30) | 1.00 | 29586.3 | 10410.00 |
| 15 | 24070.54 | 105.10 | 0.30( 0.30) | 1.00 | 30247.3 | 10700.00 |
| 16 | 23353.04 | 112.10 | 0.30( 0.30) | 1.00 | 31166.7 | 10400.00 |
| 17 | 23163.67 | 114.42 | 0.30( 0.30) | 1.00 | 31437.3 | 10200.00 |
| 18 | 22543.84 | 120.36 | 0.30( 0.30) | 1.00 | 32015.5 | 10300.00 |
| 19 | 21907.93 | 125.43 | 0.30( 0.30) | 1.00 | 32220.3 | 10210.00 |
| 20 | 19363.37 | 152.55 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

TOTAL AREA(ACRES) = 32916.6

**********

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: S25X50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 6814.52 | 66.91 | 0.30( 0.30) | 0.99 | 6393.3 | 12500.00 |
| 2 | 7515.45 | 80.53 | 0.30( 0.30) | 0.99 | 8363.5 | 12300.00 |
| 3 | 7623.90 | 81.91 | 0.30( 0.30) | 0.98 | 8652.7 | 12330.00 |
| 4 | 7789.58 | 84.57 | 0.30( 0.30) | 0.98 | 9163.3 | 12410.00 |
| 5 | 7994.43 | 88.75 | 0.30( 0.29) | 0.98 | 9893.3 | 12400.00 |
| 6 | 8150.23 | 93.51 | 0.30( 0.29) | 0.98 | 10584.1 | 12211.00 |
| 7 | 8242.61 | 97.70 | 0.30( 0.29) | 0.98 | 11179.8 | 12201.00 |
| 8 | 8205.03 | 101.92 | 0.30( 0.29) | 0.98 | 11654.1 | 12111.00 |
| 9 | 8180.32 | 104.56 | 0.30( 0.29) | 0.98 | 11967.4 | 12231.00 |
| 10 | 8145.23 | 107.37 | 0.30( 0.29) | 0.98 | 12265.9 | 12101.10 |
| 11 | 8125.55 | 108.34 | 0.30( 0.29) | 0.98 | 12357.2 | 12261.00 |
| 12 | 7675.64 | 119.74 | 0.30( 0.29) | 0.98 | 13113.0 | 12010.00 |
| 13 | 7214.09 | 128.35 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

**********

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 6814.52 | 66.91 | 0.30( 0.30) | 0.99 | 6393.3 | 12500.00 |
| 2 | 7515.45 | 80.53 | 0.30( 0.30) | 0.99 | 8363.5 | 12300.00 |
| 3 | 7623.90 | 81.91 | 0.30( 0.30) | 0.98 | 8652.7 | 12330.00 |
| 4 | 7789.58 | 84.57 | 0.30( 0.30) | 0.98 | 9163.3 | 12410.00 |
| 5 | 7994.43 | 88.75 | 0.30( 0.29) | 0.98 | 9893.3 | 12400.00 |
| 6 | 8150.23 | 93.51 | 0.30( 0.29) | 0.98 | 10584.1 | 12211.00 |
| 7 | 8242.61 | 97.70 | 0.30( 0.29) | 0.98 | 11179.8 | 12201.00 |
| 8 | 8205.03 | 101.92 | 0.30( 0.29) | 0.98 | 11654.1 | 12111.00 |
| 9 | 8180.32 | 104.56 | 0.30( 0.29) | 0.98 | 11967.4 | 12231.00 |



| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | 8145.23 | 107.37 | 0.30( 0.29) | 0.98 | 12265.9 | 12101.10 |
| 11 | 8125.55 | 108.34 | 0.30( 0.29) | 0.98 | 12357.2 | 12261.00 |
| 12 | 7675.64 | 119.74 | 0.30( 0.29) | 0.98 | 13113.0 | 12010.00 |
| 13 | 7214.09 | 128.35 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

TOTAL AREA(ACRES) = 13237.1

**********

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 6814.52 | 66.91 | 1.167 | 0.30( 0.30) | 0.99 | 6393.3 | 12500.00 |
| 2 | 7515.45 | 80.53 | 1.074 | 0.30( 0.30) | 0.99 | 8363.5 | 12300.00 |
| 3 | 7623.90 | 81.91 | 1.065 | 0.30( 0.30) | 0.98 | 8652.7 | 12330.00 |
| 4 | 7789.58 | 84.57 | 1.047 | 0.30( 0.30) | 0.98 | 9163.3 | 12410.00 |
| 5 | 7994.43 | 88.75 | 1.018 | 0.30( 0.29) | 0.98 | 9893.3 | 12400.00 |
| 6 | 8150.23 | 93.51 | 0.995 | 0.30( 0.29) | 0.98 | 10584.1 | 12211.00 |
| 7 | 8242.61 | 97.70 | 0.977 | 0.30( 0.29) | 0.98 | 11179.8 | 12201.00 |
| 8 | 8205.03 | 101.92 | 0.958 | 0.30( 0.29) | 0.98 | 11654.1 | 12111.00 |
| 9 | 8180.32 | 104.56 | 0.947 | 0.30( 0.29) | 0.98 | 11967.4 | 12231.00 |
| 10 | 8145.23 | 107.37 | 0.935 | 0.30( 0.29) | 0.98 | 12265.9 | 12101.10 |
| 11 | 8125.55 | 108.34 | 0.931 | 0.30( 0.29) | 0.98 | 12357.2 | 12261.00 |
| 12 | 7675.64 | 119.74 | 0.881 | 0.30( 0.29) | 0.98 | 13113.0 | 12010.00 |
| 13 | 7214.09 | 128.35 | 0.863 | 0.30( 0.29) | 0.98 | 13237.1 | 12000.00 |

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18863.84 | 37.77 | 1.535 | 0.30( 0.30) | 1.00 | 7696.5 | 11831.00 |
| 2 | 19171.93 | 40.18 | 1.472 | 0.30( 0.30) | 1.00 | 8206.0 | 11801.00 |
| 3 | 20870.42 | 51.52 | 1.298 | 0.30( 0.30) | 1.00 | 11178.6 | 11530.00 |
| 4 | 21741.74 | 56.15 | 1.252 | 0.30( 0.30) | 1.00 | 12836.1 | 11701.00 |
| 5 | 22206.97 | 58.56 | 1.228 | 0.30( 0.30) | 1.00 | 13761.0 | 11000.00 |
| 6 | 24578.79 | 68.37 | 1.157 | 0.30( 0.30) | 1.00 | 18741.7 | 11330.00 |
| 7 | 24998.78 | 70.58 | 1.142 | 0.30( 0.30) | 1.00 | 19900.2 | 10800.00 |
| 8 | 25620.24 | 74.96 | 1.112 | 0.30( 0.30) | 1.00 | 22211.8 | 11130.00 |
| 9 | 25459.58 | 83.55 | 1.054 | 0.30( 0.30) | 1.00 | 25307.4 | 11620.00 |
| 10 | 25389.29 | 85.79 | 1.039 | 0.30( 0.30) | 1.00 | 26059.8 | 11600.00 |
| 11 | 25269.09 | 87.43 | 1.027 | 0.30( 0.30) | 1.00 | 26526.1 | 10600.00 |
| 12 | 25052.94 | 92.79 | 0.998 | 0.30( 0.30) | 1.00 | 28070.1 | 11201.00 |
| 13 | 24726.86 | 98.42 | 0.974 | 0.30( 0.30) | 1.00 | 29254.4 | 10710.00 |
| 14 | 24565.08 | 100.41 | 0.965 | 0.30( 0.30) | 1.00 | 29586.3 | 10410.00 |
| 15 | 24070.54 | 105.10 | 0.945 | 0.30( 0.30) | 1.00 | 30247.3 | 10700.00 |
| 16 | 23353.04 | 112.10 | 0.914 | 0.30( 0.30) | 1.00 | 31166.7 | 10400.00 |
| 17 | 23163.67 | 114.42 | 0.904 | 0.30( 0.30) | 1.00 | 31437.3 | 10200.00 |
| 18 | 22543.84 | 120.36 | 0.879 | 0.30( 0.30) | 1.00 | 32015.5 | 10300.00 |
| 19 | 21907.93 | 125.43 | 0.869 | 0.30( 0.30) | 1.00 | 32220.3 | 10210.00 |
| 20 | 19363.37 | 152.55 | 0.815 | 0.30( 0.30) | 1.00 | 32916.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 24335.68 | 37.77 | 1.535 | 0.30( 0.30) | 0.99 | 11305.9 | 11831.00 |
| 2 | 24697.44 | 40.18 | 1.472 | 0.30( 0.30) | 0.99 | 12045.5 | 11801.00 |
| 3 | 26906.53 | 51.52 | 1.298 | 0.30( 0.30) | 0.99 | 16101.8 | 11530.00 |
| 4 | 28019.04 | 56.15 | 1.252 | 0.30( 0.30) | 0.99 | 18201.1 | 11701.00 |
| 5 | 28590.34 | 58.56 | 1.228 | 0.30( 0.30) | 0.99 | 19356.3 | 11000.00 |
| 6 | 31039.95 | 66.91 | 1.167 | 0.30( 0.30) | 0.99 | 24392.9 | 12500.00 |
| 7 | 31468.57 | 68.37 | 1.157 | 0.30( 0.30) | 0.99 | 25346.5 | 11330.00 |
| 8 | 32002.18 | 70.58 | 1.142 | 0.30( 0.30) | 0.99 | 26824.3 | 10800.00 |
| 9 | 32849.10 | 74.96 | 1.112 | 0.30( 0.30) | 0.99 | 29769.7 | 11130.00 |
| 10 | 33031.62 | 80.53 | 1.074 | 0.30( 0.30) | 0.99 | 32580.5 | 12300.00 |
| 11 | 33114.20 | 81.91 | 1.065 | 0.30( 0.30) | 0.99 | 33368.0 | 12330.00 |
| 12 | 33186.01 | 83.55 | 1.054 | 0.30( 0.30) | 0.99 | 34276.0 | 11620.00 |
| 13 | 33217.38 | 84.57 | 1.047 | 0.30( 0.30) | 0.99 | 34810.9 | 12410.00 |
| 14 | 33238.92 | 85.79 | 1.039 | 0.30( 0.30) | 0.99 | 35437.1 | 11600.00 |
| 15 | 33199.04 | 87.43 | 1.027 | 0.30( 0.30) | 0.99 | 36189.6 | 10600.00 |
| 16 | 33210.37 | 88.75 | 1.018 | 0.30( 0.30) | 0.99 | 36799.1 | 12400.00 |
| 17 | 33179.69 | 92.79 | 0.998 | 0.30( 0.30) | 0.99 | 38550.0 | 11201.00 |
| 18 | 33161.66 | 93.51 | 0.995 | 0.30( 0.30) | 0.99 | 38804.9 | 12211.00 |
| 19 | 33011.46 | 97.70 | 0.977 | 0.30( 0.30) | 0.99 | 40281.7 | 12201.00 |
| 20 | 32963.01 | 98.42 | 0.974 | 0.30( 0.30) | 0.99 | 40515.8 | 10710.00 |
| 21 | 32783.54 | 100.41 | 0.965 | 0.30( 0.30) | 0.99 | 41070.9 | 10410.00 |
| 22 | 32611.09 | 101.92 | 0.958 | 0.30( 0.30) | 0.99 | 41453.0 | 12111.00 |
| 23 | 32307.60 | 104.56 | 0.947 | 0.30( 0.30) | 0.99 | 42138.9 | 12231.00 |
| 24 | 32244.16 | 105.10 | 0.945 | 0.30( 0.30) | 0.99 | 42271.8 | 10700.00 |
| 25 | 31982.44 | 107.37 | 0.935 | 0.30( 0.30) | 0.99 | 42812.2 | 12101.10 |
| 26 | 31863.89 | 108.34 | 0.931 | 0.30( 0.30) | 0.99 | 43030.2 | 12261.00 |
| 27 | 31330.23 | 112.10 | 0.914 | 0.30( 0.30) | 0.99 | 43773.2 | 10400.00 |
| 28 | 31049.28 | 114.42 | 0.904 | 0.30( 0.30) | 0.99 | 44197.6 | 10200.00 |
| 29 | 30284.07 | 119.74 | 0.881 | 0.30( 0.30) | 0.99 | 45068.3 | 12010.00 |
| 30 | 30186.30 | 120.36 | 0.879 | 0.30( 0.30) | 0.99 | 45137.4 | 10300.00 |
| 31 | 29278.79 | 125.43 | 0.869 | 0.30( 0.30) | 0.99 | 45415.2 | 10210.00 |
| 32 | 28847.68 | 128.35 | 0.863 | 0.30( 0.30) | 0.99 | 45532.4 | 12000.00 |
| 33 | 25964.49 | 152.55 | 0.815 | 0.30( 0.30) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 85.792
EFFECTIVE AREA(ACRES) = 35437.09 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.035
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.30 | 0.987 | - |



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33243.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.02
AVERAGE FLOW DEPTH(FEET) = 9.03 TRAVEL TIME(MIN.) = 0.59
Tc(MIN.) = 86.38
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 9.55
EFFECTIVE AREA(ACRES) = 35451.46 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 33238.92
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.03 FLOW VELOCITY(FEET/SEC.) = 15.01
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24335.68 | 38.43 | 1.517 | 0.30( 0.30) | 0.99 | 11320.3 | 11831.00 |
| 2 | 24697.44 | 40.83 | 1.461 | 0.30( 0.30) | 0.99 | 12059.9 | 11801.00 |
| 3 | 26906.53 | 52.16 | 1.292 | 0.30( 0.30) | 0.99 | 16116.2 | 11530.00 |
| 4 | 28019.04 | 56.77 | 1.246 | 0.30( 0.30) | 0.99 | 18215.4 | 11701.00 |
| 5 | 28590.34 | 59.18 | 1.222 | 0.30( 0.30) | 0.99 | 19370.6 | 11000.00 |
| 6 | 31039.95 | 67.51 | 1.163 | 0.30( 0.30) | 0.99 | 24407.3 | 12500.00 |
| 7 | 31468.57 | 68.97 | 1.153 | 0.30( 0.30) | 0.99 | 25360.9 | 11330.00 |
| 8 | 32002.18 | 71.18 | 1.138 | 0.30( 0.30) | 0.99 | 26838.7 | 10800.00 |
| 9 | 32849.10 | 75.55 | 1.108 | 0.30( 0.30) | 0.99 | 29784.1 | 11130.00 |
| 10 | 33031.62 | 81.12 | 1.070 | 0.30( 0.30) | 0.99 | 32594.9 | 12300.00 |
| 11 | 33114.20 | 82.50 | 1.061 | 0.30( 0.30) | 0.99 | 33382.4 | 12330.00 |
| 12 | 33186.01 | 84.14 | 1.050 | 0.30( 0.30) | 0.99 | 34290.4 | 11620.00 |
| 13 | 33217.38 | 85.16 | 1.043 | 0.30( 0.30) | 0.99 | 34825.3 | 12410.00 |
| 14 | 33238.92 | 86.38 | 1.035 | 0.30( 0.30) | 0.99 | 35451.5 | 11600.00 |
| 15 | 33199.04 | 88.02 | 1.023 | 0.30( 0.30) | 0.99 | 36204.0 | 10600.00 |
| 16 | 33210.37 | 89.34 | 1.014 | 0.30( 0.30) | 0.99 | 36813.4 | 12400.00 |
| 17 | 33179.69 | 93.38 | 0.995 | 0.30( 0.30) | 0.99 | 38564.4 | 11201.00 |
| 18 | 33161.66 | 94.10 | 0.992 | 0.30( 0.30) | 0.99 | 38819.3 | 12211.00 |
| 19 | 33011.46 | 98.29 | 0.974 | 0.30( 0.30) | 0.99 | 40296.1 | 12201.00 |
| 20 | 32963.01 | 99.01 | 0.971 | 0.30( 0.30) | 0.99 | 40530.1 | 10710.00 |
| 21 | 32783.54 | 101.00 | 0.962 | 0.30( 0.30) | 0.99 | 41085.2 | 10410.00 |
| 22 | 32611.09 | 102.51 | 0.956 | 0.30( 0.30) | 0.99 | 41467.3 | 12111.00 |
| 23 | 32307.60 | 105.16 | 0.944 | 0.30( 0.30) | 0.99 | 42153.2 | 12231.00 |
| 24 | 32244.16 | 105.69 | 0.942 | 0.30( 0.30) | 0.99 | 42286.1 | 10700.00 |
| 25 | 31982.44 | 107.97 | 0.932 | 0.30( 0.30) | 0.99 | 42826.5 | 12101.10 |
| 26 | 31863.89 | 108.94 | 0.928 | 0.30( 0.30) | 0.99 | 43044.6 | 12261.00 |
| 27 | 31330.23 | 112.70 | 0.912 | 0.30( 0.30) | 0.99 | 43787.5 | 10400.00 |
| 28 | 31049.28 | 115.02 | 0.902 | 0.30( 0.30) | 0.99 | 44211.9 | 10200.00 |
| 29 | 30284.07 | 120.35 | 0.879 | 0.30( 0.30) | 0.99 | 45082.6 | 12010.00 |
| 30 | 30186.30 | 120.97 | 0.878 | 0.30( 0.30) | 0.99 | 45151.8 | 10300.00 |
| 31 | 29278.79 | 126.04 | 0.868 | 0.30( 0.30) | 0.99 | 45429.6 | 10210.00 |
| 32 | 28847.68 | 128.97 | 0.862 | 0.30( 0.30) | 0.99 | 45546.8 | 12000.00 |
| 33 | 25964.49 | 153.19 | 0.814 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 86.38
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 35451.46

**********
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24335.68 | 38.43 | 1.517 | 0.30( 0.30) | 0.99 | 11320.3 | 11831.00 |
| 2 | 24697.44 | 40.83 | 1.461 | 0.30( 0.30) | 0.99 | 12059.9 | 11801.00 |
| 3 | 26906.53 | 52.16 | 1.292 | 0.30( 0.30) | 0.99 | 16116.2 | 11530.00 |
| 4 | 28019.04 | 56.77 | 1.246 | 0.30( 0.30) | 0.99 | 18215.4 | 11701.00 |
| 5 | 28590.34 | 59.18 | 1.222 | 0.30( 0.30) | 0.99 | 19370.6 | 11000.00 |
| 6 | 31039.95 | 67.51 | 1.163 | 0.30( 0.30) | 0.99 | 24407.3 | 12500.00 |
| 7 | 31468.57 | 68.97 | 1.153 | 0.30( 0.30) | 0.99 | 25360.9 | 11330.00 |
| 8 | 32002.18 | 71.18 | 1.138 | 0.30( 0.30) | 0.99 | 26838.7 | 10800.00 |
| 9 | 32849.10 | 75.55 | 1.108 | 0.30( 0.30) | 0.99 | 29784.1 | 11130.00 |
| 10 | 33031.62 | 81.12 | 1.070 | 0.30( 0.30) | 0.99 | 32594.9 | 12300.00 |
| 11 | 33114.20 | 82.50 | 1.061 | 0.30( 0.30) | 0.99 | 33382.4 | 12330.00 |
| 12 | 33186.01 | 84.14 | 1.050 | 0.30( 0.30) | 0.99 | 34290.4 | 11620.00 |
| 13 | 33217.38 | 85.16 | 1.043 | 0.30( 0.30) | 0.99 | 34825.3 | 12410.00 |
| 14 | 33238.92 | 86.38 | 1.035 | 0.30( 0.30) | 0.99 | 35451.5 | 11600.00 |
| 15 | 33199.04 | 88.02 | 1.023 | 0.30( 0.30) | 0.99 | 36204.0 | 10600.00 |
| 16 | 33210.37 | 89.34 | 1.014 | 0.30( 0.30) | 0.99 | 36813.4 | 12400.00 |
| 17 | 33179.69 | 93.38 | 0.995 | 0.30( 0.30) | 0.99 | 38564.4 | 11201.00 |
| 18 | 33161.66 | 94.10 | 0.992 | 0.30( 0.30) | 0.99 | 38819.3 | 12211.00 |
| 19 | 33011.46 | 98.29 | 0.974 | 0.30( 0.30) | 0.99 | 40296.1 | 12201.00 |
| 20 | 32963.01 | 99.01 | 0.971 | 0.30( 0.30) | 0.99 | 40530.1 | 10710.00 |
| 21 | 32783.54 | 101.00 | 0.962 | 0.30( 0.30) | 0.99 | 41085.2 | 10410.00 |
| 22 | 32611.09 | 102.51 | 0.956 | 0.30( 0.30) | 0.99 | 41467.3 | 12111.00 |
| 23 | 32307.60 | 105.16 | 0.944 | 0.30( 0.30) | 0.99 | 42153.2 | 12231.00 |
| 24 | 32244.16 | 105.69 | 0.942 | 0.30( 0.30) | 0.99 | 42286.1 | 10700.00 |
| 25 | 31982.44 | 107.97 | 0.932 | 0.30( 0.30) | 0.99 | 42826.5 | 12101.10 |
| 26 | 31863.89 | 108.94 | 0.928 | 0.30( 0.30) | 0.99 | 43044.6 | 12261.00 |
| 27 | 31330.23 | 112.70 | 0.912 | 0.30( 0.30) | 0.99 | 43787.5 | 10400.00 |
| 28 | 31049.28 | 115.02 | 0.902 | 0.30( 0.30) | 0.99 | 44211.9 | 10200.00 |
| 29 | 30284.07 | 120.35 | 0.879 | 0.30( 0.30) | 0.99 | 45082.6 | 12010.00 |
| 30 | 30186.30 | 120.97 | 0.878 | 0.30( 0.30) | 0.99 | 45151.8 | 10300.00 |
| 31 | 29278.79 | 126.04 | 0.868 | 0.30( 0.30) | 0.99 | 45429.6 | 10210.00 |
| 32 | 28847.68 | 128.97 | 0.862 | 0.30( 0.30) | 0.99 | 45546.8 | 12000.00 |
| 33 | 25964.49 | 153.19 | 0.814 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2608.92 | 30.83 | 1.722 | 0.30( 0.30) | 1.00 | 1923.9 | 40130.00 |
| 2 | 2644.22 | 32.64 | 1.673 | 0.30( 0.30) | 1.00 | 2037.9 | 40100.00 |
| 3 | 2794.41 | 60.19 | 1.213 | 0.30( 0.30) | 1.00 | 3323.0 | 11900.00 |
| 4 | 2790.44 | 60.46 | 1.211 | 0.30( 0.30) | 1.00 | 3327.6 | 11910.00 |

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 25406.30 | 30.83 | 1.722 | 0.30( 0.30) | 0.99 | 11007.2 | 40130.00 |
| 2 | 25952.56 | 32.64 | 1.673 | 0.30( 0.30) | 0.99 | 11652.1 | 40100.00 |
| 3 | 27011.47 | 38.43 | 1.517 | 0.30( 0.30) | 0.99 | 13628.3 | 11831.00 |
| 4 | 27386.34 | 40.83 | 1.461 | 0.30( 0.30) | 0.99 | 14480.1 | 11801.00 |
| 5 | 29657.15 | 52.16 | 1.292 | 0.30( 0.30) | 0.99 | 19064.5 | 11530.00 |
| 6 | 30794.82 | 56.77 | 1.246 | 0.30( 0.30) | 0.99 | 21379.0 | 11701.00 |
| 7 | 31379.23 | 59.18 | 1.222 | 0.30( 0.30) | 0.99 | 22646.4 | 11000.00 |
| 8 | 31682.43 | 60.19 | 1.213 | 0.30( 0.30) | 0.99 | 23305.7 | 11900.00 |
| 9 | 31757.19 | 60.46 | 1.211 | 0.30( 0.30) | 0.99 | 23472.2 | 11910.00 |
| 10 | 33683.59 | 67.51 | 1.163 | 0.30( 0.30) | 0.99 | 27734.9 | 12500.00 |
| 11 | 34081.84 | 68.97 | 1.153 | 0.30( 0.30) | 0.99 | 28688.5 | 11330.00 |
| 12 | 34569.59 | 71.18 | 1.138 | 0.30( 0.30) | 0.99 | 30166.4 | 10800.00 |
| 13 | 35325.47 | 75.55 | 1.108 | 0.30( 0.30) | 0.99 | 33111.7 | 11130.00 |
| 14 | 35392.14 | 81.12 | 1.070 | 0.30( 0.30) | 0.99 | 35922.5 | 12300.00 |
| 15 | 35445.93 | 82.50 | 1.061 | 0.30( 0.30) | 0.99 | 36710.1 | 12330.00 |
| 16 | 35483.55 | 84.14 | 1.050 | 0.30( 0.30) | 0.99 | 37618.1 | 11620.00 |
| 17 | 35493.85 | 85.16 | 1.043 | 0.30( 0.30) | 0.99 | 38152.9 | 12410.00 |
| 18 | 35489.87 | 86.38 | 1.035 | 0.30( 0.30) | 0.99 | 38779.1 | 11600.00 |
| 19 | 35415.85 | 88.02 | 1.023 | 0.30( 0.30) | 0.99 | 39531.6 | 10600.00 |
| 20 | 35399.76 | 89.34 | 1.014 | 0.30( 0.30) | 0.99 | 40141.1 | 12400.00 |
| 21 | 35310.54 | 93.38 | 0.995 | 0.30( 0.30) | 0.99 | 41892.0 | 11201.00 |
| 22 | 35283.00 | 94.10 | 0.992 | 0.30( 0.30) | 0.99 | 42146.9 | 12211.00 |
| 23 | 35077.23 | 98.29 | 0.974 | 0.30( 0.30) | 0.99 | 43623.7 | 12201.00 |
| 24 | 35019.16 | 99.01 | 0.971 | 0.30( 0.30) | 0.99 | 43857.8 | 10710.00 |
| 25 | 34813.35 | 101.00 | 0.962 | 0.30( 0.30) | 0.99 | 44412.9 | 10410.00 |
| 26 | 34620.89 | 102.51 | 0.956 | 0.30( 0.30) | 0.99 | 44795.0 | 12111.00 |
| 27 | 34282.30 | 105.16 | 0.944 | 0.30( 0.30) | 0.99 | 45480.9 | 12231.00 |
| 28 | 34211.72 | 105.69 | 0.942 | 0.30( 0.30) | 0.99 | 45613.8 | 10700.00 |
| 29 | 33919.79 | 107.97 | 0.932 | 0.30( 0.30) | 0.99 | 46154.2 | 12101.10 |
| 30 | 33788.43 | 108.94 | 0.928 | 0.30( 0.30) | 0.99 | 46372.2 | 12261.00 |
| 31 | 33204.87 | 112.70 | 0.912 | 0.30( 0.30) | 0.99 | 47115.2 | 10400.00 |
| 32 | 32893.12 | 115.02 | 0.902 | 0.30( 0.30) | 0.99 | 47539.6 | 10200.00 |
| 33 | 32059.78 | 120.35 | 0.879 | 0.30( 0.30) | 0.99 | 48410.3 | 12010.00 |
| 34 | 31958.21 | 120.97 | 0.878 | 0.30( 0.30) | 0.99 | 48479.4 | 10300.00 |
| 35 | 31019.66 | 126.04 | 0.868 | 0.30( 0.30) | 0.99 | 48757.2 | 10210.00 |
| 36 | 30570.63 | 128.97 | 0.862 | 0.30( 0.30) | 0.99 | 48874.4 | 12000.00 |
| 37 | 27539.19 | 153.19 | 0.814 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 35493.85 Tc(MIN.) = 85.157
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 85.16
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 35493.85

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25406.30 | 30.83 | 1.722 | 0.30( 0.30) | 0.99 | 11007.2 | 40130.00 |
| 2 | 25952.56 | 32.64 | 1.673 | 0.30( 0.30) | 0.99 | 11652.1 | 40100.00 |
| 3 | 27011.47 | 38.43 | 1.517 | 0.30( 0.30) | 0.99 | 13628.3 | 11831.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 27386.34 | 40.83 | 1.461 | 0.30( 0.30) | 0.99 | 14480.1 | 11801.00 |
| 5 | 29657.15 | 52.16 | 1.292 | 0.30( 0.30) | 0.99 | 19064.5 | 11530.00 |
| 6 | 30794.82 | 56.77 | 1.246 | 0.30( 0.30) | 0.99 | 21379.0 | 11701.00 |
| 7 | 31379.23 | 59.18 | 1.222 | 0.30( 0.30) | 0.99 | 22646.4 | 11000.00 |
| 8 | 31682.43 | 60.19 | 1.213 | 0.30( 0.30) | 0.99 | 23305.7 | 11900.00 |
| 9 | 31757.19 | 60.46 | 1.211 | 0.30( 0.30) | 0.99 | 23472.2 | 11910.00 |
| 10 | 33683.59 | 67.51 | 1.163 | 0.30( 0.30) | 0.99 | 27734.9 | 12500.00 |
| 11 | 34081.84 | 68.97 | 1.153 | 0.30( 0.30) | 0.99 | 28688.5 | 11330.00 |
| 12 | 34569.59 | 71.18 | 1.138 | 0.30( 0.30) | 0.99 | 30166.4 | 10800.00 |
| 13 | 35325.47 | 75.55 | 1.108 | 0.30( 0.30) | 0.99 | 33111.7 | 11130.00 |
| 14 | 35392.14 | 81.12 | 1.070 | 0.30( 0.30) | 0.99 | 35922.5 | 12300.00 |
| 15 | 35445.93 | 82.50 | 1.061 | 0.30( 0.30) | 0.99 | 36710.1 | 12330.00 |
| 16 | 35483.55 | 84.14 | 1.050 | 0.30( 0.30) | 0.99 | 37618.1 | 11620.00 |
| 17 | 35493.85 | 85.16 | 1.043 | 0.30( 0.30) | 0.99 | 38152.9 | 12410.00 |
| 18 | 35489.87 | 86.38 | 1.035 | 0.30( 0.30) | 0.99 | 38779.1 | 11600.00 |
| 19 | 35415.85 | 88.02 | 1.023 | 0.30( 0.30) | 0.99 | 39531.6 | 10600.00 |
| 20 | 35399.76 | 89.34 | 1.014 | 0.30( 0.30) | 0.99 | 40141.1 | 12400.00 |
| 21 | 35310.54 | 93.38 | 0.995 | 0.30( 0.30) | 0.99 | 41892.0 | 11201.00 |
| 22 | 35283.00 | 94.10 | 0.992 | 0.30( 0.30) | 0.99 | 42146.9 | 12211.00 |
| 23 | 35077.23 | 98.29 | 0.974 | 0.30( 0.30) | 0.99 | 43623.7 | 12201.00 |
| 24 | 35019.16 | 99.01 | 0.971 | 0.30( 0.30) | 0.99 | 43857.8 | 10710.00 |
| 25 | 34813.35 | 101.00 | 0.962 | 0.30( 0.30) | 0.99 | 44412.9 | 10410.00 |
| 26 | 34620.89 | 102.51 | 0.956 | 0.30( 0.30) | 0.99 | 44795.0 | 12111.00 |
| 27 | 34282.30 | 105.16 | 0.944 | 0.30( 0.30) | 0.99 | 45480.9 | 12231.00 |
| 28 | 34211.72 | 105.69 | 0.942 | 0.30( 0.30) | 0.99 | 45613.8 | 10700.00 |
| 29 | 33919.79 | 107.97 | 0.932 | 0.30( 0.30) | 0.99 | 46154.2 | 12101.10 |
| 30 | 33788.43 | 108.94 | 0.928 | 0.30( 0.30) | 0.99 | 46372.2 | 12261.00 |
| 31 | 33204.87 | 112.70 | 0.912 | 0.30( 0.30) | 0.99 | 47115.2 | 10400.00 |
| 32 | 32893.12 | 115.02 | 0.902 | 0.30( 0.30) | 0.99 | 47539.6 | 10200.00 |
| 33 | 32059.78 | 120.35 | 0.879 | 0.30( 0.30) | 0.99 | 48410.3 | 12010.00 |
| 34 | 31958.21 | 120.97 | 0.878 | 0.30( 0.30) | 0.99 | 48479.4 | 10300.00 |
| 35 | 31019.66 | 126.04 | 0.868 | 0.30( 0.30) | 0.99 | 48757.2 | 10210.00 |
| 36 | 30570.63 | 128.97 | 0.862 | 0.30( 0.30) | 0.99 | 48874.4 | 12000.00 |
| 37 | 27539.19 | 153.19 | 0.814 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

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******************************************************************************
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                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 50-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI50EV26.DAT
  TIME/DATE OF STUDY: 09:22 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.515
   2)   10.00;  3.520
   3)   15.00;  2.687
   4)   20.00;  2.242
   5)   25.00;  1.935
   6)   30.00;  1.741
   7)   40.00;  1.473
   8)   50.00;  1.311
   9)   60.00;  1.211
  10)   90.00;  1.007
  11)  120.00;  0.877
  12)  180.00;  0.757
  13)  360.00;  0.563
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25952.56   32.64  0.30( 0.30) 0.99   11652.1   40100.00
      2    27386.34   40.83  0.30( 0.30) 0.99   14480.1   11801.00
      3    29657.15   52.16  0.30( 0.30) 0.99   19064.5   11530.00
      4    30794.82   56.77  0.30( 0.30) 0.99   21379.0   11701.00
      5    31757.19   60.46  0.30( 0.30) 0.99   23472.2   11910.00
      6    34569.59   71.18  0.30( 0.30) 0.99   30166.4   10800.00
      7    35325.47   75.55  0.30( 0.30) 0.99   33111.7   11130.00
      8    35445.93   82.50  0.30( 0.30) 0.99   36710.1   12330.00
      9    35493.85   85.16  0.30( 0.30) 0.99   38152.9   12410.00
     10    35415.85   88.02  0.30( 0.30) 0.99   39531.6   10600.00
     11    35310.54   93.38  0.30( 0.30) 0.99   41892.0   11201.00
     12    35077.23   98.29  0.30( 0.30) 0.99   43623.7   12201.00
     13    34813.35  101.00  0.30( 0.30) 0.99   44412.9   10410.00
     14    34282.30  105.16  0.30( 0.30) 0.99   45480.9   12231.00
     15    33919.79  107.97  0.30( 0.30) 0.99   46154.2   12101.10
     16    33204.87  112.70  0.30( 0.30) 0.99   47115.2   10400.00
     17    32059.78  120.35  0.30( 0.30) 0.99   48410.3   12010.00
     18    31019.66  126.04  0.30( 0.30) 0.99   48757.2   10210.00
     19    30570.63  128.97  0.30( 0.30) 0.99   48874.4   12000.00
     20    27539.19  153.19  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

******************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25952.56   32.64  0.30( 0.30) 0.99   11652.1   40100.00
      2    27386.34   40.83  0.30( 0.30) 0.99   14480.1   11801.00
      3    29657.15   52.16  0.30( 0.30) 0.99   19064.5   11530.00
      4    30794.82   56.77  0.30( 0.30) 0.99   21379.0   11701.00
      5    31757.19   60.46  0.30( 0.30) 0.99   23472.2   11910.00
      6    34569.59   71.18  0.30( 0.30) 0.99   30166.4   10800.00
      7    35325.47   75.55  0.30( 0.30) 0.99   33111.7   11130.00
      8    35445.93   82.50  0.30( 0.30) 0.99   36710.1   12330.00
      9    35493.85   85.16  0.30( 0.30) 0.99   38152.9   12410.00
     10    35415.85   88.02  0.30( 0.30) 0.99   39531.6   10600.00
     11    35310.54   93.38  0.30( 0.30) 0.99   41892.0   11201.00
     12    35077.23   98.29  0.30( 0.30) 0.99   43623.7   12201.00
     13    34813.35  101.00  0.30( 0.30) 0.99   44412.9   10410.00
```

```
     14    34282.30  105.16  0.30( 0.30) 0.99   45480.9   12231.00
     15    33919.79  107.97  0.30( 0.30) 0.99   46154.2   12101.10
     16    33204.87  112.70  0.30( 0.30) 0.99   47115.2   10400.00
     17    32059.78  120.35  0.30( 0.30) 0.99   48410.3   12010.00
     18    31019.66  126.04  0.30( 0.30) 0.99   48757.2   10210.00
     19    30570.63  128.97  0.30( 0.30) 0.99   48874.4   12000.00
     20    27539.19  153.19  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.031
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                     B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   35498.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.80
  AVERAGE FLOW DEPTH(FEET) =   7.89   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   86.46
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    9.28
  EFFECTIVE AREA(ACRES) =  38167.02     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   35493.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.89   FLOW VELOCITY(FEET/SEC.) =  18.80
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
```



```
     1    25952.56   34.08    1.632  0.30( 0.30) 0.99   11666.2   40100.00
     2    27386.34   42.25    1.436  0.30( 0.30) 0.99   14494.2   11801.00
     3    29657.15   53.54    1.276  0.30( 0.30) 0.99   19078.6   11530.00
     4    30794.82   58.14    1.230  0.30( 0.30) 0.99   21393.1   11701.00
     5    31757.19   61.81    1.199  0.30( 0.30) 0.99   23486.3   11910.00
     6    34569.59   72.49    1.126  0.30( 0.30) 0.99   30180.5   10800.00
     7    35325.47   76.85    1.096  0.30( 0.30) 0.99   33125.8   11130.00
     8    35445.93   83.80    1.049  0.30( 0.30) 0.99   36724.2   12330.00
     9    35493.85   86.46    1.031  0.30( 0.30) 0.99   38167.0   12410.00
    10    35415.85   89.33    1.012  0.30( 0.30) 0.99   39545.7   10600.00
    11    35310.54   94.68    0.987  0.30( 0.30) 0.99   41906.1   11201.00
    12    35077.23   99.59    0.965  0.30( 0.30) 0.99   43637.8   12201.00
    13    34813.35  102.31    0.954  0.30( 0.30) 0.99   44427.0   10410.00
    14    34282.30  106.47    0.936  0.30( 0.30) 0.99   45495.0   12231.00
    15    33919.79  109.29    0.923  0.30( 0.30) 0.99   46168.3   12101.10
    16    33204.87  114.03    0.903  0.30( 0.30) 0.99   47129.3   10400.00
    17    32059.78  121.70    0.874  0.30( 0.30) 0.99   48424.4   12010.00
    18    31019.66  127.40    0.862  0.30( 0.30) 0.99   48771.3   10210.00
    19    30570.63  130.34    0.856  0.30( 0.30) 0.99   48888.6   12000.00
    20    27539.19  154.61    0.808  0.30( 0.30) 0.99   49509.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   35493.85  Tc(MIN.) =   86.46
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   38167.02

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O50EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      103.71   16.55  0.30( 0.29) 0.98      51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    25952.56   34.08    1.632  0.30( 0.30) 0.99   11666.2   40100.00
      2    27386.34   42.25    1.436  0.30( 0.30) 0.99   14494.2   11801.00
      3    29657.15   53.54    1.276  0.30( 0.30) 0.99   19078.6   11530.00
      4    30794.82   58.14    1.230  0.30( 0.30) 0.99   21393.1   11701.00
      5    31757.19   61.81    1.199  0.30( 0.30) 0.99   23486.3   11910.00
      6    34569.59   72.49    1.126  0.30( 0.30) 0.99   30180.5   10800.00
      7    35325.47   76.85    1.096  0.30( 0.30) 0.99   33125.8   11130.00
      8    35445.93   83.80    1.049  0.30( 0.30) 0.99   36724.2   12330.00
      9    35493.85   86.46    1.031  0.30( 0.30) 0.99   38167.0   12410.00
     10    35415.85   89.33    1.012  0.30( 0.30) 0.99   39545.7   10600.00
     11    35310.54   94.68    0.987  0.30( 0.30) 0.99   41906.1   11201.00
     12    35077.23   99.59    0.965  0.30( 0.30) 0.99   43637.8   12201.00
```

```
    13    34813.35  102.31    0.954  0.30( 0.30) 0.99   44427.0   10410.00
    14    34282.30  106.47    0.936  0.30( 0.30) 0.99   45495.0   12231.00
    15    33919.79  109.29    0.923  0.30( 0.30) 0.99   46168.3   12101.10
    16    33204.87  114.03    0.903  0.30( 0.30) 0.99   47129.3   10400.00
    17    32059.78  121.70    0.874  0.30( 0.30) 0.99   48424.4   12010.00
    18    31019.66  127.40    0.862  0.30( 0.30) 0.99   48771.3   10210.00
    19    30570.63  130.34    0.856  0.30( 0.30) 0.99   48888.6   12000.00
    20    27539.19  154.61    0.808  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      103.71   16.55    2.549  0.30( 0.29) 0.98      51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21375.29   16.55    2.549  0.30( 0.30) 0.99    5716.0     600.00
      2    26014.07   34.08    1.632  0.30( 0.30) 0.99   11717.3   40100.00
      3    27438.89   42.25    1.436  0.30( 0.30) 0.99   14545.3   11801.00
      4    29702.30   53.54    1.276  0.30( 0.30) 0.99   19129.7   11530.00
      5    30837.85   58.14    1.230  0.30( 0.30) 0.99   21444.2   11701.00
      6    31798.79   61.81    1.199  0.30( 0.30) 0.99   23537.4   11910.00
      7    34607.86   72.49    1.126  0.30( 0.30) 0.99   30231.6   10800.00
      8    35362.37   76.85    1.096  0.30( 0.30) 0.99   33176.9   11130.00
      9    35480.66   83.80    1.049  0.30( 0.30) 0.99   36775.3   12330.00
     10    35527.75   86.46    1.031  0.30( 0.30) 0.99   38218.1   12410.00
     11    35448.85   89.33    1.012  0.30( 0.30) 0.99   39596.8   10600.00
     12    35342.40   94.68    0.987  0.30( 0.30) 0.99   41957.2   11201.00
     13    35108.11   99.59    0.965  0.30( 0.30) 0.99   43688.9   12201.00
     14    34843.69  102.31    0.954  0.30( 0.30) 0.99   44478.1   10410.00
     15    34311.80  106.47    0.936  0.30( 0.30) 0.99   45546.1   12231.00
     16    33948.73  109.29    0.923  0.30( 0.30) 0.99   46219.4   12101.10
     17    33232.87  114.03    0.903  0.30( 0.30) 0.99   47180.4   10400.00
     18    32086.44  121.70    0.874  0.30( 0.30) 0.99   48475.5   12010.00
     19    31045.79  127.40    0.862  0.30( 0.30) 0.99   48822.4   10210.00
     20    30596.49  130.34    0.856  0.30( 0.30) 0.99   48939.7   12000.00
     21    27562.82  154.61    0.808  0.30( 0.30) 0.99   49560.9   10100.00
    TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    35527.75  Tc(MIN.) =   86.458
  EFFECTIVE AREA(ACRES) =  38218.12  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.46
  CHANNEL FLOW THRU SUBAREA(CFS) =   35527.75
  FLOW VELOCITY(FEET/SEC.) =  17.34   FLOW DEPTH(FEET) =   8.46
  TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =   88.08
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21375.29   18.48    2.377  0.30( 0.30) 0.99    5716.0     600.00
      2    26014.07   35.89    1.583  0.30( 0.30) 0.99   11717.3   40100.00
      3    27438.89   44.03    1.408  0.30( 0.30) 0.99   14545.3   11801.00
      4    29702.30   55.26    1.258  0.30( 0.30) 0.99   19129.7   11530.00
      5    30837.85   59.84    1.213  0.30( 0.30) 0.99   21444.2   11701.00
      6    31798.79   63.49    1.187  0.30( 0.30) 0.99   23537.4   11910.00
      7    34607.86   74.13    1.115  0.30( 0.30) 0.99   30231.6   10800.00
      8    35362.37   78.48    1.085  0.30( 0.30) 0.99   33176.9   11130.00
      9    35480.66   85.43    1.038  0.30( 0.30) 0.99   36775.3   12330.00
     10    35527.75   88.08    1.020  0.30( 0.30) 0.99   38218.1   12410.00
     11    35448.85   90.95    1.003  0.30( 0.30) 0.99   39596.8   10600.00
     12    35342.40   96.31    0.980  0.30( 0.30) 0.99   41957.2   11201.00
     13    35108.11  101.23    0.958  0.30( 0.30) 0.99   43688.9   12201.00
     14    34843.69  103.95    0.947  0.30( 0.30) 0.99   44478.1   10410.00
     15    34311.80  108.12    0.928  0.30( 0.30) 0.99   45546.1   12231.00
     16    33948.73  110.94    0.916  0.30( 0.30) 0.99   46219.4   12101.10
     17    33232.87  115.69    0.896  0.30( 0.30) 0.99   47180.4   10400.00
     18    32086.44  123.38    0.870  0.30( 0.30) 0.99   48475.5   12010.00
     19    31045.79  129.10    0.859  0.30( 0.30) 0.99   48822.4   10210.00
     20    30596.49  132.05    0.853  0.30( 0.30) 0.99   48939.7   12000.00
     21    27562.82  156.38    0.804  0.30( 0.30) 0.99   49560.9   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   35527.75  Tc(MIN.) =   88.08
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   38218.12

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4E50EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      496.91    9.20  0.30( 0.16) 0.52     148.3     800.00
      2      445.43   12.80  0.30( 0.17) 0.57     168.2     818.00
      3      420.20   13.91  0.30( 0.17) 0.58     171.0     810.00
    TOTAL AREA(ACRES) =      171.0

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  11
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  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21375.29   18.48    2.377  0.30( 0.30) 0.99    5716.0     600.00
      2    26014.07   35.89    1.583  0.30( 0.30) 0.99   11717.3   40100.00
      3    27438.89   44.03    1.408  0.30( 0.30) 0.99   14545.3   11801.00
      4    29702.30   55.26    1.258  0.30( 0.30) 0.99   19129.7   11530.00
      5    30837.85   59.84    1.213  0.30( 0.30) 0.99   21444.2   11701.00
      6    31798.79   63.49    1.187  0.30( 0.30) 0.99   23537.4   11910.00
      7    34607.86   74.13    1.115  0.30( 0.30) 0.99   30231.6   10800.00
      8    35362.37   78.48    1.085  0.30( 0.30) 0.99   33176.9   11130.00
      9    35480.66   85.43    1.038  0.30( 0.30) 0.99   36775.3   12330.00
     10    35527.75   88.08    1.020  0.30( 0.30) 0.99   38218.1   12410.00
     11    35448.85   90.95    1.003  0.30( 0.30) 0.99   39596.8   10600.00
     12    35342.40   96.31    0.980  0.30( 0.30) 0.99   41957.2   11201.00
     13    35108.11  101.23    0.958  0.30( 0.30) 0.99   43688.9   12201.00
     14    34843.69  103.95    0.947  0.30( 0.30) 0.99   44478.1   10410.00
     15    34311.80  108.12    0.928  0.30( 0.30) 0.99   45546.1   12231.00
     16    33948.73  110.94    0.916  0.30( 0.30) 0.99   46219.4   12101.10
     17    33232.87  115.69    0.896  0.30( 0.30) 0.99   47180.4   10400.00
     18    32086.44  123.38    0.870  0.30( 0.30) 0.99   48475.5   12010.00
     19    31045.79  129.10    0.859  0.30( 0.30) 0.99   48822.4   10210.00
     20    30596.49  132.05    0.853  0.30( 0.30) 0.99   48939.7   12000.00
     21    27562.82  156.38    0.804  0.30( 0.30) 0.99   49560.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      496.91    9.20    3.838  0.30( 0.16) 0.52     148.3     800.00
      2      445.43   12.80    3.054  0.30( 0.17) 0.57     168.2     818.00
      3      420.20   13.91    2.869  0.30( 0.17) 0.58     171.0     810.00
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18619.66    9.20    3.838  0.30( 0.29) 0.97    2995.0     800.00
      2    20064.17   12.80    3.054  0.30( 0.29) 0.98    4126.0     818.00
      3    20310.97   13.91    2.869  0.30( 0.29) 0.98    4473.2     810.00
      4    21718.85   18.48    2.377  0.30( 0.29) 0.98    5887.0     600.00
      5    26233.80   35.89    1.583  0.30( 0.30) 0.99   11888.3   40100.00
      6    27631.27   44.03    1.408  0.30( 0.30) 0.99   14716.3   11801.00
      7    29871.38   55.26    1.258  0.30( 0.30) 0.99   19300.7   11530.00
      8    30999.79   59.84    1.213  0.30( 0.30) 0.99   21615.2   11701.00
      9    31956.79   63.49    1.187  0.30( 0.30) 0.99   23708.4   11910.00
     10    34754.57   74.13    1.115  0.30( 0.30) 0.99   30402.6   10800.00
     11    35504.47   78.48    1.085  0.30( 0.30) 0.99   33347.9   11130.00
     12    35615.40   85.43    1.038  0.30( 0.30) 0.99   36946.3   12330.00
     13    35659.67   88.08    1.020  0.30( 0.30) 0.99   38389.1   12410.00
     14    35578.09   90.95    1.003  0.30( 0.30) 0.99   39767.8   10600.00
     15    35468.02   96.31    0.980  0.30( 0.30) 0.99   42128.2   11201.00
     16    35230.41  101.23    0.958  0.30( 0.30) 0.99   43859.9   12201.00
     17    34964.15  103.95    0.947  0.30( 0.30) 0.99   44649.1   10410.00
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     18    34429.45  108.12    0.928  0.30( 0.30) 0.99   45717.1   12231.00
     19    34064.46  110.94    0.916  0.30( 0.30) 0.99   46390.4   12101.10
     20    33345.40  115.69    0.896  0.30( 0.30) 0.99   47351.4   10400.00
     21    32195.00  123.38    0.870  0.30( 0.30) 0.99   48646.5   12010.00
     22    31152.57  129.10    0.859  0.30( 0.30) 0.99   48993.4   10210.00
     23    30702.35  132.05    0.853  0.30( 0.30) 0.99   49110.7   12000.00
     24    27661.10  156.38    0.804  0.30( 0.30) 0.99   49731.9   10100.00
    TOTAL AREA(ACRES) =     49731.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    35659.67  Tc(MIN.) =   88.083
  EFFECTIVE AREA(ACRES) =  38389.12  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.30      0.30     1.000    66
  PUBLIC PARK               B        1.30      0.30     0.850    56
  COMMERCIAL                B        1.40      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       12.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =   12.30
  EFFECTIVE AREA(ACRES) =  38407.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       26.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
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  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   17.43
  EFFECTIVE AREA(ACRES) =  38434.32   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.40      0.30     1.000    72
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.70      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    2.17
  EFFECTIVE AREA(ACRES) =  38437.62   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =  38448.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    9.46
  EFFECTIVE AREA(ACRES) =  38463.02   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.63
  CHANNEL FLOW THRU SUBAREA(CFS) =   35659.67
  FLOW VELOCITY(FEET/SEC.) =  14.92   FLOW DEPTH(FEET) =   9.63
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =   89.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18619.66   10.43    3.448  0.30( 0.29) 0.97    3068.9     800.00
      2    20064.17   13.99    2.855  0.30( 0.29) 0.98    4199.9     818.00
      3    20310.97   15.10    2.678  0.30( 0.29) 0.98    4547.1     810.00
      4    21718.85   19.65    2.274  0.30( 0.29) 0.98    5960.9     600.00
      5    26233.80   36.98    1.554  0.30( 0.30) 0.99   11962.2   40100.00
      6    27631.27   45.10    1.390  0.30( 0.30) 0.99   14790.2   11801.00
      7    29871.38   56.31    1.248  0.30( 0.30) 0.99   19374.6   11530.00
      8    30999.79   60.88    1.205  0.30( 0.30) 0.99   21689.1   11701.00
      9    31956.79   64.52    1.180  0.30( 0.30) 0.99   23782.3   11910.00
     10    34754.57   75.13    1.108  0.30( 0.30) 0.99   30476.5   10800.00
```

```
    11    35504.47   79.47    1.079  0.30( 0.30) 0.99   33421.8   11130.00
    12    35615.40   86.42    1.031  0.30( 0.30) 0.99   37020.2   12330.00
    13    35659.67   89.07    1.013  0.30( 0.30) 0.99   38463.0   12410.00
    14    35578.09   91.94    0.999  0.30( 0.30) 0.99   39841.7   10600.00
    15    35468.02   97.30    0.975  0.30( 0.30) 0.99   42202.1   11201.00
    16    35230.41  102.22    0.954  0.30( 0.30) 0.99   43933.8   12201.00
    17    34964.15  104.94    0.942  0.30( 0.30) 0.99   44723.0   10410.00
    18    34429.45  109.12    0.924  0.30( 0.30) 0.99   45791.0   12231.00
    19    34064.46  111.95    0.912  0.30( 0.30) 0.99   46464.3   12101.10
    20    33345.40  116.70    0.891  0.30( 0.30) 0.99   47425.3   10400.00
    21    32195.00  124.40    0.868  0.30( 0.30) 0.99   48720.4   12010.00
    22    31152.57  130.14    0.857  0.30( 0.30) 0.99   49067.3   10210.00
    23    30702.35  133.09    0.851  0.30( 0.30) 0.99   49184.6   12000.00
    24    27661.10  157.45    0.802  0.30( 0.30) 0.99   49805.8   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   35659.67  Tc(MIN.) =   89.07
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =   38463.02

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    5.18
  EFFECTIVE AREA(ACRES) =  38470.82   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    8.46
  EFFECTIVE AREA(ACRES) =  38483.62   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   35659.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   35659.67
  FLOW VELOCITY(FEET/SEC.) =  17.31   FLOW DEPTH(FEET) =   8.50
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =   91.15
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18619.66   13.02    3.016  0.30( 0.29) 0.97    3089.5     800.00
      2    20064.17   16.52    2.552  0.30( 0.29) 0.98    4220.5     818.00
      3    20310.97   17.62    2.454  0.30( 0.29) 0.98    4567.7     810.00
      4    21718.85   22.10    2.113  0.30( 0.29) 0.98    5981.5     600.00
      5    26233.80   39.29    1.492  0.30( 0.30) 0.99   11982.8   40100.00
      6    27631.27   47.37    1.354  0.30( 0.30) 0.99   14810.8   11801.00
      7    29871.38   58.52    1.226  0.30( 0.30) 0.99   19395.2   11530.00
      8    30999.79   63.05    1.190  0.30( 0.30) 0.99   21709.7   11701.00
      9    31956.79   66.68    1.166  0.30( 0.30) 0.99   23802.9   11910.00
     10    34754.57   77.22    1.094  0.30( 0.30) 0.99   30497.1   10800.00
     11    35504.47   81.55    1.064  0.30( 0.30) 0.99   33442.4   11130.00
     12    35615.40   88.50    1.017  0.30( 0.30) 0.99   37040.8   12330.00
     13    35659.67   91.15    1.002  0.30( 0.30) 0.99   38483.6   12410.00
     14    35578.09   94.02    0.990  0.30( 0.30) 0.99   39862.3   10600.00
     15    35468.02   99.39    0.966  0.30( 0.30) 0.99   42222.7   11201.00
     16    35230.41  104.31    0.945  0.30( 0.30) 0.99   43954.4   12201.00
     17    34964.15  107.03    0.933  0.30( 0.30) 0.99   44743.6   10410.00
     18    34429.45  111.22    0.915  0.30( 0.30) 0.99   45811.6   12231.00
     19    34064.46  114.06    0.903  0.30( 0.30) 0.99   46484.9   12101.10
     20    33345.40  118.83    0.882  0.30( 0.30) 0.99   47445.9   10400.00
     21    32195.00  126.55    0.864  0.30( 0.30) 0.99   48741.0   12010.00
     22    31152.57  132.31    0.852  0.30( 0.30) 0.99   49087.9   10210.00
     23    30702.35  135.27    0.846  0.30( 0.30) 0.99   49205.2   12000.00
     24    27661.10  159.72    0.798  0.30( 0.30) 0.99   49826.4   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   35659.67  Tc(MIN.) =   91.15
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
```

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 38483.62

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1
----------
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 4F50EVRL.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 1127.73 | 9.96 | 0.30( 0.24) | 0.79 | 379.9 | 940.00 |
| 2 | 1132.56 | 10.20 | 0.30( 0.24) | 0.79 | 387.3 | 930.00 |
| 3 | 1160.93 | 12.96 | 0.30( 0.25) | 0.82 | 463.7 | 910.00 |
| 4 | 1137.62 | 16.43 | 0.30( 0.25) | 0.85 | 548.3 | 920.00 |
| 5 | 1114.54 | 17.20 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 1085.95 | 17.85 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

TOTAL AREA(ACRES) = 553.8

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11
----------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18619.66 | 13.02 | 3.016 | 0.30( 0.29) | 0.97 | 3089.5 | 800.00 |
| 2 | 20064.17 | 16.52 | 2.552 | 0.30( 0.29) | 0.98 | 4220.5 | 818.00 |
| 3 | 20310.97 | 17.62 | 2.454 | 0.30( 0.29) | 0.98 | 4567.7 | 810.00 |
| 4 | 21718.85 | 22.10 | 2.113 | 0.30( 0.29) | 0.98 | 5981.5 | 600.00 |
| 5 | 26233.80 | 39.29 | 1.492 | 0.30( 0.30) | 0.99 | 11982.8 | 40100.00 |
| 6 | 27631.27 | 47.37 | 1.354 | 0.30( 0.30) | 0.99 | 14810.8 | 11801.00 |
| 7 | 29871.38 | 58.52 | 1.226 | 0.30( 0.30) | 0.99 | 19395.2 | 11530.00 |
| 8 | 30999.79 | 63.05 | 1.190 | 0.30( 0.30) | 0.99 | 21709.7 | 11701.00 |
| 9 | 31956.79 | 66.68 | 1.166 | 0.30( 0.30) | 0.99 | 23802.9 | 11910.00 |
| 10 | 34754.57 | 77.22 | 1.094 | 0.30( 0.30) | 0.99 | 30497.1 | 10800.00 |
| 11 | 35504.47 | 81.55 | 1.064 | 0.30( 0.30) | 0.99 | 33442.4 | 11130.00 |
| 12 | 35615.40 | 88.50 | 1.017 | 0.30( 0.30) | 0.99 | 37040.8 | 12330.00 |
| 13 | 35659.67 | 91.15 | 1.002 | 0.30( 0.30) | 0.99 | 38483.6 | 12410.00 |
| 14 | 35578.09 | 94.02 | 0.990 | 0.30( 0.30) | 0.99 | 39862.3 | 10600.00 |
| 15 | 35468.02 | 99.39 | 0.966 | 0.30( 0.30) | 0.99 | 42222.7 | 11201.00 |
| 16 | 35230.41 | 104.31 | 0.945 | 0.30( 0.30) | 0.99 | 43954.4 | 12201.00 |
| 17 | 34964.15 | 107.03 | 0.933 | 0.30( 0.30) | 0.99 | 44743.6 | 10410.00 |
| 18 | 34429.45 | 111.22 | 0.915 | 0.30( 0.30) | 0.99 | 45811.6 | 12231.00 |
| 19 | 34064.46 | 114.06 | 0.903 | 0.30( 0.30) | 0.99 | 46484.9 | 12101.10 |
| 20 | 33345.40 | 118.83 | 0.882 | 0.30( 0.30) | 0.99 | 47445.9 | 10400.00 |
| 21 | 32195.00 | 126.55 | 0.864 | 0.30( 0.30) | 0.99 | 48741.0 | 12010.00 |
| 22 | 31152.57 | 132.31 | 0.852 | 0.30( 0.30) | 0.99 | 49087.9 | 10210.00 |
| 23 | 30702.35 | 135.27 | 0.846 | 0.30( 0.30) | 0.99 | 49205.2 | 12000.00 |
| 24 | 27661.10 | 159.72 | 0.798 | 0.30( 0.30) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1127.73 | 9.96 | 3.535 | 0.30( 0.24) | 0.79 | 379.9 | 940.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 1132.56 | 10.20 | 3.486 | 0.30( 0.24) | 0.79 | 387.3 | 930.00 |
| 3 | 1160.93 | 12.96 | 3.028 | 0.30( 0.25) | 0.82 | 463.7 | 910.00 |
| 4 | 1137.62 | 16.43 | 2.560 | 0.30( 0.25) | 0.85 | 548.3 | 920.00 |
| 5 | 1114.54 | 17.20 | 2.491 | 0.30( 0.25) | 0.85 | 553.8 | 950.00 |
| 6 | 1085.95 | 17.85 | 2.433 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 18081.63 | 9.96 | 3.535 | 0.30( 0.28) | 0.94 | 2743.4 | 940.00 |
| 2 | 18235.44 | 10.20 | 3.486 | 0.30( 0.28) | 0.94 | 2807.9 | 930.00 |
| 3 | 19760.62 | 12.96 | 3.028 | 0.30( 0.28) | 0.95 | 3537.3 | 910.00 |
| 4 | 19780.14 | 13.02 | 3.016 | 0.30( 0.28) | 0.95 | 3554.8 | 800.00 |
| 5 | 21165.54 | 16.43 | 2.560 | 0.30( 0.29) | 0.96 | 4740.4 | 920.00 |
| 6 | 21199.17 | 16.52 | 2.552 | 0.30( 0.29) | 0.96 | 4769.4 | 818.00 |
| 7 | 21332.24 | 17.20 | 2.491 | 0.30( 0.29) | 0.96 | 4990.2 | 950.00 |
| 8 | 21407.15 | 17.62 | 2.454 | 0.30( 0.29) | 0.96 | 5121.4 | 810.00 |
| 9 | 21469.53 | 17.85 | 2.433 | 0.30( 0.29) | 0.96 | 5194.4 | 900.00 |
| 10 | 22644.95 | 22.10 | 2.113 | 0.30( 0.29) | 0.97 | 6535.3 | 600.00 |
| 11 | 26850.56 | 39.29 | 1.492 | 0.30( 0.29) | 0.98 | 12536.6 | 40100.00 |
| 12 | 28179.02 | 47.37 | 1.354 | 0.30( 0.29) | 0.98 | 15364.6 | 11801.00 |
| 13 | 30355.40 | 58.52 | 1.226 | 0.30( 0.30) | 0.99 | 19949.0 | 11530.00 |
| 14 | 31466.08 | 63.05 | 1.190 | 0.30( 0.30) | 0.99 | 22263.5 | 11701.00 |
| 15 | 32410.79 | 66.68 | 1.166 | 0.30( 0.30) | 0.99 | 24356.7 | 11910.00 |
| 16 | 35172.83 | 77.22 | 1.094 | 0.30( 0.30) | 0.99 | 31050.9 | 10800.00 |
| 17 | 35908.05 | 81.55 | 1.064 | 0.30( 0.30) | 0.99 | 33996.2 | 11130.00 |
| 18 | 35995.45 | 88.50 | 1.017 | 0.30( 0.30) | 0.99 | 37594.6 | 12330.00 |
| 19 | 36032.14 | 91.15 | 1.002 | 0.30( 0.30) | 0.99 | 39037.4 | 12410.00 |
| 20 | 35944.36 | 94.02 | 0.990 | 0.30( 0.30) | 0.99 | 40416.1 | 10600.00 |
| 21 | 35822.70 | 99.39 | 0.966 | 0.30( 0.30) | 0.99 | 42776.5 | 11201.00 |
| 22 | 35574.46 | 104.31 | 0.945 | 0.30( 0.30) | 0.99 | 44508.2 | 12201.00 |
| 23 | 35302.32 | 107.03 | 0.933 | 0.30( 0.30) | 0.99 | 45297.4 | 10410.00 |
| 24 | 34758.58 | 111.22 | 0.915 | 0.30( 0.30) | 0.99 | 46365.4 | 12231.00 |
| 25 | 34387.46 | 114.06 | 0.903 | 0.30( 0.30) | 0.99 | 47038.7 | 12101.10 |
| 26 | 33658.09 | 118.83 | 0.882 | 0.30( 0.30) | 0.99 | 47999.7 | 10400.00 |
| 27 | 32498.63 | 126.55 | 0.864 | 0.30( 0.30) | 0.99 | 49294.8 | 12010.00 |
| 28 | 31450.46 | 132.31 | 0.852 | 0.30( 0.30) | 0.99 | 49641.8 | 10210.00 |
| 29 | 30997.29 | 135.27 | 0.846 | 0.30( 0.30) | 0.99 | 49759.0 | 12000.00 |
| 30 | 27931.67 | 159.72 | 0.798 | 0.30( 0.30) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36032.14 Tc(MIN.) = 91.151
EFFECTIVE AREA(ACRES) = 39037.42 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

**********
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 91.15
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ | SCS SOIL | AREA | Fp | Ap | SCS |
|---|---|---|---|---|---|

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.60      0.30     1.000    72
  COMMERCIAL                 B        1.10      0.30     0.100    56
  PUBLIC PARK                B        0.80      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.666
  SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =    2.53
  EFFECTIVE AREA(ACRES) =  39040.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50383.7       PEAK FLOW RATE(CFS) =   36032.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.15
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.002
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.50      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.80      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    5.37
  EFFECTIVE AREA(ACRES) =  39049.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50392.2       PEAK FLOW RATE(CFS) =   36032.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.15
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.002
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
```



```
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.30      0.30     1.000    66
  PUBLIC PARK                B        3.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        3.90      0.30     1.000    72
  PUBLIC PARK                B        5.90      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.969
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =   29.77
  EFFECTIVE AREA(ACRES) =  39095.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50438.7       PEAK FLOW RATE(CFS) =   36032.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    50438.7  TC(MIN.) =     91.15
  EFFECTIVE AREA(ACRES) =  39095.92  AREA-AVERAGED Fm(INCH/HR)=  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.990
  PEAK FLOW RATE(CFS)   =   36032.14

  ** PEAK FLOW RATE TABLE **
   STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    18081.63    9.96    3.535  0.30( 0.28) 0.94    2801.9     940.00
      2    18235.44   10.20    3.486  0.30( 0.28) 0.94    2866.4     930.00
      3    19760.62   12.96    3.028  0.30( 0.28) 0.95    3595.8     910.00
      4    19780.14   13.02    3.016  0.30( 0.28) 0.95    3613.3     800.00
      5    21165.54   16.43    2.560  0.30( 0.29) 0.96    4798.9     920.00
      6    21199.17   16.52    2.552  0.30( 0.29) 0.96    4827.9     818.00
      7    21332.24   17.20    2.491  0.30( 0.29) 0.96    5048.7     950.00
      8    21407.15   17.62    2.454  0.30( 0.29) 0.96    5179.9     810.00
      9    21469.53   17.85    2.433  0.30( 0.29) 0.96    5252.9     900.00
     10    22644.95   22.10    2.113  0.30( 0.29) 0.97    6593.8     600.00
     11    26850.56   39.29    1.492  0.30( 0.29) 0.98   12595.1   40100.00
     12    28179.02   47.37    1.354  0.30( 0.29) 0.98   15423.1   11801.00
     13    30355.40   58.52    1.226  0.30( 0.30) 0.99   20007.5   11530.00
     14    31466.08   63.05    1.190  0.30( 0.30) 0.99   22322.0   11701.00
     15    32410.79   66.68    1.166  0.30( 0.30) 0.99   24415.2   11910.00
     16    35172.83   77.22    1.094  0.30( 0.30) 0.99   31109.4   10800.00
     17    35908.05   81.55    1.064  0.30( 0.30) 0.99   34054.7   11130.00
     18    35995.45   88.50    1.017  0.30( 0.30) 0.99   37653.1   12330.00
     19    36032.14   91.15    1.002  0.30( 0.30) 0.99   39095.9   12410.00
     20    35944.36   94.02    0.990  0.30( 0.30) 0.99   40474.6   10600.00
     21    35822.70   99.39    0.966  0.30( 0.30) 0.99   42835.0   11201.00
     22    35574.46  104.31    0.945  0.30( 0.30) 0.99   44566.7   12201.00
     23    35302.32  107.03    0.933  0.30( 0.30) 0.99   45355.9   10410.00
     24    34758.58  111.22    0.915  0.30( 0.30) 0.99   46423.9   12231.00
     25    34387.46  114.06    0.903  0.30( 0.30) 0.99   47097.2   12101.10
     26    33658.09  118.83    0.882  0.30( 0.30) 0.99   48058.2   10400.00
     27    32498.63  126.55    0.864  0.30( 0.30) 0.99   49353.3   12010.00
     28    31450.46  132.31    0.852  0.30( 0.30) 0.99   49700.2   10210.00
     29    30997.29  135.27    0.846  0.30( 0.30) 0.99   49817.5   12000.00
     30    27931.67  159.72    0.798  0.30( 0.30) 0.99   50438.7   10100.00
============================================================================
```

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 50-YR EV FEB 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI50EV27.DAT
  TIME/DATE OF STUDY: 09:54 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.453
   2)   10.00;  3.490
   3)   15.00;  2.670
   4)   20.00;  2.230
   5)   25.00;  1.926
   6)   30.00;  1.733
   7)   40.00;  1.467
   8)   50.00;  1.305
   9)   60.00;  1.202
  10)   90.00;  0.999
  11)  120.00;  0.869
  12)  180.00;  0.747
  13)  360.00;  0.555
  14) 1200.00;  0.244
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    19780.14   13.02  0.30( 0.28) 0.95    3613.3     800.00
      2    21469.53   17.85  0.30( 0.29) 0.96    5252.9     900.00
      3    22644.95   22.10  0.30( 0.29) 0.97    6593.8     600.00
      4    26850.56   39.29  0.30( 0.29) 0.98   12595.1   40100.00
      5    28179.02   47.37  0.30( 0.29) 0.98   15423.1   11801.00
      6    30355.40   58.52  0.30( 0.30) 0.99   20007.5   11530.00
      7    31466.08   63.05  0.30( 0.30) 0.99   22322.0   11701.00
      8    32410.79   66.68  0.30( 0.30) 0.99   24415.2   11910.00
      9    35172.83   77.22  0.30( 0.30) 0.99   31109.4   10800.00
     10    35908.05   81.55  0.30( 0.30) 0.99   34054.7   11130.00
     11    36032.14   91.15  0.30( 0.30) 0.99   39095.9   12410.00
     12    35822.70   99.39  0.30( 0.30) 0.99   42835.0   11201.00
     13    35574.46  104.31  0.30( 0.30) 0.99   44566.7   12201.00
     14    34758.58  111.22  0.30( 0.30) 0.99   46423.9   12231.00
     15    34387.46  114.06  0.30( 0.30) 0.99   47097.2   12101.10
     16    33658.09  118.83  0.30( 0.30) 0.99   48058.2   10400.00
     17    32498.63  126.55  0.30( 0.30) 0.99   49353.3   12010.00
     18    31450.46  132.31  0.30( 0.30) 0.99   49700.2   10210.00
     19    30997.29  135.27  0.30( 0.30) 0.99   49817.5   12000.00
     20    27931.67  159.72  0.30( 0.30) 0.99   50438.7   10100.00
   TOTAL AREA(ACRES) =    50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    19780.14   13.02  0.30( 0.28) 0.95    3613.3     800.00
      2    21469.53   17.85  0.30( 0.29) 0.96    5252.9     900.00
      3    22644.95   22.10  0.30( 0.29) 0.97    6593.8     600.00
      4    26850.56   39.29  0.30( 0.29) 0.98   12595.1   40100.00
      5    28179.02   47.37  0.30( 0.29) 0.98   15423.1   11801.00
      6    30355.40   58.52  0.30( 0.30) 0.99   20007.5   11530.00
      7    31466.08   63.05  0.30( 0.30) 0.99   22322.0   11701.00
      8    32410.79   66.68  0.30( 0.30) 0.99   24415.2   11910.00
      9    35172.83   77.22  0.30( 0.30) 0.99   31109.4   10800.00
     10    35908.05   81.55  0.30( 0.30) 0.99   34054.7   11130.00
     11    36032.14   91.15  0.30( 0.30) 0.99   39095.9   12410.00
     12    35822.70   99.39  0.30( 0.30) 0.99   42835.0   11201.00
     13    35574.46  104.31  0.30( 0.30) 0.99   44566.7   12201.00
```

```
     14    34758.58  111.22  0.30( 0.30) 0.99   46423.9   12231.00
     15    34387.46  114.06  0.30( 0.30) 0.99   47097.2   12101.10
     16    33658.09  118.83  0.30( 0.30) 0.99   48058.2   10400.00
     17    32498.63  126.55  0.30( 0.30) 0.99   49353.3   12010.00
     18    31450.46  132.31  0.30( 0.30) 0.99   49700.2   10210.00
     19    30997.29  135.27  0.30( 0.30) 0.99   49817.5   12000.00
     20    27931.67  159.72  0.30( 0.30) 0.99   50438.7   10100.00
    TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.989
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   36044.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.78
  AVERAGE FLOW DEPTH(FEET) =   8.80   TRAVEL TIME(MIN.) =   1.25
  Tc(MIN.) =   92.40
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   23.74
  EFFECTIVE AREA(ACRES) =  39132.02     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =   36032.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.80   FLOW VELOCITY(FEET/SEC.) =  16.78
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.21
  CHANNEL FLOW THRU SUBAREA(CFS) =   36032.14
  FLOW VELOCITY(FEET/SEC.) =  15.91   FLOW DEPTH(FEET) =   9.21
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   92.56
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   92.56
  RAINFALL INTENSITY(INCH/HR) =   0.99
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   39132.02
  TOTAL STREAM AREA(ACRES) =   50474.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   36032.14

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.849
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.05
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     15.05

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.72
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.559
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       26.94      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.49
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.42
 AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   2.36
 Tc(MIN.) =   16.27
 SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   54.76
 EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      68.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   6.32
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.95
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.352
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.73      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.29
 AVERAGE FLOW DEPTH(FEET) =   0.94   TRAVEL TIME(MIN.) =   2.35
 Tc(MIN.) =   18.61
 SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   27.20
 EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      89.08
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.99

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   7.52
```



```
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.63
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.178
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      105.64      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     178.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.52
 AVERAGE FLOW DEPTH(FEET) =   1.59   TRAVEL TIME(MIN.) =   2.25
 Tc(MIN.) =   20.86
 SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  178.52
 EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     260.03
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.96

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.96   FLOW VELOCITY(FEET/SEC.) =   9.54
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.58
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.035
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.13      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     359.33
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.33
```

AVERAGE FLOW DEPTH(FEET) = 2.55 TRAVEL TIME(MIN.) = 2.35
Tc(MIN.) = 23.21
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 198.49
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 438.74
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.84

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.84 FLOW VELOCITY(FEET/SEC.) = 9.87
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 23.21
RAINFALL INTENSITY(INCH/HR) = 2.03
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 281.00
TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 438.74

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 19780.14 | 14.74 | 2.712 | 0.30( 0.28) | 0.95 | 3649.4 | 800.00 |
| 1 | 21469.53 | 19.52 | 2.272 | 0.30( 0.29) | 0.96 | 5289.0 | 900.00 |
| 1 | 22644.95 | 23.75 | 2.002 | 0.30( 0.29) | 0.97 | 6629.9 | 600.00 |
| 1 | 26850.56 | 40.84 | 1.453 | 0.30( 0.29) | 0.98 | 12631.2 | 40100.00 |
| 1 | 28179.02 | 48.89 | 1.323 | 0.30( 0.29) | 0.98 | 15459.2 | 11801.00 |
| 1 | 30355.40 | 60.01 | 1.202 | 0.30( 0.30) | 0.99 | 20043.6 | 11530.00 |
| 1 | 31466.08 | 64.53 | 1.171 | 0.30( 0.30) | 0.99 | 22358.1 | 11701.00 |
| 1 | 32410.79 | 68.13 | 1.147 | 0.30( 0.30) | 0.99 | 24451.3 | 11910.00 |
| 1 | 35172.83 | 78.64 | 1.076 | 0.30( 0.30) | 0.99 | 31145.5 | 10800.00 |
| 1 | 35908.05 | 82.96 | 1.047 | 0.30( 0.30) | 0.99 | 34090.8 | 11130.00 |
| 1 | 36032.14 | 92.56 | 0.988 | 0.30( 0.30) | 0.99 | 39132.0 | 12410.00 |
| 1 | 35822.70 | 100.80 | 0.952 | 0.30( 0.30) | 0.99 | 42871.1 | 11201.00 |
| 1 | 35574.46 | 105.72 | 0.931 | 0.30( 0.30) | 0.99 | 44602.8 | 12201.00 |
| 1 | 34758.58 | 112.64 | 0.901 | 0.30( 0.30) | 0.99 | 46460.0 | 12231.00 |
| 1 | 34387.46 | 115.49 | 0.889 | 0.30( 0.30) | 0.99 | 47133.3 | 12101.10 |
| 1 | 33658.09 | 120.27 | 0.868 | 0.30( 0.30) | 0.99 | 48094.3 | 10400.00 |
| 1 | 32498.63 | 128.01 | 0.853 | 0.30( 0.30) | 0.99 | 49389.4 | 12010.00 |
| 1 | 31450.46 | 133.78 | 0.841 | 0.30( 0.30) | 0.99 | 49736.4 | 10210.00 |
| 1 | 30997.29 | 136.75 | 0.835 | 0.30( 0.30) | 0.99 | 49853.6 | 12000.00 |
| 1 | 27931.67 | 161.25 | 0.785 | 0.30( 0.30) | 0.99 | 50474.8 | 10100.00 |
| 2 | 438.74 | 23.21 | 2.035 | 0.30( 0.30) | 1.00 | 281.0 | 12710.00 |

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



** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20167.63 | 14.74 | 2.712 | 0.30( 0.29) | 0.95 | 3827.9 | 800.00 |
| 2 | 21889.01 | 19.52 | 2.272 | 0.30( 0.29) | 0.96 | 5525.3 | 900.00 |
| 3 | 22934.17 | 23.21 | 2.035 | 0.30( 0.29) | 0.97 | 6740.4 | 12710.00 |
| 4 | 23075.42 | 23.75 | 2.002 | 0.30( 0.29) | 0.97 | 6910.9 | 600.00 |
| 5 | 27142.27 | 40.84 | 1.453 | 0.30( 0.29) | 0.98 | 12912.2 | 40100.00 |
| 6 | 28437.72 | 48.89 | 1.323 | 0.30( 0.29) | 0.98 | 15740.2 | 11801.00 |
| 7 | 30583.51 | 60.01 | 1.202 | 0.30( 0.30) | 0.99 | 20324.6 | 11530.00 |
| 8 | 31686.45 | 64.53 | 1.171 | 0.30( 0.30) | 0.99 | 22639.1 | 11701.00 |
| 9 | 32624.99 | 68.13 | 1.147 | 0.30( 0.30) | 0.99 | 24732.3 | 11910.00 |
| 10 | 35369.05 | 78.64 | 1.076 | 0.30( 0.30) | 0.99 | 31426.5 | 10800.00 |
| 11 | 36096.88 | 82.96 | 1.047 | 0.30( 0.30) | 0.99 | 34371.8 | 11130.00 |
| 12 | 36206.12 | 92.56 | 0.988 | 0.30( 0.30) | 0.99 | 39413.0 | 12410.00 |
| 13 | 35987.65 | 100.80 | 0.952 | 0.30( 0.30) | 0.99 | 43152.1 | 11201.00 |
| 14 | 35734.01 | 105.72 | 0.931 | 0.30( 0.30) | 0.99 | 44883.8 | 12201.00 |
| 15 | 34910.54 | 112.64 | 0.901 | 0.30( 0.30) | 0.99 | 46741.0 | 12231.00 |
| 16 | 34536.30 | 115.49 | 0.889 | 0.30( 0.30) | 0.99 | 47414.3 | 12101.10 |
| 17 | 33801.85 | 120.27 | 0.868 | 0.30( 0.30) | 0.99 | 48375.3 | 10400.00 |
| 18 | 32638.41 | 128.01 | 0.853 | 0.30( 0.30) | 0.99 | 49670.4 | 12010.00 |
| 19 | 31587.27 | 133.78 | 0.841 | 0.30( 0.30) | 0.99 | 50017.4 | 10210.00 |
| 20 | 31132.58 | 136.75 | 0.835 | 0.30( 0.30) | 0.99 | 50134.6 | 12000.00 |
| 21 | 28054.36 | 161.25 | 0.785 | 0.30( 0.30) | 0.99 | 50755.8 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36206.12 Tc(MIN.) = 92.56
EFFECTIVE AREA(ACRES) = 39413.02 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.39
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.976
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER "OPEN BRUSH" | B | 0.20 | 0.30 | 1.000 | 66 |
| NATURAL FAIR COVER "WOODLAND,GRASS" | B | 0.30 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.30 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |

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  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   36206.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.60
  AVERAGE FLOW DEPTH(FEET) =   9.39   TRAVEL TIME(MIN.) =   2.85
  Tc(MIN.) =   95.41
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.11
  EFFECTIVE AREA(ACRES) =  39414.72     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50757.5         PEAK FLOW RATE(CFS) =   36206.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.39   FLOW VELOCITY(FEET/SEC.) =  15.60
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.41
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.976
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.50      0.30     1.000    66
  COMMERCIAL                  B        1.40      0.30     0.100    56
  COMMERCIAL                  B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   10.47
  EFFECTIVE AREA(ACRES) =  39430.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =   36206.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.41
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.976
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
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  "WOODLAND,GRASS"            B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"      B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   37.76
  EFFECTIVE AREA(ACRES) =  39492.52   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =   36206.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3C50EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)     NODE
      1     2284.42   12.60  0.30( 0.13) 0.42     864.0     410.00
      2     2302.60   13.97  0.30( 0.13) 0.42     943.2     420.00
      3     2379.84   17.91  0.30( 0.13) 0.42    1155.4     310.00
      4     2377.12   18.33  0.30( 0.13) 0.42    1172.9     400.00
      5     2298.86   20.99  0.30( 0.13) 0.42    1248.1     430.00
      6     2283.93   21.62  0.30( 0.13) 0.42    1265.5     300.00
      7     2281.43   21.71  0.30( 0.13) 0.42    1267.7     320.00
      8     1979.90   27.44  0.30( 0.13) 0.43    1292.3     390.00
    TOTAL AREA(ACRES) =     1292.3

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
      1    20167.63   18.21    2.388  0.30( 0.29) 0.95    3907.4     800.00
      2    21889.01   22.89    2.054  0.30( 0.29) 0.96    5604.8     900.00
      3    22934.17   26.53    1.867  0.30( 0.29) 0.97    6819.9   12710.00
      4    23075.42   27.06    1.847  0.30( 0.29) 0.97    6990.4     600.00
      5    27142.27   43.97    1.403  0.30( 0.29) 0.98   12991.7   40100.00
      6    28437.72   51.98    1.285  0.30( 0.29) 0.98   15819.7   11801.00
      7    30583.51   63.02    1.182  0.30( 0.30) 0.99   20404.1   11530.00
      8    31686.45   67.50    1.151  0.30( 0.30) 0.99   22718.6   11701.00
      9    32624.99   71.08    1.127  0.30( 0.30) 0.99   24811.8   11910.00
     10    35369.05   81.51    1.056  0.30( 0.30) 0.99   31506.0   10800.00
     11    36096.88   85.82    1.027  0.30( 0.30) 0.99   34451.3   11130.00
     12    36206.12   95.41    0.976  0.30( 0.30) 0.99   39492.5   12410.00
     13    35987.65  103.65    0.940  0.30( 0.30) 0.99   43231.6   11201.00
     14    35734.01  108.58    0.918  0.30( 0.30) 0.99   44963.3   12201.00
     15    34910.54  115.53    0.888  0.30( 0.30) 0.99   46820.5   12231.00
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   16    34536.30  118.38    0.876  0.30( 0.30) 0.99   47493.8   12101.10
   17    33801.85  123.18    0.863  0.30( 0.30) 0.99   48454.8   10400.00
   18    32638.41  130.96    0.847  0.30( 0.30) 0.99   49749.9   12010.00
   19    31587.27  136.77    0.835  0.30( 0.30) 0.99   50096.9   10210.00
   20    31132.58  139.75    0.829  0.30( 0.30) 0.99   50214.1   12000.00
   21    28054.36  164.35    0.779  0.30( 0.30) 0.99   50835.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2284.42   12.60    3.064  0.30( 0.13) 0.42     864.0     410.00
    2     2302.60   13.97    2.839  0.30( 0.13) 0.42     943.2     420.00
    3     2379.84   17.91    2.414  0.30( 0.13) 0.42    1155.4     310.00
    4     2377.12   18.33    2.377  0.30( 0.13) 0.42    1172.9     400.00
    5     2298.86   20.99    2.170  0.30( 0.13) 0.42    1248.1     430.00
    6     2283.93   21.62    2.132  0.30( 0.13) 0.42    1265.5     300.00
    7     2281.43   21.71    2.126  0.30( 0.13) 0.42    1267.7     320.00
    8     1979.90   27.44    1.832  0.30( 0.13) 0.43    1292.3     390.00
LONGEST FLOWPATH FROM NODE    390.00 TO NODE  12720.50 =   13248.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20726.38   12.60    3.064  0.30( 0.25) 0.82    3567.2     410.00
    2    21097.06   13.97    2.839  0.30( 0.25) 0.82    3941.2     420.00
    3    22465.59   17.91    2.414  0.30( 0.25) 0.83    4999.3     310.00
    4    22545.53   18.21    2.388  0.30( 0.25) 0.83    5075.3     800.00
    5    22588.53   18.33    2.377  0.30( 0.25) 0.83    5123.5     400.00
    6    23487.34   20.99    2.170  0.30( 0.25) 0.85    6162.2     430.00
    7    23703.68   21.62    2.132  0.30( 0.26) 0.85    6407.6     300.00
    8    23735.92   21.71    2.126  0.30( 0.26) 0.85    6444.1     320.00
    9    24108.27   22.89    2.054  0.30( 0.26) 0.86    6877.6     900.00
   10    24962.23   26.53    1.867  0.30( 0.27) 0.88    8108.2   12710.00
   11    25075.59   27.06    1.847  0.30( 0.27) 0.89    8281.1     600.00
   12    25147.98   27.44    1.832  0.30( 0.27) 0.89    8419.5     390.00
   13    28623.22   43.97    1.403  0.30( 0.28) 0.93   14284.0   40100.00
   14    29781.40   51.98    1.285  0.30( 0.28) 0.94   17112.0   11801.00
   15    31807.33   63.02    1.182  0.30( 0.29) 0.95   21696.4   11530.00
   16    32874.98   67.50    1.151  0.30( 0.29) 0.96   24010.9   11701.00
   17    33785.36   71.08    1.127  0.30( 0.29) 0.96   26104.1   11910.00
   18    36447.32   81.51    1.056  0.30( 0.29) 0.97   32798.3   10800.00
   19    37141.28   85.82    1.027  0.30( 0.29) 0.97   35743.6   11130.00
   20    37190.35   95.41    0.976  0.30( 0.29) 0.97   40784.8   12410.00
   21    36930.32  103.65    0.940  0.30( 0.29) 0.97   44523.9   11201.00
   22    36651.83  108.58    0.918  0.30( 0.29) 0.97   46255.6   12201.00
   23    35793.36  115.53    0.888  0.30( 0.29) 0.97   48112.8   12231.00
   24    35404.73  118.38    0.876  0.30( 0.29) 0.97   48786.1   12101.10
   25    34654.61  123.18    0.863  0.30( 0.29) 0.97   49747.1   10400.00
   26    33472.79  130.96    0.847  0.30( 0.29) 0.97   51042.2   12010.00
   27    32407.91  136.77    0.835  0.30( 0.29) 0.98   51389.2   10210.00
   28    31946.17  139.75    0.829  0.30( 0.29) 0.98   51506.4   12000.00
   29    28809.76  164.35    0.779  0.30( 0.29) 0.98   52127.6   10100.00
  TOTAL AREA(ACRES) =     52127.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    37190.35  Tc(MIN.) =   95.408
EFFECTIVE AREA(ACRES) =  40784.82  AREA-AVERAGED Fm(INCH/HR) =  0.29
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  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    52127.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12722.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    258.00  DOWNSTREAM(FEET) =    255.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1269.00   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.967
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                     B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                     B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.30      0.30     1.000    66
  COMMERCIAL                  B        0.40      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.732
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   37190.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.24
  AVERAGE FLOW DEPTH(FEET) =  12.59   TRAVEL TIME(MIN.) =   1.88
  Tc(MIN.) =   97.29
  SUBAREA AREA(ACRES) =     1.40       SUBAREA RUNOFF(CFS) =    0.94
  EFFECTIVE AREA(ACRES) =  40786.22     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52129.0         PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.59   FLOW VELOCITY(FEET/SEC.) =  11.24
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12722.00 =  109948.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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==============================================================================
  MAINLINE Tc(MIN.) =   97.29
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.967
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.60      0.30     1.000    86
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    2.79
  EFFECTIVE AREA(ACRES) =  40790.42   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52133.2       PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   97.29
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.967
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   12.13
  EFFECTIVE AREA(ACRES) =  40810.62   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52153.4       PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
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  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.42
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
  COMMERCIAL                 B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   37191.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.15
  AVERAGE FLOW DEPTH(FEET) =  10.42   TRAVEL TIME(MIN.) =   0.73
  Tc(MIN.) =   98.02
  SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    3.13
  EFFECTIVE AREA(ACRES) =  40815.22     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52158.0         PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.42   FLOW VELOCITY(FEET/SEC.) =  14.15
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   98.02
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   16.15
  EFFECTIVE AREA(ACRES) =  40841.22   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52184.0       PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.02
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   23.31
  EFFECTIVE AREA(ACRES) =  40880.22   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52223.0       PEAK FLOW RATE(CFS) =   37190.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   98.02
  RAINFALL INTENSITY(INCH/HR) =   0.96
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =   40880.22
  TOTAL STREAM AREA(ACRES) =   52222.99
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   37190.35

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
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  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.863
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.60
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     14.60

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.85
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   3.34
  Tc(MIN.) =   17.16
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   67.92
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      80.34
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.14   FLOW VELOCITY(FEET/SEC.) =   5.73
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.223
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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       59.52      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     131.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.53
 AVERAGE FLOW DEPTH(FEET) =   1.54   TRAVEL TIME(MIN.) =   2.95
 Tc(MIN.) =   20.11
 SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =  103.02
 EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     173.89
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.80

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.80   FLOW VELOCITY(FEET/SEC.) =   7.12
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.30
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.975
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       64.05      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     222.24
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.76
 AVERAGE FLOW DEPTH(FEET) =   2.26   TRAVEL TIME(MIN.) =   4.08
 Tc(MIN.) =   24.19
 SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   96.56
 EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     248.03
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.40   FLOW VELOCITY(FEET/SEC.) =   6.98
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.
```



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****************************************************************************
 FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.21
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.813
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       26.02      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     265.75
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.38
 AVERAGE FLOW DEPTH(FEET) =   2.20   TRAVEL TIME(MIN.) =   3.74
 Tc(MIN.) =   27.93
 SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   35.43
 EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     259.42
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.18

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.18   FLOW VELOCITY(FEET/SEC.) =   8.30
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   27.93
 RAINFALL INTENSITY(INCH/HR) =   1.81
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =     190.54
 TOTAL STREAM AREA(ACRES) =     190.54
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     259.42

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    20726.38   15.76    2.603  0.30( 0.25) 0.83    3662.6     410.00
     1    21097.06   17.11    2.484  0.30( 0.25) 0.83    4036.6     420.00
     1    22465.59   20.99    2.170  0.30( 0.25) 0.83    5094.7     310.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 22545.53 | 21.28 | 2.152 | 0.30( 0.25) | 0.83 | 5170.7 | 800.00 |
| 1 | 22588.53 | 21.40 | 2.145 | 0.30( 0.25) | 0.83 | 5218.9 | 400.00 |
| 1 | 23487.34 | 24.02 | 1.986 | 0.30( 0.26) | 0.85 | 6257.6 | 430.00 |
| 1 | 23703.68 | 24.64 | 1.948 | 0.30( 0.26) | 0.86 | 6503.0 | 300.00 |
| 1 | 23735.92 | 24.73 | 1.942 | 0.30( 0.26) | 0.86 | 6539.5 | 320.00 |
| 1 | 24108.27 | 25.90 | 1.891 | 0.30( 0.26) | 0.87 | 6973.0 | 900.00 |
| 1 | 24962.23 | 29.50 | 1.752 | 0.30( 0.27) | 0.88 | 8203.6 | 12710.00 |
| 1 | 25075.59 | 30.03 | 1.732 | 0.30( 0.27) | 0.89 | 8376.5 | 600.00 |
| 1 | 25147.98 | 30.41 | 1.722 | 0.30( 0.27) | 0.89 | 8514.9 | 390.00 |
| 1 | 28623.22 | 46.82 | 1.357 | 0.30( 0.28) | 0.93 | 14379.4 | 40100.00 |
| 1 | 29781.40 | 54.79 | 1.256 | 0.30( 0.28) | 0.94 | 17207.4 | 11801.00 |
| 1 | 31807.33 | 65.77 | 1.163 | 0.30( 0.29) | 0.95 | 21791.8 | 11530.00 |
| 1 | 32874.98 | 70.22 | 1.133 | 0.30( 0.29) | 0.96 | 24106.3 | 11701.00 |
| 1 | 33785.36 | 73.78 | 1.109 | 0.30( 0.29) | 0.96 | 26199.5 | 11910.00 |
| 1 | 36447.32 | 84.15 | 1.039 | 0.30( 0.29) | 0.97 | 32893.7 | 10800.00 |
| 1 | 37141.28 | 88.43 | 1.010 | 0.30( 0.29) | 0.97 | 35839.0 | 11130.00 |
| 1 | 37190.35 | 98.02 | 0.964 | 0.30( 0.29) | 0.97 | 40880.2 | 12410.00 |
| 1 | 36930.32 | 106.28 | 0.928 | 0.30( 0.29) | 0.97 | 44619.3 | 11201.00 |
| 1 | 36651.83 | 111.21 | 0.907 | 0.30( 0.29) | 0.97 | 46351.0 | 12201.00 |
| 1 | 35793.36 | 118.18 | 0.877 | 0.30( 0.29) | 0.97 | 48208.2 | 12231.00 |
| 1 | 35404.73 | 121.04 | 0.867 | 0.30( 0.29) | 0.97 | 48881.5 | 12101.10 |
| 1 | 34654.61 | 125.86 | 0.857 | 0.30( 0.29) | 0.97 | 49842.5 | 10400.00 |
| 1 | 33472.79 | 133.66 | 0.841 | 0.30( 0.29) | 0.97 | 51137.6 | 12010.00 |
| 1 | 32407.91 | 139.50 | 0.829 | 0.30( 0.29) | 0.98 | 51484.6 | 10210.00 |
| 1 | 31946.17 | 142.49 | 0.823 | 0.30( 0.29) | 0.98 | 51601.8 | 12000.00 |
| 1 | 28809.76 | 167.19 | 0.773 | 0.30( 0.29) | 0.98 | 52223.0 | 10100.00 |
| 2 | 259.42 | 27.93 | 1.813 | 0.30( 0.30) | 1.00 | 190.5 | 12730.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20949.21 | 15.76 | 2.603 | 0.30( 0.25) | 0.83 | 3770.1 | 410.00 |
| 2 | 21326.52 | 17.11 | 2.484 | 0.30( 0.25) | 0.83 | 4153.4 | 420.00 |
| 3 | 22706.54 | 20.99 | 2.170 | 0.30( 0.25) | 0.84 | 5237.9 | 310.00 |
| 4 | 22787.51 | 21.28 | 2.152 | 0.30( 0.25) | 0.84 | 5315.9 | 800.00 |
| 5 | 22830.90 | 21.40 | 2.145 | 0.30( 0.25) | 0.84 | 5364.9 | 400.00 |
| 6 | 23735.90 | 24.02 | 1.986 | 0.30( 0.26) | 0.86 | 6421.4 | 430.00 |
| 7 | 23952.95 | 24.64 | 1.948 | 0.30( 0.26) | 0.86 | 6671.0 | 300.00 |
| 8 | 23985.27 | 24.73 | 1.942 | 0.30( 0.26) | 0.86 | 6708.2 | 320.00 |
| 9 | 24361.29 | 25.90 | 1.891 | 0.30( 0.26) | 0.87 | 7149.7 | 900.00 |
| 10 | 24849.61 | 27.93 | 1.813 | 0.30( 0.26) | 0.88 | 7858.0 | 12730.00 |
| 11 | 25211.26 | 29.50 | 1.752 | 0.30( 0.27) | 0.89 | 8394.2 | 12710.00 |
| 12 | 25321.20 | 30.03 | 1.732 | 0.30( 0.27) | 0.89 | 8567.0 | 600.00 |
| 13 | 25391.85 | 30.41 | 1.722 | 0.30( 0.27) | 0.89 | 8705.4 | 390.00 |
| 14 | 28804.40 | 46.82 | 1.357 | 0.30( 0.28) | 0.93 | 14570.0 | 40100.00 |
| 15 | 29945.29 | 54.79 | 1.256 | 0.30( 0.28) | 0.94 | 17397.9 | 11801.00 |
| 16 | 31955.32 | 65.77 | 1.163 | 0.30( 0.29) | 0.95 | 21982.3 | 11530.00 |
| 17 | 33017.80 | 70.22 | 1.133 | 0.30( 0.29) | 0.96 | 24296.8 | 11701.00 |
| 18 | 33924.05 | 73.78 | 1.109 | 0.30( 0.29) | 0.96 | 26390.0 | 11910.00 |
| 19 | 36573.98 | 84.15 | 1.039 | 0.30( 0.29) | 0.97 | 33084.2 | 10800.00 |
| 20 | 37262.96 | 88.43 | 1.010 | 0.30( 0.29) | 0.97 | 36029.6 | 11130.00 |
| 21 | 37304.26 | 98.02 | 0.964 | 0.30( 0.29) | 0.97 | 41070.8 | 12410.00 |
| 22 | 37038.10 | 106.28 | 0.928 | 0.30( 0.29) | 0.97 | 44809.9 | 11201.00 |
| 23 | 36755.94 | 111.21 | 0.907 | 0.30( 0.29) | 0.97 | 46541.6 | 12201.00 |
| 24 | 35892.29 | 118.18 | 0.877 | 0.30( 0.29) | 0.97 | 48398.7 | 12231.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | 35501.95 | 121.04 | 0.867 | 0.30( 0.29) | 0.97 | 49072.0 | 12101.10 |
| 26 | 34750.14 | 125.86 | 0.857 | 0.30( 0.29) | 0.97 | 50033.0 | 10400.00 |
| 27 | 33565.60 | 133.66 | 0.841 | 0.30( 0.29) | 0.97 | 51328.1 | 12010.00 |
| 28 | 32498.69 | 139.50 | 0.829 | 0.30( 0.29) | 0.98 | 51675.1 | 10210.00 |
| 29 | 32035.90 | 142.49 | 0.823 | 0.30( 0.29) | 0.98 | 51792.3 | 12000.00 |
| 30 | 28890.88 | 167.19 | 0.773 | 0.30( 0.29) | 0.98 | 52413.5 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37304.26 Tc(MIN.) = 98.02
EFFECTIVE AREA(ACRES) = 41070.76 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52413.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.96 FEET.

**********
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 56
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0099
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.959
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,STRAIGHT ROW" | B | 0.30 | 0.30 | 1.000 | 81 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.40 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.40 | 0.30 | 0.100 | 56 |
| COMMERCIAL | B | 0.60 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 1.50 | 0.30 | 1.000 | 66 |
| PUBLIC PARK | B | 3.20 | 0.30 | 0.850 | 56 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.784
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 37306.34
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 18.29
AVERAGE FLOW DEPTH(FEET) = 8.43 TRAVEL TIME(MIN.) = 1.11
Tc(MIN.) = 99.14
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 4.17
EFFECTIVE AREA(ACRES) = 41077.16 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52419.9 PEAK FLOW RATE(CFS) = 37304.26
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.43 FLOW VELOCITY(FEET/SEC.) = 18.29
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

**********

```
 FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  81
--------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 MAINLINE Tc(MIN.) =   99.14
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.959
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                    B        3.90      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        8.70      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B       10.30      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   22.90      SUBAREA RUNOFF(CFS) =   13.59
 EFFECTIVE AREA(ACRES) =  41100.06   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
 TOTAL AREA(ACRES) =    52442.8       PEAK FLOW RATE(CFS) =   37304.26
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
================================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =    52442.8  TC(MIN.) =     99.14
 EFFECTIVE AREA(ACRES) =  41100.06  AREA-AVERAGED Fm(INCH/HR)=  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.972
 PEAK FLOW RATE(CFS)   =   37304.26

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    20949.21   17.11    2.484  0.30( 0.25) 0.83    3799.4     410.00
     2    21326.52   18.46    2.366  0.30( 0.25) 0.83    4182.7     420.00
     3    22706.54   22.31    2.090  0.30( 0.25) 0.84    5267.2     310.00
     4    22787.51   22.60    2.072  0.30( 0.25) 0.84    5345.2     800.00
     5    22830.90   22.71    2.065  0.30( 0.25) 0.84    5394.2     400.00
     6    23735.90   25.32    1.914  0.30( 0.26) 0.86    6450.7     430.00
     7    23952.95   25.93    1.890  0.30( 0.26) 0.86    6700.3     300.00
     8    23985.27   26.03    1.886  0.30( 0.26) 0.86    6737.5     320.00
     9    24361.29   27.18    1.842  0.30( 0.26) 0.87    7179.0     900.00
    10    24849.61   29.21    1.764  0.30( 0.26) 0.88    7887.3   12730.00
    11    25211.26   30.77    1.712  0.30( 0.27) 0.89    8423.5   12710.00
    12    25321.20   31.30    1.699  0.30( 0.27) 0.89    8596.3     600.00
    13    25391.85   31.68    1.688  0.30( 0.27) 0.89    8734.7     390.00
    14    28804.40   48.03    1.337  0.30( 0.28) 0.93   14599.3   40100.00
    15    29945.29   55.98    1.243  0.30( 0.28) 0.94   17427.2   11801.00
    16    31955.32   66.94    1.155  0.30( 0.29) 0.95   22011.6   11530.00
    17    33017.80   71.38    1.125  0.30( 0.29) 0.96   24326.1   11701.00
    18    33924.05   74.93    1.101  0.30( 0.29) 0.96   26419.3   11910.00
    19    36573.98   85.27    1.031  0.30( 0.29) 0.97   33113.5   10800.00
    20    37262.96   89.55    1.002  0.30( 0.29) 0.97   36058.9   11130.00
    21    37304.26   99.14    0.959  0.30( 0.29) 0.97   41100.1   12410.00
    22    37038.10  107.39    0.924  0.30( 0.29) 0.97   44839.2   11201.00
    23    36755.94  112.33    0.902  0.30( 0.29) 0.97   46570.9   12201.00
    24    35892.29  119.30    0.872  0.30( 0.29) 0.97   48428.0   12231.00
    25    35501.95  122.17    0.865  0.30( 0.29) 0.97   49101.3   12101.10
    26    34750.14  127.00    0.855  0.30( 0.29) 0.97   50062.3   10400.00
```



```
    27    33565.60  134.81    0.839  0.30( 0.29) 0.97   51357.4   12010.00
    28    32498.69  140.66    0.827  0.30( 0.29) 0.98   51704.4   10210.00
    29    32035.90  143.66    0.821  0.30( 0.29) 0.98   51821.6   12000.00
    30    28890.88  168.40    0.771  0.30( 0.29) 0.98   52442.8   10100.00
================================================================================
================================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 50-YR EV FEB 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RI50EV28.DAT
  TIME/DATE OF STUDY: 09:55 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.453
   2)   10.00;  3.490
   3)   15.00;  2.670
   4)   20.00;  2.230
   5)   25.00;  1.926
   6)   30.00;  1.733
   7)   40.00;  1.467
   8)   50.00;  1.305
   9)   60.00;  1.202
  10)   90.00;  0.999
  11)  120.00;  0.869
  12)  180.00;  0.747
  13)  360.00;  0.555
  14) 1200.00;  0.244
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV27.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    21326.52   18.46  0.30( 0.25) 0.83    4182.7     420.00
      2    22830.90   22.71  0.30( 0.25) 0.84    5394.2     400.00
      3    25391.85   31.68  0.30( 0.27) 0.89    8734.7     390.00
      4    28804.40   48.03  0.30( 0.28) 0.93   14599.3   40100.00
      5    29945.29   55.98  0.30( 0.28) 0.94   17427.2   11801.00
      6    31955.32   66.94  0.30( 0.29) 0.95   22011.6   11530.00
      7    33017.80   71.38  0.30( 0.29) 0.96   24326.1   11701.00
      8    33924.05   74.93  0.30( 0.29) 0.96   26419.3   11910.00
      9    36573.98   85.27  0.30( 0.29) 0.97   33113.5   10800.00
     10    37262.96   89.55  0.30( 0.29) 0.97   36058.9   11130.00
     11    37304.26   99.14  0.30( 0.29) 0.97   41100.1   12410.00
     12    37038.10  107.39  0.30( 0.29) 0.97   44839.2   11201.00
     13    36755.94  112.33  0.30( 0.29) 0.97   46570.9   12201.00
     14    35892.29  119.30  0.30( 0.29) 0.97   48428.0   12231.00
     15    35501.95  122.17  0.30( 0.29) 0.97   49101.3   12101.10
     16    34750.14  127.00  0.30( 0.29) 0.97   50062.3   10400.00
     17    33565.60  134.81  0.30( 0.29) 0.97   51357.4   12010.00
     18    32498.69  140.66  0.30( 0.29) 0.98   51704.4   10210.00
     19    32035.90  143.66  0.30( 0.29) 0.98   51821.6   12000.00
     20    28890.88  168.40  0.30( 0.29) 0.98   52442.8   10100.00
    TOTAL AREA(ACRES) =    52442.8

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501X.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1506.93   25.94  0.30( 0.29) 0.98    1025.8   50120.00
      2     1480.85   27.19  0.30( 0.29) 0.98    1040.8   50150.00
      3     1382.53   30.77  0.30( 0.29) 0.98    1063.4   50100.00
    TOTAL AREA(ACRES) =     1063.4

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|
| 1 | 21326.52 | 18.46 | 0.30( 0.25) | 0.83 | 4182.7 | 420.00 |
| 2 | 22830.90 | 22.71 | 0.30( 0.25) | 0.84 | 5394.2 | 400.00 |
| 3 | 25391.85 | 31.68 | 0.30( 0.27) | 0.89 | 8734.7 | 390.00 |
| 4 | 28804.40 | 48.03 | 0.30( 0.28) | 0.93 | 14599.3 | 40100.00 |
| 5 | 29945.29 | 55.98 | 0.30( 0.28) | 0.94 | 17427.2 | 11801.00 |
| 6 | 31955.32 | 66.94 | 0.30( 0.29) | 0.95 | 22011.6 | 11530.00 |
| 7 | 33017.80 | 71.38 | 0.30( 0.29) | 0.96 | 24326.1 | 11701.00 |
| 8 | 33924.05 | 74.93 | 0.30( 0.29) | 0.96 | 26419.3 | 11910.00 |
| 9 | 36573.98 | 85.27 | 0.30( 0.29) | 0.97 | 33113.5 | 10800.00 |
| 10 | 37262.96 | 89.55 | 0.30( 0.29) | 0.97 | 36058.9 | 11130.00 |
| 11 | 37304.26 | 99.14 | 0.30( 0.29) | 0.97 | 41100.1 | 12410.00 |
| 12 | 37038.10 | 107.39 | 0.30( 0.29) | 0.97 | 44839.2 | 11201.00 |
| 13 | 36755.94 | 112.33 | 0.30( 0.29) | 0.97 | 46570.9 | 12201.00 |
| 14 | 35892.29 | 119.30 | 0.30( 0.29) | 0.97 | 48428.0 | 12231.00 |
| 15 | 35501.95 | 122.17 | 0.30( 0.29) | 0.97 | 49101.3 | 12101.10 |
| 16 | 34750.14 | 127.00 | 0.30( 0.29) | 0.97 | 50062.3 | 10400.00 |
| 17 | 33565.60 | 134.81 | 0.30( 0.29) | 0.97 | 51357.4 | 12010.00 |
| 18 | 32498.69 | 140.66 | 0.30( 0.29) | 0.98 | 51704.4 | 10210.00 |
| 19 | 32035.90 | 143.66 | 0.30( 0.29) | 0.98 | 51821.6 | 12000.00 |
| 20 | 28890.88 | 168.40 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

TOTAL AREA(ACRES) = 52442.8

**********

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 11

---

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 21326.52 | 18.46 | 2.366 | 0.30( 0.25) | | 0.83 | 4182.7 | 420.00 |
| 2 | 22830.90 | 22.71 | 2.065 | 0.30( 0.25) | | 0.84 | 5394.2 | 400.00 |
| 3 | 25391.85 | 31.68 | 1.688 | 0.30( 0.27) | | 0.89 | 8734.7 | 390.00 |
| 4 | 28804.40 | 48.03 | 1.337 | 0.30( 0.28) | | 0.93 | 14599.3 | 40100.00 |
| 5 | 29945.29 | 55.98 | 1.243 | 0.30( 0.28) | | 0.94 | 17427.2 | 11801.00 |
| 6 | 31955.32 | 66.94 | 1.155 | 0.30( 0.29) | | 0.95 | 22011.6 | 11530.00 |
| 7 | 33017.80 | 71.38 | 1.125 | 0.30( 0.29) | | 0.96 | 24326.1 | 11701.00 |
| 8 | 33924.05 | 74.93 | 1.101 | 0.30( 0.29) | | 0.96 | 26419.3 | 11910.00 |
| 9 | 36573.98 | 85.27 | 1.031 | 0.30( 0.29) | | 0.97 | 33113.5 | 10800.00 |
| 10 | 37262.96 | 89.55 | 1.002 | 0.30( 0.29) | | 0.97 | 36058.9 | 11130.00 |
| 11 | 37304.26 | 99.14 | 0.959 | 0.30( 0.29) | | 0.97 | 41100.1 | 12410.00 |
| 12 | 37038.10 | 107.39 | 0.924 | 0.30( 0.29) | | 0.97 | 44839.2 | 11201.00 |
| 13 | 36755.94 | 112.33 | 0.902 | 0.30( 0.29) | | 0.97 | 46570.9 | 12201.00 |
| 14 | 35892.29 | 119.30 | 0.872 | 0.30( 0.29) | | 0.97 | 48428.0 | 12231.00 |
| 15 | 35501.95 | 122.17 | 0.865 | 0.30( 0.29) | | 0.97 | 49101.3 | 12101.10 |
| 16 | 34750.14 | 127.00 | 0.855 | 0.30( 0.29) | | 0.97 | 50062.3 | 10400.00 |
| 17 | 33565.60 | 134.81 | 0.839 | 0.30( 0.29) | | 0.97 | 51357.4 | 12010.00 |
| 18 | 32498.69 | 140.66 | 0.827 | 0.30( 0.29) | | 0.98 | 51704.4 | 10210.00 |
| 19 | 32035.90 | 143.66 | 0.821 | 0.30( 0.29) | | 0.98 | 51821.6 | 12000.00 |
| 20 | 28890.88 | 168.40 | 0.771 | 0.30( 0.29) | | 0.98 | 52442.8 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 1506.93 | 25.94 | 1.890 | 0.30( 0.29) | | 0.98 | 1025.8 | 50120.00 |
| 2 | 1480.85 | 27.19 | 1.841 | 0.30( 0.29) | | 0.98 | 1040.8 | 50150.00 |
| 3 | 1382.53 | 30.77 | 1.713 | 0.30( 0.29) | | 0.98 | 1063.4 | 50100.00 |

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 22718.75 | 18.46 | 2.366 | 0.30( 0.26) | | 0.85 | 4912.6 | 420.00 |
| 2 | 24295.42 | 22.71 | 2.065 | 0.30( 0.26) | | 0.86 | 6292.4 | 400.00 |
| 3 | 25259.19 | 25.94 | 1.890 | 0.30( 0.26) | | 0.87 | 7621.7 | 50120.00 |
| 4 | 25591.00 | 27.19 | 1.841 | 0.30( 0.26) | | 0.88 | 8103.6 | 50150.00 |
| 5 | 26515.37 | 30.77 | 1.713 | 0.30( 0.27) | | 0.90 | 9460.2 | 50100.00 |
| 6 | 26750.87 | 31.68 | 1.688 | 0.30( 0.27) | | 0.90 | 9798.1 | 390.00 |
| 7 | 29820.75 | 48.03 | 1.337 | 0.30( 0.28) | | 0.94 | 15662.7 | 40100.00 |
| 8 | 30870.42 | 55.98 | 1.243 | 0.30( 0.28) | | 0.94 | 18490.6 | 11801.00 |
| 9 | 32794.34 | 66.94 | 1.155 | 0.30( 0.29) | | 0.95 | 23075.0 | 11530.00 |
| 10 | 33827.50 | 71.38 | 1.125 | 0.30( 0.29) | | 0.96 | 25389.5 | 11701.00 |
| 11 | 34710.37 | 74.93 | 1.101 | 0.30( 0.29) | | 0.96 | 27482.7 | 11910.00 |
| 12 | 37292.09 | 85.27 | 1.031 | 0.30( 0.29) | | 0.97 | 34176.9 | 10800.00 |
| 13 | 37952.84 | 89.55 | 1.002 | 0.30( 0.29) | | 0.97 | 37122.2 | 11130.00 |
| 14 | 37952.55 | 99.14 | 0.959 | 0.30( 0.29) | | 0.97 | 42163.4 | 12410.00 |
| 15 | 37651.52 | 107.39 | 0.924 | 0.30( 0.29) | | 0.97 | 45902.6 | 11201.00 |
| 16 | 37348.48 | 112.33 | 0.902 | 0.30( 0.29) | | 0.97 | 47634.3 | 12201.00 |
| 17 | 36455.38 | 119.30 | 0.872 | 0.30( 0.29) | | 0.97 | 49491.4 | 12231.00 |
| 18 | 36057.79 | 122.17 | 0.865 | 0.30( 0.29) | | 0.97 | 50164.7 | 12101.10 |
| 19 | 35296.41 | 127.00 | 0.855 | 0.30( 0.29) | | 0.97 | 51125.7 | 10400.00 |
| 20 | 34096.38 | 134.81 | 0.839 | 0.30( 0.29) | | 0.98 | 52420.8 | 12010.00 |
| 21 | 33017.87 | 140.66 | 0.827 | 0.30( 0.29) | | 0.98 | 52767.8 | 10210.00 |
| 22 | 32549.14 | 143.66 | 0.821 | 0.30( 0.29) | | 0.98 | 52885.0 | 12000.00 |
| 23 | 29355.09 | 168.40 | 0.771 | 0.30( 0.29) | | 0.98 | 53506.2 | 10100.00 |

TOTAL AREA(ACRES) = 53506.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 37952.84 Tc(MIN.) = 89.547

EFFECTIVE AREA(ACRES) = 37122.24 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA(ACRES) = 53506.2

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53506.2 TC(MIN.) = 89.55

EFFECTIVE AREA(ACRES) = 37122.24 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970

PEAK FLOW RATE(CFS) = 37952.84

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 22718.75 | 18.46 | 2.366 | 0.30( 0.26) | | 0.85 | 4912.6 | 420.00 |
| 2 | 24295.42 | 22.71 | 2.065 | 0.30( 0.26) | | 0.86 | 6292.4 | 400.00 |
| 3 | 25259.19 | 25.94 | 1.890 | 0.30( 0.26) | | 0.87 | 7621.7 | 50120.00 |
| 4 | 25591.00 | 27.19 | 1.841 | 0.30( 0.26) | | 0.88 | 8103.6 | 50150.00 |
| 5 | 26515.37 | 30.77 | 1.713 | 0.30( 0.27) | | 0.90 | 9460.2 | 50100.00 |
| 6 | 26750.87 | 31.68 | 1.688 | 0.30( 0.27) | | 0.90 | 9798.1 | 390.00 |
| 7 | 29820.75 | 48.03 | 1.337 | 0.30( 0.28) | | 0.94 | 15662.7 | 40100.00 |
| 8 | 30870.42 | 55.98 | 1.243 | 0.30( 0.28) | | 0.94 | 18490.6 | 11801.00 |
| 9 | 32794.34 | 66.94 | 1.155 | 0.30( 0.29) | | 0.95 | 23075.0 | 11530.00 |
| 10 | 33827.50 | 71.38 | 1.125 | 0.30( 0.29) | | 0.96 | 25389.5 | 11701.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 34710.37 | 74.93 | 1.101 | 0.30( 0.29) | 0.96 | 27482.7 | 11910.00 |
| 12 | 37292.09 | 85.27 | 1.031 | 0.30( 0.29) | 0.97 | 34176.9 | 10800.00 |
| 13 | 37952.84 | 89.55 | 1.002 | 0.30( 0.29) | 0.97 | 37122.2 | 11130.00 |
| 14 | 37952.55 | 99.14 | 0.959 | 0.30( 0.29) | 0.97 | 42163.4 | 12410.00 |
| 15 | 37651.52 | 107.39 | 0.924 | 0.30( 0.29) | 0.97 | 45902.6 | 11201.00 |
| 16 | 37348.48 | 112.33 | 0.902 | 0.30( 0.29) | 0.97 | 47634.3 | 12201.00 |
| 17 | 36455.38 | 119.30 | 0.872 | 0.30( 0.29) | 0.97 | 49491.4 | 12231.00 |
| 18 | 36057.79 | 122.17 | 0.865 | 0.30( 0.29) | 0.97 | 50164.7 | 12101.10 |
| 19 | 35296.41 | 127.00 | 0.855 | 0.30( 0.29) | 0.97 | 51125.7 | 10400.00 |
| 20 | 34096.38 | 134.81 | 0.839 | 0.30( 0.29) | 0.98 | 52420.8 | 12010.00 |
| 21 | 33017.87 | 140.66 | 0.827 | 0.30( 0.29) | 0.98 | 52767.8 | 10210.00 |
| 22 | 32549.14 | 143.66 | 0.821 | 0.30( 0.29) | 0.98 | 52885.0 | 12000.00 |
| 23 | 29355.09 | 168.40 | 0.771 | 0.30( 0.29) | 0.98 | 53506.2 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 50-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI50EV29.DAT
  TIME/DATE OF STUDY: 09:55 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.437
   2)   10.00;  3.483
   3)   15.00;  2.666
   4)   20.00;  2.227
   5)   25.00;  1.924
   6)   30.00;  1.731
   7)   40.00;  1.465
   8)   50.00;  1.303
   9)   60.00;  1.200
  10)   90.00;  0.997
  11)  120.00;  0.867
  12)  180.00;  0.745
  13)  360.00;  0.552
  14) 1200.00;  0.243
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22718.75   18.46  0.30( 0.26) 0.85    4912.6     420.00
      2    24295.42   22.71  0.30( 0.26) 0.86    6292.4     400.00
      3    25591.00   27.19  0.30( 0.26) 0.88    8103.6   50150.00
      4    26750.87   31.68  0.30( 0.27) 0.90    9798.1     390.00
      5    29820.75   48.03  0.30( 0.28) 0.94   15662.7   40100.00
      6    30870.42   55.98  0.30( 0.28) 0.94   18490.6   11801.00
      7    32794.34   66.94  0.30( 0.29) 0.95   23075.0   11530.00
      8    33827.50   71.38  0.30( 0.29) 0.96   25389.5   11701.00
      9    34710.37   74.93  0.30( 0.29) 0.96   27482.7   11910.00
     10    37292.09   85.27  0.30( 0.29) 0.97   34176.9   10800.00
     11    37952.84   89.55  0.30( 0.29) 0.97   37122.2   11130.00
     12    37952.55   99.14  0.30( 0.29) 0.97   42163.4   12410.00
     13    37651.52  107.39  0.30( 0.29) 0.97   45902.6   11201.00
     14    37348.48  112.33  0.30( 0.29) 0.97   47634.3   12201.00
     15    36455.38  119.30  0.30( 0.29) 0.97   49491.4   12231.00
     16    35296.41  127.00  0.30( 0.29) 0.97   51125.7   10400.00
     17    34096.38  134.81  0.30( 0.29) 0.98   52420.8   12010.00
     18    33017.87  140.66  0.30( 0.29) 0.98   52767.8   10210.00
     19    32549.14  143.66  0.30( 0.29) 0.98   52885.0   12000.00
     20    29355.09  168.40  0.30( 0.29) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =    53506.2

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22718.75   18.46  0.30( 0.26) 0.85    4912.6     420.00
      2    24295.42   22.71  0.30( 0.26) 0.86    6292.4     400.00
      3    25591.00   27.19  0.30( 0.26) 0.88    8103.6   50150.00
      4    26750.87   31.68  0.30( 0.27) 0.90    9798.1     390.00
      5    29820.75   48.03  0.30( 0.28) 0.94   15662.7   40100.00
      6    30870.42   55.98  0.30( 0.28) 0.94   18490.6   11801.00
      7    32794.34   66.94  0.30( 0.29) 0.95   23075.0   11530.00
      8    33827.50   71.38  0.30( 0.29) 0.96   25389.5   11701.00
      9    34710.37   74.93  0.30( 0.29) 0.96   27482.7   11910.00
     10    37292.09   85.27  0.30( 0.29) 0.97   34176.9   10800.00
     11    37952.84   89.55  0.30( 0.29) 0.97   37122.2   11130.00
     12    37952.55   99.14  0.30( 0.29) 0.97   42163.4   12410.00
     13    37651.52  107.39  0.30( 0.29) 0.97   45902.6   11201.00
```

```
     14    37348.48  112.33  0.30( 0.29) 0.97   47634.3   12201.00
     15    36455.38  119.30  0.30( 0.29) 0.97   49491.4   12231.00
     16    35296.41  127.00  0.30( 0.29) 0.97   51125.7   10400.00
     17    34096.38  134.81  0.30( 0.29) 0.98   52420.8   12010.00
     18    33017.87  140.66  0.30( 0.29) 0.98   52767.8   10210.00
     19    32549.14  143.66  0.30( 0.29) 0.98   52885.0   12000.00
     20    29355.09  168.40  0.30( 0.29) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.14
  CHANNEL FLOW THRU SUBAREA(CFS) =   37952.84
  FLOW VELOCITY(FEET/SEC.) =  16.89   FLOW DEPTH(FEET) =   9.14
  TRAVEL TIME(MIN.) =   3.08   Tc(MIN.) =   92.63
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.986
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   18.48
  EFFECTIVE AREA(ACRES) =  37145.94   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =   37952.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.986
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.22
  EFFECTIVE AREA(ACRES) =  37149.04   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =   37952.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.986
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    6.12
  EFFECTIVE AREA(ACRES) =  37158.24   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =   37952.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.986
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   23.10
  EFFECTIVE AREA(ACRES) =  37193.74   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =   37952.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.986
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   33.34
  EFFECTIVE AREA(ACRES) =  37245.24   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =   37952.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.98
  CHANNEL FLOW THRU SUBAREA(CFS) =   37952.84
  FLOW VELOCITY(FEET/SEC.) =  17.25   FLOW DEPTH(FEET) =   8.98
  TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =   92.74
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XX50.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       66.04   11.15  0.30( 0.27) 0.91      28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22718.75   22.26    2.090  0.30( 0.26) 0.85    5035.6     420.00
      2    24295.42   26.42    1.869  0.30( 0.26) 0.86    6415.4     400.00
      3    25591.00   30.84    1.709  0.30( 0.26) 0.88    8226.6   50150.00
      4    26750.87   35.27    1.591  0.30( 0.27) 0.90    9921.1     390.00
      5    29820.75   51.49    1.288  0.30( 0.28) 0.93   15785.7   40100.00
      6    30870.42   59.41    1.206  0.30( 0.28) 0.94   18613.6   11801.00
      7    32794.34   70.30    1.130  0.30( 0.29) 0.95   23198.0   11530.00
      8    33827.50   74.70    1.101  0.30( 0.29) 0.96   25512.5   11701.00
      9    34710.37   78.22    1.077  0.30( 0.29) 0.96   27605.7   11910.00
     10    37292.09   88.48    1.007  0.30( 0.29) 0.97   34299.9   10800.00
     11    37952.84   92.74    0.985  0.30( 0.29) 0.97   37245.2   11130.00
     12    37952.55  102.33    0.944  0.30( 0.29) 0.97   42286.4   12410.00
     13    37651.52  110.60    0.908  0.30( 0.29) 0.97   46025.6   11201.00
     14    37348.48  115.54    0.886  0.30( 0.29) 0.97   47757.3   12201.00
     15    36455.38  122.54    0.862  0.30( 0.29) 0.97   49614.4   12231.00
     16    35296.41  130.27    0.846  0.30( 0.29) 0.97   51248.7   10400.00
     17    34096.38  138.13    0.830  0.30( 0.29) 0.97   52543.8   12010.00
     18    33017.87  144.01    0.818  0.30( 0.29) 0.97   52890.8   10210.00
     19    32549.14  147.03    0.812  0.30( 0.29) 0.97   53008.0   12000.00
     20    29355.09  171.88    0.762  0.30( 0.29) 0.98   53629.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       66.04   11.15    3.296  0.30( 0.27) 0.91      28.7   50200.00
  LONGEST FLOWPATH FROM NODE  50200.00 TO NODE  12902.00 =    1426.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18920.58   11.15    3.296  0.30( 0.26) 0.85    2550.6   50200.00
      2    22758.45   22.26    2.090  0.30( 0.26) 0.85    5064.3     420.00
      3    24330.29   26.42    1.869  0.30( 0.26) 0.86    6444.1     400.00
      4    25622.36   30.84    1.709  0.30( 0.26) 0.88    8255.3   50150.00
      5    26779.66   35.27    1.591  0.30( 0.27) 0.90    9949.8     390.00
      6    29842.91   51.49    1.288  0.30( 0.28) 0.93   15814.4   40100.00
```

```
      7    30890.81   59.41    1.206  0.30( 0.28) 0.94   18642.3   11801.00
      8    32813.07   70.30    1.130  0.30( 0.29) 0.95   23226.7   11530.00
      9    33845.58   74.70    1.101  0.30( 0.29) 0.96   25541.2   11701.00
     10    34727.93   78.22    1.077  0.30( 0.29) 0.96   27634.4   11910.00
     11    37308.13   88.48    1.007  0.30( 0.29) 0.97   34328.6   10800.00
     12    37968.40   92.74    0.985  0.30( 0.29) 0.97   37273.9   11130.00
     13    37967.20  102.33    0.944  0.30( 0.29) 0.97   42315.1   12410.00
     14    37665.39  110.60    0.908  0.30( 0.29) 0.97   46054.3   11201.00
     15    37361.88  115.54    0.886  0.30( 0.29) 0.97   47786.0   12201.00
     16    36468.25  122.54    0.862  0.30( 0.29) 0.97   49643.1   12231.00
     17    35308.93  130.27    0.846  0.30( 0.29) 0.97   51277.4   10400.00
     18    34108.55  138.13    0.830  0.30( 0.29) 0.97   52572.5   12010.00
     19    33029.78  144.01    0.818  0.30( 0.29) 0.97   52919.5   10210.00
     20    32560.91  147.03    0.812  0.30( 0.29) 0.97   53036.7   12000.00
     21    29365.76  171.88    0.762  0.30( 0.29) 0.98   53657.9   10100.00
   TOTAL AREA(ACRES) =     53657.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    37968.40  Tc(MIN.) =   92.744
  EFFECTIVE AREA(ACRES) =  37273.94  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53657.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E503XX50.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      496.69   24.76  0.30( 0.30) 0.99     366.4   50300.00
    TOTAL AREA(ACRES) =      366.4

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18920.58   11.15    3.296  0.30( 0.26) 0.85    2550.6   50200.00
      2    22758.45   22.26    2.090  0.30( 0.26) 0.85    5064.3     420.00
      3    24330.29   26.42    1.869  0.30( 0.26) 0.86    6444.1     400.00
      4    25622.36   30.84    1.709  0.30( 0.26) 0.88    8255.3   50150.00
      5    26779.66   35.27    1.591  0.30( 0.27) 0.90    9949.8     390.00
      6    29842.91   51.49    1.288  0.30( 0.28) 0.93   15814.4   40100.00
      7    30890.81   59.41    1.206  0.30( 0.28) 0.94   18642.3   11801.00
```



```
      8    32813.07   70.30    1.130  0.30( 0.29) 0.95   23226.7   11530.00
      9    33845.58   74.70    1.101  0.30( 0.29) 0.96   25541.2   11701.00
     10    34727.93   78.22    1.077  0.30( 0.29) 0.96   27634.4   11910.00
     11    37308.13   88.48    1.007  0.30( 0.29) 0.97   34328.6   10800.00
     12    37968.40   92.74    0.985  0.30( 0.29) 0.97   37273.9   11130.00
     13    37967.20  102.33    0.944  0.30( 0.29) 0.97   42315.1   12410.00
     14    37665.39  110.60    0.908  0.30( 0.29) 0.97   46054.3   11201.00
     15    37361.88  115.54    0.886  0.30( 0.29) 0.97   47786.0   12201.00
     16    36468.25  122.54    0.862  0.30( 0.29) 0.97   49643.1   12231.00
     17    35308.93  130.27    0.846  0.30( 0.29) 0.97   51277.4   10400.00
     18    34108.55  138.13    0.830  0.30( 0.29) 0.97   52572.5   12010.00
     19    33029.78  144.01    0.818  0.30( 0.29) 0.97   52919.5   10210.00
     20    32560.91  147.03    0.812  0.30( 0.29) 0.97   53036.7   12000.00
     21    29365.76  171.88    0.762  0.30( 0.29) 0.98   53657.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      496.69   24.76    1.939  0.30( 0.30) 0.99     366.4   50300.00
  LONGEST FLOWPATH FROM NODE  50300.00 TO NODE  12902.00 =    8614.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19328.87   11.15    3.296  0.30( 0.26) 0.86    2715.6   50200.00
      2    23246.14   22.26    2.090  0.30( 0.26) 0.86    5393.7     420.00
      3    24198.08   24.76    1.939  0.30( 0.26) 0.86    6258.4   50300.00
      4    24805.90   26.42    1.869  0.30( 0.26) 0.86    6810.5     400.00
      5    26049.52   30.84    1.709  0.30( 0.26) 0.88    8621.7   50150.00
      6    27171.18   35.27    1.591  0.30( 0.27) 0.90   10316.2     390.00
      7    30142.79   51.49    1.288  0.30( 0.28) 0.94   16180.8   40100.00
      8    31166.05   59.41    1.206  0.30( 0.28) 0.94   19008.7   11801.00
      9    33065.40   70.30    1.130  0.30( 0.29) 0.95   23593.1   11530.00
     10    34088.90   74.70    1.101  0.30( 0.29) 0.96   25907.6   11701.00
     11    34964.05   78.22    1.077  0.30( 0.29) 0.96   28000.8   11910.00
     12    37523.27   88.48    1.007  0.30( 0.29) 0.97   34695.0   10800.00
     13    38176.84   92.74    0.985  0.30( 0.29) 0.97   37640.3   11130.00
     14    38163.07  102.33    0.944  0.30( 0.29) 0.97   42681.5   12410.00
     15    37850.45  110.60    0.908  0.30( 0.29) 0.97   46420.7   11201.00
     16    37540.46  115.54    0.886  0.30( 0.29) 0.97   48152.4   12201.00
     17    36639.42  122.54    0.862  0.30( 0.29) 0.97   50009.5   12231.00
     18    35475.36  130.27    0.846  0.30( 0.29) 0.97   51643.8   10400.00
     19    34270.15  138.13    0.830  0.30( 0.29) 0.97   52938.9   12010.00
     20    33187.76  144.01    0.818  0.30( 0.29) 0.97   53285.9   10210.00
     21    32717.04  147.03    0.812  0.30( 0.29) 0.97   53403.1   12000.00
     22    29506.62  171.88    0.762  0.30( 0.29) 0.98   54024.3   10100.00
   TOTAL AREA(ACRES) =     54024.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    38176.84  Tc(MIN.) =   92.744
  EFFECTIVE AREA(ACRES) =  37640.34  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54024.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
```

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

******************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.69
  CHANNEL FLOW THRU SUBAREA(CFS) =   38176.84
  FLOW VELOCITY(FEET/SEC.) =   8.74   FLOW DEPTH(FEET) =  15.69
  TRAVEL TIME(MIN.) =   1.71   Tc(MIN.) =   94.45
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XX50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      123.35   17.17  0.30( 0.29) 0.97      70.5   50400.00
    TOTAL AREA(ACRES) =       70.5

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19328.87   13.26    2.951  0.30( 0.26) 0.86    2715.6   50200.00
      2    23246.14   24.25    1.970  0.30( 0.26) 0.86    5393.7     420.00
      3    24198.08   26.72    1.858  0.30( 0.26) 0.86    6258.4   50300.00
      4    24805.90   28.37    1.794  0.30( 0.26) 0.86    6810.5     400.00
      5    26049.52   32.76    1.658  0.30( 0.26) 0.88    8621.7   50150.00
      6    27171.18   37.16    1.540  0.30( 0.27) 0.90   10316.2     390.00
      7    30142.79   53.33    1.269  0.30( 0.28) 0.94   16180.8   40100.00
      8    31166.05   61.22    1.192  0.30( 0.28) 0.94   19008.7   11801.00
      9    33065.40   72.08    1.118  0.30( 0.29) 0.95   23593.1   11530.00
     10    34088.90   76.47    1.089  0.30( 0.29) 0.96   25907.6   11701.00
     11    34964.05   79.98    1.065  0.30( 0.29) 0.96   28000.8   11910.00
     12    37523.27   90.20    0.996  0.30( 0.29) 0.97   34695.0   10800.00
     13    38176.84   94.45    0.978  0.30( 0.29) 0.97   37640.3   11130.00
     14    38163.07  104.04    0.936  0.30( 0.29) 0.97   42681.5   12410.00
     15    37850.45  112.31    0.900  0.30( 0.29) 0.97   46420.7   11201.00
     16    37540.46  117.26    0.879  0.30( 0.29) 0.97   48152.4   12201.00
     17    36639.42  124.27    0.858  0.30( 0.29) 0.97   50009.5   12231.00
```



```
     18    35475.36  132.02    0.843  0.30( 0.29) 0.97   51643.8   10400.00
     19    34270.15  139.89    0.827  0.30( 0.29) 0.97   52938.9   12010.00
     20    33187.76  145.79    0.815  0.30( 0.29) 0.97   53285.9   10210.00
     21    32717.04  148.82    0.808  0.30( 0.29) 0.97   53403.1   12000.00
     22    29506.62  173.73    0.758  0.30( 0.29) 0.98   54024.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      123.35   17.17    2.476  0.30( 0.29) 0.97      70.5   50400.00
  LONGEST FLOWPATH FROM NODE  50400.00 TO NODE  12903.00 =    3607.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19444.83   13.26    2.951  0.30( 0.26) 0.86    2770.0   50200.00
      2    20845.38   17.17    2.476  0.30( 0.26) 0.86    3738.6   50400.00
      3    23340.93   24.25    1.970  0.30( 0.26) 0.86    5464.2     420.00
      4    24286.54   26.72    1.858  0.30( 0.26) 0.86    6328.9   50300.00
      5    24890.76   28.37    1.794  0.30( 0.26) 0.86    6881.0     400.00
      6    26126.70   32.76    1.658  0.30( 0.26) 0.88    8692.2   50150.00
      7    27241.74   37.16    1.540  0.30( 0.27) 0.90   10386.7     390.00
      8    30198.02   53.33    1.269  0.30( 0.28) 0.94   16251.3   40100.00
      9    31216.93   61.22    1.192  0.30( 0.28) 0.94   19079.2   11801.00
     10    33112.14   72.08    1.118  0.30( 0.29) 0.95   23663.6   11530.00
     11    34133.96   76.47    1.089  0.30( 0.29) 0.96   25978.1   11701.00
     12    35007.78   79.98    1.065  0.30( 0.29) 0.96   28071.3   11910.00
     13    37563.12   90.20    0.996  0.30( 0.29) 0.97   34765.5   10800.00
     14    38215.65   94.45    0.978  0.30( 0.29) 0.97   37710.8   11130.00
     15    38199.54  104.04    0.936  0.30( 0.29) 0.97   42752.0   12410.00
     16    37884.89  112.31    0.900  0.30( 0.29) 0.97   46491.2   11201.00
     17    37573.69  117.26    0.879  0.30( 0.29) 0.97   48222.9   12201.00
     18    36671.49  124.27    0.858  0.30( 0.29) 0.97   50080.0   12231.00
     19    35506.54  132.02    0.843  0.30( 0.29) 0.97   51714.3   10400.00
     20    34300.43  139.89    0.827  0.30( 0.29) 0.97   53009.4   12010.00
     21    33217.36  145.79    0.815  0.30( 0.29) 0.97   53356.4   10210.00
     22    32746.30  148.82    0.808  0.30( 0.29) 0.97   53473.6   12000.00
     23    29533.02  173.73    0.758  0.30( 0.29) 0.98   54094.8   10100.00
    TOTAL AREA(ACRES) =     54094.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    38215.65  Tc(MIN.) =   94.452
  EFFECTIVE AREA(ACRES) =  37710.84  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54094.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12904.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    214.00  DOWNSTREAM(FEET) =    213.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   767.57   CHANNEL SLOPE =  0.0013
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.05
  CHANNEL FLOW THRU SUBAREA(CFS) =   38215.65
  FLOW VELOCITY(FEET/SEC.) =   9.23   FLOW DEPTH(FEET) =  15.05
  TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   95.84
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3B50EVRL.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      422.03   16.63  0.30( 0.13) 0.43     195.9     203.00
      2      417.91   19.16  0.30( 0.13) 0.43     213.7     210.00
    TOTAL AREA(ACRES) =      213.7

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19444.83   14.97    2.671  0.30( 0.26) 0.86    2770.0   50200.00
      2    20845.38   18.84    2.329  0.30( 0.26) 0.86    3738.6   50400.00
      3    23340.93   25.86    1.891  0.30( 0.26) 0.86    5464.2     420.00
      4    24286.54   28.32    1.796  0.30( 0.26) 0.86    6328.9   50300.00
      5    24890.76   29.96    1.733  0.30( 0.26) 0.86    6881.0     400.00
      6    26126.70   34.32    1.616  0.30( 0.26) 0.88    8692.2   50150.00
      7    27241.74   38.70    1.499  0.30( 0.27) 0.90   10386.7     390.00
      8    30198.02   54.82    1.253  0.30( 0.28) 0.94   16251.3   40100.00
      9    31216.93   62.70    1.182  0.30( 0.28) 0.94   19079.2   11801.00
     10    33112.14   73.53    1.108  0.30( 0.29) 0.95   23663.6   11530.00
     11    34133.96   77.91    1.079  0.30( 0.29) 0.96   25978.1   11701.00
     12    35007.78   81.40    1.055  0.30( 0.29) 0.96   28071.3   11910.00
     13    37563.12   91.59    0.990  0.30( 0.29) 0.97   34765.5   10800.00
     14    38215.65   95.84    0.972  0.30( 0.29) 0.97   37710.8   11130.00
     15    38199.54  105.43    0.930  0.30( 0.29) 0.97   42752.0   12410.00
     16    37884.89  113.70    0.894  0.30( 0.29) 0.97   46491.2   11201.00
     17    37573.69  118.65    0.873  0.30( 0.29) 0.97   48222.9   12201.00
     18    36671.49  125.68    0.855  0.30( 0.29) 0.97   50080.0   12231.00
     19    35506.54  133.44    0.840  0.30( 0.29) 0.97   51714.3   10400.00
     20    34300.43  141.33    0.824  0.30( 0.29) 0.97   53009.4   12010.00
     21    33217.36  147.24    0.812  0.30( 0.29) 0.97   53356.4   10210.00
     22    32746.30  150.27    0.805  0.30( 0.29) 0.97   53473.6   12000.00
     23    29533.02  175.23    0.755  0.30( 0.29) 0.98   54094.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.
```



```
  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      422.03   16.63    2.523  0.30( 0.13) 0.43     195.9     203.00
      2      417.91   19.16    2.301  0.30( 0.13) 0.43     213.7     210.00
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE  12904.00 =    7986.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19848.29   14.97    2.671  0.30( 0.25) 0.84    2946.5   50200.00
      2    20465.33   16.63    2.523  0.30( 0.25) 0.84    3379.8     203.00
      3    21263.80   18.84    2.329  0.30( 0.25) 0.84    3950.0   50400.00
      4    21376.08   19.16    2.301  0.30( 0.25) 0.84    4030.3     210.00
      5    23679.95   25.86    1.891  0.30( 0.25) 0.85    5677.9     420.00
      6    24607.34   28.32    1.796  0.30( 0.25) 0.85    6542.6   50300.00
      7    25199.38   29.96    1.733  0.30( 0.26) 0.85    7094.7     400.00
      8    26412.92   34.32    1.616  0.30( 0.26) 0.87    8905.9   50150.00
      9    27505.52   38.70    1.499  0.30( 0.27) 0.89   10600.4     390.00
     10    30414.46   54.82    1.253  0.30( 0.28) 0.93   16465.0   40100.00
     11    31419.61   62.70    1.182  0.30( 0.28) 0.94   19292.9   11801.00
     12    33300.72   73.53    1.108  0.30( 0.28) 0.95   23877.3   11530.00
     13    34316.85   77.91    1.079  0.30( 0.29) 0.95   26191.8   11701.00
     14    35186.11   81.40    1.055  0.30( 0.29) 0.96   28285.0   11910.00
     15    37728.94   91.59    0.990  0.30( 0.29) 0.96   34979.2   10800.00
     16    38377.93   95.84    0.972  0.30( 0.29) 0.97   37924.5   11130.00
     17    38353.82  105.43    0.930  0.30( 0.29) 0.97   42965.7   12410.00
     18    38032.29  113.70    0.894  0.30( 0.29) 0.97   46704.9   11201.00
     19    37716.95  118.65    0.873  0.30( 0.29) 0.97   48436.6   12201.00
     20    36811.41  125.68    0.855  0.30( 0.29) 0.97   50293.7   12231.00
     21    35643.43  133.44    0.840  0.30( 0.29) 0.97   51928.0   10400.00
     22    34434.23  141.33    0.824  0.30( 0.29) 0.97   53223.1   12010.00
     23    33348.85  147.24    0.812  0.30( 0.29) 0.97   53570.1   10210.00
     24    32876.60  150.27    0.805  0.30( 0.29) 0.97   53687.3   12000.00
     25    29653.56  175.23    0.755  0.30( 0.29) 0.97   54308.5   10100.00
    TOTAL AREA(ACRES) =     54308.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    38377.93  Tc(MIN.) =   95.839
  EFFECTIVE AREA(ACRES) =  37924.54  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    54308.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.84
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.972
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.10      0.30      0.900    56
  NATURAL FAIR COVER
```

```
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  COMMERCIAL                 B        1.20      0.30     0.100    56
  COMMERCIAL                 B        1.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.641
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    4.77
  EFFECTIVE AREA(ACRES) =  37931.34   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54315.3       PEAK FLOW RATE(CFS) =   38377.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.84
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.972
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.60      0.30     1.000    69
  PUBLIC PARK                B       15.10      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B       20.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.941
  SUBAREA AREA(ACRES) =   38.70      SUBAREA RUNOFF(CFS) =   24.01
  EFFECTIVE AREA(ACRES) =  37970.04   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54354.0       PEAK FLOW RATE(CFS) =   38377.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    54354.0  TC(MIN.) =     95.84
  EFFECTIVE AREA(ACRES) =  37970.04  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.966
  PEAK FLOW RATE(CFS)   =   38377.93

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19848.29   14.97    2.671  0.30( 0.25) 0.84    2992.0   50200.00
      2    20465.33   16.63    2.523  0.30( 0.25) 0.84    3425.3     203.00
      3    21263.80   18.84    2.329  0.30( 0.25) 0.84    3995.5   50400.00
      4    21376.08   19.16    2.301  0.30( 0.25) 0.84    4075.8     210.00
      5    23679.95   25.86    1.891  0.30( 0.25) 0.85    5723.4     420.00
      6    24607.34   28.32    1.796  0.30( 0.25) 0.85    6588.1   50300.00
      7    25199.38   29.96    1.733  0.30( 0.26) 0.85    7140.2     400.00
      8    26412.92   34.32    1.616  0.30( 0.26) 0.87    8951.4   50150.00
      9    27505.52   38.70    1.499  0.30( 0.27) 0.89   10645.9     390.00
     10    30414.46   54.82    1.253  0.30( 0.28) 0.93   16510.5   40100.00
     11    31419.61   62.70    1.182  0.30( 0.28) 0.94   19338.4   11801.00
```



```
     12    33300.72   73.53    1.108  0.30( 0.28) 0.95   23922.8   11530.00
     13    34316.85   77.91    1.079  0.30( 0.29) 0.95   26237.3   11701.00
     14    35186.11   81.40    1.055  0.30( 0.29) 0.96   28330.5   11910.00
     15    37728.94   91.59    0.990  0.30( 0.29) 0.96   35024.7   10800.00
     16    38377.93   95.84    0.972  0.30( 0.29) 0.97   37970.0   11130.00
     17    38353.82  105.43    0.930  0.30( 0.29) 0.97   43011.2   12410.00
     18    38032.29  113.70    0.894  0.30( 0.29) 0.97   46750.4   11201.00
     19    37716.95  118.65    0.873  0.30( 0.29) 0.97   48482.1   12201.00
     20    36811.41  125.68    0.855  0.30( 0.29) 0.97   50339.2   12231.00
     21    35643.43  133.44    0.840  0.30( 0.29) 0.97   51973.5   10400.00
     22    34434.23  141.33    0.824  0.30( 0.29) 0.97   53268.6   12010.00
     23    33348.85  147.24    0.812  0.30( 0.29) 0.97   53615.6   10210.00
     24    32876.60  150.27    0.805  0.30( 0.29) 0.97   53732.8   12000.00
     25    29653.56  175.23    0.755  0.30( 0.29) 0.97   54354.0   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 50-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RI50EV33.DAT
  TIME/DATE OF STUDY: 09:55 02/15/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.329
   2)   10.00;  3.431
   3)   15.00;  2.636
   4)   20.00;  2.205
   5)   25.00;  1.909
   6)   30.00;  1.717
   7)   40.00;  1.455
   8)   50.00;  1.293
   9)   60.00;  1.185
  10)   90.00;  0.982
  11)  120.00;  0.852
  12)  180.00;  0.728
  13)  360.00;  0.537
  14) 1200.00;  0.235
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X50.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     2838.09   34.69  0.30( 0.24) 0.81    2526.1   13100.00
      2     2813.56   59.31  0.30( 0.24) 0.81    3777.1   13000.00
      3     2759.78   61.54  0.30( 0.24) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1294.02   32.85  0.30( 0.25) 0.83    1118.5   13210.00
      2     1295.27   33.25  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =     1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1294.02   32.85  0.30( 0.25) 0.83    1118.5   13210.00
      2     1295.27   33.25  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =      1127.6

******************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1294.02   32.85    1.642  0.30( 0.25) 0.83    1118.5   13210.00
      2     1295.27   33.25    1.632  0.30( 0.25) 0.83    1127.6   13200.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1     2838.09   34.69     1.594  0.30( 0.24) 0.81     2526.1   13100.00
     2     2813.56   59.31     1.192  0.30( 0.24) 0.81     3777.1   13000.00
     3     2759.78   61.54     1.175  0.30( 0.24) 0.81     3796.8   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1     4077.65   32.85     1.642  0.30( 0.24) 0.82     3511.0   13210.00
     2     4091.65   33.25     1.632  0.30( 0.24) 0.82     3549.2   13200.00
     3     4098.16   34.69     1.594  0.30( 0.24) 0.82     3653.7   13100.00
     4     3697.52   59.31     1.192  0.30( 0.24) 0.81     4904.7   13000.00
     5     3627.04   61.54     1.175  0.30( 0.24) 0.81     4924.4   13010.00
   TOTAL AREA(ACRES) =      4924.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     4098.16  Tc(MIN.) =   34.689
 EFFECTIVE AREA(ACRES) =   3653.73  AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     4924.4
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.04
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.506
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       15.60      0.30     1.000    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
 AGRICULTURAL POOR COVER
```



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 "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 COMMERCIAL                 B       22.60      0.30     0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4125.61
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.57
 AVERAGE FLOW DEPTH(FEET) =   5.04   TRAVEL TIME(MIN.) =   3.36
 Tc(MIN.) =   38.05
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   54.91
 EFFECTIVE AREA(ACRES) =   3698.93     AREA-AVERAGED Fm(INCH/HR) =   0.24
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.81
 TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    4203.54
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.09

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.09   FLOW VELOCITY(FEET/SEC.) =  12.64
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1     4194.79   36.22     1.554  0.30( 0.24) 0.81     3556.2   13210.00
     2     4206.09   36.62     1.544  0.30( 0.24) 0.81     3594.4   13200.00
     3     4203.54   38.05     1.506  0.30( 0.24) 0.81     3698.9   13100.00
     4     4113.27   62.78     1.166  0.30( 0.24) 0.81     4949.9   13000.00
     5     4061.84   65.03     1.151  0.30( 0.24) 0.81     4969.6   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    4206.09  Tc(MIN.) =   36.62
 AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.81  EFFECTIVE AREA(ACRES) =    3594.44

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   36.62
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        7.40      0.30     0.100    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   20.27
 EFFECTIVE AREA(ACRES) =   3610.94   AREA-AVERAGED Fm(INCH/HR) =  0.24
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  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    4226.36

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.62
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        1.30      0.30     1.000    86
  COMMERCIAL                B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    8.89
  EFFECTIVE AREA(ACRES) =   3618.84   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    4235.25

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.62
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   24.62
  EFFECTIVE AREA(ACRES) =   3640.84   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
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  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    4259.87

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.62
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   16.79
  EFFECTIVE AREA(ACRES) =   3655.84   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    4276.66

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.947
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.61
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.61

****************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.823
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.90
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   0.33
  Tc(MIN.) =    8.97
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    4.12
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       7.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   7.42
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.665
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.13
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   0.42
  Tc(MIN.) =    9.38
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  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    6.97
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      14.24

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   8.60
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.395
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.36
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   0.84
  Tc(MIN.) =   10.22
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =   10.03
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      23.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   6.63
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.284
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
```

```
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.87
  AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   0.70
  Tc(MIN.) =   10.92
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   17.19
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      39.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.35   FLOW VELOCITY(FEET/SEC.) =   7.27
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.170
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.00
  AVERAGE FLOW DEPTH(FEET) =   1.49   TRAVEL TIME(MIN.) =   0.72
  Tc(MIN.) =   11.64
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   27.90
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      65.87
```



```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.62   FLOW VELOCITY(FEET/SEC.) =   8.36
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.67
  AVERAGE FLOW DEPTH(FEET) =   1.91   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   12.99
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   36.10
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      97.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.827
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```

```
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.74
  AVERAGE FLOW DEPTH(FEET) =   2.25   TRAVEL TIME(MIN.) =   0.81
  Tc(MIN.) =   13.80
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   41.62
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     133.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.36   FLOW VELOCITY(FEET/SEC.) =   8.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.671
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.82
  AVERAGE FLOW DEPTH(FEET) =   2.38   TRAVEL TIME(MIN.) =   0.98
  Tc(MIN.) =   14.78
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  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   31.15
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     156.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.42   FLOW VELOCITY(FEET/SEC.) =   8.92
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.671
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   69.99
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     226.83

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.435
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
```

```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     234.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.29
  AVERAGE FLOW DEPTH(FEET) =   2.90   TRAVEL TIME(MIN.) =   2.55
  Tc(MIN.) =   17.33
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   15.95
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     226.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.87   FLOW VELOCITY(FEET/SEC.) =   9.21
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.435
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   41.91
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     262.16

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```



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  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.144
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     277.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.30
  AVERAGE FLOW DEPTH(FEET) =   3.34   TRAVEL TIME(MIN.) =   3.71
  Tc(MIN.) =   21.04
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   30.05
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     262.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.27   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      262.16   21.04    2.144  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     4265.94   36.22    1.554  0.30( 0.24) 0.81    3617.6   13210.00
      2     4276.66   36.62    1.544  0.30( 0.24) 0.81    3655.8   13200.00
      3     4272.04   38.05    1.506  0.30( 0.24) 0.81    3760.3   13100.00
      4     4162.98   62.78    1.166  0.30( 0.24) 0.81    5011.3   13000.00
      5     4110.71   65.03    1.151  0.30( 0.24) 0.81    5031.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

```
      1     3854.88   21.04    2.144  0.30( 0.25) 0.83    2255.8   31100.00
      2     4444.28   36.22    1.554  0.30( 0.25) 0.82    3772.1   13210.00
      3     4453.52   36.62    1.544  0.30( 0.25) 0.82    3810.3   13200.00
      4     4443.56   38.05    1.506  0.30( 0.25) 0.82    3914.8   13100.00
      5     4286.17   62.78    1.166  0.30( 0.24) 0.82    5165.8   13000.00
      6     4231.73   65.03    1.151  0.30( 0.24) 0.82    5185.5   13010.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4453.52  Tc(MIN.) =   36.616
  EFFECTIVE AREA(ACRES) =   3810.34  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4458.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.86
  AVERAGE FLOW DEPTH(FEET) =   7.07   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   38.76
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =   10.05
  EFFECTIVE AREA(ACRES) =   3819.74     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    4453.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
```



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  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.06   FLOW VELOCITY(FEET/SEC.) =   8.86
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13302.00 =   35800.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3854.88   23.28    2.011  0.30( 0.25) 0.83    2265.2   31100.00
      2     4444.28   38.37    1.498  0.30( 0.25) 0.82    3781.5   13210.00
      3     4453.52   38.76    1.487  0.30( 0.25) 0.82    3819.7   13200.00
      4     4443.56   40.20    1.452  0.30( 0.25) 0.82    3924.2   13100.00
      5     4286.17   64.96    1.151  0.30( 0.24) 0.82    5175.2   13000.00
      6     4231.73   67.21    1.136  0.30( 0.24) 0.82    5194.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    4453.52  Tc(MIN.) =   38.76
  AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.82  EFFECTIVE AREA(ACRES) =    3819.74

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        2.60      0.30     1.000    86
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   30.39
  EFFECTIVE AREA(ACRES) =   3847.84   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    4453.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B        0.10      0.30     1.000    79
 COMMERCIAL                  B        0.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"          B        2.40      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B        0.50      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
 SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    3.40
 EFFECTIVE AREA(ACRES) =   3850.94   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    4453.52
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.76
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                    B        0.10      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B        3.10      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B        0.40      0.30     1.000    65
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"       B        0.20      0.30     1.000    63
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       13.80      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   21.59
 EFFECTIVE AREA(ACRES) =   3871.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    4453.52
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.76
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
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 "ROW CROPS,CONTOURED"       B       34.60      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B        2.40      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       22.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B       11.60      0.30     1.000    79
 APARTMENTS                  B        0.40      0.30     0.200    56
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"       B        4.80      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
 SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   81.73
 EFFECTIVE AREA(ACRES) =   3947.54   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    4453.52
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.76
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                     B        1.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       46.40      0.30     1.000    66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"        B        0.10      0.30     0.200    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"       B       60.70      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B        5.80      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
 SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =  122.49
 EFFECTIVE AREA(ACRES) =   4062.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    4526.41

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.40
 CHANNEL FLOW THRU SUBAREA(CFS) =    4526.41
 FLOW VELOCITY(FEET/SEC.) =  10.22   FLOW DEPTH(FEET) =   6.40
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 TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =   42.34
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13303.00 =   37994.87 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     3968.19   27.00    1.832  0.30( 0.25) 0.84    2507.6   31100.00
     2     4521.30   41.94    1.424  0.30( 0.25) 0.83    4023.9   13210.00
     3     4526.41   42.34    1.417  0.30( 0.25) 0.83    4062.1   13200.00
     4     4509.95   43.77    1.394  0.30( 0.25) 0.83    4166.6   13100.00
     5     4408.64   68.56    1.127  0.30( 0.25) 0.82    5417.6   13000.00
     6     4350.32   70.83    1.112  0.30( 0.25) 0.82    5437.3   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    4526.41  Tc(MIN.) =   42.34
 AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    4062.14

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.34
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.80      0.30     1.000    86
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        2.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.20      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
 SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    7.98
 EFFECTIVE AREA(ACRES) =   4069.74   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.34
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
```



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 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
 COMMERCIAL                 B        3.60      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        4.00      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
 SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   15.75
 EFFECTIVE AREA(ACRES) =   4084.54   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.34
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.30      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =   24.73
 EFFECTIVE AREA(ACRES) =   4109.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.34
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        0.30      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.60      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B       31.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
  SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =   35.59
  EFFECTIVE AREA(ACRES) =   4144.44   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.34
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =   11.04
  EFFECTIVE AREA(ACRES) =   4154.94   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.34
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
```



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  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =   11.92
  EFFECTIVE AREA(ACRES) =   4166.54   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4529.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.52
  AVERAGE FLOW DEPTH(FEET) =   7.37   TRAVEL TIME(MIN.) =   1.81
  Tc(MIN.) =   44.15
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    6.56
  EFFECTIVE AREA(ACRES) =   4173.24     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.37   FLOW VELOCITY(FEET/SEC.) =   8.51
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     3968.19   28.88    1.760  0.30( 0.25) 0.85    2618.7   31100.00
     2     4521.30   43.76    1.394  0.30( 0.25) 0.83    4135.0   13210.00
     3     4526.41   44.15    1.388  0.30( 0.25) 0.83    4173.2   13200.00
     4     4509.95   45.59    1.364  0.30( 0.25) 0.83    4277.7   13100.00
     5     4408.64   70.39    1.115  0.30( 0.25) 0.83    5528.7   13000.00
     6     4350.32   72.66    1.099  0.30( 0.25) 0.83    5548.4   13010.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    4526.41  Tc(MIN.) =   44.15
 AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.83  EFFECTIVE AREA(ACRES) =    4173.24

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   44.15
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.80      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    6.95
 EFFECTIVE AREA(ACRES) =   4180.34   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   44.15
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        7.80      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        9.40      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.20      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
```



```
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   22.32
 EFFECTIVE AREA(ACRES) =   4203.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   44.15
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
 SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    3.33
 EFFECTIVE AREA(ACRES) =   4206.54   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    4526.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.96
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        1.70      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        0.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 NATURAL FAIR COVER
```

```
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4530.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.19
  AVERAGE FLOW DEPTH(FEET) =   5.96   TRAVEL TIME(MIN.) =   4.42
  Tc(MIN.) =   48.57
  SUBAREA AREA(ACRES) =     9.20       SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =   4215.74     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.96   FLOW VELOCITY(FEET/SEC.) =  11.18
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3968.19   33.48    1.626  0.30( 0.25) 0.85    2661.2   31100.00
      2     4521.30   48.18    1.323  0.30( 0.25) 0.84    4177.5   13210.00
      3     4526.41   48.57    1.316  0.30( 0.25) 0.84    4215.7   13200.00
      4     4509.95   50.01    1.293  0.30( 0.25) 0.83    4320.2   13100.00
      5     4408.64   74.84    1.085  0.30( 0.25) 0.83    5571.2   13000.00
      6     4350.32   77.14    1.069  0.30( 0.25) 0.83    5590.9   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    4526.41  Tc(MIN.) =   48.57
  AREA-AVERAGED Fm(INCH/HR) =  0.25  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.84  EFFECTIVE AREA(ACRES) =    4215.74

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   16.65
  EFFECTIVE AREA(ACRES) =   4233.94   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   49.60
  EFFECTIVE AREA(ACRES) =   4287.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
```

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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   26.29
  EFFECTIVE AREA(ACRES) =   4314.74   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                 B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   23.71
  EFFECTIVE AREA(ACRES) =   4340.44   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
```



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  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =   10.34
  EFFECTIVE AREA(ACRES) =   4351.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    8.18
  EFFECTIVE AREA(ACRES) =   4359.84   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    4526.41
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A50EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1087.20   13.49  0.30( 0.13) 0.43     436.1     120.00
      2     1086.73   13.53  0.30( 0.13) 0.43     436.7     110.00
      3      930.63   20.54  0.30( 0.13) 0.43     504.3     100.00
      4      870.49   23.19  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     3968.19   33.48    1.626  0.30( 0.26) 0.85    2805.3   31100.00
      2     4521.30   48.18    1.323  0.30( 0.25) 0.84    4321.6   13210.00
      3     4526.41   48.57    1.316  0.30( 0.25) 0.84    4359.8   13200.00
```

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     4     4509.95   50.01    1.293  0.30( 0.25) 0.84    4464.3   13100.00
     5     4408.64   74.84    1.085  0.30( 0.25) 0.83    5715.3   13000.00
     6     4350.32   77.14    1.069  0.30( 0.25) 0.83    5735.0   13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1087.20   13.49    2.876  0.30( 0.13) 0.43     436.1     120.00
      2     1086.73   13.53    2.870  0.30( 0.13) 0.43     436.7     110.00
      3      930.63   20.54    2.173  0.30( 0.13) 0.43     504.3     100.00
      4      870.49   23.19    2.016  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     4145.11   13.49    2.876  0.30( 0.22) 0.74    1566.5     120.00
      2     4146.14   13.53    2.870  0.30( 0.22) 0.74    1570.2     110.00
      3     4337.43   20.54    2.173  0.30( 0.23) 0.76    2225.4     100.00
      4     4401.93   23.19    2.016  0.30( 0.23) 0.77    2453.0     150.00
      5     4658.47   33.48    1.626  0.30( 0.24) 0.79    3315.5   31100.00
      6     5071.66   48.18    1.323  0.30( 0.24) 0.80    4831.8   13210.00
      7     5073.85   48.57    1.316  0.30( 0.24) 0.80    4870.0   13200.00
      8     5046.62   50.01    1.293  0.30( 0.24) 0.80    4974.5   13100.00
      9     4849.17   74.84    1.085  0.30( 0.24) 0.80    6225.5   13000.00
     10     4783.69   77.14    1.069  0.30( 0.24) 0.80    6245.2   13010.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     5073.85  Tc(MIN.) =   48.568
  EFFECTIVE AREA(ACRES) =   4870.04  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
```



```
  "BARREN"                  B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                   B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        4.10      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5081.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.82
  AVERAGE FLOW DEPTH(FEET) =   5.86   TRAVEL TIME(MIN.) =   5.73
  Tc(MIN.) =   54.30
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =   15.68
  EFFECTIVE AREA(ACRES) =   4888.44     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6          PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.86   FLOW VELOCITY(FEET/SEC.) =  12.81
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     4145.11   19.59    2.240  0.30( 0.22) 0.74    1584.9     120.00
      2     4146.14   19.63    2.237  0.30( 0.22) 0.74    1588.6     110.00
      3     4337.43   26.56    1.849  0.30( 0.23) 0.76    2243.8     100.00
      4     4401.93   29.18    1.749  0.30( 0.23) 0.77    2471.4     150.00
      5     4658.47   39.37    1.472  0.30( 0.24) 0.79    3333.9   31100.00
      6     5071.66   53.91    1.251  0.30( 0.24) 0.80    4850.2   13210.00
      7     5073.85   54.30    1.247  0.30( 0.24) 0.80    4888.4   13200.00
      8     5046.62   55.76    1.231  0.30( 0.24) 0.80    4992.9   13100.00
      9     4849.17   80.65    1.045  0.30( 0.24) 0.80    6243.9   13000.00
     10     4783.69   82.98    1.030  0.30( 0.24) 0.80    6263.6   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    5073.85  Tc(MIN.) =   54.30
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    4888.44

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   42.26
  EFFECTIVE AREA(ACRES) =   4938.04   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.68
  EFFECTIVE AREA(ACRES) =   4938.84   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
```



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  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    1.13
  EFFECTIVE AREA(ACRES) =   4940.14   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    6.84
  EFFECTIVE AREA(ACRES) =   4947.74   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
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```
  COMMERCIAL                  B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   44.94
  EFFECTIVE AREA(ACRES) =   4995.34   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                    B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                    B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   49.56
  EFFECTIVE AREA(ACRES) =   5053.52   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.79
  CHANNEL FLOW THRU SUBAREA(CFS) =    5073.85
  FLOW VELOCITY(FEET/SEC.) =  13.02   FLOW DEPTH(FEET) =   5.79
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   56.27
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     4145.11   21.70    2.105  0.30( 0.23) 0.75    1749.9     120.00
      2     4146.14   21.73    2.102  0.30( 0.23) 0.75    1753.7     110.00
      3     4337.43   28.63    1.770  0.30( 0.23) 0.77    2408.8     100.00
      4     4401.93   31.24    1.684  0.30( 0.23) 0.78    2636.5     150.00
      5     4658.47   41.40    1.432  0.30( 0.24) 0.79    3498.9   31100.00
      6     5071.66   55.89    1.229  0.30( 0.24) 0.80    5015.3   13210.00
      7     5073.85   56.27    1.225  0.30( 0.24) 0.80    5053.5   13200.00
      8     5046.62   57.74    1.209  0.30( 0.24) 0.80    5158.0   13100.00
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      9     4849.17   82.66    1.032  0.30( 0.24) 0.80    6409.0   13000.00
     10     4783.69   84.99    1.016  0.30( 0.24) 0.80    6428.7   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    5073.85  Tc(MIN.) =   56.27
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    5053.52

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.27
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.225
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                    B        3.70      0.30     1.000    86
  COMMERCIAL                  B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    6.53
  EFFECTIVE AREA(ACRES) =   5061.22   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.27
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.225
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    5.08
  EFFECTIVE AREA(ACRES) =   5067.32   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.91
  CHANNEL FLOW THRU SUBAREA(CFS) =    5073.85
  FLOW VELOCITY(FEET/SEC.) =  10.39   FLOW DEPTH(FEET) =   6.91
  TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =   57.76
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13308.00 =   48763.78 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     4145.11   23.27    2.011  0.30( 0.23) 0.75    1763.7     120.00
      2     4146.14   23.31    2.009  0.30( 0.23) 0.75    1767.5     110.00
      3     4337.43   30.19    1.712  0.30( 0.23) 0.77    2422.6     100.00
      4     4401.93   32.79    1.644  0.30( 0.23) 0.78    2650.3     150.00
      5     4658.47   42.92    1.408  0.30( 0.24) 0.79    3512.7   31100.00
      6     5071.66   57.37    1.213  0.30( 0.24) 0.80    5029.1   13210.00
      7     5073.85   57.76    1.209  0.30( 0.24) 0.80    5067.3   13200.00
      8     5046.62   59.22    1.193  0.30( 0.24) 0.80    5171.8   13100.00
      9     4849.17   84.16    1.021  0.30( 0.24) 0.80    6422.8   13000.00
     10     4783.69   86.50    1.006  0.30( 0.24) 0.80    6442.5   13010.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    5073.85  Tc(MIN.) =   57.76
  AREA-AVERAGED Fm(INCH/HR) =  0.24  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.80  EFFECTIVE AREA(ACRES) =    5067.32

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.00      0.30     1.000    65
  COMMERCIAL                 B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
```



```
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    8.55
  EFFECTIVE AREA(ACRES) =   5076.82   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  COMMERCIAL                 B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   72.11
  EFFECTIVE AREA(ACRES) =   5152.42   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.90      0.30     1.000    79
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       13.20      0.30     1.000    65
  APARTMENTS                 B        0.50      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
  SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =   12.91
  EFFECTIVE AREA(ACRES) =   5168.02   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
```

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  TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B       17.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       16.80      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.60      0.30     0.200    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.50      0.30     0.400    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       10.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   74.40
  EFFECTIVE AREA(ACRES) =   5248.42   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.85
  EFFECTIVE AREA(ACRES) =   5249.42   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.72
  EFFECTIVE AREA(ACRES) =   5251.52   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.76
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  PUBLIC PARK                B        1.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    9.56
  EFFECTIVE AREA(ACRES) =   5263.12   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    5073.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
```

```
--------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
================================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1    21376.08   19.16  0.30( 0.25) 0.84    4075.8     210.00
      2    23679.95   25.86  0.30( 0.25) 0.85    5723.4     420.00
      3    25199.38   29.96  0.30( 0.26) 0.85    7140.2     400.00
      4    26412.92   34.32  0.30( 0.26) 0.87    8951.4   50150.00
      5    27505.52   38.70  0.30( 0.27) 0.89   10645.9     390.00
      6    30414.46   54.82  0.30( 0.28) 0.93   16510.5   40100.00
      7    31419.61   62.70  0.30( 0.28) 0.94   19338.4   11801.00
      8    33300.72   73.53  0.30( 0.28) 0.95   23922.8   11530.00
      9    35186.11   81.40  0.30( 0.29) 0.96   28330.5   11910.00
     10    37728.94   91.59  0.30( 0.29) 0.96   35024.7   10800.00
     11    38377.93   95.84  0.30( 0.29) 0.97   37970.0   11130.00
     12    38353.82  105.43  0.30( 0.29) 0.97   43011.2   12410.00
     13    38032.29  113.70  0.30( 0.29) 0.97   46750.4   11201.00
     14    37716.95  118.65  0.30( 0.29) 0.97   48482.1   12201.00
     15    36811.41  125.68  0.30( 0.29) 0.97   50339.2   12231.00
     16    35643.43  133.44  0.30( 0.29) 0.97   51973.5   10400.00
     17    34434.23  141.33  0.30( 0.29) 0.97   53268.6   12010.00
     18    33348.85  147.24  0.30( 0.29) 0.97   53615.6   10210.00
     19    32876.60  150.27  0.30( 0.29) 0.97   53732.8   12000.00
     20    29653.56  175.23  0.30( 0.29) 0.97   54354.0   10100.00
    TOTAL AREA(ACRES) =    54354.0

********************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
--------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
================================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1    21376.08   19.16  0.30( 0.25) 0.84    4075.8     210.00
      2    23679.95   25.86  0.30( 0.25) 0.85    5723.4     420.00
      3    25199.38   29.96  0.30( 0.26) 0.85    7140.2     400.00
      4    26412.92   34.32  0.30( 0.26) 0.87    8951.4   50150.00
      5    27505.52   38.70  0.30( 0.27) 0.89   10645.9     390.00
      6    30414.46   54.82  0.30( 0.28) 0.93   16510.5   40100.00
      7    31419.61   62.70  0.30( 0.28) 0.94   19338.4   11801.00
      8    33300.72   73.53  0.30( 0.28) 0.95   23922.8   11530.00
      9    35186.11   81.40  0.30( 0.29) 0.96   28330.5   11910.00
     10    37728.94   91.59  0.30( 0.29) 0.96   35024.7   10800.00
     11    38377.93   95.84  0.30( 0.29) 0.97   37970.0   11130.00
     12    38353.82  105.43  0.30( 0.29) 0.97   43011.2   12410.00
     13    38032.29  113.70  0.30( 0.29) 0.97   46750.4   11201.00
     14    37716.95  118.65  0.30( 0.29) 0.97   48482.1   12201.00
     15    36811.41  125.68  0.30( 0.29) 0.97   50339.2   12231.00
     16    35643.43  133.44  0.30( 0.29) 0.97   51973.5   10400.00
     17    34434.23  141.33  0.30( 0.29) 0.97   53268.6   12010.00
     18    33348.85  147.24  0.30( 0.29) 0.97   53615.6   10210.00
     19    32876.60  150.27  0.30( 0.29) 0.97   53732.8   12000.00
     20    29653.56  175.23  0.30( 0.29) 0.97   54354.0   10100.00
```



```
    TOTAL AREA(ACRES) =     54354.0

********************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.71
  CHANNEL FLOW THRU SUBAREA(CFS) =   38377.93
  FLOW VELOCITY(FEET/SEC.) =   7.51   FLOW DEPTH(FEET) =  17.71
  TRAVEL TIME(MIN.) =   3.08   Tc(MIN.) =   98.92
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21376.08   22.85    2.036  0.30( 0.25) 0.84    4075.8     210.00
      2    23679.95   29.44    1.739  0.30( 0.25) 0.85    5723.4     420.00
      3    25199.38   33.46    1.626  0.30( 0.26) 0.85    7140.2     400.00
      4    26412.92   37.77    1.513  0.30( 0.26) 0.87    8951.4   50150.00
      5    27505.52   42.12    1.421  0.30( 0.27) 0.89   10645.9     390.00
      6    30414.46   58.13    1.205  0.30( 0.28) 0.93   16510.5   40100.00
      7    31419.61   65.98    1.145  0.30( 0.28) 0.94   19338.4   11801.00
      8    33300.72   76.75    1.072  0.30( 0.28) 0.95   23922.8   11530.00
      9    35186.11   84.57    1.019  0.30( 0.29) 0.96   28330.5   11910.00
     10    37728.94   94.69    0.962  0.30( 0.29) 0.96   35024.7   10800.00
     11    38377.93   98.92    0.943  0.30( 0.29) 0.97   37970.0   11130.00
     12    38353.82  108.51    0.902  0.30( 0.29) 0.97   43011.2   12410.00
     13    38032.29  116.79    0.866  0.30( 0.29) 0.97   46750.4   11201.00
     14    37716.95  121.76    0.848  0.30( 0.29) 0.97   48482.1   12201.00
     15    36811.41  128.80    0.834  0.30( 0.29) 0.97   50339.2   12231.00
     16    35643.43  136.59    0.818  0.30( 0.29) 0.97   51973.5   10400.00
     17    34434.23  144.51    0.801  0.30( 0.29) 0.97   53268.6   12010.00
     18    33348.85  150.46    0.789  0.30( 0.29) 0.97   53615.6   10210.00
     19    32876.60  153.50    0.783  0.30( 0.29) 0.97   53732.8   12000.00
     20    29653.56  178.56    0.731  0.30( 0.29) 0.97   54354.0   10100.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   38377.93  Tc(MIN.) =   98.92
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =   37970.04

********************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21376.08   22.85    2.036  0.30( 0.25) 0.84    4075.8     210.00
      2    23679.95   29.44    1.739  0.30( 0.25) 0.85    5723.4     420.00
      3    25199.38   33.46    1.626  0.30( 0.26) 0.85    7140.2     400.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 | 26412.92 | 37.77 | 1.513 | 0.30( 0.26) | 0.87 | 8951.4 | 50150.00 |
| 5 | 27505.52 | 42.12 | 1.421 | 0.30( 0.27) | 0.89 | 10645.9 | 390.00 |
| 6 | 30414.46 | 58.13 | 1.205 | 0.30( 0.28) | 0.93 | 16510.5 | 40100.00 |
| 7 | 31419.61 | 65.98 | 1.145 | 0.30( 0.28) | 0.94 | 19338.4 | 11801.00 |
| 8 | 33300.72 | 76.75 | 1.072 | 0.30( 0.28) | 0.95 | 23922.8 | 11530.00 |
| 9 | 35186.11 | 84.57 | 1.019 | 0.30( 0.29) | 0.96 | 28330.5 | 11910.00 |
| 10 | 37728.94 | 94.69 | 0.962 | 0.30( 0.29) | 0.96 | 35024.7 | 10800.00 |
| 11 | 38377.93 | 98.92 | 0.943 | 0.30( 0.29) | 0.97 | 37970.0 | 11130.00 |
| 12 | 38353.82 | 108.51 | 0.902 | 0.30( 0.29) | 0.97 | 43011.2 | 12410.00 |
| 13 | 38032.29 | 116.79 | 0.866 | 0.30( 0.29) | 0.97 | 46750.4 | 11201.00 |
| 14 | 37716.95 | 121.76 | 0.848 | 0.30( 0.29) | 0.97 | 48482.1 | 12201.00 |
| 15 | 36811.41 | 128.80 | 0.834 | 0.30( 0.29) | 0.97 | 50339.2 | 12231.00 |
| 16 | 35643.43 | 136.59 | 0.818 | 0.30( 0.29) | 0.97 | 51973.5 | 10400.00 |
| 17 | 34434.23 | 144.51 | 0.801 | 0.30( 0.29) | 0.97 | 53268.6 | 12010.00 |
| 18 | 33348.85 | 150.46 | 0.789 | 0.30( 0.29) | 0.97 | 53615.6 | 10210.00 |
| 19 | 32876.60 | 153.50 | 0.783 | 0.30( 0.29) | 0.97 | 53732.8 | 12000.00 |
| 20 | 29653.56 | 178.56 | 0.731 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 4145.11 | 23.27 | 2.011 | 0.30( 0.22) | 0.74 | 1959.5 | 120.00 |
| 2 | 4146.14 | 23.31 | 2.009 | 0.30( 0.22) | 0.74 | 1963.3 | 110.00 |
| 3 | 4337.43 | 30.19 | 1.712 | 0.30( 0.23) | 0.76 | 2618.4 | 100.00 |
| 4 | 4401.93 | 32.79 | 1.644 | 0.30( 0.23) | 0.77 | 2846.1 | 150.00 |
| 5 | 4658.47 | 42.92 | 1.408 | 0.30( 0.24) | 0.79 | 3708.5 | 31100.00 |
| 6 | 5071.66 | 57.37 | 1.213 | 0.30( 0.24) | 0.79 | 5224.9 | 13210.00 |
| 7 | 5073.85 | 57.76 | 1.209 | 0.30( 0.24) | 0.79 | 5263.1 | 13200.00 |
| 8 | 5046.62 | 59.22 | 1.193 | 0.30( 0.24) | 0.79 | 5367.6 | 13100.00 |
| 9 | 4849.17 | 84.16 | 1.021 | 0.30( 0.24) | 0.80 | 6618.6 | 13000.00 |
| 10 | 4783.69 | 86.50 | 1.006 | 0.30( 0.24) | 0.80 | 6638.3 | 13010.00 |

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25502.66 | 22.85 | 2.036 | 0.30( 0.24) | 0.81 | 5999.4 | 210.00 |
| 2 | 25670.33 | 23.27 | 2.011 | 0.30( 0.24) | 0.81 | 6142.0 | 120.00 |
| 3 | 25685.02 | 23.31 | 2.009 | 0.30( 0.24) | 0.81 | 6155.5 | 110.00 |
| 4 | 27996.45 | 29.44 | 1.739 | 0.30( 0.25) | 0.82 | 8270.1 | 420.00 |
| 5 | 28301.36 | 30.19 | 1.712 | 0.30( 0.25) | 0.82 | 8606.6 | 100.00 |
| 6 | 29349.14 | 32.79 | 1.644 | 0.30( 0.25) | 0.83 | 9751.1 | 150.00 |
| 7 | 29618.23 | 33.46 | 1.626 | 0.30( 0.25) | 0.83 | 10043.2 | 400.00 |
| 8 | 30940.93 | 37.77 | 1.513 | 0.30( 0.25) | 0.85 | 12221.4 | 50150.00 |
| 9 | 32143.59 | 42.12 | 1.421 | 0.30( 0.26) | 0.87 | 14285.9 | 390.00 |
| 10 | 32310.23 | 42.92 | 1.408 | 0.30( 0.26) | 0.87 | 14649.3 | 31100.00 |
| 11 | 35349.00 | 57.37 | 1.213 | 0.30( 0.27) | 0.89 | 21458.9 | 13210.00 |
| 12 | 35421.32 | 57.76 | 1.209 | 0.30( 0.27) | 0.90 | 21638.5 | 13200.00 |
| 13 | 35481.45 | 58.13 | 1.205 | 0.30( 0.27) | 0.90 | 21799.9 | 40100.00 |
| 14 | 35601.25 | 59.22 | 1.193 | 0.30( 0.27) | 0.90 | 22272.4 | 13100.00 |
| 15 | 36412.77 | 65.98 | 1.145 | 0.30( 0.27) | 0.91 | 25044.7 | 11801.00 |
| 16 | 38208.60 | 76.75 | 1.072 | 0.30( 0.28) | 0.92 | 30169.4 | 11530.00 |
| 17 | 39938.36 | 84.16 | 1.021 | 0.30( 0.28) | 0.93 | 34722.5 | 13000.00 |
| 18 | 40024.03 | 84.57 | 1.019 | 0.30( 0.28) | 0.93 | 34952.5 | 11910.00 |
| 19 | 40455.69 | 86.50 | 1.006 | 0.30( 0.28) | 0.93 | 36248.0 | 13010.00 |
| 20 | 42238.07 | 94.69 | 0.962 | 0.30( 0.28) | 0.94 | 41663.0 | 10800.00 |
| 21 | 42772.74 | 98.92 | 0.943 | 0.30( 0.28) | 0.94 | 44608.4 | 11130.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 22 | 42489.44 | 108.51 | 0.902 | 0.30( 0.28) | 0.95 | 49649.6 | 12410.00 |
| 23 | 41944.18 | 116.79 | 0.866 | 0.30( 0.28) | 0.95 | 53388.7 | 11201.00 |
| 24 | 41519.47 | 121.76 | 0.848 | 0.30( 0.28) | 0.95 | 55120.4 | 12201.00 |
| 25 | 40523.12 | 128.80 | 0.834 | 0.30( 0.29) | 0.95 | 56977.5 | 12231.00 |
| 26 | 39254.71 | 136.59 | 0.818 | 0.30( 0.29) | 0.95 | 58611.8 | 10400.00 |
| 27 | 37943.41 | 144.51 | 0.801 | 0.30( 0.29) | 0.95 | 59906.9 | 12010.00 |
| 28 | 36781.39 | 150.46 | 0.789 | 0.30( 0.29) | 0.95 | 60253.9 | 10210.00 |
| 29 | 36269.89 | 153.50 | 0.783 | 0.30( 0.29) | 0.95 | 60371.1 | 12000.00 |
| 30 | 32723.83 | 178.56 | 0.731 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

TOTAL AREA(ACRES) = 60992.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 42772.74 Tc(MIN.) = 98.923
EFFECTIVE AREA(ACRES) = 44608.35 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 60992.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60992.3 TC(MIN.) = 98.92
EFFECTIVE AREA(ACRES) = 44608.35 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 42772.74

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25502.66 | 22.85 | 2.036 | 0.30( 0.24) | 0.81 | 5999.4 | 210.00 |
| 2 | 25670.33 | 23.27 | 2.011 | 0.30( 0.24) | 0.81 | 6142.0 | 120.00 |
| 3 | 25685.02 | 23.31 | 2.009 | 0.30( 0.24) | 0.81 | 6155.5 | 110.00 |
| 4 | 27996.45 | 29.44 | 1.739 | 0.30( 0.25) | 0.82 | 8270.1 | 420.00 |
| 5 | 28301.36 | 30.19 | 1.712 | 0.30( 0.25) | 0.82 | 8606.6 | 100.00 |
| 6 | 29349.14 | 32.79 | 1.644 | 0.30( 0.25) | 0.83 | 9751.1 | 150.00 |
| 7 | 29618.23 | 33.46 | 1.626 | 0.30( 0.25) | 0.83 | 10043.2 | 400.00 |
| 8 | 30940.93 | 37.77 | 1.513 | 0.30( 0.25) | 0.85 | 12221.4 | 50150.00 |
| 9 | 32143.59 | 42.12 | 1.421 | 0.30( 0.26) | 0.87 | 14285.9 | 390.00 |
| 10 | 32310.23 | 42.92 | 1.408 | 0.30( 0.26) | 0.87 | 14649.3 | 31100.00 |
| 11 | 35349.00 | 57.37 | 1.213 | 0.30( 0.27) | 0.89 | 21458.9 | 13210.00 |
| 12 | 35421.32 | 57.76 | 1.209 | 0.30( 0.27) | 0.90 | 21638.5 | 13200.00 |
| 13 | 35481.45 | 58.13 | 1.205 | 0.30( 0.27) | 0.90 | 21799.9 | 40100.00 |
| 14 | 35601.25 | 59.22 | 1.193 | 0.30( 0.27) | 0.90 | 22272.4 | 13100.00 |
| 15 | 36412.77 | 65.98 | 1.145 | 0.30( 0.27) | 0.91 | 25044.7 | 11801.00 |
| 16 | 38208.60 | 76.75 | 1.072 | 0.30( 0.28) | 0.92 | 30169.4 | 11530.00 |
| 17 | 39938.36 | 84.16 | 1.021 | 0.30( 0.28) | 0.93 | 34722.5 | 13000.00 |
| 18 | 40024.03 | 84.57 | 1.019 | 0.30( 0.28) | 0.93 | 34952.5 | 11910.00 |
| 19 | 40455.69 | 86.50 | 1.006 | 0.30( 0.28) | 0.93 | 36248.0 | 13010.00 |
| 20 | 42238.07 | 94.69 | 0.962 | 0.30( 0.28) | 0.94 | 41663.0 | 10800.00 |
| 21 | 42772.74 | 98.92 | 0.943 | 0.30( 0.28) | 0.94 | 44608.4 | 11130.00 |
| 22 | 42489.44 | 108.51 | 0.902 | 0.30( 0.28) | 0.95 | 49649.6 | 12410.00 |
| 23 | 41944.18 | 116.79 | 0.866 | 0.30( 0.28) | 0.95 | 53388.7 | 11201.00 |
| 24 | 41519.47 | 121.76 | 0.848 | 0.30( 0.28) | 0.95 | 55120.4 | 12201.00 |
| 25 | 40523.12 | 128.80 | 0.834 | 0.30( 0.29) | 0.95 | 56977.5 | 12231.00 |
| 26 | 39254.71 | 136.59 | 0.818 | 0.30( 0.29) | 0.95 | 58611.8 | 10400.00 |
| 27 | 37943.41 | 144.51 | 0.801 | 0.30( 0.29) | 0.95 | 59906.9 | 12010.00 |
| 28 | 36781.39 | 150.46 | 0.789 | 0.30( 0.29) | 0.95 | 60253.9 | 10210.00 |
| 29 | 36269.89 | 153.50 | 0.783 | 0.30( 0.29) | 0.95 | 60371.1 | 12000.00 |
| 30 | 32723.83 | 178.56 | 0.731 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 50-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI50EV34.DAT
  TIME/DATE OF STUDY: 13:37 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.305
   2)   10.00;  3.420
   3)   15.00;  2.629
   4)   20.00;  2.200
   5)   25.00;  1.906
   6)   30.00;  1.714
   7)   40.00;  1.452
   8)   50.00;  1.290
   9)   60.00;  1.181
  10)   90.00;  0.979
  11)  120.00;  0.849
  12)  180.00;  0.725
  13)  360.00;  0.534
  14) 1200.00;  0.233
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    25685.02   23.31  0.30( 0.24) 0.81    6155.5     110.00
      2    28301.36   30.19  0.30( 0.25) 0.82    8606.6     100.00
      3    29618.23   33.46  0.30( 0.25) 0.83   10043.2     400.00
      4    30940.93   37.77  0.30( 0.25) 0.85   12221.4   50150.00
      5    32310.23   42.92  0.30( 0.26) 0.87   14649.3   31100.00
      6    35601.25   59.22  0.30( 0.27) 0.90   22272.4   13100.00
      7    36412.77   65.98  0.30( 0.27) 0.91   25044.7   11801.00
      8    38208.60   76.75  0.30( 0.28) 0.92   30169.4   11530.00
      9    40455.69   86.50  0.30( 0.28) 0.93   36248.0   13010.00
     10    42238.07   94.69  0.30( 0.28) 0.94   41663.0   10800.00
     11    42772.74   98.92  0.30( 0.28) 0.94   44608.4   11130.00
     12    42489.44  108.51  0.30( 0.28) 0.95   49649.6   12410.00
     13    41944.18  116.79  0.30( 0.28) 0.95   53388.7   11201.00
     14    41519.47  121.76  0.30( 0.28) 0.95   55120.4   12201.00
     15    40523.12  128.80  0.30( 0.29) 0.95   56977.5   12231.00
     16    39254.71  136.59  0.30( 0.29) 0.95   58611.8   10400.00
     17    37943.41  144.51  0.30( 0.29) 0.95   59906.9   12010.00
     18    36781.39  150.46  0.30( 0.29) 0.95   60253.9   10210.00
     19    36269.89  153.50  0.30( 0.29) 0.95   60371.1   12000.00
     20    32723.83  178.56  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    25685.02   23.31  0.30( 0.24) 0.81    6155.5     110.00
      2    28301.36   30.19  0.30( 0.25) 0.82    8606.6     100.00
      3    29618.23   33.46  0.30( 0.25) 0.83   10043.2     400.00
      4    30940.93   37.77  0.30( 0.25) 0.85   12221.4   50150.00
      5    32310.23   42.92  0.30( 0.26) 0.87   14649.3   31100.00
      6    35601.25   59.22  0.30( 0.27) 0.90   22272.4   13100.00
      7    36412.77   65.98  0.30( 0.27) 0.91   25044.7   11801.00
      8    38208.60   76.75  0.30( 0.28) 0.92   30169.4   11530.00
      9    40455.69   86.50  0.30( 0.28) 0.93   36248.0   13010.00
     10    42238.07   94.69  0.30( 0.28) 0.94   41663.0   10800.00
     11    42772.74   98.92  0.30( 0.28) 0.94   44608.4   11130.00
     12    42489.44  108.51  0.30( 0.28) 0.95   49649.6   12410.00
     13    41944.18  116.79  0.30( 0.28) 0.95   53388.7   11201.00
```

```
     14    41519.47  121.76  0.30( 0.28) 0.95   55120.4   12201.00
     15    40523.12  128.80  0.30( 0.29) 0.95   56977.5   12231.00
     16    39254.71  136.59  0.30( 0.29) 0.95   58611.8   10400.00
     17    37943.41  144.51  0.30( 0.29) 0.95   59906.9   12010.00
     18    36781.39  150.46  0.30( 0.29) 0.95   60253.9   10210.00
     19    36269.89  153.50  0.30( 0.29) 0.95   60371.1   12000.00
     20    32723.83  178.56  0.30( 0.29) 0.95   60992.3   10100.00
    TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.16
  CHANNEL FLOW THRU SUBAREA(CFS) =   42772.74
  FLOW VELOCITY(FEET/SEC.) =  14.98   FLOW DEPTH(FEET) =  11.16
  TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =   99.62
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505X.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      265.16   19.79  0.30( 0.30) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25685.02   24.13    1.957  0.30( 0.24) 0.81    6155.5     110.00
      2    28301.36   30.98    1.688  0.30( 0.25) 0.82    8606.6     100.00
      3    29618.23   34.24    1.603  0.30( 0.25) 0.83   10043.2     400.00
      4    30940.93   38.54    1.490  0.30( 0.25) 0.85   12221.4   50150.00
      5    32310.23   43.68    1.392  0.30( 0.26) 0.87   14649.3   31100.00
      6    35601.25   59.96    1.181  0.30( 0.27) 0.90   22272.4   13100.00
      7    36412.77   66.71    1.136  0.30( 0.27) 0.91   25044.7   11801.00
      8    38208.60   77.47    1.063  0.30( 0.28) 0.92   30169.4   11530.00
      9    40455.69   87.21    0.998  0.30( 0.28) 0.93   36248.0   13010.00
     10    42238.07   95.39    0.956  0.30( 0.28) 0.94   41663.0   10800.00
     11    42772.74   99.62    0.937  0.30( 0.28) 0.94   44608.4   11130.00
     12    42489.44  109.21    0.896  0.30( 0.28) 0.95   49649.6   12410.00
```



```
     13    41944.18  117.49    0.860  0.30( 0.28) 0.95   53388.7   11201.00
     14    41519.47  122.46    0.844  0.30( 0.28) 0.95   55120.4   12201.00
     15    40523.12  129.51    0.829  0.30( 0.29) 0.95   56977.5   12231.00
     16    39254.71  137.30    0.813  0.30( 0.29) 0.95   58611.8   10400.00
     17    37943.41  145.23    0.797  0.30( 0.29) 0.95   59906.9   12010.00
     18    36781.39  151.19    0.785  0.30( 0.29) 0.95   60253.9   10210.00
     19    36269.89  154.23    0.778  0.30( 0.29) 0.95   60371.1   12000.00
     20    32723.83  179.32    0.726  0.30( 0.29) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     265.16   19.79    2.218  0.30( 0.30) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24535.28   19.79    2.218  0.30( 0.24) 0.81    5200.5   50500.00
      2    25914.16   24.13    1.957  0.30( 0.24) 0.81    6308.6     110.00
      3    28493.41   30.98    1.688  0.30( 0.25) 0.82    8759.8     100.00
      4    29798.50   34.24    1.603  0.30( 0.25) 0.83   10196.4     400.00
      5    31105.66   38.54    1.490  0.30( 0.25) 0.85   12374.6   50150.00
      6    32461.47   43.68    1.392  0.30( 0.26) 0.87   14802.4   31100.00
      7    35723.40   59.96    1.181  0.30( 0.27) 0.90   22425.6   13100.00
      8    36528.62   66.71    1.136  0.30( 0.27) 0.91   25197.9   11801.00
      9    38314.46   77.47    1.063  0.30( 0.28) 0.92   30322.6   11530.00
     10    40552.51   87.21    0.998  0.30( 0.28) 0.93   36401.2   13010.00
     11    42329.08   95.39    0.956  0.30( 0.28) 0.94   41816.2   10800.00
     12    42861.21   99.62    0.937  0.30( 0.28) 0.94   44761.5   11130.00
     13    42572.19  109.21    0.896  0.30( 0.28) 0.95   49802.7   12410.00
     14    42021.97  117.49    0.860  0.30( 0.28) 0.95   53541.8   11201.00
     15    41595.07  122.46    0.844  0.30( 0.28) 0.95   55273.5   12201.00
     16    40596.71  129.51    0.829  0.30( 0.29) 0.95   57130.7   12231.00
     17    39326.07  137.30    0.813  0.30( 0.29) 0.95   58765.0   10400.00
     18    38012.51  145.23    0.797  0.30( 0.29) 0.95   60060.1   12010.00
     19    36848.80  151.19    0.785  0.30( 0.29) 0.95   60407.1   10210.00
     20    36336.43  154.23    0.778  0.30( 0.29) 0.95   60524.3   12000.00
     21    32783.21  179.32    0.726  0.30( 0.29) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    42861.21  Tc(MIN.) =   99.616
  EFFECTIVE AREA(ACRES) =  44761.53  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.02
CHANNEL FLOW THRU SUBAREA(CFS) = 42861.21
FLOW VELOCITY(FEET/SEC.) = 15.24 FLOW DEPTH(FEET) = 11.02
TRAVEL TIME(MIN.) = 0.43 Tc(MIN.) = 100.05
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

**********
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1
----------
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0610506X.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 94.69 | 17.43 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

TOTAL AREA(ACRES) = 49.6

**********
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11
----------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24535.28 | 20.30 | 2.182 | 0.30( 0.24) | 0.81 | 5200.5 | 50500.00 |
| 2 | 25914.16 | 24.64 | 1.927 | 0.30( 0.24) | 0.81 | 6308.6 | 110.00 |
| 3 | 28493.41 | 31.47 | 1.675 | 0.30( 0.25) | 0.82 | 8759.8 | 100.00 |
| 4 | 29798.50 | 34.73 | 1.590 | 0.30( 0.25) | 0.83 | 10196.4 | 400.00 |
| 5 | 31105.66 | 39.02 | 1.478 | 0.30( 0.25) | 0.85 | 12374.6 | 50150.00 |
| 6 | 32461.47 | 44.15 | 1.385 | 0.30( 0.26) | 0.87 | 14802.4 | 31100.00 |
| 7 | 35723.40 | 60.42 | 1.178 | 0.30( 0.27) | 0.90 | 22425.6 | 13100.00 |
| 8 | 36528.62 | 67.16 | 1.133 | 0.30( 0.27) | 0.91 | 25197.9 | 11801.00 |
| 9 | 38314.46 | 77.91 | 1.060 | 0.30( 0.28) | 0.92 | 30322.6 | 11530.00 |
| 10 | 40552.51 | 87.65 | 0.995 | 0.30( 0.28) | 0.93 | 36401.2 | 13010.00 |
| 11 | 42329.08 | 95.82 | 0.954 | 0.30( 0.28) | 0.94 | 41816.2 | 10800.00 |
| 12 | 42861.21 | 100.05 | 0.935 | 0.30( 0.28) | 0.94 | 44761.5 | 11130.00 |
| 13 | 42572.19 | 109.64 | 0.894 | 0.30( 0.28) | 0.95 | 49802.7 | 12410.00 |
| 14 | 42021.97 | 117.92 | 0.858 | 0.30( 0.28) | 0.95 | 53541.8 | 11201.00 |
| 15 | 41595.07 | 122.89 | 0.843 | 0.30( 0.28) | 0.95 | 55273.5 | 12201.00 |
| 16 | 40596.71 | 129.95 | 0.828 | 0.30( 0.29) | 0.95 | 57130.7 | 12231.00 |
| 17 | 39326.07 | 137.75 | 0.812 | 0.30( 0.29) | 0.95 | 58765.0 | 10400.00 |
| 18 | 38012.51 | 145.68 | 0.796 | 0.30( 0.29) | 0.95 | 60060.1 | 12010.00 |
| 19 | 36848.80 | 151.64 | 0.784 | 0.30( 0.29) | 0.95 | 60407.1 | 10210.00 |
| 20 | 36336.43 | 154.69 | 0.777 | 0.30( 0.29) | 0.95 | 60524.3 | 12000.00 |
| 21 | 32783.21 | 179.79 | 0.725 | 0.30( 0.29) | 0.95 | 61145.5 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 94.69 | 17.43 | 2.420 | 0.30( 0.30) | 1.00 | 49.6 | 50600.00 |

LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.

** PEAK FLOW RATE TABLE **



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23748.21 | 17.43 | 2.420 | 0.30( 0.25) | 0.82 | 4514.0 | 50600.00 |
| 2 | 24619.33 | 20.30 | 2.182 | 0.30( 0.24) | 0.82 | 5250.1 | 50500.00 |
| 3 | 25986.82 | 24.64 | 1.927 | 0.30( 0.24) | 0.82 | 6358.2 | 110.00 |
| 4 | 28554.83 | 31.47 | 1.675 | 0.30( 0.25) | 0.82 | 8809.4 | 100.00 |
| 5 | 29856.11 | 34.73 | 1.590 | 0.30( 0.25) | 0.83 | 10245.9 | 400.00 |
| 6 | 31158.25 | 39.02 | 1.478 | 0.30( 0.25) | 0.85 | 12424.1 | 50150.00 |
| 7 | 32509.91 | 44.15 | 1.385 | 0.30( 0.26) | 0.87 | 14852.0 | 31100.00 |
| 8 | 35762.61 | 60.42 | 1.178 | 0.30( 0.27) | 0.90 | 22475.2 | 13100.00 |
| 9 | 36565.81 | 67.16 | 1.133 | 0.30( 0.27) | 0.91 | 25247.5 | 11801.00 |
| 10 | 38348.42 | 77.91 | 1.060 | 0.30( 0.28) | 0.92 | 30372.2 | 11530.00 |
| 11 | 40583.54 | 87.65 | 0.995 | 0.30( 0.28) | 0.93 | 36450.8 | 13010.00 |
| 12 | 42358.27 | 95.82 | 0.954 | 0.30( 0.28) | 0.94 | 41865.8 | 10800.00 |
| 13 | 42889.59 | 100.05 | 0.935 | 0.30( 0.28) | 0.94 | 44811.1 | 11130.00 |
| 14 | 42598.71 | 109.64 | 0.894 | 0.30( 0.28) | 0.95 | 49852.3 | 12410.00 |
| 15 | 42046.89 | 117.92 | 0.858 | 0.30( 0.28) | 0.95 | 53591.4 | 11201.00 |
| 16 | 41619.32 | 122.89 | 0.843 | 0.30( 0.28) | 0.95 | 55323.1 | 12201.00 |
| 17 | 40620.31 | 129.95 | 0.828 | 0.30( 0.29) | 0.95 | 57180.3 | 12231.00 |
| 18 | 39348.95 | 137.75 | 0.812 | 0.30( 0.29) | 0.95 | 58814.6 | 10400.00 |
| 19 | 38034.66 | 145.68 | 0.796 | 0.30( 0.29) | 0.95 | 60109.7 | 12010.00 |
| 20 | 36870.40 | 151.64 | 0.784 | 0.30( 0.29) | 0.95 | 60456.7 | 10210.00 |
| 21 | 36357.75 | 154.69 | 0.777 | 0.30( 0.29) | 0.95 | 60573.9 | 12000.00 |
| 22 | 32802.21 | 179.79 | 0.725 | 0.30( 0.29) | 0.95 | 61195.1 | 10100.00 |

TOTAL AREA(ACRES) = 61195.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 42889.59 Tc(MIN.) = 100.048
EFFECTIVE AREA(ACRES) = 44811.12 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 61195.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

**********
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.88
CHANNEL FLOW THRU SUBAREA(CFS) = 42889.59
FLOW VELOCITY(FEET/SEC.) = 17.42 FLOW DEPTH(FEET) = 9.88
TRAVEL TIME(MIN.) = 1.53 Tc(MIN.) = 101.58
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120708.25 FEET.

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81
----------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.58
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.80      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =   11.49
  EFFECTIVE AREA(ACRES) =  44831.43   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61215.4       PEAK FLOW RATE(CFS) =   42889.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  101.58
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.929
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        3.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =    9.39
  EFFECTIVE AREA(ACRES) =  44848.03   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61232.0       PEAK FLOW RATE(CFS) =   42889.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
```



```
  PEAK FLOWRATE TABLE FILE NAME: 2p50evbb.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)           (ACRES)     NODE
      1      748.33    9.86  0.30( 0.11) 0.38      244.2      429.00
      2      793.01   11.37  0.30( 0.11) 0.38      281.3      425.00
      3      804.73   11.79  0.30( 0.11) 0.38      291.7      400.00
      4      836.36   13.23  0.30( 0.11) 0.38      327.6      300.00
      5      892.30   18.33  0.30( 0.11) 0.38      440.3      210.00
      6      879.40   20.37  0.30( 0.11) 0.38      466.7      410.00
      7      872.79   21.37  0.30( 0.11) 0.38      479.4      200.00
      8      870.12   21.98  0.30( 0.11) 0.38      486.6      230.00
      9      849.67   23.09  0.30( 0.11) 0.37      491.2      220.50
    TOTAL AREA(ACRES) =      491.2

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    23748.21   19.30    2.260  0.30( 0.25) 0.82     4550.9    50600.00
      2    24619.33   22.15    2.074  0.30( 0.25) 0.82     5287.0    50500.00
      3    25986.82   26.45    1.850  0.30( 0.24) 0.82     6395.1      110.00
      4    28554.83   33.23    1.629  0.30( 0.25) 0.82     8846.3      100.00
      5    29856.11   36.46    1.545  0.30( 0.25) 0.83    10282.8      400.00
      6    31158.25   40.72    1.440  0.30( 0.25) 0.85    12461.0    50150.00
      7    32509.91   45.83    1.358  0.30( 0.26) 0.87    14888.9    31100.00
      8    35762.61   62.04    1.167  0.30( 0.27) 0.90    22512.1    13100.00
      9    36565.81   68.78    1.122  0.30( 0.27) 0.91    25284.4    11801.00
     10    38348.42   79.50    1.050  0.30( 0.28) 0.92    30409.1    11530.00
     11    40583.54   89.21    0.984  0.30( 0.28) 0.93    36487.7    13010.00
     12    42358.27   97.36    0.947  0.30( 0.28) 0.94    41902.7    10800.00
     13    42889.59  101.58    0.929  0.30( 0.28) 0.94    44848.0    11130.00
     14    42598.71  111.18    0.887  0.30( 0.28) 0.95    49889.2    12410.00
     15    42046.89  119.47    0.851  0.30( 0.28) 0.95    53628.3    11201.00
     16    41619.32  124.44    0.840  0.30( 0.28) 0.95    55360.0    12201.00
     17    40620.31  131.51    0.825  0.30( 0.29) 0.95    57217.2    12231.00
     18    39348.95  139.32    0.809  0.30( 0.29) 0.95    58851.5    10400.00
     19    38034.66  147.28    0.793  0.30( 0.29) 0.95    60146.6    12010.00
     20    36870.40  153.25    0.780  0.30( 0.29) 0.95    60493.6    10210.00
     21    36357.75  156.31    0.774  0.30( 0.29) 0.95    60610.8    12000.00
     22    32802.21  181.46    0.723  0.30( 0.29) 0.95    61232.0    10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      748.33    9.86    3.472  0.30( 0.11) 0.38      244.2      429.00
      2      793.01   11.37    3.204  0.30( 0.11) 0.38      281.3      425.00
      3      804.73   11.79    3.137  0.30( 0.11) 0.38      291.7      400.00
      4      836.36   13.23    2.909  0.30( 0.11) 0.38      327.6      300.00
      5      892.30   18.33    2.343  0.30( 0.11) 0.38      440.3      210.00
      6      879.40   20.37    2.178  0.30( 0.11) 0.38      466.7      410.00
      7      872.79   21.37    2.119  0.30( 0.11) 0.38      479.4      200.00
```

```
     8      870.12   21.98    2.083  0.30( 0.11) 0.38     486.6     230.00
     9      849.67   23.09    2.018  0.30( 0.11) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20184.47    9.86    3.472  0.30( 0.23) 0.78    2570.0     429.00
      2    21333.08   11.37    3.204  0.30( 0.23) 0.78    2962.4     425.00
      3    21625.18   11.79    3.137  0.30( 0.23) 0.78    3071.8     400.00
      4    22360.99   13.23    2.909  0.30( 0.23) 0.78    3448.3     300.00
      5    24380.09   18.33    2.343  0.30( 0.23) 0.78    4763.8     210.00
      6    24634.41   19.30    2.260  0.30( 0.23) 0.78    5003.8   50600.00
      7    24956.25   20.37    2.178  0.30( 0.23) 0.78    5295.3     410.00
      8    25254.68   21.37    2.119  0.30( 0.23) 0.78    5565.8     200.00
      9    25439.55   21.98    2.083  0.30( 0.23) 0.78    5731.5     230.00
     10    25486.42   22.15    2.074  0.30( 0.23) 0.78    5774.3   50500.00
     11    25768.03   23.09    2.018  0.30( 0.23) 0.78    6020.5     220.50
     12    26761.57   26.45    1.850  0.30( 0.24) 0.78    6886.3     110.00
     13    29231.09   33.23    1.629  0.30( 0.24) 0.80    9337.5     100.00
     14    30494.66   36.46    1.545  0.30( 0.24) 0.81   10774.0     400.00
     15    31750.19   40.72    1.440  0.30( 0.25) 0.83   12952.2   50150.00
     16    33064.95   45.83    1.358  0.30( 0.26) 0.85   15380.1   31100.00
     17    36232.84   62.04    1.167  0.30( 0.27) 0.89   23003.3   13100.00
     18    37015.82   68.78    1.122  0.30( 0.27) 0.90   25775.6   11801.00
     19    38766.23   79.50    1.050  0.30( 0.27) 0.91   30900.3   11530.00
     20    40972.23   89.21    0.984  0.30( 0.28) 0.92   36978.9   13010.00
     21    42730.36   97.36    0.947  0.30( 0.28) 0.93   42393.9   10800.00
     22    43253.52  101.58    0.929  0.30( 0.28) 0.93   45339.2   11130.00
     23    42944.10  111.18    0.887  0.30( 0.28) 0.94   50380.4   12410.00
     24    42376.27  119.47    0.851  0.30( 0.28) 0.94   54119.5   11201.00
     25    41943.58  124.44    0.840  0.30( 0.28) 0.94   55851.2   12201.00
     26    40938.06  131.51    0.825  0.30( 0.28) 0.95   57708.4   12231.00
     27    39659.50  139.32    0.809  0.30( 0.28) 0.95   59342.7   10400.00
     28    38337.88  147.28    0.793  0.30( 0.28) 0.95   60637.8   12010.00
     29    37168.12  153.25    0.780  0.30( 0.28) 0.95   60984.8   10210.00
     30    36652.65  156.31    0.774  0.30( 0.28) 0.95   61102.0   12000.00
     31    33074.60  181.46    0.723  0.30( 0.28) 0.95   61723.2   10100.00
    TOTAL AREA(ACRES) =     61723.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    43253.52  Tc(MIN.) =  101.581
  EFFECTIVE AREA(ACRES) =  45339.23  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    61723.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.94
```



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  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.917
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.00      0.30      1.000     -
  USER-DEFINED               -        3.30      0.30      1.000     -
  USER-DEFINED               -        0.40      0.30      0.100     -
  USER-DEFINED               -        1.40      0.30      1.000     -
  USER-DEFINED               -        0.30      0.30      0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   43257.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.52
  AVERAGE FLOW DEPTH(FEET) =  10.94   TRAVEL TIME(MIN.) =   2.64
  Tc(MIN.) =  104.22
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    7.06
  EFFECTIVE AREA(ACRES) =  45351.62     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    61735.6         PEAK FLOW RATE(CFS) =   43253.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.94

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.94   FLOW VELOCITY(FEET/SEC.) =  15.52
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610507X.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      406.61   19.94  0.30( 0.30) 0.99     236.8   50700.00
    TOTAL AREA(ACRES) =      236.8

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20184.47   13.25    2.905  0.30( 0.23) 0.78    2582.4     429.00
      2    21333.08   14.70    2.677  0.30( 0.23) 0.78    2974.8     425.00
      3    21625.18   15.10    2.620  0.30( 0.23) 0.78    3084.2     400.00
```

```
     4    22360.99   16.51    2.499  0.30( 0.23) 0.78    3460.7     300.00
     5    24380.09   21.51    2.111  0.30( 0.23) 0.78    4776.2     210.00
     6    24634.41   22.47    2.055  0.30( 0.23) 0.78    5016.2   50600.00
     7    24956.25   23.53    1.992  0.30( 0.23) 0.78    5307.7     410.00
     8    25254.68   24.52    1.934  0.30( 0.23) 0.78    5578.2     200.00
     9    25439.55   25.12    1.901  0.30( 0.23) 0.78    5743.9     230.00
    10    25486.42   25.28    1.895  0.30( 0.23) 0.78    5786.7   50500.00
    11    25768.03   26.21    1.859  0.30( 0.23) 0.78    6032.9     220.50
    12    26761.57   29.54    1.732  0.30( 0.24) 0.79    6898.7     110.00
    13    29231.09   36.22    1.551  0.30( 0.24) 0.80    9349.9     100.00
    14    30494.66   39.41    1.467  0.30( 0.24) 0.81   10786.4     400.00
    15    31750.19   43.64    1.393  0.30( 0.25) 0.83   12964.6   50150.00
    16    33064.95   48.71    1.311  0.30( 0.26) 0.85   15392.5   31100.00
    17    36232.84   64.84    1.148  0.30( 0.27) 0.89   23015.7   13100.00
    18    37015.82   71.55    1.103  0.30( 0.27) 0.90   25788.0   11801.00
    19    38766.23   82.24    1.031  0.30( 0.27) 0.91   30912.7   11530.00
    20    40972.23   91.89    0.971  0.30( 0.28) 0.92   36991.3   13010.00
    21    42730.36  100.01    0.936  0.30( 0.28) 0.93   42406.3   10800.00
    22    43253.52  104.22    0.917  0.30( 0.28) 0.93   45351.6   11130.00
    23    42944.10  113.82    0.876  0.30( 0.28) 0.94   50392.8   12410.00
    24    42376.27  122.12    0.845  0.30( 0.28) 0.94   54131.9   11201.00
    25    41943.58  127.11    0.834  0.30( 0.28) 0.94   55863.6   12201.00
    26    40938.06  134.19    0.820  0.30( 0.28) 0.95   57720.8   12231.00
    27    39659.50  142.04    0.803  0.30( 0.28) 0.95   59355.1   10400.00
    28    38337.88  150.02    0.787  0.30( 0.28) 0.95   60650.2   12010.00
    29    37168.12  156.02    0.775  0.30( 0.28) 0.95   60997.2   10210.00
    30    36652.65  159.09    0.768  0.30( 0.28) 0.95   61114.4   12000.00
    31    33074.60  184.34    0.720  0.30( 0.28) 0.95   61735.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       406.61   19.94    2.205  0.30( 0.30) 0.99     236.8   50700.00
LONGEST FLOWPATH FROM NODE  50700.00 TO NODE  13408.00 =    7903.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20553.93   13.25    2.905  0.30( 0.24) 0.79    2739.7     429.00
    2    21706.90   14.70    2.677  0.30( 0.24) 0.79    3149.3     425.00
    3    22000.16   15.10    2.620  0.30( 0.24) 0.79    3263.6     400.00
    4    22749.61   16.51    2.499  0.30( 0.24) 0.79    3656.7     300.00
    5    24152.70   19.94    2.205  0.30( 0.24) 0.79    4599.9   50700.00
    6    24766.68   21.51    2.111  0.30( 0.24) 0.79    5013.0     210.00
    7    25009.02   22.47    2.055  0.30( 0.24) 0.79    5252.9   50600.00
    8    25317.57   23.53    1.992  0.30( 0.24) 0.79    5544.5     410.00
    9    25603.61   24.52    1.934  0.30( 0.24) 0.79    5815.0     200.00
   10    25781.43   25.12    1.901  0.30( 0.24) 0.79    5980.6     230.00
   11    25826.98   25.28    1.895  0.30( 0.24) 0.79    6023.5   50500.00
   12    26100.98   26.21    1.859  0.30( 0.24) 0.79    6269.7     220.50
   13    27067.32   29.54    1.732  0.30( 0.24) 0.79    7135.5     110.00
   14    29498.27   36.22    1.551  0.30( 0.24) 0.81    9586.7     100.00
   15    30744.04   39.41    1.467  0.30( 0.24) 0.81   11023.2     400.00
   16    31983.72   43.64    1.393  0.30( 0.25) 0.83   13201.4   50150.00
   17    33280.96   48.71    1.311  0.30( 0.26) 0.86   15629.3   31100.00
   18    36414.21   64.84    1.148  0.30( 0.27) 0.89   23252.5   13100.00
   19    37187.56   71.55    1.103  0.30( 0.27) 0.90   26024.8   11801.00
```



```
   20    38922.62   82.24    1.031  0.30( 0.27) 0.91   31149.5   11530.00
   21    41115.73   91.89    0.971  0.30( 0.28) 0.92   37228.1   13010.00
   22    42866.36  100.01    0.936  0.30( 0.28) 0.93   42643.0   10800.00
   23    43385.63  104.22    0.917  0.30( 0.28) 0.94   45588.4   11130.00
   24    43067.34  113.82    0.876  0.30( 0.28) 0.94   50629.6   12410.00
   25    42492.87  122.12    0.845  0.30( 0.28) 0.94   54368.7   11201.00
   26    42057.98  127.11    0.834  0.30( 0.28) 0.95   56100.4   12201.00
   27    41049.34  134.19    0.820  0.30( 0.28) 0.95   57957.6   12231.00
   28    39767.32  142.04    0.803  0.30( 0.28) 0.95   59591.9   10400.00
   29    38442.18  150.02    0.787  0.30( 0.28) 0.95   60887.0   12010.00
   30    37269.78  156.02    0.775  0.30( 0.28) 0.95   61233.9   10210.00
   31    36752.96  159.09    0.768  0.30( 0.28) 0.95   61351.1   12000.00
   32    33164.71  184.34    0.720  0.30( 0.28) 0.95   61972.4   10100.00
  TOTAL AREA(ACRES) =     61972.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    43385.63  Tc(MIN.) =  104.222
  EFFECTIVE AREA(ACRES) =  45588.41  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    61972.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    182.00  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =   952.73   CHANNEL SLOPE =  0.0034
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.35
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.912
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.40      0.30     1.000     -
  USER-DEFINED               -        2.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   43386.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.41
  AVERAGE FLOW DEPTH(FEET) =  12.35   TRAVEL TIME(MIN.) =   1.18
  Tc(MIN.) =  105.41
  SUBAREA AREA(ACRES) =     3.30       SUBAREA RUNOFF(CFS) =    1.82
  EFFECTIVE AREA(ACRES) =  45591.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    61975.7         PEAK FLOW RATE(CFS) =   43385.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.35   FLOW VELOCITY(FEET/SEC.) =  13.41
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)           (ACRES)    NODE
      1     2426.61   27.79  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73  0.30( 0.28) 0.93    3859.7   13500.00
    TOTAL AREA(ACRES) =     3859.7

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    20553.93   14.76    2.667  0.30( 0.24) 0.79    2743.0     429.00
      2    21706.90   16.18    2.528  0.30( 0.24) 0.79    3152.6     425.00
      3    22000.16   16.58    2.494  0.30( 0.24) 0.79    3266.9     400.00
      4    22749.61   17.97    2.374  0.30( 0.24) 0.79    3660.0     300.00
      5    24152.70   21.37    2.119  0.30( 0.24) 0.79    4603.2   50700.00
      6    24766.68   22.93    2.028  0.30( 0.24) 0.79    5016.3     210.00
      7    25009.02   23.88    1.972  0.30( 0.24) 0.79    5256.2   50600.00
      8    25317.57   24.94    1.910  0.30( 0.24) 0.79    5547.8     410.00
      9    25603.61   25.92    1.871  0.30( 0.24) 0.79    5818.3     200.00
     10    25781.43   26.52    1.848  0.30( 0.24) 0.79    5983.9     230.00
     11    25826.98   26.68    1.841  0.30( 0.24) 0.79    6026.8   50500.00
     12    26100.98   27.61    1.806  0.30( 0.24) 0.79    6273.0     220.50
     13    27067.32   30.91    1.690  0.30( 0.24) 0.79    7138.8     110.00
     14    29498.27   37.56    1.516  0.30( 0.24) 0.81    9590.0     100.00
     15    30744.04   40.73    1.440  0.30( 0.24) 0.81   11026.5     400.00
     16    31983.72   44.94    1.372  0.30( 0.25) 0.83   13204.7   50150.00
     17    33280.96   50.00    1.290  0.30( 0.26) 0.86   15632.6   31100.00
     18    36414.21   66.09    1.140  0.30( 0.27) 0.89   23255.8   13100.00
     19    37187.56   72.79    1.095  0.30( 0.27) 0.90   26028.1   11801.00
     20    38922.62   83.46    1.023  0.30( 0.27) 0.91   31152.8   11530.00
     21    41115.73   93.10    0.966  0.30( 0.28) 0.92   37231.4   13010.00
     22    42866.36  101.20    0.930  0.30( 0.28) 0.93   42646.3   10800.00
     23    43385.63  105.41    0.912  0.30( 0.28) 0.94   45591.7   11130.00
     24    43067.34  115.01    0.871  0.30( 0.28) 0.94   50632.9   12410.00
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     25    42492.87  123.31    0.842  0.30( 0.28) 0.94   54372.0   11201.00
     26    42057.98  128.30    0.832  0.30( 0.28) 0.95   56103.7   12201.00
     27    41049.34  135.40    0.817  0.30( 0.28) 0.95   57960.9   12231.00
     28    39767.32  143.26    0.801  0.30( 0.28) 0.95   59595.2   10400.00
     29    38442.18  151.25    0.784  0.30( 0.28) 0.95   60890.3   12010.00
     30    37269.78  157.26    0.772  0.30( 0.28) 0.95   61237.2   10210.00
     31    36752.96  160.34    0.766  0.30( 0.28) 0.95   61354.4   12000.00
     32    33164.71  185.63    0.719  0.30( 0.28) 0.95   61975.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1     2426.61   27.79    1.799  0.30( 0.27) 0.90    1478.1     110.00
    2     2523.08   30.18    1.709  0.30( 0.27) 0.90    1650.5     100.00
    3     2535.23   31.37    1.678  0.30( 0.27) 0.90    1727.1     100.00
    4     2565.50   34.38    1.599  0.30( 0.27) 0.91    1904.1     130.00
    5     2700.64   47.40    1.332  0.30( 0.28) 0.93    2638.7   20100.00
    6     2620.76   52.90    1.258  0.30( 0.28) 0.93    2824.4   13600.00
    7     2498.72   87.84    0.994  0.30( 0.28) 0.93    3795.6   13510.00
    8     2354.93   96.73    0.950  0.30( 0.28) 0.93    3859.7   13500.00
LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1    22574.91   14.76    2.667  0.30( 0.24) 0.81    3528.1     429.00
    2    23793.45   16.18    2.528  0.30( 0.24) 0.81    4013.0     425.00
    3    24105.77   16.58    2.494  0.30( 0.24) 0.81    4148.5     400.00
    4    24909.40   17.97    2.374  0.30( 0.24) 0.81    4615.7     300.00
    5    26410.23   21.37    2.119  0.30( 0.24) 0.81    5739.9   50700.00
    6    27068.79   22.93    2.028  0.30( 0.24) 0.81    6236.0     210.00
    7    27330.29   23.88    1.972  0.30( 0.24) 0.81    6526.5   50600.00
    8    27652.97   24.94    1.910  0.30( 0.24) 0.81    6874.1     410.00
    9    27973.26   25.92    1.871  0.30( 0.24) 0.81    7196.9     200.00
   10    28171.07   26.52    1.848  0.30( 0.24) 0.81    7394.5     230.00
   11    28221.70   26.68    1.841  0.30( 0.24) 0.81    7445.9   50500.00
   12    28522.67   27.61    1.806  0.30( 0.24) 0.81    7741.3     220.50
   13    28581.35   27.79    1.799  0.30( 0.24) 0.81    7799.3     110.00
   14    29375.88   30.18    1.709  0.30( 0.24) 0.81    8597.1     100.00
   15    29597.91   30.91    1.690  0.30( 0.24) 0.81    8836.6     110.00
   16    29768.84   31.37    1.678  0.30( 0.24) 0.81    9033.6     100.00
   17    30900.10   34.38    1.599  0.30( 0.25) 0.82   10320.8     130.00
   18    32096.80   37.56    1.516  0.30( 0.25) 0.83   11673.7     100.00
   19    33375.46   40.73    1.440  0.30( 0.25) 0.83   13289.0     400.00
   20    34658.83   44.94    1.372  0.30( 0.25) 0.85   15704.7   50150.00
   21    35315.69   47.40    1.332  0.30( 0.26) 0.86   17025.0   20100.00
   22    35943.91   50.00    1.290  0.30( 0.26) 0.87   18359.0   31100.00
   23    36467.04   52.90    1.258  0.30( 0.26) 0.87   19832.4   13600.00
   24    38988.90   66.09    1.140  0.30( 0.27) 0.89   26446.8   13100.00
   25    39738.83   72.79    1.095  0.30( 0.27) 0.90   29405.5   11801.00
   26    41436.63   83.46    1.023  0.30( 0.27) 0.91   34826.7   11530.00
   27    42417.76   87.84    0.994  0.30( 0.28) 0.92   37710.1   13510.00
   28    43529.45   93.10    0.966  0.30( 0.28) 0.92   41064.8   13010.00
   29    44256.14   96.73    0.950  0.30( 0.28) 0.93   43520.7   13500.00
   30    45153.22  101.20    0.930  0.30( 0.28) 0.93   46506.0   10800.00
   31    45608.43  105.41    0.912  0.30( 0.28) 0.94   49451.4   11130.00
   32    45143.82  115.01    0.871  0.30( 0.28) 0.94   54492.6   12410.00
```

```
     33    44469.23  123.31    0.842  0.30( 0.28) 0.94   58231.7   11201.00
     34    43998.11  128.30    0.832  0.30( 0.28) 0.94   59963.4   12201.00
     35    42937.89  135.40    0.817  0.30( 0.28) 0.95   61820.6   12231.00
     36    41598.77  143.26    0.801  0.30( 0.28) 0.95   63454.9   10400.00
     37    40215.55  151.25    0.784  0.30( 0.28) 0.95   64750.0   12010.00
     38    38999.45  157.26    0.772  0.30( 0.28) 0.95   65096.9   10210.00
     39    38460.29  160.34    0.766  0.30( 0.28) 0.95   65214.1   12000.00
     40    34708.16  185.63    0.719  0.30( 0.28) 0.95   65835.4   10100.00
    TOTAL AREA(ACRES) =     65835.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    45608.43  Tc(MIN.) =  105.405
  EFFECTIVE AREA(ACRES) =  49451.39  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    65835.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.28
  CHANNEL FLOW THRU SUBAREA(CFS) =   45608.43
  FLOW VELOCITY(FEET/SEC.) =  19.94   FLOW DEPTH(FEET) =   9.28
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  105.55
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101C.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      570.78   37.58  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    22574.91   14.94    2.638  0.30( 0.24) 0.81    3528.1     429.00
    2    23793.45   16.35    2.513  0.30( 0.24) 0.81    4013.0     425.00
    3    24105.77   16.75    2.479  0.30( 0.24) 0.81    4148.5     400.00
    4    24909.40   18.14    2.359  0.30( 0.24) 0.81    4615.7     300.00
    5    26410.23   21.54    2.109  0.30( 0.24) 0.81    5739.9   50700.00
    6    27068.79   23.10    2.018  0.30( 0.24) 0.81    6236.0     210.00
    7    27330.29   24.05    1.962  0.30( 0.24) 0.81    6526.5   50600.00
    8    27652.97   25.10    1.902  0.30( 0.24) 0.81    6874.1     410.00
    9    27973.26   26.09    1.864  0.30( 0.24) 0.81    7196.9     200.00
   10    28171.07   26.69    1.841  0.30( 0.24) 0.81    7394.5     230.00
   11    28221.70   26.85    1.835  0.30( 0.24) 0.81    7445.9   50500.00
   12    28522.67   27.77    1.800  0.30( 0.24) 0.81    7741.3     220.50
   13    28581.35   27.96    1.792  0.30( 0.24) 0.81    7799.3     110.00
   14    29375.88   30.34    1.705  0.30( 0.24) 0.81    8597.1     100.00
   15    29597.91   31.08    1.686  0.30( 0.24) 0.81    8836.6     110.00
   16    29768.84   31.53    1.674  0.30( 0.24) 0.81    9033.6     100.00
   17    30900.10   34.54    1.595  0.30( 0.25) 0.82   10320.8     130.00
   18    32096.80   37.72    1.512  0.30( 0.25) 0.83   11673.7     100.00
   19    33375.46   40.89    1.438  0.30( 0.25) 0.83   13289.0     400.00
   20    34658.83   45.10    1.369  0.30( 0.25) 0.85   15704.7   50150.00
   21    35315.69   47.56    1.330  0.30( 0.26) 0.86   17025.0   20100.00
   22    35943.91   50.15    1.288  0.30( 0.26) 0.87   18359.0   31100.00
   23    36467.04   53.05    1.257  0.30( 0.26) 0.87   19832.4   13600.00
   24    38988.90   66.24    1.139  0.30( 0.27) 0.89   26446.8   13100.00
   25    39738.83   72.94    1.094  0.30( 0.27) 0.90   29405.5   11801.00
   26    41436.63   83.61    1.022  0.30( 0.27) 0.91   34826.7   11530.00
   27    42417.76   87.98    0.993  0.30( 0.28) 0.92   37710.1   13510.00
   28    43529.45   93.24    0.965  0.30( 0.28) 0.92   41064.8   13010.00
   29    44256.14   96.88    0.949  0.30( 0.28) 0.93   43520.7   13500.00
   30    45153.22  101.34    0.930  0.30( 0.28) 0.93   46506.0   10800.00
   31    45608.43  105.55    0.912  0.30( 0.28) 0.94   49451.4   11130.00
   32    45143.82  115.15    0.870  0.30( 0.28) 0.94   54492.6   12410.00
   33    44469.23  123.46    0.842  0.30( 0.28) 0.94   58231.7   11201.00
   34    43998.11  128.44    0.832  0.30( 0.28) 0.94   59963.4   12201.00
   35    42937.89  135.54    0.817  0.30( 0.28) 0.95   61820.6   12231.00
   36    41598.77  143.40    0.801  0.30( 0.28) 0.95   63454.9   10400.00
   37    40215.55  151.40    0.784  0.30( 0.28) 0.95   64750.0   12010.00
   38    38999.45  157.41    0.772  0.30( 0.28) 0.95   65096.9   10210.00
   39    38460.29  160.49    0.765  0.30( 0.28) 0.95   65214.1   12000.00
   40    34708.16  185.79    0.719  0.30( 0.28) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      570.78   37.58    1.515  0.30( 0.30) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23010.65   14.94    2.638  0.30( 0.25) 0.83    3763.1     429.00
    2    24244.85   16.35    2.513  0.30( 0.25) 0.82    4270.2     425.00
    3    24561.04   16.75    2.479  0.30( 0.25) 0.82    4412.0     400.00
    4    25375.51   18.14    2.359  0.30( 0.25) 0.82    4901.0     300.00
    5    26896.66   21.54    2.109  0.30( 0.25) 0.82    6078.7   50700.00
```

```
      6    27564.06   23.10    2.018  0.30( 0.25) 0.82    6599.3     210.00
      7    27829.21   24.05    1.962  0.30( 0.25) 0.82    6904.7   50600.00
      8    28155.05   25.10    1.902  0.30( 0.25) 0.82    7268.9     410.00
      9    28482.74   26.09    1.864  0.30( 0.25) 0.82    7607.1     200.00
     10    28684.63   26.69    1.841  0.30( 0.25) 0.82    7814.3     230.00
     11    28736.28   26.85    1.835  0.30( 0.25) 0.82    7868.2   50500.00
     12    29042.70   27.77    1.800  0.30( 0.25) 0.82    8178.1     220.50
     13    29102.37   27.96    1.792  0.30( 0.25) 0.82    8238.9     110.00
     14    29908.35   30.34    1.705  0.30( 0.25) 0.82    9074.3     100.00
     15    30135.81   31.08    1.686  0.30( 0.25) 0.82    9325.3     110.00
     16    30309.94   31.53    1.674  0.30( 0.25) 0.82    9529.5     100.00
     17    31458.95   34.54    1.595  0.30( 0.25) 0.83   10864.0     130.00
     18    32613.45   37.58    1.515  0.30( 0.25) 0.83   12203.5   10100.00
     19    32665.82   37.72    1.512  0.30( 0.25) 0.83   12264.7     100.00
     20    33909.83   40.89    1.438  0.30( 0.25) 0.84   13880.0     400.00
     21    35161.31   45.10    1.369  0.30( 0.26) 0.85   16295.7   50150.00
     22    35799.54   47.56    1.330  0.30( 0.26) 0.86   17616.0   20100.00
     23    36408.48   50.15    1.288  0.30( 0.26) 0.87   18950.0   31100.00
     24    36916.82   53.05    1.257  0.30( 0.26) 0.87   20423.4   13600.00
     25    39383.62   66.24    1.139  0.30( 0.27) 0.90   27037.8   13100.00
     26    40112.44   72.94    1.094  0.30( 0.27) 0.90   29996.5   11801.00
     27    41776.64   83.61    1.022  0.30( 0.27) 0.91   35417.7   11530.00
     28    42744.00   87.98    0.993  0.30( 0.28) 0.92   38301.1   13510.00
     29    43842.77   93.24    0.965  0.30( 0.28) 0.92   41655.8   13010.00
     30    44562.10   96.88    0.949  0.30( 0.28) 0.93   44111.7   13500.00
     31    45450.12  101.34    0.930  0.30( 0.28) 0.93   47097.0   10800.00
     32    45896.81  105.55    0.912  0.30( 0.28) 0.94   50042.4   11130.00
     33    45412.73  115.15    0.870  0.30( 0.28) 0.94   55083.6   12410.00
     34    44724.98  123.46    0.842  0.30( 0.28) 0.94   58822.7   11201.00
     35    44249.04  128.44    0.832  0.30( 0.28) 0.94   60554.4   12201.00
     36    43181.96  135.54    0.817  0.30( 0.28) 0.95   62411.6   12231.00
     37    41835.24  143.40    0.801  0.30( 0.28) 0.95   64045.9   10400.00
     38    40444.29  151.40    0.784  0.30( 0.28) 0.95   65341.0   12010.00
     39    39222.38  157.41    0.772  0.30( 0.28) 0.95   65687.9   10210.00
     40    38680.25  160.49    0.765  0.30( 0.28) 0.95   65805.1   12000.00
     41    34906.39  185.79    0.719  0.30( 0.28) 0.95   66426.4   10100.00
   TOTAL AREA(ACRES) =     66426.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    45896.81  Tc(MIN.) =  105.547
  EFFECTIVE AREA(ACRES) =  50042.39  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    66426.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13700.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    176.93  DOWNSTREAM(FEET) =    170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.10   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.15
  CHANNEL FLOW THRU SUBAREA(CFS) =   45896.81
  FLOW VELOCITY(FEET/SEC.) =  27.22   FLOW DEPTH(FEET) =   7.15
```



```
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =  105.71
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124549.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610508X.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      219.66   20.77  0.30( 0.30) 0.99     131.3   50800.00
    TOTAL AREA(ACRES) =      131.3

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23010.65   15.14    2.617  0.30( 0.25) 0.83    3763.1     429.00
      2    24244.85   16.55    2.496  0.30( 0.25) 0.82    4270.2     425.00
      3    24561.04   16.95    2.462  0.30( 0.25) 0.82    4412.0     400.00
      4    25375.51   18.34    2.343  0.30( 0.25) 0.82    4901.0     300.00
      5    26896.66   21.73    2.098  0.30( 0.25) 0.82    6078.7   50700.00
      6    27564.06   23.29    2.007  0.30( 0.25) 0.82    6599.3     210.00
      7    27829.21   24.24    1.951  0.30( 0.25) 0.82    6904.7   50600.00
      8    28155.05   25.29    1.895  0.30( 0.25) 0.82    7268.9     410.00
      9    28482.74   26.27    1.857  0.30( 0.25) 0.82    7607.1     200.00
     10    28684.63   26.88    1.834  0.30( 0.25) 0.82    7814.3     230.00
     11    28736.28   27.04    1.828  0.30( 0.25) 0.82    7868.2   50500.00
     12    29042.70   27.96    1.792  0.30( 0.25) 0.82    8178.1     220.50
     13    29102.37   28.14    1.785  0.30( 0.25) 0.82    8238.9     110.00
     14    29908.35   30.53    1.700  0.30( 0.25) 0.82    9074.3     100.00
     15    30135.81   31.26    1.681  0.30( 0.25) 0.82    9325.3     110.00
     16    30309.94   31.71    1.669  0.30( 0.25) 0.82    9529.5     100.00
     17    31458.95   34.72    1.590  0.30( 0.25) 0.83   10864.0     130.00
     18    32613.45   37.76    1.511  0.30( 0.25) 0.83   12203.5   10100.00
     19    32665.82   37.90    1.507  0.30( 0.25) 0.83   12264.7     100.00
     20    33909.83   41.07    1.435  0.30( 0.25) 0.84   13880.0     400.00
     21    35161.31   45.27    1.367  0.30( 0.26) 0.85   16295.7   50150.00
     22    35799.54   47.73    1.327  0.30( 0.26) 0.86   17616.0   20100.00
     23    36408.48   50.32    1.286  0.30( 0.26) 0.87   18950.0   31100.00
     24    36916.82   53.22    1.255  0.30( 0.26) 0.87   20423.4   13600.00
     25    39383.62   66.41    1.138  0.30( 0.27) 0.90   27037.8   13100.00
     26    40112.44   73.11    1.093  0.30( 0.27) 0.90   29996.5   11801.00
     27    41776.64   83.77    1.021  0.30( 0.27) 0.91   35417.7   11530.00
     28    42744.00   88.15    0.991  0.30( 0.28) 0.92   38301.1   13510.00
```

```
   29    43842.77   93.40    0.964  0.30( 0.28) 0.92   41655.8   13010.00
   30    44562.10   97.04    0.949  0.30( 0.28) 0.93   44111.7   13500.00
   31    45450.12  101.50    0.929  0.30( 0.28) 0.93   47097.0   10800.00
   32    45896.81  105.71    0.911  0.30( 0.28) 0.94   50042.4   11130.00
   33    45412.73  115.31    0.869  0.30( 0.28) 0.94   55083.6   12410.00
   34    44724.98  123.62    0.842  0.30( 0.28) 0.94   58822.7   11201.00
   35    44249.04  128.60    0.831  0.30( 0.28) 0.94   60554.4   12201.00
   36    43181.96  135.70    0.817  0.30( 0.28) 0.95   62411.6   12231.00
   37    41835.24  143.57    0.800  0.30( 0.28) 0.95   64045.9   10400.00
   38    40444.29  151.56    0.784  0.30( 0.28) 0.95   65341.0   12010.00
   39    39222.38  157.58    0.771  0.30( 0.28) 0.95   65687.9   10210.00
   40    38680.25  160.66    0.765  0.30( 0.28) 0.95   65805.1   12000.00
   41    34906.39  185.96    0.719  0.30( 0.28) 0.95   66426.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124549.22 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      219.66   20.77    2.155  0.30( 0.30) 0.99     131.3   50800.00
LONGEST FLOWPATH FROM NODE  50800.00 TO NODE  13700.00 =    5946.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23210.63   15.14    2.617  0.30( 0.25) 0.83   3858.8     429.00
    2    24452.05   16.55    2.496  0.30( 0.25) 0.83   4374.8     425.00
    3    24769.93   16.95    2.462  0.30( 0.25) 0.83   4519.1     400.00
    4    25589.07   18.34    2.343  0.30( 0.25) 0.83   5016.9     300.00
    5    26682.95   20.77    2.155  0.30( 0.25) 0.83   5874.5   50800.00
    6    27109.59   21.73    2.098  0.30( 0.25) 0.82   6210.0   50700.00
    7    27766.18   23.29    2.007  0.30( 0.25) 0.82   6730.6     210.00
    8    28024.72   24.24    1.951  0.30( 0.25) 0.82   7036.0   50600.00
    9    28343.96   25.29    1.895  0.30( 0.25) 0.82   7400.2     410.00
   10    28667.19   26.27    1.857  0.30( 0.25) 0.82   7738.4     200.00
   11    28866.35   26.88    1.834  0.30( 0.25) 0.82   7945.5     230.00
   12    28917.28   27.04    1.828  0.30( 0.25) 0.82   7999.5   50500.00
   13    29219.50   27.96    1.792  0.30( 0.25) 0.82   8309.4     220.50
   14    29278.33   28.14    1.785  0.30( 0.25) 0.82   8370.2     110.00
   15    30074.25   30.53    1.700  0.30( 0.25) 0.82   9205.6     100.00
   16    30299.45   31.26    1.681  0.30( 0.25) 0.82   9456.6     110.00
   17    30472.17   31.71    1.669  0.30( 0.25) 0.82   9660.7     100.00
   18    31611.87   34.72    1.590  0.30( 0.25) 0.83  10995.3     130.00
   19    32756.96   37.76    1.511  0.30( 0.25) 0.83  12334.8   10100.00
   20    32808.89   37.90    1.507  0.30( 0.25) 0.83  12396.0     100.00
   21    34044.36   41.07    1.435  0.30( 0.25) 0.84  14011.3     400.00
   22    35287.79   45.27    1.367  0.30( 0.26) 0.85  16427.0   50150.00
   23    35921.31   47.73    1.327  0.30( 0.26) 0.86  17747.3   20100.00
   24    36525.49   50.32    1.286  0.30( 0.26) 0.87  19081.2   31100.00
   25    37030.09   53.22    1.255  0.30( 0.26) 0.88  20554.7   13600.00
   26    39483.07   66.41    1.138  0.30( 0.27) 0.90  27169.0   13100.00
   27    40206.55   73.11    1.093  0.30( 0.27) 0.90  30127.7   11801.00
   28    41862.27   83.77    1.021  0.30( 0.27) 0.91  35549.0   11530.00
   29    42826.14   88.15    0.991  0.30( 0.28) 0.92  38432.4   13510.00
   30    43921.70   93.40    0.964  0.30( 0.28) 0.92  41787.1   13010.00
   31    44639.16   97.04    0.949  0.30( 0.28) 0.93  44242.9   13500.00
   32    45524.90  101.50    0.929  0.30( 0.28) 0.93  47228.3   10800.00
   33    45969.44  105.71    0.911  0.30( 0.28) 0.94  50173.7   11130.00
   34    45480.44  115.31    0.869  0.30( 0.28) 0.94  55214.9   12410.00
```



```
   35    44789.40  123.62    0.842  0.30( 0.28) 0.94   58954.0   11201.00
   36    44312.24  128.60    0.831  0.30( 0.28) 0.94   60685.7   12201.00
   37    43243.43  135.70    0.817  0.30( 0.28) 0.95   62542.8   12231.00
   38    41894.79  143.57    0.800  0.30( 0.28) 0.95   64177.1   10400.00
   39    40501.88  151.56    0.784  0.30( 0.28) 0.95   65472.2   12010.00
   40    39278.50  157.58    0.771  0.30( 0.28) 0.95   65819.2   10210.00
   41    38735.62  160.66    0.765  0.30( 0.28) 0.95   65936.4   12000.00
   42    34956.29  185.96    0.719  0.30( 0.28) 0.95   66557.6   10100.00
  TOTAL AREA(ACRES) =     66557.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    45969.44  Tc(MIN.) =  105.706
  EFFECTIVE AREA(ACRES) =  50173.66  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    66557.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13700.00 =  124549.22 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    66557.6  TC(MIN.) =    105.71
  EFFECTIVE AREA(ACRES) =  50173.66  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.936
  PEAK FLOW RATE(CFS)   =   45969.44

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23210.63   15.14    2.617  0.30( 0.25) 0.83   3858.8     429.00
      2    24452.05   16.55    2.496  0.30( 0.25) 0.83   4374.8     425.00
      3    24769.93   16.95    2.462  0.30( 0.25) 0.83   4519.1     400.00
      4    25589.07   18.34    2.343  0.30( 0.25) 0.83   5016.9     300.00
      5    26682.95   20.77    2.155  0.30( 0.25) 0.83   5874.5   50800.00
      6    27109.59   21.73    2.098  0.30( 0.25) 0.82   6210.0   50700.00
      7    27766.18   23.29    2.007  0.30( 0.25) 0.82   6730.6     210.00
      8    28024.72   24.24    1.951  0.30( 0.25) 0.82   7036.0   50600.00
      9    28343.96   25.29    1.895  0.30( 0.25) 0.82   7400.2     410.00
     10    28667.19   26.27    1.857  0.30( 0.25) 0.82   7738.4     200.00
     11    28866.35   26.88    1.834  0.30( 0.25) 0.82   7945.5     230.00
     12    28917.28   27.04    1.828  0.30( 0.25) 0.82   7999.5   50500.00
     13    29219.50   27.96    1.792  0.30( 0.25) 0.82   8309.4     220.50
     14    29278.33   28.14    1.785  0.30( 0.25) 0.82   8370.2     110.00
     15    30074.25   30.53    1.700  0.30( 0.25) 0.82   9205.6     100.00
     16    30299.45   31.26    1.681  0.30( 0.25) 0.82   9456.6     110.00
     17    30472.17   31.71    1.669  0.30( 0.25) 0.82   9660.7     100.00
     18    31611.87   34.72    1.590  0.30( 0.25) 0.83  10995.3     130.00
     19    32756.96   37.76    1.511  0.30( 0.25) 0.83  12334.8   10100.00
     20    32808.89   37.90    1.507  0.30( 0.25) 0.83  12396.0     100.00
     21    34044.36   41.07    1.435  0.30( 0.25) 0.84  14011.3     400.00
     22    35287.79   45.27    1.367  0.30( 0.26) 0.85  16427.0   50150.00
     23    35921.31   47.73    1.327  0.30( 0.26) 0.86  17747.3   20100.00
     24    36525.49   50.32    1.286  0.30( 0.26) 0.87  19081.2   31100.00
     25    37030.09   53.22    1.255  0.30( 0.26) 0.88  20554.7   13600.00
     26    39483.07   66.41    1.138  0.30( 0.27) 0.90  27169.0   13100.00
     27    40206.55   73.11    1.093  0.30( 0.27) 0.90  30127.7   11801.00
     28    41862.27   83.77    1.021  0.30( 0.27) 0.91  35549.0   11530.00
     29    42826.14   88.15    0.991  0.30( 0.28) 0.92  38432.4   13510.00
     30    43921.70   93.40    0.964  0.30( 0.28) 0.92  41787.1   13010.00
     31    44639.16   97.04    0.949  0.30( 0.28) 0.93  44242.9   13500.00
     32    45524.90  101.50    0.929  0.30( 0.28) 0.93  47228.3   10800.00
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 45969.44 | 105.71 | 0.911 | 0.30( 0.28) | 0.94 | 50173.7 | 11130.00 |
| 34 | 45480.44 | 115.31 | 0.869 | 0.30( 0.28) | 0.94 | 55214.9 | 12410.00 |
| 35 | 44789.40 | 123.62 | 0.842 | 0.30( 0.28) | 0.94 | 58954.0 | 11201.00 |
| 36 | 44312.24 | 128.60 | 0.831 | 0.30( 0.28) | 0.94 | 60685.7 | 12201.00 |
| 37 | 43243.43 | 135.70 | 0.817 | 0.30( 0.28) | 0.95 | 62542.8 | 12231.00 |
| 38 | 41894.79 | 143.57 | 0.800 | 0.30( 0.28) | 0.95 | 64177.1 | 10400.00 |
| 39 | 40501.88 | 151.56 | 0.784 | 0.30( 0.28) | 0.95 | 65472.2 | 12010.00 |
| 40 | 39278.50 | 157.58 | 0.771 | 0.30( 0.28) | 0.95 | 65819.2 | 10210.00 |
| 41 | 38735.62 | 160.66 | 0.765 | 0.30( 0.28) | 0.95 | 65936.4 | 12000.00 |
| 42 | 34956.29 | 185.96 | 0.719 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 50-YR EV FEB 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI50EV36.DAT
  TIME/DATE OF STUDY: 09:16 02/15/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.255
   2)   10.00;  3.396
   3)   15.00;  2.615
   4)   20.00;  2.190
   5)   25.00;  1.899
   6)   30.00;  1.707
   7)   40.00;  1.447
   8)   50.00;  1.285
   9)   60.00;  1.174
  10)   90.00;  0.972
  11)  120.00;  0.842
  12)  180.00;  0.717
  13)  360.00;  0.527
  14) 1200.00;  0.230
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    69   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.97
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      8.97

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.962
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.91
  AVERAGE FLOW DEPTH(FEET) =   0.42   TRAVEL TIME(MIN.) =   1.78
  Tc(MIN.) =   12.78
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   17.85
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      25.97
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   4.49
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.29
  AVERAGE FLOW DEPTH(FEET) =   0.93   TRAVEL TIME(MIN.) =   2.45
  Tc(MIN.) =   15.23
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   63.97
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      86.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.16   FLOW VELOCITY(FEET/SEC.) =   6.03
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.331
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.35
  AVERAGE FLOW DEPTH(FEET) =   1.34   TRAVEL TIME(MIN.) =   3.11
  Tc(MIN.) =   18.34
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   42.70
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     119.11
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   6.56
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.67
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
  AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   2.31
  Tc(MIN.) =   20.65
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   35.41
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     144.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =   6.30
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1198.50   52.93  0.30( 0.28) 0.95    1515.8   13510.00
      2     1092.68   61.25  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1198.50   52.93  0.30( 0.28) 0.95    1515.8   13510.00
      2     1092.68   61.25  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1209.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.50
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.57   TRAVEL TIME(MIN.) =   2.75
  Tc(MIN.) =   55.68
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   22.00
  EFFECTIVE AREA(ACRES) =   1542.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1301.65
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.68   FLOW VELOCITY(FEET/SEC.) =  12.80
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1301.65   55.68    1.222  0.30( 0.28) 0.95    1542.3   13510.00
      2     1247.57   64.08    1.147  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1301.65  Tc(MIN.) =   55.68
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1542.26

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.20
  EFFECTIVE AREA(ACRES) =   1543.71   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1302.85

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1302.85   55.68    1.222  0.30( 0.28) 0.95    1543.7   13510.00
      2     1248.68   64.08    1.147  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      144.04   20.65    2.152  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1106.54   20.65    2.152  0.30( 0.29) 0.95      658.9   13600.00
     2     1374.55   55.68    1.222  0.30( 0.29) 0.95     1630.1   13510.00
     3     1314.51   64.08    1.147  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1374.55  Tc(MIN.) =   55.676
 EFFECTIVE AREA(ACRES) =   1630.11  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1396.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.88
 AVERAGE FLOW DEPTH(FEET) =   2.82   TRAVEL TIME(MIN.) =   1.79
 Tc(MIN.) =   57.47
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   44.27
 EFFECTIVE AREA(ACRES) =   1684.63     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1389.65
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.81

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.81   FLOW VELOCITY(FEET/SEC.) =  12.87
```



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 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1126.15   22.55    2.041  0.30( 0.29) 0.96      713.4   13600.00
     2     1389.65   57.47    1.202  0.30( 0.29) 0.95     1684.6   13510.00
     3     1336.79   65.90    1.134  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1389.65  Tc(MIN.) =   57.47
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1684.63

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   57.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   47.39
 EFFECTIVE AREA(ACRES) =   1742.99   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1437.03

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XX50.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      238.49   17.13  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1217.61   22.55    2.041  0.30( 0.29) 0.96      771.8   13600.00
     2     1437.03   57.47    1.202  0.30( 0.29) 0.95     1743.0   13510.00
     3     1380.61   65.90    1.134  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      238.49   17.13    2.434  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.34   17.13    2.434  0.30( 0.28) 0.94     719.9   20100.00
     2     1413.09   22.55    2.041  0.30( 0.28) 0.95     905.6   13600.00
     3     1540.61   57.47    1.202  0.30( 0.28) 0.95    1876.8   13510.00
     4     1476.77   65.90    1.134  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1540.61  Tc(MIN.) =   57.467
 EFFECTIVE AREA(ACRES) =   1876.79  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.79
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1566.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.98
 AVERAGE FLOW DEPTH(FEET) =   3.79   TRAVEL TIME(MIN.) =   5.00
 Tc(MIN.) =   62.47
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   52.15
 EFFECTIVE AREA(ACRES) =   1944.37     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1540.61
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.76
```



```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.76   FLOW VELOCITY(FEET/SEC.) =   9.93
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.34   22.27    2.058  0.30( 0.28) 0.95     787.5   20100.00
     2     1413.09   27.67    1.797  0.30( 0.28) 0.95     973.1   13600.00
     3     1540.61   62.47    1.157  0.30( 0.28) 0.95    1944.4   13510.00
     4     1476.77   70.96    1.100  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1540.61  Tc(MIN.) =   62.47
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1944.37

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   80.80
 EFFECTIVE AREA(ACRES) =   2049.07   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1608.30

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    6.20
 EFFECTIVE AREA(ACRES) =   2057.10   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1614.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.13
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1695.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.70
  AVERAGE FLOW DEPTH(FEET) =   4.12   TRAVEL TIME(MIN.) =   4.83
  Tc(MIN.) =   67.30
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  162.77
  EFFECTIVE AREA(ACRES) =   2276.35     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1717.01
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.16   FLOW VELOCITY(FEET/SEC.) =   9.73
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1536.97   27.21    1.814  0.30( 0.29) 0.96    1119.4   20100.00
      2     1587.17   32.58    1.640  0.30( 0.29) 0.96    1305.1   13600.00
      3     1717.01   67.30    1.125  0.30( 0.29) 0.96    2276.4   13510.00
      4     1645.19   75.85    1.067  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1717.01  Tc(MIN.) =   67.30
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2276.35

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   67.30
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  159.94
  EFFECTIVE AREA(ACRES) =   2491.78   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1876.96

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   67.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   12.41
  EFFECTIVE AREA(ACRES) =   2508.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1889.37

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.23
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.17      0.30     1.000     -
  USER-DEFINED               -        9.19      0.30     1.000     -
  USER-DEFINED               -       67.57      0.30     1.000     -
  USER-DEFINED               -       35.19      0.30     1.000     -
```

```
  USER-DEFINED               -       30.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1941.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.77
  AVERAGE FLOW DEPTH(FEET) =   4.22   TRAVEL TIME(MIN.) =   4.51
  Tc(MIN.) =   71.81
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =  103.69
  EFFECTIVE AREA(ACRES) =   2653.51     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    1924.53
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.21   FLOW VELOCITY(FEET/SEC.) =  10.73
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1853.35   31.72    1.662  0.30( 0.29) 0.97    1496.6   20100.00
      2     1867.13   37.09    1.523  0.30( 0.29) 0.97    1682.3   13600.00
      3     1924.53   71.81    1.094  0.30( 0.29) 0.96    2653.5   13510.00
      4     1830.43   80.42    1.036  0.30( 0.29) 0.96    2717.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1924.53  Tc(MIN.) =   71.81
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2653.51

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   71.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       20.65      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  USER-DEFINED               -        8.45      0.30     1.000     -
  USER-DEFINED               -       96.93      0.30     1.000     -
  USER-DEFINED               -       13.19      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =  102.11
  EFFECTIVE AREA(ACRES) =   2796.31   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    2026.64

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN.) =   71.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       42.54      0.30     1.000     -
  USER-DEFINED               -       16.96      0.30     1.000     -
  USER-DEFINED               -       80.60      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        2.00      0.30     1.000     -
  USER-DEFINED               -        3.11      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  104.95
  EFFECTIVE AREA(ACRES) =   2943.08   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    2131.59

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2201.63   31.72    1.662  0.30( 0.29) 0.98    1786.2   20100.00
      2     2183.27   37.09    1.523  0.30( 0.29) 0.97    1971.9   13600.00
      3     2131.59   71.81    1.094  0.30( 0.29) 0.97    2943.1   13510.00
      4     2022.39   80.42    1.036  0.30( 0.29) 0.96    3007.2   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2201.63  Tc(MIN.) =   31.72
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1786.18

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.10
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2233.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.88
  AVERAGE FLOW DEPTH(FEET) =   4.10   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =   33.78
```

```
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   63.97
  EFFECTIVE AREA(ACRES) =   1840.48     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    2201.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.06   FLOW VELOCITY(FEET/SEC.) =  12.84
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2201.63   33.78    1.609  0.30( 0.29) 0.98    1840.5   20100.00
      2     2183.27   39.15    1.469  0.30( 0.29) 0.98    2026.2   13600.00
      3     2132.60   73.89    1.080  0.30( 0.29) 0.97    2997.4   13510.00
      4     2022.39   82.54    1.022  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2201.63  Tc(MIN.) =   33.78
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1840.48

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        9.52      0.30     1.000     -
  USER-DEFINED               -        0.71      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -       39.42      0.30     1.000     -
  USER-DEFINED               -        0.62      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   60.27
  EFFECTIVE AREA(ACRES) =   1891.64   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    2239.80

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  USER-DEFINED               -        0.11      0.30     1.000     -
  USER-DEFINED               -        0.77      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    4.46
  EFFECTIVE AREA(ACRES) =   1895.43   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    2244.27

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P50EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)         (ACRES)    NODE
      1      528.88   14.09  0.30( 0.11) 0.36     173.1     110.00
      2      529.33   16.63  0.30( 0.11) 0.37     204.3     100.00
      3      521.87   17.83  0.30( 0.11) 0.38     213.9     100.00
      4      463.87   20.89  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN 108.0 INCH PIPE IS  81.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  43.83
  ESTIMATED PIPE DIAMETER(INCH) = 108.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    2244.27
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   34.11
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2244.27   34.11    1.600  0.30( 0.29) 0.98    1895.4   20100.00
      2     2202.96   39.49    1.460  0.30( 0.29) 0.98    2081.1   13600.00
```

```
    3     2171.20   74.23    1.078  0.30( 0.29) 0.97    3052.3   13510.00
    4     2054.87   82.88    1.020  0.30( 0.29) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      528.88   14.09    2.758  0.30( 0.11) 0.36     173.1     110.00
      2      529.33   16.63    2.477  0.30( 0.11) 0.37     204.3     100.00
      3      521.87   17.83    2.374  0.30( 0.11) 0.38     213.9     100.00
      4      463.87   20.89    2.138  0.30( 0.12) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2276.62   14.09    2.758  0.30( 0.26) 0.87     955.9     110.00
      2     2357.12   16.63    2.477  0.30( 0.26) 0.87    1128.4     100.00
      3     2390.18   17.83    2.374  0.30( 0.26) 0.87    1204.9     100.00
      4     2404.22   20.89    2.138  0.30( 0.27) 0.89    1381.9     130.00
      5     2584.45   34.11    1.600  0.30( 0.28) 0.92    2116.5   20100.00
      6     2510.99   39.49    1.460  0.30( 0.28) 0.92    2302.2   13600.00
      7     2391.39   74.23    1.078  0.30( 0.28) 0.93    3273.4   13510.00
      8     2261.67   82.88    1.020  0.30( 0.28) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2584.45  Tc(MIN.) =   34.110
  EFFECTIVE AREA(ACRES) =   2116.53  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.11
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.600
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        1.11      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        0.44      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                   B        1.49      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        1.70      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.09      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       18.57      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   28.55
```



```
  EFFECTIVE AREA(ACRES) =   2140.93   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2584.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.11
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.600
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.19      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   57.06
  EFFECTIVE AREA(ACRES) =   2189.69   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2609.48

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        0.22      0.30     1.000     -
  USER-DEFINED              -        9.23      0.30     1.000     -
  USER-DEFINED              -        0.54      0.30     1.000     -
  USER-DEFINED              -        5.66      0.30     1.000     -
  USER-DEFINED              -        3.66      0.30     1.000     -
  USER-DEFINED              -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2620.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.43
  AVERAGE FLOW DEPTH(FEET) =   5.43   TRAVEL TIME(MIN.) =   1.49
```

Tc(MIN.) = 35.60
SUBAREA AREA(ACRES) = 19.98 SUBAREA RUNOFF(CFS) = 22.68
EFFECTIVE AREA(ACRES) = 2209.67 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3430.6 PEAK FLOW RATE(CFS) = 2609.48
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 5.41 FLOW VELOCITY(FEET/SEC.) = 10.43
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2310.60 | 15.63 | 2.561 | 0.30( 0.26) | 0.88 | 1049.1 | 110.00 |
| 2 | 2393.75 | 18.16 | 2.347 | 0.30( 0.26) | 0.88 | 1221.5 | 100.00 |
| 3 | 2427.48 | 19.36 | 2.245 | 0.30( 0.26) | 0.88 | 1298.1 | 100.00 |
| 4 | 2450.06 | 22.41 | 2.050 | 0.30( 0.27) | 0.89 | 1475.1 | 130.00 |
| 5 | 2609.48 | 35.60 | 1.561 | 0.30( 0.28) | 0.92 | 2209.7 | 20100.00 |
| 6 | 2529.63 | 40.99 | 1.431 | 0.30( 0.28) | 0.92 | 2395.3 | 13600.00 |
| 7 | 2406.81 | 75.76 | 1.068 | 0.30( 0.28) | 0.93 | 3366.6 | 13510.00 |
| 8 | 2274.74 | 84.43 | 1.009 | 0.30( 0.28) | 0.93 | 3430.6 | 13500.00 |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 2609.48 Tc(MIN.) = 35.60
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2209.67

****************************************************************************
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 35.60
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 1.56 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 9.40 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.76 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 17.38 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.46 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 5.56 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 39.12 SUBAREA RUNOFF(CFS) = 44.41
EFFECTIVE AREA(ACRES) = 2248.79 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3469.8 PEAK FLOW RATE(CFS) = 2609.48
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<



============================================================================
MAINLINE Tc(MIN.) = 35.60
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.65 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 1.70 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 2.67
EFFECTIVE AREA(ACRES) = 2251.14 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 2609.48
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 35.60
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 5.29 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 31.25 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.22 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 6.26 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.07 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 0.22 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 49.17
EFFECTIVE AREA(ACRES) = 2294.45 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 2651.97

****************************************************************************
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) = 35.60
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 2.47 | 0.30 | 0.850 | - |
| USER-DEFINED | - | 3.06 | 0.30 | 0.850 | - |
| USER-DEFINED | - | 17.76 | 0.30 | 0.500 | - |

```
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   48.07
  EFFECTIVE AREA(ACRES) =   2333.61   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    2700.04

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.60
  EFFECTIVE AREA(ACRES) =   2334.14   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    2700.64

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.20
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2706.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.41
  AVERAGE FLOW DEPTH(FEET) =   5.20   TRAVEL TIME(MIN.) =   4.18
  Tc(MIN.) =   39.78
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =   12.11
  EFFECTIVE AREA(ACRES) =   2345.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
```



```
  TOTAL AREA(ACRES) =     3566.8       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.19   FLOW VELOCITY(FEET/SEC.) =  11.41
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     2426.61   19.94    2.195  0.30( 0.26) 0.88    1185.2     110.00
      2     2523.08   22.41    2.050  0.30( 0.26) 0.88    1357.6     100.00
      3     2535.23   23.61    1.980  0.30( 0.26) 0.88    1434.2     100.00
      4     2565.50   26.65    1.836  0.30( 0.27) 0.89    1611.2     130.00
      5     2700.64   39.78    1.453  0.30( 0.28) 0.92    2345.8   20100.00
      6     2617.49   45.21    1.363  0.30( 0.28) 0.92    2531.5   13600.00
      7     2479.31   80.04    1.039  0.30( 0.28) 0.93    3502.7   13510.00
      8     2338.52   88.79    0.980  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   39.78
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2345.81

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   91.26
  EFFECTIVE AREA(ACRES) =   2433.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        0.01      0.30     1.000     -
 USER-DEFINED              -        0.18      0.30     1.000     -
 USER-DEFINED              -        0.38      0.30     1.000     -
 USER-DEFINED              -        0.22      0.30     1.000     -
 USER-DEFINED              -        7.73      0.30     1.000     -
 USER-DEFINED              -        4.37      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   13.37
 EFFECTIVE AREA(ACRES) =   2446.66   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                  B        2.57      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                  B        1.97      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                   B        1.00      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                   B        2.98      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        2.39      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        1.67      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   13.05
 EFFECTIVE AREA(ACRES) =   2459.24   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        0.44      0.30     1.000    66
```



```
 PUBLIC PARK               B        2.65      0.30     0.850    56
 PUBLIC PARK               B        1.16      0.30     0.850    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"      B        0.47      0.30     0.500    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"      B        0.25      0.30     0.500    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"  B       20.24      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
 SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   26.41
 EFFECTIVE AREA(ACRES) =   2484.45   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        7.08      0.30     1.000     -
 USER-DEFINED              -        6.75      0.30     1.000     -
 USER-DEFINED              -        0.02      0.30     1.000     -
 USER-DEFINED              -        0.93      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   15.33
 EFFECTIVE AREA(ACRES) =   2499.23   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.49
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        8.49      0.30     1.000     -
 USER-DEFINED              -       13.31      0.30     1.000     -
 USER-DEFINED              -        0.87      0.30     1.000     -
 USER-DEFINED              -       20.26      0.30     1.000     -
 USER-DEFINED              -        1.21      0.30     1.000     -
```

```
  USER-DEFINED               -        0.05      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2722.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.67
  AVERAGE FLOW DEPTH(FEET) =   5.49   TRAVEL TIME(MIN.) =   3.95
  Tc(MIN.) =   43.73
  SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   43.22
  EFFECTIVE AREA(ACRES) =   2543.42     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.47   FLOW VELOCITY(FEET/SEC.) =  10.64
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   24.00    1.957  0.30( 0.27) 0.90    1382.8     110.00
      2     2523.08   26.43    1.844  0.30( 0.27) 0.90    1555.2     100.00
      3     2535.23   27.62    1.798  0.30( 0.27) 0.90    1631.8     100.00
      4     2565.50   30.65    1.690  0.30( 0.27) 0.90    1808.8     130.00
      5     2700.64   43.73    1.387  0.30( 0.28) 0.93    2543.4   20100.00
      6     2620.76   49.19    1.298  0.30( 0.28) 0.93    2729.1   13600.00
      7     2498.72   84.08    1.012  0.30( 0.28) 0.93    3700.3   13510.00
      8     2345.92   92.91    0.959  0.30( 0.28) 0.93    3764.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   43.73
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2543.42

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.56      0.30     1.000     -
  USER-DEFINED               -        0.81      0.30     1.000     -
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        0.59      0.30     1.000     -
  USER-DEFINED               -        3.04      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =   17.72
  EFFECTIVE AREA(ACRES) =   2561.54   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =    2700.64
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.70      0.30     0.850    56
  PUBLIC PARK                B        0.10      0.30     0.850    56
  PUBLIC PARK                B        2.90      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    6.34
  EFFECTIVE AREA(ACRES) =   2567.74   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.10      0.30     0.500    56
  CONDOMINIUMS               B        0.10      0.30     0.350    56
  PUBLIC PARK                B        6.90      0.30     0.850    56
  PUBLIC PARK                B        0.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    7.66
  EFFECTIVE AREA(ACRES) =   2575.24   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.55      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.01      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.35      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.44      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.67      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    5.95
  EFFECTIVE AREA(ACRES) =   2581.32   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   33.93
  EFFECTIVE AREA(ACRES) =   2616.01   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    2700.64
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   13.99
  EFFECTIVE AREA(ACRES) =   2630.32   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.84
  CHANNEL FLOW THRU SUBAREA(CFS) =    2700.64
  FLOW VELOCITY(FEET/SEC.) =  16.94   FLOW DEPTH(FEET) =   3.84
  TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =   44.01
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   24.30    1.940  0.30( 0.27) 0.90    1469.7     110.00
      2     2523.08   26.72    1.833  0.30( 0.27) 0.90    1642.1     100.00
      3     2535.23   27.91    1.787  0.30( 0.27) 0.90    1718.7     100.00
      4     2565.50   30.94    1.683  0.30( 0.27) 0.91    1895.7     130.00
      5     2700.64   44.01    1.382  0.30( 0.28) 0.93    2630.3   20100.00
      6     2620.76   49.48    1.293  0.30( 0.28) 0.93    2816.0   13600.00
      7     2498.72   84.37    1.010  0.30( 0.28) 0.93    3787.2   13510.00
      8     2354.93   93.20    0.958  0.30( 0.28) 0.93    3851.3   13500.00
  NEW PEAK FLOW DATA ARE:
```

```
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   44.01
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2630.32

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.16
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.327
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.23      0.30     1.000     -
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -        0.06      0.30     1.000     -
  USER-DEFINED               -        0.13      0.30     1.000     -
  USER-DEFINED               -        6.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2704.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
  AVERAGE FLOW DEPTH(FEET) =   6.16   TRAVEL TIME(MIN.) =   3.39
  Tc(MIN.) =   47.40
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    7.76
  EFFECTIVE AREA(ACRES) =   2638.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.15

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.15   FLOW VELOCITY(FEET/SEC.) =   9.06
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   27.79    1.792  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18    1.702  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37    1.671  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38    1.593  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40    1.327  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90    1.253  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84    0.987  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73    0.943  0.30( 0.28) 0.93    3859.7   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   47.40
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2638.71
```



```
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     3859.7  TC(MIN.) =     47.40
  EFFECTIVE AREA(ACRES) =   2638.71  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.928
  PEAK FLOW RATE(CFS)   =    2700.64

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   27.79    1.792  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18    1.702  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37    1.671  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38    1.593  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40    1.327  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90    1.253  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84    0.987  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73    0.943  0.30( 0.28) 0.93    3859.7   13500.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 50-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI50EV37.DAT
  TIME/DATE OF STUDY: 13:37 08/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.240
   2)   10.00;  3.389
   3)   15.00;  2.611
   4)   20.00;  2.187
   5)   25.00;  1.897
   6)   30.00;  1.705
   7)   40.00;  1.446
   8)   50.00;  1.284
   9)   60.00;  1.172
  10)   90.00;  0.970
  11)  120.00;  0.840
  12)  180.00;  0.715
  13)  360.00;  0.524
  14) 1200.00;  0.229
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25589.07   18.34  0.30( 0.25) 0.83    5016.9     300.00
      2    29278.33   28.14  0.30( 0.25) 0.82    8370.2     110.00
      3    34044.36   41.07  0.30( 0.25) 0.84   14011.3     400.00
      4    37030.09   53.22  0.30( 0.26) 0.88   20554.7   13600.00
      5    39483.07   66.41  0.30( 0.27) 0.90   27169.0   13100.00
      6    40206.55   73.11  0.30( 0.27) 0.90   30127.7   11801.00
      7    41862.27   83.77  0.30( 0.27) 0.91   35549.0   11530.00
      8    42826.14   88.15  0.30( 0.28) 0.92   38432.4   13510.00
      9    43921.70   93.40  0.30( 0.28) 0.92   41787.1   13010.00
     10    44639.16   97.04  0.30( 0.28) 0.93   44242.9   13500.00
     11    45524.90  101.50  0.30( 0.28) 0.93   47228.3   10800.00
     12    45969.44  105.71  0.30( 0.28) 0.94   50173.7   11130.00
     13    45480.44  115.31  0.30( 0.28) 0.94   55214.9   12410.00
     14    44789.40  123.62  0.30( 0.28) 0.94   58954.0   11201.00
     15    44312.24  128.60  0.30( 0.28) 0.94   60685.7   12201.00
     16    43243.43  135.70  0.30( 0.28) 0.95   62542.8   12231.00
     17    41894.79  143.57  0.30( 0.28) 0.95   64177.1   10400.00
     18    40501.88  151.56  0.30( 0.28) 0.95   65472.2   12010.00
     19    39278.50  157.58  0.30( 0.28) 0.95   65819.2   10210.00
     20    34956.29  185.96  0.30( 0.28) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25589.07   18.34  0.30( 0.25) 0.83    5016.9     300.00
      2    29278.33   28.14  0.30( 0.25) 0.82    8370.2     110.00
      3    34044.36   41.07  0.30( 0.25) 0.84   14011.3     400.00
      4    37030.09   53.22  0.30( 0.26) 0.88   20554.7   13600.00
      5    39483.07   66.41  0.30( 0.27) 0.90   27169.0   13100.00
      6    40206.55   73.11  0.30( 0.27) 0.90   30127.7   11801.00
      7    41862.27   83.77  0.30( 0.27) 0.91   35549.0   11530.00
      8    42826.14   88.15  0.30( 0.28) 0.92   38432.4   13510.00
      9    43921.70   93.40  0.30( 0.28) 0.92   41787.1   13010.00
     10    44639.16   97.04  0.30( 0.28) 0.93   44242.9   13500.00
     11    45524.90  101.50  0.30( 0.28) 0.93   47228.3   10800.00
     12    45969.44  105.71  0.30( 0.28) 0.94   50173.7   11130.00
     13    45480.44  115.31  0.30( 0.28) 0.94   55214.9   12410.00
```

```
     14    44789.40  123.62  0.30( 0.28) 0.94   58954.0   11201.00
     15    44312.24  128.60  0.30( 0.28) 0.94   60685.7   12201.00
     16    43243.43  135.70  0.30( 0.28) 0.95   62542.8   12231.00
     17    41894.79  143.57  0.30( 0.28) 0.95   64177.1   10400.00
     18    40501.88  151.56  0.30( 0.28) 0.95   65472.2   12010.00
     19    39278.50  157.58  0.30( 0.28) 0.95   65819.2   10210.00
     20    34956.29  185.96  0.30( 0.28) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.13
  CHANNEL FLOW THRU SUBAREA(CFS) =   45969.44
  FLOW VELOCITY(FEET/SEC.) =  12.02   FLOW DEPTH(FEET) =  14.13
  TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =  108.33
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      368.04   14.55  0.30( 0.29) 0.96     189.6   10230.00
      2      334.70   24.11  0.30( 0.29) 0.95     240.8   10200.00
      3      332.42   24.51  0.30( 0.29) 0.95     241.8   10250.00
      4      305.13   28.32  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25589.07   21.49    2.100  0.30( 0.25) 0.83    5016.9     300.00
      2    29278.33   31.16    1.675  0.30( 0.25) 0.82    8370.2     110.00
      3    34044.36   43.95    1.382  0.30( 0.25) 0.84   14011.3     400.00
```



```
      4    37030.09   56.03    1.216  0.30( 0.26) 0.88   20554.7   13600.00
      5    39483.07   69.16    1.110  0.30( 0.27) 0.90   27169.0   13100.00
      6    40206.55   75.84    1.065  0.30( 0.27) 0.90   30127.7   11801.00
      7    41862.27   86.47    0.994  0.30( 0.27) 0.91   35549.0   11530.00
      8    42826.14   90.83    0.966  0.30( 0.28) 0.92   38432.4   13510.00
      9    43921.70   96.06    0.944  0.30( 0.28) 0.92   41787.1   13010.00
     10    44639.16   99.68    0.928  0.30( 0.28) 0.93   44242.9   13500.00
     11    45524.90  104.13    0.909  0.30( 0.28) 0.93   47228.3   10800.00
     12    45969.44  108.33    0.891  0.30( 0.28) 0.94   50173.7   11130.00
     13    45480.44  117.94    0.849  0.30( 0.28) 0.94   55214.9   12410.00
     14    44789.40  126.26    0.827  0.30( 0.28) 0.94   58954.0   11201.00
     15    44312.24  131.26    0.817  0.30( 0.28) 0.94   60685.7   12201.00
     16    43243.43  138.38    0.802  0.30( 0.28) 0.95   62542.8   12231.00
     17    41894.79  146.27    0.785  0.30( 0.28) 0.95   64177.1   10400.00
     18    40501.88  154.29    0.769  0.30( 0.28) 0.95   65472.2   12010.00
     19    39278.50  160.34    0.756  0.30( 0.28) 0.95   65819.2   10210.00
     20    34956.29  188.82    0.706  0.30( 0.28) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      368.04   14.55    2.681  0.30( 0.29) 0.96     189.6   10230.00
    2      334.70   24.11    1.948  0.30( 0.29) 0.95     240.8   10200.00
    3      332.42   24.51    1.925  0.30( 0.29) 0.95     241.8   10250.00
    4      305.13   28.32    1.769  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23119.80   14.55    2.681  0.30( 0.25) 0.83    3585.3   10230.00
    2    25932.90   21.49    2.100  0.30( 0.25) 0.83    5243.7     300.00
    3    26923.81   24.11    1.948  0.30( 0.25) 0.83    6166.7   10200.00
    4    27072.53   24.51    1.925  0.30( 0.25) 0.83    6304.9   10250.00
    5    28498.51   28.32    1.769  0.30( 0.25) 0.83    7630.3   10220.00
    6    29563.99   31.16    1.675  0.30( 0.25) 0.83    8616.5     110.00
    7    34269.79   43.95    1.382  0.30( 0.25) 0.84   14257.5     400.00
    8    37221.47   56.03    1.216  0.30( 0.26) 0.88   20800.9   13600.00
    9    39652.62   69.16    1.110  0.30( 0.27) 0.90   27415.3   13100.00
   10    40366.83   75.84    1.065  0.30( 0.27) 0.90   30374.0   11801.00
   11    42007.83   86.47    0.994  0.30( 0.27) 0.91   35795.2   11530.00
   12    42966.08   90.83    0.966  0.30( 0.28) 0.92   38678.7   13510.00
   13    44056.98   96.06    0.944  0.30( 0.28) 0.92   42033.4   13010.00
   14    44771.21   99.68    0.928  0.30( 0.28) 0.93   44489.2   13500.00
   15    45652.98  104.13    0.909  0.30( 0.28) 0.93   47474.6   10800.00
   16    46093.78  108.33    0.891  0.30( 0.28) 0.94   50419.9   11130.00
   17    45596.21  117.94    0.849  0.30( 0.28) 0.94   55461.1   12410.00
   18    44900.66  126.26    0.827  0.30( 0.28) 0.94   59200.2   11201.00
   19    44421.36  131.26    0.817  0.30( 0.28) 0.94   60931.9   12201.00
   20    43349.49  138.38    0.802  0.30( 0.28) 0.95   62789.1   12231.00
   21    41997.47  146.27    0.785  0.30( 0.28) 0.95   64423.4   10400.00
   22    40601.13  154.29    0.769  0.30( 0.28) 0.95   65718.5   12010.00
   23    39375.16  160.34    0.756  0.30( 0.28) 0.95   66065.4   10210.00
   24    35042.59  188.82    0.706  0.30( 0.28) 0.95   66803.9   10100.00
  TOTAL AREA(ACRES) =     66803.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    46093.78  Tc(MIN.) =  108.330
  EFFECTIVE AREA(ACRES) =  50419.92  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.51
  CHANNEL FLOW THRU SUBAREA(CFS) =   46093.78
  FLOW VELOCITY(FEET/SEC.) =  11.66   FLOW DEPTH(FEET) =  14.51
  TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  111.29
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      702.74   18.17  0.30( 0.23) 0.76     400.0   10300.00
      2      704.90   18.97  0.30( 0.23) 0.76     413.4   10380.00
      3      693.05   21.35  0.30( 0.23) 0.76     439.7   10320.00
      4      668.71   23.48  0.30( 0.23) 0.76     451.6   10360.00
      5      629.78   26.35  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23119.80   18.23    2.338  0.30( 0.25) 0.83    3585.3   10230.00
      2    25932.90   25.03    1.896  0.30( 0.25) 0.83    5243.7     300.00
      3    26923.81   27.61    1.797  0.30( 0.25) 0.83    6166.7   10200.00
      4    27072.53   28.00    1.782  0.30( 0.25) 0.83    6304.9   10250.00
      5    28498.51   31.76    1.659  0.30( 0.25) 0.83    7630.3   10220.00
```



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      6    29563.99   34.56    1.587  0.30( 0.25) 0.83    8616.5     110.00
      7    34269.79   47.19    1.330  0.30( 0.25) 0.84   14257.5     400.00
      8    37221.47   59.19    1.181  0.30( 0.26) 0.88   20800.9   13600.00
      9    39652.62   72.25    1.089  0.30( 0.27) 0.90   27415.3   13100.00
     10    40366.83   78.92    1.045  0.30( 0.27) 0.90   30374.0   11801.00
     11    42007.83   89.52    0.973  0.30( 0.27) 0.91   35795.2   11530.00
     12    42966.08   93.85    0.953  0.30( 0.28) 0.92   38678.7   13510.00
     13    44056.98   99.06    0.931  0.30( 0.28) 0.92   42033.4   13010.00
     14    44771.21  102.67    0.915  0.30( 0.28) 0.93   44489.2   13500.00
     15    45652.98  107.10    0.896  0.30( 0.28) 0.93   47474.6   10800.00
     16    46093.78  111.29    0.878  0.30( 0.28) 0.94   50419.9   11130.00
     17    45596.21  120.91    0.838  0.30( 0.28) 0.94   55461.1   12410.00
     18    44900.66  129.24    0.821  0.30( 0.28) 0.94   59200.2   11201.00
     19    44421.36  134.25    0.810  0.30( 0.28) 0.94   60931.9   12201.00
     20    43349.49  141.39    0.795  0.30( 0.28) 0.95   62789.1   12231.00
     21    41997.47  149.31    0.779  0.30( 0.28) 0.95   64423.4   10400.00
     22    40601.13  157.37    0.762  0.30( 0.28) 0.95   65718.5   12010.00
     23    39375.16  163.44    0.749  0.30( 0.28) 0.95   66065.4   10210.00
     24    35042.59  192.04    0.702  0.30( 0.28) 0.95   66803.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      702.74   18.17    2.342  0.30( 0.23) 0.76     400.0   10300.00
      2      704.90   18.97    2.274  0.30( 0.23) 0.76     413.4   10380.00
      3      693.05   21.35    2.109  0.30( 0.23) 0.76     439.7   10320.00
      4      668.71   23.48    1.985  0.30( 0.23) 0.76     451.6   10360.00
      5      629.78   26.35    1.845  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23803.59   18.17    2.342  0.30( 0.25) 0.83    3974.1   10300.00
      2    23822.69   18.23    2.338  0.30( 0.25) 0.83    3986.2   10230.00
      3    24132.93   18.97    2.274  0.30( 0.25) 0.83    4180.4   10380.00
      4    25103.19   21.35    2.109  0.30( 0.25) 0.83    4785.7   10320.00
      5    25958.02   23.48    1.985  0.30( 0.25) 0.83    5315.9   10360.00
      6    26580.54   25.03    1.896  0.30( 0.25) 0.83    5700.3     300.00
      7    27069.70   26.35    1.845  0.30( 0.25) 0.83    6176.8   10340.00
      8    27534.74   27.61    1.797  0.30( 0.25) 0.83    6627.5   10200.00
      9    27677.61   28.00    1.782  0.30( 0.25) 0.83    6765.7   10250.00
     10    29055.99   31.76    1.659  0.30( 0.25) 0.82    8091.1   10220.00
     11    30093.17   34.56    1.587  0.30( 0.25) 0.82    9077.3     110.00
     12    34698.68   47.19    1.330  0.30( 0.25) 0.84   14718.3     400.00
     13    37592.51   59.19    1.181  0.30( 0.26) 0.87   21261.7   13600.00
     14    39987.96   72.25    1.089  0.30( 0.27) 0.89   27876.1   13100.00
     15    40684.67   78.92    1.045  0.30( 0.27) 0.90   30834.8   11801.00
     16    42297.87   89.52    0.973  0.30( 0.27) 0.91   36256.0   11530.00
     17    43248.34   93.85    0.953  0.30( 0.27) 0.92   39139.5   13510.00
     18    44330.45   99.06    0.931  0.30( 0.28) 0.92   42494.2   13010.00
     19    45038.59  102.67    0.915  0.30( 0.28) 0.93   44950.0   13500.00
     20    45912.88  107.10    0.896  0.30( 0.28) 0.93   47935.4   10800.00
     21    46346.61  111.29    0.878  0.30( 0.28) 0.93   50880.7   11130.00
     22    45833.58  120.91    0.838  0.30( 0.28) 0.94   55921.9   12410.00
     23    45131.26  129.24    0.821  0.30( 0.28) 0.94   59661.0   11201.00
     24    44647.89  134.25    0.810  0.30( 0.28) 0.94   61392.7   12201.00
```

```
     25    43570.23  141.39    0.795  0.30( 0.28) 0.94   63249.9   12231.00
     26    42211.78  149.31    0.779  0.30( 0.28) 0.95   64884.2   10400.00
     27    40808.89  157.37    0.762  0.30( 0.28) 0.95   66179.3   12010.00
     28    39577.99  163.44    0.749  0.30( 0.28) 0.95   66526.2   10210.00
     29    35227.01  192.04    0.702  0.30( 0.28) 0.95   67264.7   10100.00
    TOTAL AREA(ACRES) =     67264.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    46346.61  Tc(MIN.) =  111.286
  EFFECTIVE AREA(ACRES) =  50880.72  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    67264.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.43
  CHANNEL FLOW THRU SUBAREA(CFS) =   46346.61
  FLOW VELOCITY(FEET/SEC.) =  41.09   FLOW DEPTH(FEET) =   8.43
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =  111.43
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       71.30   19.53  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23803.59   18.35    2.327  0.30( 0.25) 0.83    3974.1   10300.00
```



```
      2    23822.69   18.41    2.322  0.30( 0.25) 0.83    3986.2   10230.00
      3    24132.93   19.15    2.259  0.30( 0.25) 0.83    4180.4   10380.00
      4    25103.19   21.53    2.098  0.30( 0.25) 0.83    4785.7   10320.00
      5    25958.02   23.65    1.975  0.30( 0.25) 0.83    5315.9   10360.00
      6    26580.54   25.21    1.889  0.30( 0.25) 0.83    5700.3     300.00
      7    27069.70   26.53    1.838  0.30( 0.25) 0.83    6176.8   10340.00
      8    27534.74   27.79    1.790  0.30( 0.25) 0.83    6627.5   10200.00
      9    27677.61   28.18    1.775  0.30( 0.25) 0.83    6765.7   10250.00
     10    29055.99   31.93    1.655  0.30( 0.25) 0.82    8091.1   10220.00
     11    30093.17   34.73    1.582  0.30( 0.25) 0.82    9077.3     110.00
     12    34698.68   47.35    1.327  0.30( 0.25) 0.84   14718.3     400.00
     13    37592.51   59.35    1.179  0.30( 0.26) 0.87   21261.7   13600.00
     14    39987.96   72.41    1.088  0.30( 0.27) 0.89   27876.1   13100.00
     15    40684.67   79.08    1.044  0.30( 0.27) 0.90   30834.8   11801.00
     16    42297.87   89.67    0.972  0.30( 0.27) 0.91   36256.0   11530.00
     17    43248.34   94.00    0.953  0.30( 0.27) 0.92   39139.5   13510.00
     18    44330.45   99.21    0.930  0.30( 0.28) 0.92   42494.2   13010.00
     19    45038.59  102.82    0.914  0.30( 0.28) 0.93   44950.0   13500.00
     20    45912.88  107.25    0.895  0.30( 0.28) 0.93   47935.4   10800.00
     21    46346.61  111.43    0.877  0.30( 0.28) 0.93   50880.7   11130.00
     22    45833.58  121.06    0.838  0.30( 0.28) 0.94   55921.9   12410.00
     23    45131.26  129.39    0.820  0.30( 0.28) 0.94   59661.0   11201.00
     24    44647.89  134.40    0.810  0.30( 0.28) 0.94   61392.7   12201.00
     25    43570.23  141.54    0.795  0.30( 0.28) 0.94   63249.9   12231.00
     26    42211.78  149.46    0.779  0.30( 0.28) 0.95   64884.2   10400.00
     27    40808.89  157.52    0.762  0.30( 0.28) 0.95   66179.3   12010.00
     28    39577.99  163.60    0.749  0.30( 0.28) 0.95   66526.2   10210.00
     29    35227.01  192.20    0.702  0.30( 0.28) 0.95   67264.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       71.30   19.53    2.227  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23873.96   18.35    2.327  0.30( 0.25) 0.83    4015.7   10300.00
    2    23893.11   18.41    2.322  0.30( 0.25) 0.83    4028.0   10230.00
    3    24203.98   19.15    2.259  0.30( 0.25) 0.83    4223.8   10380.00
    4    24359.85   19.53    2.227  0.30( 0.25) 0.83    4321.8   10400.00
    5    25169.89   21.53    2.098  0.30( 0.25) 0.83    4830.0   10320.00
    6    26020.29   23.65    1.975  0.30( 0.25) 0.83    5360.2   10360.00
    7    26639.72   25.21    1.889  0.30( 0.25) 0.83    5744.6     300.00
    8    27127.07   26.53    1.838  0.30( 0.25) 0.83    6221.1   10340.00
    9    27590.38   27.79    1.790  0.30( 0.25) 0.83    6671.8   10200.00
   10    27732.71   28.18    1.775  0.30( 0.25) 0.83    6810.0   10250.00
   11    29106.79   31.93    1.655  0.30( 0.25) 0.82    8135.4   10220.00
   12    30141.37   34.73    1.582  0.30( 0.25) 0.82    9121.6     110.00
   13    34737.70   47.35    1.327  0.30( 0.25) 0.84   14762.6     400.00
   14    37626.23   59.35    1.179  0.30( 0.26) 0.87   21306.0   13600.00
   15    40018.42   72.41    1.088  0.30( 0.27) 0.89   27920.4   13100.00
   16    40713.52   79.08    1.044  0.30( 0.27) 0.90   30879.1   11801.00
   17    42324.16   89.67    0.972  0.30( 0.27) 0.91   36300.3   11530.00
   18    43273.94   94.00    0.953  0.30( 0.27) 0.92   39183.8   13510.00
   19    44355.23   99.21    0.930  0.30( 0.28) 0.92   42538.5   13010.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 20 | 45062.81 | 102.82 | 0.914 | 0.30( 0.28) | 0.93 | 44994.3 | 13500.00 |
| 21 | 45936.41 | 107.25 | 0.895 | 0.30( 0.28) | 0.93 | 47979.7 | 10800.00 |
| 22 | 46369.49 | 111.43 | 0.877 | 0.30( 0.28) | 0.93 | 50925.0 | 11130.00 |
| 23 | 45855.05 | 121.06 | 0.838 | 0.30( 0.28) | 0.94 | 55966.2 | 12410.00 |
| 24 | 45152.11 | 129.39 | 0.820 | 0.30( 0.28) | 0.94 | 59705.3 | 11201.00 |
| 25 | 44668.37 | 134.40 | 0.810 | 0.30( 0.28) | 0.94 | 61437.0 | 12201.00 |
| 26 | 43590.17 | 141.54 | 0.795 | 0.30( 0.28) | 0.94 | 63294.2 | 12231.00 |
| 27 | 42231.13 | 149.46 | 0.779 | 0.30( 0.28) | 0.95 | 64928.5 | 10400.00 |
| 28 | 40827.64 | 157.52 | 0.762 | 0.30( 0.28) | 0.95 | 66223.6 | 12010.00 |
| 29 | 39596.28 | 163.60 | 0.749 | 0.30( 0.28) | 0.95 | 66570.5 | 10210.00 |
| 30 | 35243.61 | 192.20 | 0.702 | 0.30( 0.28) | 0.95 | 67309.0 | 10100.00 |

TOTAL AREA(ACRES) = 67309.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 46369.49 Tc(MIN.) = 111.434
EFFECTIVE AREA(ACRES) = 50925.02 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67309.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

**********
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.05
CHANNEL FLOW THRU SUBAREA(CFS) = 46369.49
FLOW VELOCITY(FEET/SEC.) = 16.17 FLOW DEPTH(FEET) = 17.05
TRAVEL TIME(MIN.) = 1.58 Tc(MIN.) = 113.01
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105J.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 385.37 | 14.62 | 0.30( 0.27) | 0.90 | 207.5 | 10520.00 |
| 2 | 453.34 | 31.20 | 0.30( 0.28) | 0.93 | 403.6 | 10500.00 |

TOTAL AREA(ACRES) = 403.6

**********
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11
---



>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23873.96 | 20.26 | 2.172 | 0.30( 0.25) | 0.83 | 4015.7 | 10300.00 |
| 2 | 23893.11 | 20.32 | 2.168 | 0.30( 0.25) | 0.83 | 4028.0 | 10230.00 |
| 3 | 24203.98 | 21.06 | 2.126 | 0.30( 0.25) | 0.83 | 4223.8 | 10380.00 |
| 4 | 24359.85 | 21.43 | 2.104 | 0.30( 0.25) | 0.83 | 4321.8 | 10400.00 |
| 5 | 25169.89 | 23.41 | 1.989 | 0.30( 0.25) | 0.83 | 4830.0 | 10320.00 |
| 6 | 26020.29 | 25.52 | 1.877 | 0.30( 0.25) | 0.83 | 5360.2 | 10360.00 |
| 7 | 26639.72 | 27.06 | 1.818 | 0.30( 0.25) | 0.83 | 5744.6 | 300.00 |
| 8 | 27127.07 | 28.37 | 1.768 | 0.30( 0.25) | 0.83 | 6221.1 | 10340.00 |
| 9 | 27590.38 | 29.62 | 1.720 | 0.30( 0.25) | 0.83 | 6671.8 | 10200.00 |
| 10 | 27732.71 | 30.01 | 1.705 | 0.30( 0.25) | 0.83 | 6810.0 | 10250.00 |
| 11 | 29106.79 | 33.73 | 1.608 | 0.30( 0.25) | 0.82 | 8135.4 | 10220.00 |
| 12 | 30141.37 | 36.52 | 1.536 | 0.30( 0.25) | 0.82 | 9121.6 | 110.00 |
| 13 | 34737.70 | 49.07 | 1.299 | 0.30( 0.25) | 0.84 | 14762.6 | 400.00 |
| 14 | 37626.23 | 61.02 | 1.165 | 0.30( 0.26) | 0.87 | 21306.0 | 13600.00 |
| 15 | 40018.42 | 74.06 | 1.077 | 0.30( 0.27) | 0.89 | 27920.4 | 13100.00 |
| 16 | 40713.52 | 80.72 | 1.033 | 0.30( 0.27) | 0.90 | 30879.1 | 11801.00 |
| 17 | 42324.16 | 91.29 | 0.964 | 0.30( 0.27) | 0.91 | 36300.3 | 11530.00 |
| 18 | 43273.94 | 95.61 | 0.946 | 0.30( 0.27) | 0.92 | 39183.8 | 13510.00 |
| 19 | 44355.23 | 100.81 | 0.923 | 0.30( 0.28) | 0.92 | 42538.5 | 13010.00 |
| 20 | 45062.81 | 104.41 | 0.908 | 0.30( 0.28) | 0.93 | 44994.3 | 13500.00 |
| 21 | 45936.41 | 108.83 | 0.888 | 0.30( 0.28) | 0.93 | 47979.7 | 10800.00 |
| 22 | 46369.49 | 113.01 | 0.870 | 0.30( 0.28) | 0.93 | 50925.0 | 11130.00 |
| 23 | 45855.05 | 122.64 | 0.834 | 0.30( 0.28) | 0.94 | 55966.2 | 12410.00 |
| 24 | 45152.11 | 130.98 | 0.817 | 0.30( 0.28) | 0.94 | 59705.3 | 11201.00 |
| 25 | 44668.37 | 136.00 | 0.807 | 0.30( 0.28) | 0.94 | 61437.0 | 12201.00 |
| 26 | 43590.17 | 143.15 | 0.792 | 0.30( 0.28) | 0.94 | 63294.2 | 12231.00 |
| 27 | 42231.13 | 151.08 | 0.775 | 0.30( 0.28) | 0.95 | 64928.5 | 10400.00 |
| 28 | 40827.64 | 159.16 | 0.758 | 0.30( 0.28) | 0.95 | 66223.6 | 12010.00 |
| 29 | 39596.28 | 165.25 | 0.746 | 0.30( 0.28) | 0.95 | 66570.5 | 10210.00 |
| 30 | 35243.61 | 193.91 | 0.700 | 0.30( 0.28) | 0.95 | 67309.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 385.37 | 14.62 | 2.670 | 0.30( 0.27) | 0.90 | 207.5 | 10520.00 |
| 2 | 453.34 | 31.20 | 1.674 | 0.30( 0.28) | 0.93 | 403.6 | 10500.00 |

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22072.57 | 14.62 | 2.670 | 0.30( 0.25) | 0.83 | 3105.0 | 10520.00 |
| 2 | 24282.46 | 20.26 | 2.172 | 0.30( 0.25) | 0.83 | 4289.9 | 10300.00 |
| 3 | 24301.84 | 20.32 | 2.168 | 0.30( 0.25) | 0.83 | 4302.9 | 10230.00 |
| 4 | 24615.74 | 21.06 | 2.126 | 0.30( 0.25) | 0.83 | 4507.5 | 10380.00 |
| 5 | 24773.15 | 21.43 | 2.104 | 0.30( 0.25) | 0.83 | 4609.9 | 10400.00 |
| 6 | 25591.29 | 23.41 | 1.989 | 0.30( 0.25) | 0.83 | 5141.4 | 10320.00 |
| 7 | 26450.34 | 25.52 | 1.877 | 0.30( 0.25) | 0.83 | 5696.6 | 10360.00 |
| 8 | 27076.09 | 27.06 | 1.818 | 0.30( 0.25) | 0.83 | 6099.2 | 300.00 |
| 9 | 27568.80 | 28.37 | 1.768 | 0.30( 0.25) | 0.83 | 6591.2 | 10340.00 |
| 10 | 28037.23 | 29.62 | 1.720 | 0.30( 0.25) | 0.83 | 7056.7 | 10200.00 |

```
    11    28181.16   30.01    1.705  0.30( 0.25) 0.83    7199.5   10250.00
    12    28627.04   31.20    1.674  0.30( 0.25) 0.83    7639.0   10500.00
    13    29538.85   33.73    1.608  0.30( 0.25) 0.83    8539.0   10220.00
    14    30550.01   36.52    1.536  0.30( 0.25) 0.83    9525.2     110.00
    15    35069.34   49.07    1.299  0.30( 0.25) 0.84   15166.2     400.00
    16    37914.36   61.02    1.165  0.30( 0.26) 0.87   21709.6   13600.00
    17    40278.04   74.06    1.077  0.30( 0.27) 0.89   28324.0   13100.00
    18    40958.58   80.72    1.033  0.30( 0.27) 0.90   31282.7   11801.00
    19    42547.10   91.29    0.964  0.30( 0.27) 0.91   36703.9   11530.00
    20    43490.79   95.61    0.946  0.30( 0.27) 0.92   39587.4   13510.00
    21    44564.77  100.81    0.923  0.30( 0.28) 0.92   42942.1   13010.00
    22    45267.29  104.41    0.908  0.30( 0.28) 0.93   45397.9   13500.00
    23    46134.66  108.83    0.888  0.30( 0.28) 0.93   48383.3   10800.00
    24    46561.85  113.01    0.870  0.30( 0.28) 0.93   51328.6   11130.00
    25    46035.79  122.64    0.834  0.30( 0.28) 0.94   56369.8   12410.00
    26    45327.21  130.98    0.817  0.30( 0.28) 0.94   60108.9   11201.00
    27    44840.07  136.00    0.807  0.30( 0.28) 0.94   61840.6   12201.00
    28    43757.04  143.15    0.792  0.30( 0.28) 0.94   63697.8   12231.00
    29    42392.62  151.08    0.775  0.30( 0.28) 0.95   65332.1   10400.00
    30    40983.68  159.16    0.758  0.30( 0.28) 0.95   66627.2   12010.00
    31    39748.20  165.25    0.746  0.30( 0.28) 0.95   66974.1   10210.00
    32    35380.75  193.91    0.700  0.30( 0.28) 0.95   67712.6   10100.00
  TOTAL AREA(ACRES) =     67712.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    46561.85  Tc(MIN.) =  113.014
  EFFECTIVE AREA(ACRES) =  51328.62  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67712.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    135.00  DOWNSTREAM(FEET) =    134.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.23   CHANNEL SLOPE =  0.0000
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  48.86
  CHANNEL FLOW THRU SUBAREA(CFS) =   46561.85
  FLOW VELOCITY(FEET/SEC.) =   3.23   FLOW DEPTH(FEET) =  48.86
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  114.09
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13803.00 =  130613.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  114.09
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.866
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "1 DWELLING/ACRE"          B       48.80      0.30     0.800    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA AREA(ACRES) =   48.80      SUBAREA RUNOFF(CFS) =   27.48
  EFFECTIVE AREA(ACRES) =  51377.42   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67761.4       PEAK FLOW RATE(CFS) =   46561.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506106C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       63.85   17.52  0.30( 0.20) 0.67      36.9   10600.00
    TOTAL AREA(ACRES) =       36.9

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    22072.57   15.92    2.533  0.30( 0.25) 0.83    3153.8   10520.00
      2    24282.46   21.53    2.098  0.30( 0.25) 0.83    4338.7   10300.00
      3    24301.84   21.59    2.095  0.30( 0.25) 0.83    4351.7   10230.00
      4    24615.74   22.32    2.052  0.30( 0.25) 0.83    4556.3   10380.00
      5    24773.15   22.70    2.031  0.30( 0.25) 0.83    4658.7   10400.00
      6    25591.29   24.66    1.917  0.30( 0.25) 0.83    5190.2   10320.00
      7    26450.34   26.76    1.829  0.30( 0.25) 0.83    5745.4   10360.00
      8    27076.09   28.29    1.770  0.30( 0.25) 0.83    6148.0     300.00
      9    27568.80   29.60    1.720  0.30( 0.25) 0.83    6640.0   10340.00
     10    28037.23   30.84    1.683  0.30( 0.25) 0.83    7105.5   10200.00
     11    28181.16   31.23    1.673  0.30( 0.25) 0.83    7248.3   10250.00
     12    28627.04   32.42    1.642  0.30( 0.25) 0.83    7687.8   10500.00
     13    29538.85   34.94    1.577  0.30( 0.25) 0.83    8587.8   10220.00
     14    30550.01   37.71    1.505  0.30( 0.25) 0.83    9574.0     110.00
     15    35069.34   50.22    1.282  0.30( 0.25) 0.84   15215.0     400.00
     16    37914.36   62.15    1.158  0.30( 0.26) 0.87   21758.4   13600.00
     17    40278.04   75.17    1.070  0.30( 0.27) 0.89   28372.8   13100.00
     18    40958.58   81.82    1.025  0.30( 0.27) 0.90   31331.5   11801.00
     19    42547.10   92.39    0.960  0.30( 0.27) 0.91   36752.7   11530.00
     20    43490.79   96.70    0.941  0.30( 0.27) 0.92   39636.2   13510.00
     21    44564.77  101.89    0.918  0.30( 0.28) 0.92   42990.9   13010.00
     22    45267.29  105.49    0.903  0.30( 0.28) 0.93   45446.7   13500.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 23 | 46134.66 | 109.91 | 0.884 | 0.30( 0.28) | 0.93 | 48432.1 | 10800.00 |
| 24 | 46561.85 | 114.09 | 0.866 | 0.30( 0.28) | 0.93 | 51377.4 | 11130.00 |
| 25 | 46035.79 | 123.72 | 0.832 | 0.30( 0.28) | 0.94 | 56418.6 | 12410.00 |
| 26 | 45327.21 | 132.06 | 0.815 | 0.30( 0.28) | 0.94 | 60157.7 | 11201.00 |
| 27 | 44840.07 | 137.08 | 0.804 | 0.30( 0.28) | 0.94 | 61889.4 | 12201.00 |
| 28 | 43757.04 | 144.24 | 0.790 | 0.30( 0.28) | 0.94 | 63746.6 | 12231.00 |
| 29 | 42392.62 | 152.18 | 0.773 | 0.30( 0.28) | 0.95 | 65380.9 | 10400.00 |
| 30 | 40983.68 | 160.27 | 0.756 | 0.30( 0.28) | 0.95 | 66676.0 | 12010.00 |
| 31 | 39748.20 | 166.36 | 0.743 | 0.30( 0.28) | 0.95 | 67022.9 | 10210.00 |
| 32 | 35380.75 | 195.06 | 0.699 | 0.30( 0.28) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 63.85 | 17.52 | 2.397 | 0.30( 0.20) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22134.18 | 15.92 | 2.533 | 0.30( 0.25) | 0.83 | 3187.3 | 10520.00 |
| 2 | 22767.10 | 17.52 | 2.397 | 0.30( 0.25) | 0.83 | 3528.9 | 10600.00 |
| 3 | 24337.62 | 21.53 | 2.098 | 0.30( 0.25) | 0.83 | 4375.6 | 10300.00 |
| 4 | 24356.91 | 21.59 | 2.095 | 0.30( 0.25) | 0.83 | 4388.6 | 10230.00 |
| 5 | 24669.56 | 22.32 | 2.052 | 0.30( 0.25) | 0.83 | 4593.2 | 10380.00 |
| 6 | 24826.34 | 22.70 | 2.031 | 0.30( 0.25) | 0.83 | 4695.6 | 10400.00 |
| 7 | 25641.17 | 24.66 | 1.917 | 0.30( 0.25) | 0.83 | 5227.1 | 10320.00 |
| 8 | 26497.68 | 26.76 | 1.829 | 0.30( 0.25) | 0.83 | 5782.3 | 10360.00 |
| 9 | 27121.72 | 28.29 | 1.770 | 0.30( 0.25) | 0.83 | 6184.9 | 300.00 |
| 10 | 27612.98 | 29.60 | 1.720 | 0.30( 0.25) | 0.83 | 6676.9 | 10340.00 |
| 11 | 28080.33 | 30.84 | 1.683 | 0.30( 0.25) | 0.83 | 7142.4 | 10200.00 |
| 12 | 28223.96 | 31.23 | 1.673 | 0.30( 0.25) | 0.83 | 7285.2 | 10250.00 |
| 13 | 28668.94 | 32.42 | 1.642 | 0.30( 0.25) | 0.83 | 7724.7 | 10500.00 |
| 14 | 29578.86 | 34.94 | 1.577 | 0.30( 0.25) | 0.83 | 8624.7 | 10220.00 |
| 15 | 30587.93 | 37.71 | 1.505 | 0.30( 0.25) | 0.83 | 9610.9 | 110.00 |
| 16 | 35100.75 | 50.22 | 1.282 | 0.30( 0.25) | 0.84 | 15251.9 | 400.00 |
| 17 | 37942.17 | 62.15 | 1.158 | 0.30( 0.26) | 0.87 | 21795.3 | 13600.00 |
| 18 | 40303.30 | 75.17 | 1.070 | 0.30( 0.27) | 0.89 | 28409.7 | 13100.00 |
| 19 | 40982.54 | 81.82 | 1.025 | 0.30( 0.27) | 0.90 | 31368.4 | 11801.00 |
| 20 | 42569.16 | 92.39 | 0.960 | 0.30( 0.27) | 0.91 | 36789.6 | 11530.00 |
| 21 | 43512.30 | 96.70 | 0.941 | 0.30( 0.27) | 0.92 | 39673.1 | 13510.00 |
| 22 | 44585.62 | 101.89 | 0.918 | 0.30( 0.28) | 0.92 | 43027.8 | 13010.00 |
| 23 | 45287.69 | 105.49 | 0.903 | 0.30( 0.28) | 0.93 | 45483.6 | 13500.00 |
| 24 | 46154.50 | 109.91 | 0.884 | 0.30( 0.28) | 0.93 | 48469.0 | 10800.00 |
| 25 | 46581.18 | 114.09 | 0.866 | 0.30( 0.28) | 0.93 | 51414.3 | 11130.00 |
| 26 | 46054.14 | 123.72 | 0.832 | 0.30( 0.28) | 0.94 | 56455.5 | 12410.00 |
| 27 | 45345.05 | 132.06 | 0.815 | 0.30( 0.28) | 0.94 | 60194.6 | 11201.00 |
| 28 | 44857.62 | 137.08 | 0.804 | 0.30( 0.28) | 0.94 | 61926.3 | 12201.00 |
| 29 | 43774.14 | 144.24 | 0.790 | 0.30( 0.28) | 0.94 | 63783.5 | 12231.00 |
| 30 | 42409.25 | 152.18 | 0.773 | 0.30( 0.28) | 0.95 | 65417.8 | 10400.00 |
| 31 | 40999.82 | 160.27 | 0.756 | 0.30( 0.28) | 0.95 | 66712.9 | 12010.00 |
| 32 | 39763.96 | 166.36 | 0.743 | 0.30( 0.28) | 0.95 | 67059.8 | 10210.00 |
| 33 | 35395.23 | 195.06 | 0.699 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 46581.18 Tc(MIN.) = 114.085



EFFECTIVE AREA(ACRES) = 51414.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 114.09
EFFECTIVE AREA(ACRES) = 51414.32 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.934
PEAK FLOW RATE(CFS) = 46581.18

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22134.18 | 15.92 | 2.533 | 0.30( 0.25) | 0.83 | 3187.3 | 10520.00 |
| 2 | 22767.10 | 17.52 | 2.397 | 0.30( 0.25) | 0.83 | 3528.9 | 10600.00 |
| 3 | 24337.62 | 21.53 | 2.098 | 0.30( 0.25) | 0.83 | 4375.6 | 10300.00 |
| 4 | 24356.91 | 21.59 | 2.095 | 0.30( 0.25) | 0.83 | 4388.6 | 10230.00 |
| 5 | 24669.56 | 22.32 | 2.052 | 0.30( 0.25) | 0.83 | 4593.2 | 10380.00 |
| 6 | 24826.34 | 22.70 | 2.031 | 0.30( 0.25) | 0.83 | 4695.6 | 10400.00 |
| 7 | 25641.17 | 24.66 | 1.917 | 0.30( 0.25) | 0.83 | 5227.1 | 10320.00 |
| 8 | 26497.68 | 26.76 | 1.829 | 0.30( 0.25) | 0.83 | 5782.3 | 10360.00 |
| 9 | 27121.72 | 28.29 | 1.770 | 0.30( 0.25) | 0.83 | 6184.9 | 300.00 |
| 10 | 27612.98 | 29.60 | 1.720 | 0.30( 0.25) | 0.83 | 6676.9 | 10340.00 |
| 11 | 28080.33 | 30.84 | 1.683 | 0.30( 0.25) | 0.83 | 7142.4 | 10200.00 |
| 12 | 28223.96 | 31.23 | 1.673 | 0.30( 0.25) | 0.83 | 7285.2 | 10250.00 |
| 13 | 28668.94 | 32.42 | 1.642 | 0.30( 0.25) | 0.83 | 7724.7 | 10500.00 |
| 14 | 29578.86 | 34.94 | 1.577 | 0.30( 0.25) | 0.83 | 8624.7 | 10220.00 |
| 15 | 30587.93 | 37.71 | 1.505 | 0.30( 0.25) | 0.83 | 9610.9 | 110.00 |
| 16 | 35100.75 | 50.22 | 1.282 | 0.30( 0.25) | 0.84 | 15251.9 | 400.00 |
| 17 | 37942.17 | 62.15 | 1.158 | 0.30( 0.26) | 0.87 | 21795.3 | 13600.00 |
| 18 | 40303.30 | 75.17 | 1.070 | 0.30( 0.27) | 0.89 | 28409.7 | 13100.00 |
| 19 | 40982.54 | 81.82 | 1.025 | 0.30( 0.27) | 0.90 | 31368.4 | 11801.00 |
| 20 | 42569.16 | 92.39 | 0.960 | 0.30( 0.27) | 0.91 | 36789.6 | 11530.00 |
| 21 | 43512.30 | 96.70 | 0.941 | 0.30( 0.27) | 0.92 | 39673.1 | 13510.00 |
| 22 | 44585.62 | 101.89 | 0.918 | 0.30( 0.28) | 0.92 | 43027.8 | 13010.00 |
| 23 | 45287.69 | 105.49 | 0.903 | 0.30( 0.28) | 0.93 | 45483.6 | 13500.00 |
| 24 | 46154.50 | 109.91 | 0.884 | 0.30( 0.28) | 0.93 | 48469.0 | 10800.00 |
| 25 | 46581.18 | 114.09 | 0.866 | 0.30( 0.28) | 0.93 | 51414.3 | 11130.00 |
| 26 | 46054.14 | 123.72 | 0.832 | 0.30( 0.28) | 0.94 | 56455.5 | 12410.00 |
| 27 | 45345.05 | 132.06 | 0.815 | 0.30( 0.28) | 0.94 | 60194.6 | 11201.00 |
| 28 | 44857.62 | 137.08 | 0.804 | 0.30( 0.28) | 0.94 | 61926.3 | 12201.00 |
| 29 | 43774.14 | 144.24 | 0.790 | 0.30( 0.28) | 0.94 | 63783.5 | 12231.00 |
| 30 | 42409.25 | 152.18 | 0.773 | 0.30( 0.28) | 0.95 | 65417.8 | 10400.00 |
| 31 | 40999.82 | 160.27 | 0.756 | 0.30( 0.28) | 0.95 | 66712.9 | 12010.00 |
| 32 | 39763.96 | 166.36 | 0.743 | 0.30( 0.28) | 0.95 | 67059.8 | 10210.00 |
| 33 | 35395.23 | 195.06 | 0.699 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 50-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RI50EV38.DAT
  TIME/DATE OF STUDY: 13:38 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.225
   2)   10.00;  3.382
   3)   15.00;  2.607
   4)   20.00;  2.184
   5)   25.00;  1.895
   6)   30.00;  1.703
   7)   40.00;  1.444
   8)   50.00;  1.282
   9)   60.00;  1.170
  10)   90.00;  0.968
  11)  120.00;  0.838
  12)  180.00;  0.713
  13)  360.00;  0.522
  14) 1200.00;  0.227
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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)
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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22767.10   17.52  0.30( 0.25) 0.83    3528.9   10600.00
      2    30587.93   37.71  0.30( 0.25) 0.83    9610.9     110.00
      3    35100.75   50.22  0.30( 0.25) 0.84   15251.9     400.00
      4    37942.17   62.15  0.30( 0.26) 0.87   21795.3   13600.00
      5    40303.30   75.17  0.30( 0.27) 0.89   28409.7   13100.00
      6    40982.54   81.82  0.30( 0.27) 0.90   31368.4   11801.00
      7    42569.16   92.39  0.30( 0.27) 0.91   36789.6   11530.00
      8    43512.30   96.70  0.30( 0.27) 0.92   39673.1   13510.00
      9    44585.62  101.89  0.30( 0.28) 0.92   43027.8   13010.00
     10    45287.69  105.49  0.30( 0.28) 0.93   45483.6   13500.00
     11    46154.50  109.91  0.30( 0.28) 0.93   48469.0   10800.00
     12    46581.18  114.09  0.30( 0.28) 0.93   51414.3   11130.00
     13    46054.14  123.72  0.30( 0.28) 0.94   56455.5   12410.00
     14    45345.05  132.06  0.30( 0.28) 0.94   60194.6   11201.00
     15    44857.62  137.08  0.30( 0.28) 0.94   61926.3   12201.00
     16    43774.14  144.24  0.30( 0.28) 0.94   63783.5   12231.00
     17    42409.25  152.18  0.30( 0.28) 0.95   65417.8   10400.00
     18    40999.82  160.27  0.30( 0.28) 0.95   66712.9   12010.00
     19    39763.96  166.36  0.30( 0.28) 0.95   67059.8   10210.00
     20    35395.23  195.06  0.30( 0.28) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22767.10   17.52  0.30( 0.25) 0.83    3528.9   10600.00
      2    30587.93   37.71  0.30( 0.25) 0.83    9610.9     110.00
      3    35100.75   50.22  0.30( 0.25) 0.84   15251.9     400.00
      4    37942.17   62.15  0.30( 0.26) 0.87   21795.3   13600.00
      5    40303.30   75.17  0.30( 0.27) 0.89   28409.7   13100.00
      6    40982.54   81.82  0.30( 0.27) 0.90   31368.4   11801.00
      7    42569.16   92.39  0.30( 0.27) 0.91   36789.6   11530.00
      8    43512.30   96.70  0.30( 0.27) 0.92   39673.1   13510.00
      9    44585.62  101.89  0.30( 0.28) 0.92   43027.8   13010.00
     10    45287.69  105.49  0.30( 0.28) 0.93   45483.6   13500.00
     11    46154.50  109.91  0.30( 0.28) 0.93   48469.0   10800.00
     12    46581.18  114.09  0.30( 0.28) 0.93   51414.3   11130.00
     13    46054.14  123.72  0.30( 0.28) 0.94   56455.5   12410.00
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     14    45345.05  132.06  0.30( 0.28) 0.94   60194.6   11201.00
     15    44857.62  137.08  0.30( 0.28) 0.94   61926.3   12201.00
     16    43774.14  144.24  0.30( 0.28) 0.94   63783.5   12231.00
     17    42409.25  152.18  0.30( 0.28) 0.95   65417.8   10400.00
     18    40999.82  160.27  0.30( 0.28) 0.95   66712.9   12010.00
     19    39763.96  166.36  0.30( 0.28) 0.95   67059.8   10210.00
     20    35395.23  195.06  0.30( 0.28) 0.95   67798.3   10100.00
    TOTAL AREA(ACRES) =     67798.3

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  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  23.67
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.857
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   46589.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.11
  AVERAGE FLOW DEPTH(FEET) =  23.67   TRAVEL TIME(MIN.) =   1.53
  Tc(MIN.) =  115.61
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   15.91
  EFFECTIVE AREA(ACRES) =  51445.76     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =   46581.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  23.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 23.66   FLOW VELOCITY(FEET/SEC.) =  10.11
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =  115.61
  RAINFALL INTENSITY(INCH/HR) =   0.86
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   51445.76
  TOTAL STREAM AREA(ACRES) =   67829.72
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  PEAK FLOW RATE(CFS) AT CONFLUENCE =   46581.18

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.027
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.69
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     13.69

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.26
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.85
  Tc(MIN.) =   14.15
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   32.47
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      44.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   7.18
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.05
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.490
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.08
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   2.23
  Tc(MIN.) =   16.38
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   36.29
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      76.44
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   5.41
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.66
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   19.17
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   50.08
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
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  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     118.29
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.19   FLOW VELOCITY(FEET/SEC.) =   8.05
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.57
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     118.29
  PIPE TRAVEL TIME(MIN.) =   1.78    Tc(MIN.) =   20.95
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.95
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.129
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  147.39
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     258.17

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   20.95
  RAINFALL INTENSITY(INCH/HR) =   2.13
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
  TOTAL STREAM AREA(ACRES) =     150.29
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 258.17

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22767.10 | 19.38 | 2.236 | 0.30( 0.25) | 0.83 | 3560.3 | 10600.00 |
| 1 | 30587.93 | 39.42 | 1.459 | 0.30( 0.25) | 0.83 | 9642.3 | 110.00 |
| 1 | 35100.75 | 51.87 | 1.261 | 0.30( 0.25) | 0.84 | 15283.4 | 400.00 |
| 1 | 37942.17 | 63.77 | 1.145 | 0.30( 0.26) | 0.87 | 21826.8 | 13600.00 |
| 1 | 40303.30 | 76.76 | 1.057 | 0.30( 0.27) | 0.89 | 28441.1 | 13100.00 |
| 1 | 40982.54 | 83.41 | 1.012 | 0.30( 0.27) | 0.90 | 31399.8 | 11801.00 |
| 1 | 42569.16 | 93.95 | 0.951 | 0.30( 0.27) | 0.91 | 36821.1 | 11530.00 |
| 1 | 43512.30 | 98.26 | 0.932 | 0.30( 0.27) | 0.92 | 39704.5 | 13510.00 |
| 1 | 44585.62 | 103.44 | 0.910 | 0.30( 0.28) | 0.92 | 43059.2 | 13010.00 |
| 1 | 45287.69 | 107.03 | 0.894 | 0.30( 0.28) | 0.93 | 45515.0 | 13500.00 |
| 1 | 46154.50 | 111.44 | 0.875 | 0.30( 0.28) | 0.93 | 48500.4 | 10800.00 |
| 1 | 46581.18 | 115.61 | 0.857 | 0.30( 0.28) | 0.93 | 51445.8 | 11130.00 |
| 1 | 46054.14 | 125.25 | 0.827 | 0.30( 0.28) | 0.94 | 56487.0 | 12410.00 |
| 1 | 45345.05 | 133.60 | 0.810 | 0.30( 0.28) | 0.94 | 60226.1 | 11201.00 |
| 1 | 44857.62 | 138.62 | 0.799 | 0.30( 0.28) | 0.94 | 61957.8 | 12201.00 |
| 1 | 43774.14 | 145.79 | 0.784 | 0.30( 0.28) | 0.94 | 63814.9 | 12231.00 |
| 1 | 42409.25 | 153.75 | 0.768 | 0.30( 0.28) | 0.95 | 65449.2 | 10400.00 |
| 1 | 40999.82 | 161.85 | 0.751 | 0.30( 0.28) | 0.95 | 66744.3 | 12010.00 |
| 1 | 39763.96 | 167.96 | 0.738 | 0.30( 0.28) | 0.95 | 67091.3 | 10210.00 |
| 1 | 35395.23 | 196.70 | 0.695 | 0.30( 0.28) | 0.95 | 67829.7 | 10100.00 |
| 2 | 258.17 | 20.95 | 2.129 | 0.30( 0.22) | 0.73 | 150.3 | 13810.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23019.34 | 19.38 | 2.236 | 0.30( 0.25) | 0.83 | 3699.3 | 10600.00 |
| 2 | 23638.68 | 20.95 | 2.129 | 0.30( 0.25) | 0.83 | 4187.6 | 13810.00 |
| 3 | 30755.47 | 39.42 | 1.459 | 0.30( 0.25) | 0.83 | 9792.6 | 110.00 |
| 4 | 35241.54 | 51.87 | 1.261 | 0.30( 0.25) | 0.84 | 15433.7 | 400.00 |
| 5 | 38067.20 | 63.77 | 1.145 | 0.30( 0.26) | 0.87 | 21977.1 | 13600.00 |
| 6 | 40416.51 | 76.76 | 1.057 | 0.30( 0.27) | 0.89 | 28591.4 | 13100.00 |
| 7 | 41089.68 | 83.41 | 1.012 | 0.30( 0.27) | 0.90 | 31550.1 | 11801.00 |
| 8 | 42667.98 | 93.95 | 0.951 | 0.30( 0.27) | 0.91 | 36971.4 | 11530.00 |
| 9 | 43608.60 | 98.26 | 0.932 | 0.30( 0.27) | 0.92 | 39854.8 | 13510.00 |
| 10 | 44678.89 | 103.44 | 0.910 | 0.30( 0.28) | 0.92 | 43209.5 | 13010.00 |
| 11 | 45378.85 | 107.03 | 0.894 | 0.30( 0.28) | 0.92 | 45665.3 | 13500.00 |
| 12 | 46243.08 | 111.44 | 0.875 | 0.30( 0.28) | 0.93 | 48650.7 | 10800.00 |
| 13 | 46667.30 | 115.61 | 0.857 | 0.30( 0.28) | 0.93 | 51596.1 | 11130.00 |
| 14 | 46136.22 | 125.25 | 0.827 | 0.30( 0.28) | 0.94 | 56637.3 | 12410.00 |
| 15 | 45424.78 | 133.60 | 0.810 | 0.30( 0.28) | 0.94 | 60376.4 | 11201.00 |
| 16 | 44935.93 | 138.62 | 0.799 | 0.30( 0.28) | 0.94 | 62108.1 | 12201.00 |
| 17 | 43850.43 | 145.79 | 0.784 | 0.30( 0.28) | 0.94 | 63965.2 | 12231.00 |
| 18 | 42483.30 | 153.75 | 0.768 | 0.30( 0.28) | 0.94 | 65599.5 | 10400.00 |
| 19 | 41071.58 | 161.85 | 0.751 | 0.30( 0.28) | 0.95 | 66894.6 | 12010.00 |
| 20 | 39834.01 | 167.96 | 0.738 | 0.30( 0.28) | 0.95 | 67241.6 | 10210.00 |
| 21 | 35459.48 | 196.70 | 0.695 | 0.30( 0.28) | 0.95 | 67980.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 46667.30 Tc(MIN.) = 115.61
EFFECTIVE AREA(ACRES) = 51596.05 AREA-AVERAGED Fm(INCH/HR) = 0.28



AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67980.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 18.05
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.851
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 31.60 | 0.30 | 0.683 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46676.49
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.02
AVERAGE FLOW DEPTH(FEET) = 18.05 TRAVEL TIME(MIN.) = 1.40
Tc(MIN.) = 117.01
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 18.37
EFFECTIVE AREA(ACRES) = 51627.65 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68011.6 PEAK FLOW RATE(CFS) = 46667.30
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 18.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 18.05 FLOW VELOCITY(FEET/SEC.) = 15.02
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 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.) = 117.01
RAINFALL INTENSITY(INCH/HR) = 0.85
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93
EFFECTIVE STREAM AREA(ACRES) = 51627.65
TOTAL STREAM AREA(ACRES) = 68011.61
PEAK FLOW RATE(CFS) AT CONFLUENCE = 46667.30

**********
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21
---

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.784
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.31
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     11.31

**************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.443
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.82
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   3.08
  Tc(MIN.) =   16.94
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   62.82
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      72.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.88   FLOW VELOCITY(FEET/SEC.) =   6.99
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```



```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.139
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   3.84
  Tc(MIN.) =   20.78
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   53.35
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     115.63
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   8.59
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     137.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.31
  AVERAGE FLOW DEPTH(FEET) =   1.31   TRAVEL TIME(MIN.) =   1.89
  Tc(MIN.) =   22.67
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   42.83
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     151.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.38
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.38   FLOW VELOCITY(FEET/SEC.) =   8.58
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     217.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.51
  AVERAGE FLOW DEPTH(FEET) =   1.86   TRAVEL TIME(MIN.) =   3.23
  Tc(MIN.) =   25.90
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  132.32
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     269.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.09   FLOW VELOCITY(FEET/SEC.) =   9.06
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.09
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.734
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     419.75
```



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  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.61
  AVERAGE FLOW DEPTH(FEET) =   3.03   TRAVEL TIME(MIN.) =   3.28
  Tc(MIN.) =   29.18
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  301.14
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     548.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.48   FLOW VELOCITY(FEET/SEC.) =   9.28
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.16
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.593
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     629.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.31
  AVERAGE FLOW DEPTH(FEET) =   4.14   TRAVEL TIME(MIN.) =   5.07
  Tc(MIN.) =   34.25
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  161.11
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     655.45
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.23   FLOW VELOCITY(FEET/SEC.) =   8.40
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  49.4 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  34.36
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     655.45
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   34.81
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.578
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.97      0.30     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    7.48
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     655.65

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 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.) =   34.81
  RAINFALL INTENSITY(INCH/HR) =   1.58
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     655.65

  ** CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23019.34   21.09    2.121  0.30( 0.25) 0.83    3730.9   10600.00
      1    23638.68   22.65    2.031  0.30( 0.25) 0.83    4219.2   13810.00
      1    30755.47   41.00    1.428  0.30( 0.25) 0.83    9824.2     110.00
      1    35241.54   53.38    1.244  0.30( 0.25) 0.84   15465.3     400.00
      1    38067.20   65.25    1.135  0.30( 0.26) 0.87   22008.7   13600.00
      1    40416.51   78.21    1.047  0.30( 0.27) 0.89   28623.0   13100.00
      1    41089.68   84.86    1.003  0.30( 0.27) 0.90   31581.7   11801.00
      1    42667.98   95.39    0.945  0.30( 0.27) 0.91   37003.0   11530.00
      1    43608.60   99.69    0.926  0.30( 0.27) 0.92   39886.4   13510.00
      1    44678.89  104.86    0.904  0.30( 0.28) 0.92   43241.1   13010.00
      1    45378.85  108.44    0.888  0.30( 0.28) 0.92   45696.9   13500.00
      1    46243.08  112.84    0.869  0.30( 0.28) 0.93   48682.3   10800.00
      1    46667.30  117.01    0.851  0.30( 0.28) 0.93   51627.7   11130.00
      1    46136.22  126.65    0.824  0.30( 0.28) 0.94   56668.9   12410.00
```



```
      1    45424.78  135.01    0.807  0.30( 0.28) 0.94   60408.0   11201.00
      1    44935.93  140.03    0.796  0.30( 0.28) 0.94   62139.7   12201.00
      1    43850.43  147.22    0.781  0.30( 0.28) 0.94   63996.8   12231.00
      1    42483.30  155.19    0.765  0.30( 0.28) 0.94   65631.1   10400.00
      1    41071.58  163.30    0.748  0.30( 0.28) 0.95   66926.2   12010.00
      1    39834.01  169.42    0.735  0.30( 0.28) 0.95   67273.2   10210.00
      1    35459.48  198.21    0.694  0.30( 0.28) 0.95   68011.6   10100.00
      2      655.65   34.81    1.578  0.30( 0.29) 0.97     565.5   13830.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23583.89   21.09    2.121  0.30( 0.25) 0.84    4073.6   10600.00
      2    24215.12   22.65    2.031  0.30( 0.25) 0.84    4587.2   13810.00
      3    29010.71   34.81    1.578  0.30( 0.25) 0.84    8499.2   13830.00
      4    31334.48   41.00    1.428  0.30( 0.25) 0.83   10389.7     110.00
      5    35727.04   53.38    1.244  0.30( 0.25) 0.84   16030.8     400.00
      6    38497.01   65.25    1.135  0.30( 0.26) 0.88   22574.2   13600.00
      7    40801.89   78.21    1.047  0.30( 0.27) 0.89   29188.5   13100.00
      8    41452.29   84.86    1.003  0.30( 0.27) 0.90   32147.2   11801.00
      9    43001.09   95.39    0.945  0.30( 0.27) 0.91   37568.5   11530.00
     10    43932.23   99.69    0.926  0.30( 0.27) 0.92   40451.9   13510.00
     11    44991.11  104.86    0.904  0.30( 0.28) 0.92   43806.6   13010.00
     12    45683.17  108.44    0.888  0.30( 0.28) 0.93   46262.4   13500.00
     13    46537.69  112.84    0.869  0.30( 0.28) 0.93   49247.8   10800.00
     14    46952.71  117.01    0.851  0.30( 0.28) 0.93   52193.2   11130.00
     15    46407.98  126.65    0.824  0.30( 0.28) 0.94   57234.4   12410.00
     16    45687.68  135.01    0.807  0.30( 0.28) 0.94   60973.5   11201.00
     17    45193.50  140.03    0.796  0.30( 0.28) 0.94   62705.2   12201.00
     18    44100.40  147.22    0.781  0.30( 0.28) 0.94   64562.3   12231.00
     19    42724.82  155.19    0.765  0.30( 0.28) 0.94   66196.6   10400.00
     20    41304.50  163.30    0.748  0.30( 0.28) 0.95   67491.7   12010.00
     21    40060.43  169.42    0.735  0.30( 0.28) 0.95   67838.7   10210.00
     22    35664.84  198.21    0.694  0.30( 0.28) 0.95   68577.1   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   46952.71    Tc(MIN.) =   117.01
  EFFECTIVE AREA(ACRES) =   52193.15   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68577.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.48
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.848
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        6.61      0.30     0.975     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   46954.37
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.18
 AVERAGE FLOW DEPTH(FEET) =  16.48   TRAVEL TIME(MIN.) =   0.64
 Tc(MIN.) =  117.65
 SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    3.31
 EFFECTIVE AREA(ACRES) =  52199.76     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    68583.7         PEAK FLOW RATE(CFS) =   46952.71
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  16.48

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 16.48   FLOW VELOCITY(FEET/SEC.) =  17.18
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 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.) =  117.65
 RAINFALL INTENSITY(INCH/HR) =   0.85
 AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93
 EFFECTIVE STREAM AREA(ACRES) =   52199.76
 TOTAL STREAM AREA(ACRES) =   68583.72
 PEAK FLOW RATE(CFS) AT CONFLUENCE =   46952.71

****************************************************************************
 FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
 ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.051
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    56   12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     12.25
```



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 TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     12.25

****************************************************************************
 FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.36
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.846
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        4.02      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.86
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.43
 AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   1.32
 Tc(MIN.) =   13.46
 SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    9.21
 EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      20.55
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =   4.74
 LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
 CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.578
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        7.17      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.55
 AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   1.88
 Tc(MIN.) =   15.34
```

```
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   14.70
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      33.10
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   4.86
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.459
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   1.41
  Tc(MIN.) =   16.75
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   13.14
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      44.50
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   5.45
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.237
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.12
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   2.62
  Tc(MIN.) =   19.37
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   31.66
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      71.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   6.46
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.031
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     102.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.25
  AVERAGE FLOW DEPTH(FEET) =   1.30   TRAVEL TIME(MIN.) =   3.27
  Tc(MIN.) =   22.65
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   61.64
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     125.61
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.46   FLOW VELOCITY(FEET/SEC.) =   6.66
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
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--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.01
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     125.61
  PIPE TRAVEL TIME(MIN.) =   1.94    Tc(MIN.) =   24.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   24.58
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.919
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   66.69
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     184.26

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 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.) =   24.58
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     184.26

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23583.89   21.87    2.076  0.30( 0.25) 0.84    4080.2   10600.00
      1    24215.12   23.42    1.986  0.30( 0.25) 0.84    4593.8   13810.00
      1    29010.71   35.54    1.560  0.30( 0.25) 0.84    8505.8   13830.00
      1    31334.48   41.71    1.416  0.30( 0.25) 0.83   10396.3     110.00
      1    35727.04   54.07    1.236  0.30( 0.25) 0.84   16037.4     400.00
      1    38497.01   65.92    1.130  0.30( 0.26) 0.88   22580.8   13600.00
      1    40801.89   78.87    1.043  0.30( 0.27) 0.89   29195.1   13100.00
```



```
      1    41452.29   85.51    0.998  0.30( 0.27) 0.90   32153.8   11801.00
      1    43001.09   96.04    0.942  0.30( 0.27) 0.91   37575.1   11530.00
      1    43932.23  100.33    0.923  0.30( 0.27) 0.92   40458.5   13510.00
      1    44991.11  105.50    0.901  0.30( 0.28) 0.92   43813.2   13010.00
      1    45683.17  109.08    0.885  0.30( 0.28) 0.93   46269.0   13500.00
      1    46537.69  113.48    0.866  0.30( 0.28) 0.93   49254.4   10800.00
      1    46952.71  117.65    0.848  0.30( 0.28) 0.93   52199.8   11130.00
      1    46407.98  127.29    0.823  0.30( 0.28) 0.94   57241.0   12410.00
      1    45687.68  135.65    0.805  0.30( 0.28) 0.94   60980.1   11201.00
      1    45193.50  140.68    0.795  0.30( 0.28) 0.94   62711.8   12201.00
      1    44100.40  147.86    0.780  0.30( 0.28) 0.94   64568.9   12231.00
      1    42724.82  155.84    0.763  0.30( 0.28) 0.94   66203.2   10400.00
      1    41304.50  163.96    0.746  0.30( 0.28) 0.95   67498.3   12010.00
      1    40060.43  170.09    0.734  0.30( 0.28) 0.95   67845.3   10210.00
      1    35664.84  198.90    0.693  0.30( 0.28) 0.95   68583.7   10100.00
      2      184.26   24.58    1.919  0.30( 0.26) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23763.29   21.87    2.076  0.30( 0.25) 0.84    4189.8   10600.00
      2    24397.77   23.42    1.986  0.30( 0.25) 0.84    4711.2   13810.00
      3    24859.45   24.58    1.919  0.30( 0.25) 0.84    5092.3   13850.00
      4    29155.10   35.54    1.560  0.30( 0.25) 0.84    8629.0   13830.00
      5    31462.98   41.71    1.416  0.30( 0.25) 0.83   10519.5     110.00
      6    35835.60   54.07    1.236  0.30( 0.25) 0.84   16160.6     400.00
      7    38593.77   65.92    1.130  0.30( 0.26) 0.88   22704.0   13600.00
      8    40888.98   78.87    1.043  0.30( 0.27) 0.89   29318.4   13100.00
      9    41534.43   85.51    0.998  0.30( 0.27) 0.90   32277.0   11801.00
     10    43076.97   96.04    0.942  0.30( 0.27) 0.91   37698.3   11530.00
     11    44006.05  100.33    0.923  0.30( 0.27) 0.92   40581.7   13510.00
     12    45062.45  105.50    0.901  0.30( 0.28) 0.92   43936.4   13010.00
     13    45752.79  109.08    0.885  0.30( 0.28) 0.93   46392.3   13500.00
     14    46605.20  113.48    0.866  0.30( 0.28) 0.93   49377.6   10800.00
     15    47018.21  117.65    0.848  0.30( 0.28) 0.93   52323.0   11130.00
     16    46470.67  127.29    0.823  0.30( 0.28) 0.94   57364.2   12410.00
     17    45748.44  135.65    0.805  0.30( 0.28) 0.94   61103.3   11201.00
     18    45253.10  140.68    0.795  0.30( 0.28) 0.94   62835.0   12201.00
     19    44158.33  147.86    0.780  0.30( 0.28) 0.94   64692.1   12231.00
     20    42780.91  155.84    0.763  0.30( 0.28) 0.94   66326.4   10400.00
     21    41358.71  163.96    0.746  0.30( 0.28) 0.95   67621.5   12010.00
     22    40113.23  170.09    0.734  0.30( 0.28) 0.95   67968.5   10210.00
     23    35713.13  198.90    0.693  0.30( 0.28) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   47018.21    Tc(MIN.) =   117.65
  EFFECTIVE AREA(ACRES) =   52322.98   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
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  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.847
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   47019.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.49
  AVERAGE FLOW DEPTH(FEET) =  12.00   TRAVEL TIME(MIN.) =   0.38
  Tc(MIN.) =  118.03
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.41
  EFFECTIVE AREA(ACRES) =  52327.87     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68711.8         PEAK FLOW RATE(CFS) =   47018.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.00   FLOW VELOCITY(FEET/SEC.) =  26.49
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 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.) =  118.03
  RAINFALL INTENSITY(INCH/HR) =   0.85
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52327.87
  TOTAL STREAM AREA(ACRES) =   68711.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   47018.21

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
```



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  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.547
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.81
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     14.81

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.51
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.311
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.93
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   2.80
  Tc(MIN.) =   18.50
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   23.54
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      36.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =   5.55
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.94
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.099
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       32.99      0.30     0.923     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.88
 AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   2.98
 Tc(MIN.) =   21.48
 SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   54.09
 EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      87.00
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   6.51
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.09
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.925
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       30.94      0.30     0.900     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     110.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.45
 AVERAGE FLOW DEPTH(FEET) =   1.07   TRAVEL TIME(MIN.) =   3.00
 Tc(MIN.) =   24.47
 SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   46.10
 EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     124.79
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   8.78
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
```



```
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
 CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.90
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.820
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       73.67      0.30     0.930     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     175.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.90
 AVERAGE FLOW DEPTH(FEET) =   2.87   TRAVEL TIME(MIN.) =   2.49
 Tc(MIN.) =   26.96
 SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =  102.15
 EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     218.91
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.21

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.21   FLOW VELOCITY(FEET/SEC.) =   4.14
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
 FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.30
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     218.91
 PIPE TRAVEL TIME(MIN.) =   1.69    Tc(MIN.) =   28.65
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   28.65
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       34.90      0.30     0.743     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 48.11
EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 257.80

**********
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 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.) = 28.65
RAINFALL INTENSITY(INCH/HR) = 1.75
AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.90
EFFECTIVE STREAM AREA(ACRES) = 192.83
TOTAL STREAM AREA(ACRES) = 192.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 257.80

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23763.29 | 22.34 | 2.049 | 0.30( 0.25) | 0.84 | 4194.7 | 10600.00 |
| 1 | 24397.77 | 23.89 | 1.959 | 0.30( 0.25) | 0.84 | 4716.1 | 13810.00 |
| 1 | 24859.45 | 25.05 | 1.893 | 0.30( 0.25) | 0.84 | 5097.2 | 13850.00 |
| 1 | 29155.10 | 35.98 | 1.548 | 0.30( 0.25) | 0.84 | 8633.9 | 13830.00 |
| 1 | 31462.98 | 42.14 | 1.409 | 0.30( 0.25) | 0.83 | 10524.4 | 110.00 |
| 1 | 35835.60 | 54.49 | 1.232 | 0.30( 0.25) | 0.84 | 16165.5 | 400.00 |
| 1 | 38593.77 | 66.33 | 1.127 | 0.30( 0.26) | 0.88 | 22708.9 | 13600.00 |
| 1 | 40888.98 | 79.27 | 1.040 | 0.30( 0.27) | 0.89 | 29323.2 | 13100.00 |
| 1 | 41534.43 | 85.91 | 0.996 | 0.30( 0.27) | 0.90 | 32281.9 | 11801.00 |
| 1 | 43076.97 | 96.43 | 0.940 | 0.30( 0.27) | 0.91 | 37703.2 | 11530.00 |
| 1 | 44006.05 | 100.72 | 0.922 | 0.30( 0.27) | 0.92 | 40586.6 | 13510.00 |
| 1 | 45062.45 | 105.89 | 0.899 | 0.30( 0.28) | 0.92 | 43941.3 | 13010.00 |
| 1 | 45752.79 | 109.47 | 0.884 | 0.30( 0.28) | 0.93 | 46397.1 | 13500.00 |
| 1 | 46605.20 | 113.86 | 0.865 | 0.30( 0.28) | 0.93 | 49382.5 | 10800.00 |
| 1 | 47018.21 | 118.03 | 0.847 | 0.30( 0.28) | 0.93 | 52327.9 | 11130.00 |
| 1 | 46470.67 | 127.68 | 0.822 | 0.30( 0.28) | 0.94 | 57369.1 | 12410.00 |
| 1 | 45748.44 | 136.04 | 0.805 | 0.30( 0.28) | 0.94 | 61108.2 | 11201.00 |
| 1 | 45253.10 | 141.07 | 0.794 | 0.30( 0.28) | 0.94 | 62839.9 | 12201.00 |
| 1 | 44158.33 | 148.26 | 0.779 | 0.30( 0.28) | 0.94 | 64697.0 | 12231.00 |
| 1 | 42780.91 | 156.23 | 0.763 | 0.30( 0.28) | 0.94 | 66331.3 | 10400.00 |
| 1 | 41358.71 | 164.36 | 0.746 | 0.30( 0.28) | 0.95 | 67626.4 | 12010.00 |
| 1 | 40113.23 | 170.49 | 0.733 | 0.30( 0.28) | 0.95 | 67973.4 | 10210.00 |
| 1 | 35713.13 | 199.32 | 0.693 | 0.30( 0.28) | 0.95 | 68711.8 | 10100.00 |
| 2 | 257.80 | 28.65 | 1.755 | 0.30( 0.27) | 0.90 | 192.8 | 13870.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24004.07 | 22.34 | 2.049 | 0.30( 0.25) | 0.84 | 4345.0 | 10600.00 |
| 2 | 24642.29 | 23.89 | 1.959 | 0.30( 0.25) | 0.84 | 4876.9 | 13810.00 |
| 3 | 25105.82 | 25.05 | 1.893 | 0.30( 0.25) | 0.84 | 5265.8 | 13850.00 |
| 4 | 26533.78 | 28.65 | 1.755 | 0.30( 0.25) | 0.84 | 6456.3 | 13870.00 |
| 5 | 29377.04 | 35.98 | 1.548 | 0.30( 0.25) | 0.84 | 8826.8 | 13830.00 |
| 6 | 31660.84 | 42.14 | 1.409 | 0.30( 0.25) | 0.84 | 10717.2 | 110.00 |
| 7 | 36002.64 | 54.49 | 1.232 | 0.30( 0.25) | 0.85 | 16358.3 | 400.00 |
| 8 | 38742.71 | 66.33 | 1.127 | 0.30( 0.26) | 0.88 | 22901.7 | 13600.00 |
| 9 | 41022.79 | 79.27 | 1.040 | 0.30( 0.27) | 0.89 | 29516.1 | 13100.00 |
| 10 | 41660.48 | 85.91 | 0.996 | 0.30( 0.27) | 0.90 | 32474.8 | 11801.00 |
| 11 | 43193.41 | 96.43 | 0.940 | 0.30( 0.27) | 0.91 | 37896.0 | 11530.00 |
| 12 | 44119.26 | 100.72 | 0.922 | 0.30( 0.27) | 0.92 | 40779.5 | 13510.00 |
| 13 | 45171.78 | 105.89 | 0.899 | 0.30( 0.28) | 0.92 | 44134.1 | 13010.00 |
| 14 | 45859.43 | 109.47 | 0.884 | 0.30( 0.28) | 0.92 | 46590.0 | 13500.00 |
| 15 | 46708.53 | 113.86 | 0.865 | 0.30( 0.28) | 0.93 | 49575.3 | 10800.00 |
| 16 | 47118.41 | 118.03 | 0.847 | 0.30( 0.28) | 0.93 | 52520.7 | 11130.00 |
| 17 | 46566.61 | 127.68 | 0.822 | 0.30( 0.28) | 0.94 | 57561.9 | 12410.00 |
| 18 | 45841.35 | 136.04 | 0.805 | 0.30( 0.28) | 0.94 | 61301.0 | 11201.00 |
| 19 | 45344.20 | 141.07 | 0.794 | 0.30( 0.28) | 0.94 | 63032.7 | 12201.00 |
| 20 | 44246.83 | 148.26 | 0.779 | 0.30( 0.28) | 0.94 | 64889.9 | 12231.00 |
| 21 | 42866.52 | 156.23 | 0.763 | 0.30( 0.28) | 0.94 | 66524.2 | 10400.00 |
| 22 | 41441.39 | 164.36 | 0.746 | 0.30( 0.28) | 0.95 | 67819.2 | 12010.00 |
| 23 | 40193.69 | 170.49 | 0.733 | 0.30( 0.28) | 0.95 | 68166.2 | 10210.00 |
| 24 | 35786.59 | 199.32 | 0.693 | 0.30( 0.28) | 0.95 | 68904.7 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 47118.41 Tc(MIN.) = 118.03
EFFECTIVE AREA(ACRES) = 52520.70 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68904.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134066.75 FEET.

**********
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 26.12
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 117.69 | 0.30 | 0.724 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47151.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.83
AVERAGE FLOW DEPTH(FEET) = 26.11 TRAVEL TIME(MIN.) = 2.25
Tc(MIN.) = 120.28
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 65.70
EFFECTIVE AREA(ACRES) = 52638.39 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69022.3 PEAK FLOW RATE(CFS) = 47118.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  26.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 26.10   FLOW VELOCITY(FEET/SEC.) =   8.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 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.) =  120.28
  RAINFALL INTENSITY(INCH/HR) =   0.84
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52638.39
  TOTAL STREAM AREA(ACRES) =   69022.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   47118.41

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.497
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     11.48
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     11.48

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.985
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.39
  Tc(MIN.) =    8.36
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   26.96
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1          PEAK FLOW RATE(CFS) =      37.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   6.02
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.64
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.473
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.95
  AVERAGE FLOW DEPTH(FEET) =   0.62   TRAVEL TIME(MIN.) =   1.39
  Tc(MIN.) =    9.75
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   35.70
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6          PEAK FLOW RATE(CFS) =      67.61
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   8.51
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.131
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.75
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   1.87
  Tc(MIN.) =   11.62
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   40.43
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =     100.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   9.18
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.812
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.28
  AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   2.05
  Tc(MIN.) =   13.68
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   64.36
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     153.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.26   FLOW VELOCITY(FEET/SEC.) =   9.73
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.73
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     153.78
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =   15.46
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.568
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   25.02
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     163.86

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   15.46
  RAINFALL INTENSITY(INCH/HR) =   2.57
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     163.86

  ** CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24004.07 | 25.04 | 1.894 | 0.30( 0.25) | 0.84 | 4462.7 | 10600.00 |
| 1 | 24642.29 | 26.57 | 1.835 | 0.30( 0.25) | 0.84 | 4994.6 | 13810.00 |
| 1 | 25105.82 | 27.71 | 1.791 | 0.30( 0.25) | 0.84 | 5383.5 | 13850.00 |
| 1 | 26533.78 | 31.28 | 1.670 | 0.30( 0.25) | 0.84 | 6574.0 | 13870.00 |
| 1 | 29377.04 | 38.53 | 1.482 | 0.30( 0.25) | 0.84 | 8944.4 | 13830.00 |
| 1 | 31660.84 | 44.65 | 1.369 | 0.30( 0.25) | 0.83 | 10834.9 | 110.00 |
| 1 | 36002.64 | 56.90 | 1.205 | 0.30( 0.25) | 0.84 | 16476.0 | 400.00 |
| 1 | 38742.71 | 68.69 | 1.111 | 0.30( 0.26) | 0.87 | 23019.4 | 13600.00 |
| 1 | 41022.79 | 81.61 | 1.025 | 0.30( 0.27) | 0.89 | 29633.8 | 13100.00 |
| 1 | 41660.48 | 88.23 | 0.980 | 0.30( 0.27) | 0.90 | 32592.4 | 11801.00 |
| 1 | 43193.41 | 98.73 | 0.930 | 0.30( 0.27) | 0.91 | 38013.7 | 11530.00 |
| 1 | 44119.26 | 103.01 | 0.912 | 0.30( 0.27) | 0.92 | 40897.1 | 13510.00 |
| 1 | 45171.78 | 108.16 | 0.889 | 0.30( 0.28) | 0.92 | 44251.8 | 13010.00 |
| 1 | 45859.43 | 111.73 | 0.874 | 0.30( 0.28) | 0.92 | 46707.7 | 13500.00 |
| 1 | 46708.53 | 116.11 | 0.855 | 0.30( 0.28) | 0.93 | 49693.0 | 10800.00 |
| 1 | 47118.41 | 120.28 | 0.837 | 0.30( 0.28) | 0.93 | 52638.4 | 11130.00 |
| 1 | 46566.61 | 129.93 | 0.817 | 0.30( 0.28) | 0.94 | 57679.6 | 12410.00 |
| 1 | 45841.35 | 138.30 | 0.800 | 0.30( 0.28) | 0.94 | 61418.7 | 11201.00 |
| 1 | 45344.20 | 143.33 | 0.789 | 0.30( 0.28) | 0.94 | 63150.4 | 12201.00 |
| 1 | 44246.83 | 150.54 | 0.774 | 0.30( 0.28) | 0.94 | 65007.6 | 12231.00 |
| 1 | 42866.52 | 158.54 | 0.758 | 0.30( 0.28) | 0.94 | 66641.9 | 10400.00 |
| 1 | 41441.39 | 166.68 | 0.741 | 0.30( 0.28) | 0.95 | 67936.9 | 12010.00 |
| 1 | 40193.69 | 172.83 | 0.728 | 0.30( 0.28) | 0.95 | 68283.9 | 10210.00 |
| 1 | 35786.59 | 201.74 | 0.690 | 0.30( 0.28) | 0.95 | 69022.3 | 10100.00 |
| 2 | 163.86 | 15.46 | 2.568 | 0.30( 0.28) | 0.94 | 79.6 | 13889.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21073.70 | 15.46 | 2.568 | 0.30( 0.25) | 0.84 | 2835.5 | 13889.00 |
| 2 | 24119.60 | 25.04 | 1.894 | 0.30( 0.25) | 0.84 | 4542.3 | 10600.00 |
| 3 | 24753.62 | 26.57 | 1.835 | 0.30( 0.25) | 0.84 | 5074.2 | 13810.00 |
| 4 | 25213.99 | 27.71 | 1.791 | 0.30( 0.25) | 0.84 | 5463.1 | 13850.00 |
| 5 | 26633.28 | 31.28 | 1.670 | 0.30( 0.25) | 0.84 | 6653.6 | 13870.00 |
| 6 | 29463.07 | 38.53 | 1.482 | 0.30( 0.25) | 0.84 | 9024.1 | 13830.00 |
| 7 | 31738.76 | 44.65 | 1.369 | 0.30( 0.25) | 0.83 | 10914.6 | 110.00 |
| 8 | 36068.81 | 56.90 | 1.205 | 0.30( 0.25) | 0.84 | 16555.6 | 400.00 |
| 9 | 38802.20 | 68.69 | 1.111 | 0.30( 0.26) | 0.87 | 23099.0 | 13600.00 |
| 10 | 41076.05 | 81.61 | 1.025 | 0.30( 0.27) | 0.89 | 29713.4 | 13100.00 |
| 11 | 41710.54 | 88.23 | 0.980 | 0.30( 0.27) | 0.90 | 32672.1 | 11801.00 |
| 12 | 43239.91 | 98.73 | 0.930 | 0.30( 0.27) | 0.91 | 38093.3 | 11530.00 |
| 13 | 44164.42 | 103.01 | 0.912 | 0.30( 0.27) | 0.92 | 40976.8 | 13510.00 |
| 14 | 45215.34 | 108.16 | 0.889 | 0.30( 0.28) | 0.92 | 44331.5 | 13010.00 |
| 15 | 45901.89 | 111.73 | 0.874 | 0.30( 0.28) | 0.92 | 46787.3 | 13500.00 |
| 16 | 46749.62 | 116.11 | 0.855 | 0.30( 0.28) | 0.93 | 49772.6 | 10800.00 |
| 17 | 47158.26 | 120.28 | 0.837 | 0.30( 0.28) | 0.93 | 52718.0 | 11130.00 |
| 18 | 46605.01 | 129.93 | 0.817 | 0.30( 0.28) | 0.94 | 57759.2 | 12410.00 |
| 19 | 45878.51 | 138.30 | 0.800 | 0.30( 0.28) | 0.94 | 61498.3 | 11201.00 |
| 20 | 45380.60 | 143.33 | 0.789 | 0.30( 0.28) | 0.94 | 63230.0 | 12201.00 |
| 21 | 44282.16 | 150.54 | 0.774 | 0.30( 0.28) | 0.94 | 65087.2 | 12231.00 |
| 22 | 42900.66 | 158.54 | 0.758 | 0.30( 0.28) | 0.94 | 66721.5 | 10400.00 |
| 23 | 41474.31 | 166.68 | 0.741 | 0.30( 0.28) | 0.95 | 68016.6 | 12010.00 |
| 24 | 40225.69 | 172.83 | 0.728 | 0.30( 0.28) | 0.95 | 68363.5 | 10210.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | 35815.88 | 201.74 | 0.690 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 47158.26 Tc(MIN.) = 120.28
EFFECTIVE AREA(ACRES) = 52718.01 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 120.28
EFFECTIVE AREA(ACRES) = 52718.01 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.933
PEAK FLOW RATE(CFS) = 47158.26

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21073.70 | 15.46 | 2.568 | 0.30( 0.25) | 0.84 | 2835.5 | 13889.00 |
| 2 | 24119.60 | 25.04 | 1.894 | 0.30( 0.25) | 0.84 | 4542.3 | 10600.00 |
| 3 | 24753.62 | 26.57 | 1.835 | 0.30( 0.25) | 0.84 | 5074.2 | 13810.00 |
| 4 | 25213.99 | 27.71 | 1.791 | 0.30( 0.25) | 0.84 | 5463.1 | 13850.00 |
| 5 | 26633.28 | 31.28 | 1.670 | 0.30( 0.25) | 0.84 | 6653.6 | 13870.00 |
| 6 | 29463.07 | 38.53 | 1.482 | 0.30( 0.25) | 0.84 | 9024.1 | 13830.00 |
| 7 | 31738.76 | 44.65 | 1.369 | 0.30( 0.25) | 0.83 | 10914.6 | 110.00 |
| 8 | 36068.81 | 56.90 | 1.205 | 0.30( 0.25) | 0.84 | 16555.6 | 400.00 |
| 9 | 38802.20 | 68.69 | 1.111 | 0.30( 0.26) | 0.87 | 23099.0 | 13600.00 |
| 10 | 41076.05 | 81.61 | 1.025 | 0.30( 0.27) | 0.89 | 29713.4 | 13100.00 |
| 11 | 41710.54 | 88.23 | 0.980 | 0.30( 0.27) | 0.90 | 32672.1 | 11801.00 |
| 12 | 43239.91 | 98.73 | 0.930 | 0.30( 0.27) | 0.91 | 38093.3 | 11530.00 |
| 13 | 44164.42 | 103.01 | 0.912 | 0.30( 0.27) | 0.92 | 40976.8 | 13510.00 |
| 14 | 45215.34 | 108.16 | 0.889 | 0.30( 0.28) | 0.92 | 44331.5 | 13010.00 |
| 15 | 45901.89 | 111.73 | 0.874 | 0.30( 0.28) | 0.92 | 46787.3 | 13500.00 |
| 16 | 46749.62 | 116.11 | 0.855 | 0.30( 0.28) | 0.93 | 49772.6 | 10800.00 |
| 17 | 47158.26 | 120.28 | 0.837 | 0.30( 0.28) | 0.93 | 52718.0 | 11130.00 |
| 18 | 46605.01 | 129.93 | 0.817 | 0.30( 0.28) | 0.94 | 57759.2 | 12410.00 |
| 19 | 45878.51 | 138.30 | 0.800 | 0.30( 0.28) | 0.94 | 61498.3 | 11201.00 |
| 20 | 45380.60 | 143.33 | 0.789 | 0.30( 0.28) | 0.94 | 63230.0 | 12201.00 |
| 21 | 44282.16 | 150.54 | 0.774 | 0.30( 0.28) | 0.94 | 65087.2 | 12231.00 |
| 22 | 42900.66 | 158.54 | 0.758 | 0.30( 0.28) | 0.94 | 66721.5 | 10400.00 |
| 23 | 41474.31 | 166.68 | 0.741 | 0.30( 0.28) | 0.95 | 68016.6 | 12010.00 |
| 24 | 40225.69 | 172.83 | 0.728 | 0.30( 0.28) | 0.95 | 68363.5 | 10210.00 |
| 25 | 35815.88 | 201.74 | 0.690 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 50-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RI50EV39.DAT
  TIME/DATE OF STUDY: 13:38 08/09/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.220
   2)   10.00;  3.380
   3)   15.00;  2.606
   4)   20.00;  2.184
   5)   25.00;  1.894
   6)   30.00;  1.703
   7)   40.00;  1.444
   8)   50.00;  1.282
   9)   60.00;  1.169
  10)   90.00;  0.968
  11)  120.00;  0.837
  12)  180.00;  0.712
  13)  360.00;  0.522
  14) 1200.00;  0.227
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.247
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.61
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     10.61

************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.983
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.34
  AVERAGE FLOW DEPTH(FEET) =   0.31   TRAVEL TIME(MIN.) =   1.70
  Tc(MIN.) =   12.56
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   20.46
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      30.12
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   7.24
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.795
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.15
  AVERAGE FLOW DEPTH(FEET) =   0.56   TRAVEL TIME(MIN.) =   1.22
  Tc(MIN.) =   13.78
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   53.67
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      81.67
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOW VELOCITY(FEET/SEC.) =  10.38
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.86
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      81.67
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =   14.60
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.668
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   45.40
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     122.93

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.50
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     122.93
  PIPE TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =   16.71
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.71
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   88.82
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     201.06

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RI50EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 21073.70 | 15.46 | 0.30( 0.25) | 0.84 | 2835.5 | 13889.00 |
| 2 | 26633.28 | 31.28 | 0.30( 0.25) | 0.84 | 6653.6 | 13870.00 |
| 3 | 29463.07 | 38.53 | 0.30( 0.25) | 0.84 | 9024.1 | 13830.00 |
| 4 | 31738.76 | 44.65 | 0.30( 0.25) | 0.83 | 10914.6 | 110.00 |
| 5 | 36068.81 | 56.90 | 0.30( 0.25) | 0.84 | 16555.6 | 400.00 |
| 6 | 38802.20 | 68.69 | 0.30( 0.26) | 0.87 | 23099.0 | 13600.00 |
| 7 | 41076.05 | 81.61 | 0.30( 0.27) | 0.89 | 29713.4 | 13100.00 |
| 8 | 41710.54 | 88.23 | 0.30( 0.27) | 0.90 | 32672.1 | 11801.00 |
| 9 | 44164.42 | 103.01 | 0.30( 0.27) | 0.92 | 40976.8 | 13510.00 |
| 10 | 45901.89 | 111.73 | 0.30( 0.28) | 0.92 | 46787.3 | 13500.00 |
| 11 | 46749.62 | 116.11 | 0.30( 0.28) | 0.93 | 49772.6 | 10800.00 |
| 12 | 47158.26 | 120.28 | 0.30( 0.28) | 0.93 | 52718.0 | 11130.00 |
| 13 | 46605.01 | 129.93 | 0.30( 0.28) | 0.94 | 57759.2 | 12410.00 |
| 14 | 45878.51 | 138.30 | 0.30( 0.28) | 0.94 | 61498.3 | 11201.00 |
| 15 | 45380.60 | 143.33 | 0.30( 0.28) | 0.94 | 63230.0 | 12201.00 |
| 16 | 44282.16 | 150.54 | 0.30( 0.28) | 0.94 | 65087.2 | 12231.00 |
| 17 | 42900.66 | 158.54 | 0.30( 0.28) | 0.94 | 66721.5 | 10400.00 |
| 18 | 41474.31 | 166.68 | 0.30( 0.28) | 0.95 | 68016.6 | 12010.00 |
| 19 | 40225.69 | 172.83 | 0.30( 0.28) | 0.95 | 68363.5 | 10210.00 |
| 20 | 35815.88 | 201.74 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

---

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

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 21073.70 | 15.46 | 0.30( 0.25) | 0.84 | 2835.5 | 13889.00 |
| 2 | 26633.28 | 31.28 | 0.30( 0.25) | 0.84 | 6653.6 | 13870.00 |
| 3 | 29463.07 | 38.53 | 0.30( 0.25) | 0.84 | 9024.1 | 13830.00 |
| 4 | 31738.76 | 44.65 | 0.30( 0.25) | 0.83 | 10914.6 | 110.00 |
| 5 | 36068.81 | 56.90 | 0.30( 0.25) | 0.84 | 16555.6 | 400.00 |
| 6 | 38802.20 | 68.69 | 0.30( 0.26) | 0.87 | 23099.0 | 13600.00 |
| 7 | 41076.05 | 81.61 | 0.30( 0.27) | 0.89 | 29713.4 | 13100.00 |
| 8 | 41710.54 | 88.23 | 0.30( 0.27) | 0.90 | 32672.1 | 11801.00 |
| 9 | 44164.42 | 103.01 | 0.30( 0.27) | 0.92 | 40976.8 | 13510.00 |
| 10 | 45901.89 | 111.73 | 0.30( 0.28) | 0.92 | 46787.3 | 13500.00 |
| 11 | 46749.62 | 116.11 | 0.30( 0.28) | 0.93 | 49772.6 | 10800.00 |
| 12 | 47158.26 | 120.28 | 0.30( 0.28) | 0.93 | 52718.0 | 11130.00 |
| 13 | 46605.01 | 129.93 | 0.30( 0.28) | 0.94 | 57759.2 | 12410.00 |
| 14 | 45878.51 | 138.30 | 0.30( 0.28) | 0.94 | 61498.3 | 11201.00 |
| 15 | 45380.60 | 143.33 | 0.30( 0.28) | 0.94 | 63230.0 | 12201.00 |
| 16 | 44282.16 | 150.54 | 0.30( 0.28) | 0.94 | 65087.2 | 12231.00 |
| 17 | 42900.66 | 158.54 | 0.30( 0.28) | 0.94 | 66721.5 | 10400.00 |
| 18 | 41474.31 | 166.68 | 0.30( 0.28) | 0.95 | 68016.6 | 12010.00 |
| 19 | 40225.69 | 172.83 | 0.30( 0.28) | 0.95 | 68363.5 | 10210.00 |
| 20 | 35815.88 | 201.74 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56



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

>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 22.98

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.832

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 96.09 | 0.30 | 0.535 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47187.29

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.70

AVERAGE FLOW DEPTH(FEET) = 22.98 TRAVEL TIME(MIN.) = 2.14

Tc(MIN.) = 122.42

SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 58.07

EFFECTIVE AREA(ACRES) = 52814.10 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 69198.1 PEAK FLOW RATE(CFS) = 47158.26

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 22.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 22.97 FLOW VELOCITY(FEET/SEC.) = 10.70

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

**********

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21073.70 | 18.14 | 2.341 | 0.30( 0.25) | 0.83 | 2931.6 | 13889.00 |
| 2 | 26633.28 | 33.79 | 1.605 | 0.30( 0.25) | 0.83 | 6749.7 | 13870.00 |
| 3 | 29463.07 | 40.97 | 1.428 | 0.30( 0.25) | 0.83 | 9120.2 | 13830.00 |
| 4 | 31738.76 | 47.03 | 1.330 | 0.30( 0.25) | 0.83 | 11010.6 | 110.00 |
| 5 | 36068.81 | 59.21 | 1.178 | 0.30( 0.25) | 0.84 | 16651.7 | 400.00 |
| 6 | 38802.20 | 70.95 | 1.096 | 0.30( 0.26) | 0.87 | 23195.1 | 13600.00 |
| 7 | 41076.05 | 83.83 | 1.009 | 0.30( 0.27) | 0.89 | 29809.5 | 13100.00 |
| 8 | 41710.54 | 90.45 | 0.966 | 0.30( 0.27) | 0.90 | 32768.2 | 11801.00 |
| 9 | 44164.42 | 105.19 | 0.902 | 0.30( 0.27) | 0.91 | 41072.9 | 13510.00 |
| 10 | 45901.89 | 113.89 | 0.864 | 0.30( 0.28) | 0.92 | 46883.4 | 13500.00 |
| 11 | 46749.62 | 118.26 | 0.845 | 0.30( 0.28) | 0.93 | 49868.7 | 10800.00 |
| 12 | 47158.26 | 122.42 | 0.832 | 0.30( 0.28) | 0.93 | 52814.1 | 11130.00 |
| 13 | 46605.01 | 132.08 | 0.812 | 0.30( 0.28) | 0.94 | 57855.3 | 12410.00 |
| 14 | 45878.51 | 140.46 | 0.794 | 0.30( 0.28) | 0.94 | 61594.4 | 11201.00 |
| 15 | 45380.60 | 145.50 | 0.784 | 0.30( 0.28) | 0.94 | 63326.1 | 12201.00 |
| 16 | 44282.16 | 152.72 | 0.769 | 0.30( 0.28) | 0.94 | 65183.3 | 12231.00 |

```
    17    42900.66  160.74    0.752  0.30( 0.28) 0.94   66817.6   10400.00
    18    41474.31  168.90    0.735  0.30( 0.28) 0.94   68112.6   12010.00
    19    40225.69  175.07    0.722  0.30( 0.28) 0.94   68459.6   10210.00
    20    35815.88  204.05    0.687  0.30( 0.28) 0.95   69198.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      201.06   16.71    2.462  0.30( 0.25) 0.84     101.1   13900.00
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20732.91   16.71    2.462  0.30( 0.25) 0.83    2801.5   13900.00
      2    21263.77   18.14    2.341  0.30( 0.25) 0.83    3032.7   13889.00
      3    26756.34   33.79    1.605  0.30( 0.25) 0.83    6850.9   13870.00
      4    29570.04   40.97    1.428  0.30( 0.25) 0.83    9221.3   13830.00
      5    31836.79   47.03    1.330  0.30( 0.25) 0.83   11111.8     110.00
      6    36153.00   59.21    1.178  0.30( 0.25) 0.84   16752.9     400.00
      7    38878.89   70.95    1.096  0.30( 0.26) 0.87   23296.3   13600.00
      8    41144.88   83.83    1.009  0.30( 0.27) 0.89   29910.6   13100.00
      9    41775.43   90.45    0.966  0.30( 0.27) 0.90   32869.3   11801.00
     10    44223.46  105.19    0.902  0.30( 0.27) 0.91   41174.0   13510.00
     11    45957.46  113.89    0.864  0.30( 0.28) 0.92   46984.5   13500.00
     12    46803.46  118.26    0.845  0.30( 0.28) 0.93   49969.9   10800.00
     13    47210.95  122.42    0.832  0.30( 0.28) 0.93   52915.2   11130.00
     14    46655.87  132.08    0.812  0.30( 0.28) 0.94   57956.4   12410.00
     15    45927.78  140.46    0.794  0.30( 0.28) 0.94   61695.6   11201.00
     16    45428.92  145.50    0.784  0.30( 0.28) 0.94   63427.3   12201.00
     17    44329.11  152.72    0.769  0.30( 0.28) 0.94   65284.4   12231.00
     18    42946.08  160.74    0.752  0.30( 0.28) 0.94   66918.7   10400.00
     19    41518.19  168.90    0.735  0.30( 0.28) 0.94   68213.8   12010.00
     20    40268.40  175.07    0.722  0.30( 0.28) 0.94   68560.8   10210.00
     21    35855.34  204.05    0.687  0.30( 0.28) 0.95   69299.2   10100.00
    TOTAL AREA(ACRES) =     69299.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    47210.95  Tc(MIN.) =  122.422
  EFFECTIVE AREA(ACRES) =  52915.24  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    69299.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.26
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.831
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      134.30      0.30     0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   47249.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  21.11
  AVERAGE FLOW DEPTH(FEET) =  14.26   TRAVEL TIME(MIN.) =   0.26
  Tc(MIN.) =  122.69
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   76.64
  EFFECTIVE AREA(ACRES) =  53049.54     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =   47210.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 14.25   FLOW VELOCITY(FEET/SEC.) =  21.10
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       96.27      0.30     0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   47237.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  23.48
  AVERAGE FLOW DEPTH(FEET) =  13.17   TRAVEL TIME(MIN.) =   0.99
  Tc(MIN.) =  123.68
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   53.07
  EFFECTIVE AREA(ACRES) =  53145.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =   47210.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.17   FLOW VELOCITY(FEET/SEC.) =  23.48
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
  END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 69529.8 TC(MIN.) = 123.68
EFFECTIVE AREA(ACRES) = 53145.81 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.931
PEAK FLOW RATE(CFS) = 47210.95

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20732.91 | 18.31 | 2.327 | 0.30( 0.25) | 0.82 | 3032.1 | 13900.00 |
| 2 | 21263.77 | 19.73 | 2.207 | 0.30( 0.25) | 0.82 | 3263.3 | 13889.00 |
| 3 | 26756.34 | 35.27 | 1.567 | 0.30( 0.25) | 0.83 | 7081.4 | 13870.00 |
| 4 | 29570.04 | 42.41 | 1.405 | 0.30( 0.25) | 0.83 | 9451.9 | 13830.00 |
| 5 | 31836.79 | 48.44 | 1.307 | 0.30( 0.25) | 0.83 | 11342.4 | 110.00 |
| 6 | 36153.00 | 60.56 | 1.165 | 0.30( 0.25) | 0.84 | 16983.4 | 400.00 |
| 7 | 38878.89 | 72.28 | 1.087 | 0.30( 0.26) | 0.87 | 23526.8 | 13600.00 |
| 8 | 41144.88 | 85.14 | 1.001 | 0.30( 0.27) | 0.89 | 30141.2 | 13100.00 |
| 9 | 41775.43 | 91.75 | 0.960 | 0.30( 0.27) | 0.90 | 33099.9 | 11801.00 |
| 10 | 44223.46 | 106.47 | 0.896 | 0.30( 0.27) | 0.91 | 41404.6 | 13510.00 |
| 11 | 45957.46 | 115.15 | 0.858 | 0.30( 0.28) | 0.92 | 47215.1 | 13500.00 |
| 12 | 46803.46 | 119.52 | 0.839 | 0.30( 0.28) | 0.93 | 50200.4 | 10800.00 |
| 13 | 47210.95 | 123.68 | 0.829 | 0.30( 0.28) | 0.93 | 53145.8 | 11130.00 |
| 14 | 46655.87 | 133.34 | 0.809 | 0.30( 0.28) | 0.94 | 58187.0 | 12410.00 |
| 15 | 45927.78 | 141.73 | 0.792 | 0.30( 0.28) | 0.94 | 61926.1 | 11201.00 |
| 16 | 45428.92 | 146.77 | 0.781 | 0.30( 0.28) | 0.94 | 63657.8 | 12201.00 |
| 17 | 44329.11 | 154.00 | 0.766 | 0.30( 0.28) | 0.94 | 65515.0 | 12231.00 |
| 18 | 42946.08 | 162.03 | 0.749 | 0.30( 0.28) | 0.94 | 67149.3 | 10400.00 |
| 19 | 41518.19 | 170.20 | 0.732 | 0.30( 0.28) | 0.94 | 68444.4 | 12010.00 |
| 20 | 40268.40 | 176.39 | 0.720 | 0.30( 0.28) | 0.94 | 68791.3 | 10210.00 |
| 21 | 35855.34 | 205.41 | 0.685 | 0.30( 0.28) | 0.94 | 69529.8 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
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                         Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 119 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 100-YR EV MARCH 2019 ROKAMOTO                                        *
 ***********************************************************************

  FILE NAME: RU00EV19.DAT
  TIME/DATE OF STUDY: 11:52 03/29/2019
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.126
   2)   10.00;  3.913
   3)   15.00;  3.013
   4)   20.00;  2.470
   5)   25.00;  2.132
   6)   30.00;  1.903
   7)   40.00;  1.647
   8)   50.00;  1.421
   9)   60.00;  1.323
  10)   90.00;  1.122
  11)  120.00;  0.987
  12)  180.00;  0.829
  13)  360.00;  0.620
  14) 1200.00;  0.273
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.151
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      7.07
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      7.07

****************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.47
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   3.19
  Tc(MIN.) =   10.39
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   26.83
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      32.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

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  DEPTH(FEET) =  0.69   FLOW VELOCITY(FEET/SEC.) =   4.07
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.267
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.84
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   13.59
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   92.97
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =     119.81
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.64   FLOW VELOCITY(FEET/SEC.) =   5.52
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.02
  AVERAGE FLOW DEPTH(FEET) =   2.44   TRAVEL TIME(MIN.) =   3.71
```



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  Tc(MIN.) =   17.30
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   52.69
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     152.33
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.50   FLOW VELOCITY(FEET/SEC.) =   4.06
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     215.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.43
  AVERAGE FLOW DEPTH(FEET) =   2.29   TRAVEL TIME(MIN.) =   4.99
  Tc(MIN.) =   22.29
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =  125.00
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     249.87
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.49   FLOW VELOCITY(FEET/SEC.) =   6.70
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.99
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.122
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       63.15      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     301.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.98
 AVERAGE FLOW DEPTH(FEET) =   1.97   TRAVEL TIME(MIN.) =   2.93
 Tc(MIN.) =   25.22
 SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =  103.55
 EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
 TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     329.70
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.07   FLOW VELOCITY(FEET/SEC.) =  11.26
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       84.87      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     394.80
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.18
 AVERAGE FLOW DEPTH(FEET) =   1.80   TRAVEL TIME(MIN.) =   2.57
 Tc(MIN.) =   27.79
 SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =  130.16
 EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
 TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     438.66
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.90   FLOW VELOCITY(FEET/SEC.) =  16.70
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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```
 FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.89
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.848
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      199.43      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     577.66
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.91
 AVERAGE FLOW DEPTH(FEET) =   2.85   TRAVEL TIME(MIN.) =   4.35
 Tc(MIN.) =   32.15
 SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  277.86
 EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     676.56
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.10   FLOW VELOCITY(FEET/SEC.) =  13.47
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 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.) =   32.15
 RAINFALL INTENSITY(INCH/HR) =   1.85
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =     484.08
 TOTAL STREAM AREA(ACRES) =     484.08
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     676.56

****************************************************************************
 FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
 ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
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  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.520
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.03
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =     10.03

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.259
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.58
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   1.45
  Tc(MIN.) =   13.63
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   15.42
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      24.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   5.18
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.25
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.579
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.88
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   5.36
  Tc(MIN.) =   19.00
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =  111.38
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     130.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   6.81
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     190.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.69
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   21.79
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =  120.15
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     237.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.47   FLOW VELOCITY(FEET/SEC.) =  12.50
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.198
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     304.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.52
 AVERAGE FLOW DEPTH(FEET) =   1.79   TRAVEL TIME(MIN.) =   2.24
 Tc(MIN.) =   24.03
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  134.10
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     353.89
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.95

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.95   FLOW VELOCITY(FEET/SEC.) =  13.07
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.60
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.037
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     409.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.45
 AVERAGE FLOW DEPTH(FEET) =   2.58   TRAVEL TIME(MIN.) =   3.05
 Tc(MIN.) =   27.08
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =  110.18
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     434.11
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.66

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.66   FLOW VELOCITY(FEET/SEC.) =  10.65
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.939
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     605.42
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.15
 AVERAGE FLOW DEPTH(FEET) =   2.62   TRAVEL TIME(MIN.) =   2.14
 Tc(MIN.) =   29.22
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  342.51
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     752.12
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.94   FLOW VELOCITY(FEET/SEC.) =  16.11
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.837
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED                -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     828.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.74
  AVERAGE FLOW DEPTH(FEET) =   3.73   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =   32.57
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  153.32
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     858.76
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.80   FLOW VELOCITY(FEET/SEC.) =  12.86
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.57
  RAINFALL INTENSITY(INCH/HR) =   1.84
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     858.76

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      676.56   32.15    1.848  0.30( 0.30) 0.98     484.1   11900.00
      2      858.76   32.57    1.837  0.30( 0.30) 1.00     620.7   11910.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1530.12   32.15    1.848  0.30( 0.30) 0.99    1096.7   11900.00
      2     1530.59   32.57    1.837  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1530.59    Tc(MIN.) =    32.57
  EFFECTIVE AREA(ACRES) =    1104.79   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.782
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1602.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.86
  AVERAGE FLOW DEPTH(FEET) =   6.44   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   34.75
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  143.30
  EFFECTIVE AREA(ACRES) =   1212.26     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1618.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.47   FLOW VELOCITY(FEET/SEC.) =  10.89
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1619.54   34.32    1.792  0.30( 0.30) 0.99    1204.2   11900.00
      2     1618.54   34.75    1.782  0.30( 0.30) 0.99    1212.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1619.54  Tc(MIN.) =   34.32
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1204.17

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.726
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1840.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.10
  AVERAGE FLOW DEPTH(FEET) =   6.57   TRAVEL TIME(MIN.) =   2.60
  Tc(MIN.) =   36.92
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  441.81
  EFFECTIVE AREA(ACRES) =   1548.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1989.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.82   FLOW VELOCITY(FEET/SEC.) =  12.35
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1989.26   36.92    1.726  0.30( 0.30) 0.99    1548.4   11900.00
      2     1984.41   37.34    1.715  0.30( 0.30) 1.00    1556.5   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1989.26  Tc(MIN.) =   36.92
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1548.44

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2088.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.47
  AVERAGE FLOW DEPTH(FEET) =   6.99   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   40.74
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  197.76
  EFFECTIVE AREA(ACRES) =   1713.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    2053.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.93   FLOW VELOCITY(FEET/SEC.) =  12.42
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2053.72   40.74    1.630  0.30( 0.30) 1.00    1713.6   11900.00
      2     2048.46   41.17    1.621  0.30( 0.30) 1.00    1721.7   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2053.72  Tc(MIN.) =   40.74
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1713.62

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2302.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.07
  AVERAGE FLOW DEPTH(FEET) =   7.58   TRAVEL TIME(MIN.) =   2.55
  Tc(MIN.) =   43.29
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  496.81
  EFFECTIVE AREA(ACRES) =   2147.35     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    2461.77
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.82   FLOW VELOCITY(FEET/SEC.) =  12.27
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2461.77   43.29    1.573  0.30( 0.30) 1.00    2147.4   11900.00
      2     2452.21   43.72    1.563  0.30( 0.30) 1.00    2155.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2461.77  Tc(MIN.) =   43.29
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
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  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2147.35

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2603.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.12
  AVERAGE FLOW DEPTH(FEET) =   8.16   TRAVEL TIME(MIN.) =   3.79
  Tc(MIN.) =   47.08
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  283.56
  EFFECTIVE AREA(ACRES) =   2412.77     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    2579.81
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.13   FLOW VELOCITY(FEET/SEC.) =  12.09
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2579.81   47.08    1.487  0.30( 0.30) 1.00    2412.8   11900.00
      2     2567.11   47.51    1.477  0.30( 0.30) 1.00    2420.9   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   47.08
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2412.77

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.418
```



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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2628.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.03
  AVERAGE FLOW DEPTH(FEET) =   9.22   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   50.28
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   98.10
  EFFECTIVE AREA(ACRES) =   2510.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    2579.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.14   FLOW VELOCITY(FEET/SEC.) =   9.98
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2579.81   50.28    1.418  0.30( 0.30) 1.00    2510.2   11900.00
      2     2567.11   50.71    1.414  0.30( 0.30) 1.00    2518.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   50.28
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2510.23

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2606.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.55
  AVERAGE FLOW DEPTH(FEET) =   8.41   TRAVEL TIME(MIN.) =   3.13
  Tc(MIN.) =   53.41
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   52.70
  EFFECTIVE AREA(ACRES) =   2564.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```

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  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    2579.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.37   FLOW VELOCITY(FEET/SEC.) =  11.52
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2579.81   53.41    1.388  0.30( 0.30) 1.00    2564.1   11900.00
      2     2567.11   53.85    1.383  0.30( 0.30) 1.00    2572.1   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   53.41
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2564.06

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XXCE.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      944.38   25.32  0.30( 0.30) 1.00     624.3   40130.00
      2      939.28   27.13  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2579.81   53.41    1.388  0.30( 0.30) 1.00    2564.1   11900.00
      2     2567.11   53.85    1.383  0.30( 0.30) 1.00    2572.1   11910.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      944.38   25.32    2.118  0.30( 0.30) 1.00     624.3   40130.00
      2      939.28   27.13    2.034  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2987.26   25.32    2.118  0.30( 0.30) 1.00    1839.8   40130.00
      2     3028.60   27.13    2.034  0.30( 0.30) 1.00    1956.9   40100.00
      3     3168.88   53.41    1.388  0.30( 0.30) 1.00    3218.3   11900.00
      4     3153.84   53.85    1.383  0.30( 0.30) 1.00    3226.4   11910.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3168.88  Tc(MIN.) =   53.406
  EFFECTIVE AREA(ACRES) =   3218.26  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.49
  CHANNEL FLOW THRU SUBAREA(CFS) =    3168.88
  FLOW VELOCITY(FEET/SEC.) =   9.76   FLOW DEPTH(FEET) =  10.49
  TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =   55.09
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2987.26   27.03    2.039  0.30( 0.30) 1.00    1839.8   40130.00
      2     3028.60   28.84    1.956  0.30( 0.30) 1.00    1956.9   40100.00
      3     3168.88   55.09    1.371  0.30( 0.30) 1.00    3218.3   11900.00
      4     3153.84   55.53    1.367  0.30( 0.30) 1.00    3226.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3168.88  Tc(MIN.) =   55.09
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3218.26

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    8.10
  EFFECTIVE AREA(ACRES) =   3226.66   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.48
  EFFECTIVE AREA(ACRES) =   3227.16   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.93
  EFFECTIVE AREA(ACRES) =   3229.16   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.363
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.01      0.30     0.984     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3206.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.86
  AVERAGE FLOW DEPTH(FEET) =   8.54   TRAVEL TIME(MIN.) =   0.78
  Tc(MIN.) =   55.87
  SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   75.01
  EFFECTIVE AREA(ACRES) =   3307.17     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.50   FLOW VELOCITY(FEET/SEC.) =  13.82
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2987.26   27.82    2.003  0.30( 0.30) 1.00    1928.7   40130.00
      2     3028.60   29.63    1.920  0.30( 0.30) 1.00    2045.8   40100.00
      3     3168.88   55.87    1.363  0.30( 0.30) 1.00    3307.2   11900.00
```

```
     4     3162.81   56.31    1.359  0.30( 0.30) 1.00    3315.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3168.88  Tc(MIN.) =   55.87
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3307.17

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.363
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.63
  EFFECTIVE AREA(ACRES) =   3308.87   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    3169.66

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.18      0.30     0.890     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3173.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.24
  AVERAGE FLOW DEPTH(FEET) =  10.84   TRAVEL TIME(MIN.) =   2.38
  Tc(MIN.) =   58.25
  SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    7.90
  EFFECTIVE AREA(ACRES) =   3317.05     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    3169.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
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  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.84   FLOW VELOCITY(FEET/SEC.) =   9.23
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2987.26   30.24    1.897  0.30( 0.30) 1.00    1938.6   40130.00
      2     3028.60   32.04    1.851  0.30( 0.30) 1.00    2055.7   40100.00
      3     3169.66   58.25    1.340  0.30( 0.30) 1.00    3317.1   11900.00
      4     3164.43   58.70    1.336  0.30( 0.30) 1.00    3325.1   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3169.66  Tc(MIN.) =   58.25
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3317.05

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    2.34
  EFFECTIVE AREA(ACRES) =   3319.55   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    3169.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S18X00.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    22054.84   36.58  0.30( 0.30) 1.00    7926.9   11831.00
      2    22725.41   39.13  0.30( 0.30) 1.00    8505.3   11801.00
      3    25134.97   47.53  0.30( 0.30) 1.00   10691.9   11500.00
      4    25502.09   49.16  0.30( 0.30) 1.00   11329.9   11530.00
      5    26360.19   53.71  0.30( 0.30) 1.00   13011.5   11701.00
```

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      6    26779.09   55.76  0.30( 0.30) 1.00   13818.6   11000.00
      7    29291.04   65.53  0.30( 0.30) 1.00   18866.7   11330.00
      8    30114.29   72.03  0.30( 0.30) 1.00   22317.4   11130.00
      9    29645.18   80.38  0.30( 0.30) 1.00   25368.4   11620.00
     10    29500.26   82.66  0.30( 0.30) 1.00   26144.7   11600.00
     11    29052.00   88.60  0.30( 0.30) 1.00   27897.1   11111.00
     12    28910.69   90.07  0.30( 0.30) 1.00   28280.6   11101.00
     13    28571.47   94.86  0.30( 0.30) 1.00   29290.8   10710.00
     14    28361.22   96.69  0.30( 0.30) 1.00   29594.6   10410.00
     15    27934.24  101.05  0.30( 0.30) 1.00   30249.2   10700.00
     16    27383.49  107.91  0.30( 0.30) 1.00   31215.0   10400.00
     17    27137.20  109.87  0.30( 0.30) 1.00   31440.4   10200.00
     18    26251.80  115.74  0.30( 0.30) 1.00   32001.9   10300.00
     19    25289.37  121.31  0.30( 0.30) 1.00   32223.4   10210.00
     20    23048.07  146.70  0.30( 0.30) 1.00   32916.6   10100.00
    TOTAL AREA(ACRES) =    32916.6

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S25X00.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70  0.30( 0.29) 0.98   11677.0   12111.00
      9     9366.85  101.16  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92  0.30( 0.29) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =    13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70  0.30( 0.29) 0.98   11677.0   12111.00
```



```
      9     9366.85  101.16  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92  0.30( 0.29) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =     13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18    1.288  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32    1.200  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61    1.192  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20    1.174  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22    1.147  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84    1.118  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81    1.100  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70    1.083  0.30( 0.29) 0.98   11677.0   12111.00
      9     9366.85  101.16    1.072  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97    1.059  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81    1.055  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67    1.006  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92    0.977  0.30( 0.29) 0.98   13237.1   12000.00
  LONGEST FLOWPATH FROM NODE  12000.00 TO NODE  12527.00 =   77156.98 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22054.84   36.58    1.735  0.30( 0.30) 1.00    7926.9   11831.00
      2    22725.41   39.13    1.669  0.30( 0.30) 1.00    8505.3   11801.00
      3    25134.97   47.53    1.477  0.30( 0.30) 1.00   10691.9   11500.00
      4    25502.09   49.16    1.440  0.30( 0.30) 1.00   11329.9   11530.00
      5    26360.19   53.71    1.385  0.30( 0.30) 1.00   13011.5   11701.00
      6    26779.09   55.76    1.365  0.30( 0.30) 1.00   13818.6   11000.00
      7    29291.04   65.53    1.286  0.30( 0.30) 1.00   18866.7   11330.00
      8    30114.29   72.03    1.242  0.30( 0.30) 1.00   22317.4   11130.00
      9    29645.18   80.38    1.186  0.30( 0.30) 1.00   25368.4   11620.00
     10    29500.26   82.66    1.171  0.30( 0.30) 1.00   26144.7   11600.00
     11    29052.00   88.60    1.131  0.30( 0.30) 1.00   27897.1   11111.00
     12    28910.69   90.07    1.122  0.30( 0.30) 1.00   28280.6   11101.00
     13    28571.47   94.86    1.100  0.30( 0.30) 1.00   29290.8   10710.00
     14    28361.22   96.69    1.092  0.30( 0.30) 1.00   29594.6   10410.00
     15    27934.24  101.05    1.072  0.30( 0.30) 1.00   30249.2   10700.00
     16    27383.49  107.91    1.041  0.30( 0.30) 1.00   31215.0   10400.00
     17    27137.20  109.87    1.033  0.30( 0.30) 1.00   31440.4   10200.00
     18    26251.80  115.74    1.006  0.30( 0.30) 1.00   32001.9   10300.00
     19    25289.37  121.31    0.984  0.30( 0.30) 1.00   32223.4   10210.00
     20    23048.07  146.70    0.917  0.30( 0.30) 1.00   32916.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12527.00 =   97868.13 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```

| NUMBER | (CFS) | (MIN.) | (INCH/HR) | (INCH/HR) | | (ACRES) | NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28196.41 | 36.58 | 1.735 | 0.30( 0.30) | 0.99 | 11536.0 | 11831.00 |
| 2 | 28997.24 | 39.13 | 1.669 | 0.30( 0.30) | 0.99 | 12366.4 | 11801.00 |
| 3 | 31685.73 | 47.53 | 1.477 | 0.30( 0.30) | 0.99 | 15382.2 | 11500.00 |
| 4 | 32066.13 | 49.16 | 1.440 | 0.30( 0.30) | 0.99 | 16181.3 | 11530.00 |
| 5 | 33185.00 | 53.71 | 1.385 | 0.30( 0.30) | 0.99 | 18311.7 | 11701.00 |
| 6 | 33733.33 | 55.76 | 1.365 | 0.30( 0.30) | 0.99 | 19320.5 | 11000.00 |
| 7 | 36747.98 | 65.18 | 1.288 | 0.30( 0.30) | 0.99 | 25113.1 | 12500.00 |
| 8 | 36865.25 | 65.53 | 1.286 | 0.30( 0.30) | 0.99 | 25351.9 | 11330.00 |
| 9 | 38148.02 | 72.03 | 1.242 | 0.30( 0.30) | 0.99 | 29783.0 | 11130.00 |
| 10 | 38239.23 | 78.32 | 1.200 | 0.30( 0.30) | 0.99 | 33026.2 | 12300.00 |
| 11 | 38282.50 | 79.61 | 1.192 | 0.30( 0.30) | 0.99 | 33776.9 | 12330.00 |
| 12 | 38292.96 | 80.38 | 1.186 | 0.30( 0.30) | 0.99 | 34212.1 | 11620.00 |
| 13 | 38303.77 | 82.20 | 1.174 | 0.30( 0.30) | 0.99 | 35191.7 | 12410.00 |
| 14 | 38301.27 | 82.66 | 1.171 | 0.30( 0.30) | 0.99 | 35429.0 | 11600.00 |
| 15 | 38240.18 | 86.22 | 1.147 | 0.30( 0.30) | 0.99 | 37120.1 | 12400.00 |
| 16 | 38170.52 | 88.60 | 1.131 | 0.30( 0.30) | 0.99 | 38181.1 | 11111.00 |
| 17 | 38097.30 | 90.07 | 1.122 | 0.30( 0.30) | 0.99 | 38787.4 | 11101.00 |
| 18 | 38078.45 | 90.84 | 1.118 | 0.30( 0.30) | 0.99 | 39063.9 | 12211.00 |
| 19 | 37922.34 | 94.81 | 1.100 | 0.30( 0.30) | 0.99 | 40488.9 | 12201.00 |
| 20 | 37919.14 | 94.86 | 1.100 | 0.30( 0.30) | 0.99 | 40506.2 | 10710.00 |
| 21 | 37726.41 | 96.69 | 1.092 | 0.30( 0.30) | 0.99 | 41029.8 | 10410.00 |
| 22 | 37548.75 | 98.70 | 1.083 | 0.30( 0.30) | 0.99 | 41573.6 | 12111.00 |
| 23 | 37301.90 | 101.05 | 1.072 | 0.30( 0.30) | 0.99 | 42213.4 | 10700.00 |
| 24 | 37292.05 | 101.16 | 1.072 | 0.30( 0.30) | 0.99 | 42243.0 | 12231.00 |
| 25 | 37019.30 | 103.97 | 1.059 | 0.30( 0.30) | 0.99 | 42943.0 | 12101.10 |
| 26 | 36931.54 | 104.81 | 1.055 | 0.30( 0.30) | 0.99 | 43143.1 | 12261.00 |
| 27 | 36574.05 | 107.91 | 1.041 | 0.30( 0.30) | 0.99 | 43792.1 | 10400.00 |
| 28 | 36258.75 | 109.87 | 1.033 | 0.30( 0.30) | 0.99 | 44152.4 | 10200.00 |
| 29 | 35179.73 | 115.67 | 1.006 | 0.30( 0.30) | 0.99 | 45107.2 | 12010.00 |
| 30 | 35165.68 | 115.74 | 1.006 | 0.30( 0.30) | 0.99 | 45115.3 | 10300.00 |
| 31 | 33973.56 | 121.31 | 0.984 | 0.30( 0.30) | 0.99 | 45420.9 | 10210.00 |
| 32 | 33634.95 | 123.92 | 0.977 | 0.30( 0.30) | 0.99 | 45531.8 | 12000.00 |
| 33 | 30871.16 | 146.70 | 0.917 | 0.30( 0.30) | 0.99 | 46153.7 | 10100.00 |

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.200
EFFECTIVE AREA(ACRES) = 35191.74 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

**********
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56
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>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.170
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 14.37 | 0.30 | 0.987 | - |



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38309.42
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.73
AVERAGE FLOW DEPTH(FEET) = 9.79 TRAVEL TIME(MIN.) = 0.56
Tc(MIN.) = 82.76
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 11.31
EFFECTIVE AREA(ACRES) = 35206.11 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 38303.77
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.79 FLOW VELOCITY(FEET/SEC.) = 15.72
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|---|
| 1 | 28196.41 | 37.20 | 1.719 | 0.30( 0.30) | 0.99 | 11550.4 | 11831.00 | |
| 2 | 28997.24 | 39.75 | 1.653 | 0.30( 0.30) | 0.99 | 12380.8 | 11801.00 | |
| 3 | 31685.73 | 48.13 | 1.463 | 0.30( 0.30) | 0.99 | 15396.6 | 11500.00 | |
| 4 | 32066.13 | 49.76 | 1.426 | 0.30( 0.30) | 0.99 | 16195.7 | 11530.00 | |
| 5 | 33185.00 | 54.30 | 1.379 | 0.30( 0.30) | 0.99 | 18326.0 | 11701.00 | |
| 6 | 33733.33 | 56.35 | 1.359 | 0.30( 0.30) | 0.99 | 19334.9 | 11000.00 | |
| 7 | 36747.98 | 65.75 | 1.284 | 0.30( 0.30) | 0.99 | 25127.5 | 12500.00 | |
| 8 | 36865.25 | 66.10 | 1.282 | 0.30( 0.30) | 0.99 | 25366.3 | 11330.00 | |
| 9 | 38148.02 | 72.60 | 1.239 | 0.30( 0.30) | 0.99 | 29797.3 | 11130.00 | |
| 10 | 38239.23 | 78.88 | 1.197 | 0.30( 0.30) | 0.99 | 33040.6 | 12300.00 | |
| 11 | 38282.50 | 80.17 | 1.188 | 0.30( 0.30) | 0.99 | 33791.3 | 12330.00 | |
| 12 | 38292.96 | 80.95 | 1.183 | 0.30( 0.30) | 0.99 | 34226.5 | 11620.00 | |
| 13 | 38303.77 | 82.76 | 1.170 | 0.30( 0.30) | 0.99 | 35206.1 | 12410.00 | |
| 14 | 38301.27 | 83.22 | 1.167 | 0.30( 0.30) | 0.99 | 35443.4 | 11600.00 | |
| 15 | 38240.18 | 86.78 | 1.144 | 0.30( 0.30) | 0.99 | 37134.5 | 12400.00 | |
| 16 | 38170.52 | 89.16 | 1.128 | 0.30( 0.30) | 0.99 | 38195.5 | 11111.00 | |
| 17 | 38097.30 | 90.64 | 1.119 | 0.30( 0.30) | 0.99 | 38801.7 | 11101.00 | |
| 18 | 38078.45 | 91.40 | 1.116 | 0.30( 0.30) | 0.99 | 39078.2 | 12211.00 | |
| 19 | 37922.34 | 95.38 | 1.098 | 0.30( 0.30) | 0.99 | 40503.2 | 12201.00 | |
| 20 | 37919.14 | 95.43 | 1.098 | 0.30( 0.30) | 0.99 | 40520.6 | 10710.00 | |
| 21 | 37726.41 | 97.26 | 1.089 | 0.30( 0.30) | 0.99 | 41044.2 | 10410.00 | |
| 22 | 37548.75 | 99.27 | 1.080 | 0.30( 0.30) | 0.99 | 41587.9 | 12111.00 | |
| 23 | 37301.90 | 101.62 | 1.070 | 0.30( 0.30) | 0.99 | 42227.7 | 10700.00 | |
| 24 | 37292.05 | 101.73 | 1.069 | 0.30( 0.30) | 0.99 | 42257.4 | 12231.00 | |
| 25 | 37019.30 | 104.54 | 1.057 | 0.30( 0.30) | 0.99 | 42957.4 | 12101.10 | |
| 26 | 36931.54 | 105.38 | 1.053 | 0.30( 0.30) | 0.99 | 43157.5 | 12261.00 | |
| 27 | 36574.05 | 108.48 | 1.039 | 0.30( 0.30) | 0.99 | 43806.5 | 10400.00 | |
| 28 | 36258.75 | 110.44 | 1.030 | 0.30( 0.30) | 0.99 | 44166.8 | 10200.00 | |
| 29 | 35179.73 | 116.25 | 1.004 | 0.30( 0.30) | 0.99 | 45121.6 | 12010.00 | |
| 30 | 35165.68 | 116.32 | 1.004 | 0.30( 0.30) | 0.99 | 45129.7 | 10300.00 | |
| 31 | 33973.56 | 121.90 | 0.982 | 0.30( 0.30) | 0.99 | 45435.3 | 10210.00 | |
| 32 | 33634.95 | 124.51 | 0.975 | 0.30( 0.30) | 0.99 | 45546.2 | 12000.00 | |
| 33 | 30871.16 | 147.31 | 0.915 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 | |

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.76

AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 35206.11

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FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11
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>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
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** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28196.41 | 37.20 | 1.719 | 0.30( 0.30) | 0.99 | 11550.4 | 11831.00 |
| 2 | 28997.24 | 39.75 | 1.653 | 0.30( 0.30) | 0.99 | 12380.8 | 11801.00 |
| 3 | 31685.73 | 48.13 | 1.463 | 0.30( 0.30) | 0.99 | 15396.6 | 11500.00 |
| 4 | 32066.13 | 49.76 | 1.426 | 0.30( 0.30) | 0.99 | 16195.7 | 11530.00 |
| 5 | 33185.00 | 54.30 | 1.379 | 0.30( 0.30) | 0.99 | 18326.0 | 11701.00 |
| 6 | 33733.33 | 56.35 | 1.359 | 0.30( 0.30) | 0.99 | 19334.9 | 11000.00 |
| 7 | 36747.98 | 65.75 | 1.284 | 0.30( 0.30) | 0.99 | 25127.5 | 12500.00 |
| 8 | 36865.25 | 66.10 | 1.282 | 0.30( 0.30) | 0.99 | 25366.3 | 11330.00 |
| 9 | 38148.02 | 72.60 | 1.239 | 0.30( 0.30) | 0.99 | 29797.3 | 11130.00 |
| 10 | 38239.23 | 78.88 | 1.197 | 0.30( 0.30) | 0.99 | 33040.6 | 12300.00 |
| 11 | 38282.50 | 80.17 | 1.188 | 0.30( 0.30) | 0.99 | 33791.3 | 12330.00 |
| 12 | 38292.96 | 80.95 | 1.183 | 0.30( 0.30) | 0.99 | 34226.5 | 11620.00 |
| 13 | 38303.77 | 82.76 | 1.170 | 0.30( 0.30) | 0.99 | 35206.1 | 12410.00 |
| 14 | 38301.27 | 83.22 | 1.167 | 0.30( 0.30) | 0.99 | 35443.4 | 11600.00 |
| 15 | 38240.18 | 86.78 | 1.144 | 0.30( 0.30) | 0.99 | 37134.5 | 12400.00 |
| 16 | 38170.52 | 89.16 | 1.128 | 0.30( 0.30) | 0.99 | 38195.5 | 11111.00 |
| 17 | 38097.30 | 90.64 | 1.119 | 0.30( 0.30) | 0.99 | 38801.7 | 11101.00 |
| 18 | 38078.45 | 91.40 | 1.116 | 0.30( 0.30) | 0.99 | 39078.2 | 12211.00 |
| 19 | 37922.34 | 95.38 | 1.098 | 0.30( 0.30) | 0.99 | 40503.2 | 12201.00 |
| 20 | 37919.14 | 95.43 | 1.098 | 0.30( 0.30) | 0.99 | 40520.6 | 10710.00 |
| 21 | 37726.41 | 97.26 | 1.089 | 0.30( 0.30) | 0.99 | 41044.2 | 10410.00 |
| 22 | 37548.75 | 99.27 | 1.080 | 0.30( 0.30) | 0.99 | 41587.9 | 12111.00 |
| 23 | 37301.90 | 101.62 | 1.070 | 0.30( 0.30) | 0.99 | 42227.7 | 10700.00 |
| 24 | 37292.05 | 101.73 | 1.069 | 0.30( 0.30) | 0.99 | 42257.4 | 12231.00 |
| 25 | 37019.30 | 104.54 | 1.057 | 0.30( 0.30) | 0.99 | 42957.4 | 12101.10 |
| 26 | 36931.54 | 105.38 | 1.053 | 0.30( 0.30) | 0.99 | 43157.5 | 12261.00 |
| 27 | 36574.05 | 108.48 | 1.039 | 0.30( 0.30) | 0.99 | 43806.5 | 10400.00 |
| 28 | 36258.75 | 110.44 | 1.030 | 0.30( 0.30) | 0.99 | 44166.8 | 10200.00 |
| 29 | 35179.73 | 116.25 | 1.004 | 0.30( 0.30) | 0.99 | 45121.6 | 12010.00 |
| 30 | 35165.68 | 116.32 | 1.004 | 0.30( 0.30) | 0.99 | 45129.7 | 10300.00 |
| 31 | 33973.56 | 121.90 | 0.982 | 0.30( 0.30) | 0.99 | 45435.3 | 10210.00 |
| 32 | 33634.95 | 124.51 | 0.975 | 0.30( 0.30) | 0.99 | 45546.2 | 12000.00 |
| 33 | 30871.16 | 147.31 | 0.915 | 0.30( 0.30) | 0.99 | 46168.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2987.26 | 30.24 | 1.897 | 0.30( 0.30) | 1.00 | 1941.1 | 40130.00 |
| 2 | 3028.60 | 32.04 | 1.851 | 0.30( 0.30) | 1.00 | 2058.2 | 40100.00 |
| 3 | 3169.66 | 58.25 | 1.340 | 0.30( 0.30) | 1.00 | 3319.6 | 11900.00 |
| 4 | 3164.43 | 58.70 | 1.336 | 0.30( 0.30) | 1.00 | 3327.6 | 11910.00 |

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|



| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28781.04 | 30.24 | 1.897 | 0.30( 0.30) | 0.99 | 11329.6 | 40130.00 |
| 2 | 29570.59 | 32.04 | 1.851 | 0.30( 0.30) | 0.99 | 12005.8 | 40100.00 |
| 3 | 31252.79 | 37.20 | 1.719 | 0.30( 0.30) | 0.99 | 13857.0 | 11831.00 |
| 4 | 32067.32 | 39.75 | 1.653 | 0.30( 0.30) | 0.99 | 14809.9 | 11801.00 |
| 5 | 34800.94 | 48.13 | 1.463 | 0.30( 0.30) | 0.99 | 18229.2 | 11500.00 |
| 6 | 35190.11 | 49.76 | 1.426 | 0.30( 0.30) | 0.99 | 19106.7 | 11530.00 |
| 7 | 36333.41 | 54.30 | 1.379 | 0.30( 0.30) | 0.99 | 21455.5 | 11701.00 |
| 8 | 36892.72 | 56.35 | 1.359 | 0.30( 0.30) | 0.99 | 22562.6 | 11000.00 |
| 9 | 37514.99 | 58.25 | 1.340 | 0.30( 0.30) | 0.99 | 23830.4 | 11900.00 |
| 10 | 37652.28 | 58.70 | 1.336 | 0.30( 0.30) | 0.99 | 24112.3 | 11910.00 |
| 11 | 39755.94 | 65.75 | 1.284 | 0.30( 0.30) | 0.99 | 28455.1 | 12500.00 |
| 12 | 39865.90 | 66.10 | 1.282 | 0.30( 0.30) | 0.99 | 28694.0 | 11330.00 |
| 13 | 41015.88 | 72.60 | 1.239 | 0.30( 0.30) | 0.99 | 33125.0 | 11130.00 |
| 14 | 40978.60 | 78.88 | 1.197 | 0.30( 0.30) | 0.99 | 36368.2 | 12300.00 |
| 15 | 40995.41 | 80.17 | 1.188 | 0.30( 0.30) | 0.99 | 37118.9 | 12330.00 |
| 16 | 40990.07 | 80.95 | 1.183 | 0.30( 0.30) | 0.99 | 37554.1 | 11620.00 |
| 17 | 40963.71 | 82.76 | 1.170 | 0.30( 0.30) | 0.99 | 38533.8 | 12410.00 |
| 18 | 40951.90 | 83.22 | 1.167 | 0.30( 0.30) | 0.99 | 38771.0 | 11600.00 |
| 19 | 40817.93 | 86.78 | 1.144 | 0.30( 0.30) | 0.99 | 40462.1 | 12400.00 |
| 20 | 40699.58 | 89.16 | 1.128 | 0.30( 0.30) | 0.99 | 41523.1 | 11111.00 |
| 21 | 40600.48 | 90.64 | 1.119 | 0.30( 0.30) | 0.99 | 42129.4 | 11101.00 |
| 22 | 40571.13 | 91.40 | 1.116 | 0.30( 0.30) | 0.99 | 42405.9 | 12211.00 |
| 23 | 40360.44 | 95.38 | 1.098 | 0.30( 0.30) | 0.99 | 43830.9 | 12201.00 |
| 24 | 40356.51 | 95.43 | 1.098 | 0.30( 0.30) | 0.99 | 43848.2 | 10710.00 |
| 25 | 40138.69 | 97.26 | 1.089 | 0.30( 0.30) | 0.99 | 44371.8 | 10410.00 |
| 26 | 39933.41 | 99.27 | 1.080 | 0.30( 0.30) | 0.99 | 44915.6 | 12111.00 |
| 27 | 39654.30 | 101.62 | 1.070 | 0.30( 0.30) | 0.99 | 45555.4 | 10700.00 |
| 28 | 39642.91 | 101.73 | 1.069 | 0.30( 0.30) | 0.99 | 45585.0 | 12231.00 |
| 29 | 39331.55 | 104.54 | 1.057 | 0.30( 0.30) | 0.99 | 46285.0 | 12101.10 |
| 30 | 39232.20 | 105.38 | 1.053 | 0.30( 0.30) | 0.99 | 46485.2 | 12261.00 |
| 31 | 38832.19 | 108.48 | 1.039 | 0.30( 0.30) | 0.99 | 47134.1 | 10400.00 |
| 32 | 38489.96 | 110.44 | 1.030 | 0.30( 0.30) | 0.99 | 47494.5 | 10200.00 |
| 33 | 37331.12 | 116.25 | 1.004 | 0.30( 0.30) | 0.99 | 48449.2 | 12010.00 |
| 34 | 37316.06 | 116.32 | 1.004 | 0.30( 0.30) | 0.99 | 48457.4 | 10300.00 |
| 35 | 36058.22 | 121.90 | 0.982 | 0.30( 0.30) | 0.99 | 48763.0 | 10210.00 |
| 36 | 35698.59 | 124.51 | 0.975 | 0.30( 0.30) | 0.99 | 48873.8 | 12000.00 |
| 37 | 32751.58 | 147.31 | 0.915 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41015.88 Tc(MIN.) = 72.598
EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 72.60
EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 41015.88

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28781.04 | 30.24 | 1.897 | 0.30( 0.30) | 0.99 | 11329.6 | 40130.00 |
| 2 | 29570.59 | 32.04 | 1.851 | 0.30( 0.30) | 0.99 | 12005.8 | 40100.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 31252.79 | 37.20 | 1.719 | 0.30( 0.30) | 0.99 | 13857.0 | 11831.00 |
| 4 | 32067.32 | 39.75 | 1.653 | 0.30( 0.30) | 0.99 | 14809.9 | 11801.00 |
| 5 | 34800.94 | 48.13 | 1.463 | 0.30( 0.30) | 0.99 | 18229.2 | 11500.00 |
| 6 | 35190.11 | 49.76 | 1.426 | 0.30( 0.30) | 0.99 | 19106.7 | 11530.00 |
| 7 | 36333.41 | 54.30 | 1.379 | 0.30( 0.30) | 0.99 | 21455.5 | 11701.00 |
| 8 | 36892.72 | 56.35 | 1.359 | 0.30( 0.30) | 0.99 | 22562.6 | 11000.00 |
| 9 | 37514.99 | 58.25 | 1.340 | 0.30( 0.30) | 0.99 | 23830.4 | 11900.00 |
| 10 | 37652.28 | 58.70 | 1.336 | 0.30( 0.30) | 0.99 | 24112.3 | 11910.00 |
| 11 | 39755.94 | 65.75 | 1.284 | 0.30( 0.30) | 0.99 | 28455.1 | 12500.00 |
| 12 | 39865.90 | 66.10 | 1.282 | 0.30( 0.30) | 0.99 | 28694.0 | 11330.00 |
| 13 | 41015.88 | 72.60 | 1.239 | 0.30( 0.30) | 0.99 | 33125.0 | 11130.00 |
| 14 | 40978.60 | 78.88 | 1.197 | 0.30( 0.30) | 0.99 | 36368.2 | 12300.00 |
| 15 | 40995.41 | 80.17 | 1.188 | 0.30( 0.30) | 0.99 | 37118.9 | 12330.00 |
| 16 | 40990.07 | 80.95 | 1.183 | 0.30( 0.30) | 0.99 | 37554.1 | 11620.00 |
| 17 | 40963.71 | 82.76 | 1.170 | 0.30( 0.30) | 0.99 | 38533.8 | 12410.00 |
| 18 | 40951.90 | 83.22 | 1.167 | 0.30( 0.30) | 0.99 | 38771.0 | 11600.00 |
| 19 | 40817.93 | 86.78 | 1.144 | 0.30( 0.30) | 0.99 | 40462.1 | 12400.00 |
| 20 | 40699.58 | 89.16 | 1.128 | 0.30( 0.30) | 0.99 | 41523.1 | 11111.00 |
| 21 | 40600.48 | 90.64 | 1.119 | 0.30( 0.30) | 0.99 | 42129.4 | 11101.00 |
| 22 | 40571.13 | 91.40 | 1.116 | 0.30( 0.30) | 0.99 | 42405.9 | 12211.00 |
| 23 | 40360.44 | 95.38 | 1.098 | 0.30( 0.30) | 0.99 | 43830.9 | 12201.00 |
| 24 | 40356.51 | 95.43 | 1.098 | 0.30( 0.30) | 0.99 | 43848.2 | 10710.00 |
| 25 | 40138.69 | 97.26 | 1.089 | 0.30( 0.30) | 0.99 | 44371.8 | 10410.00 |
| 26 | 39933.41 | 99.27 | 1.080 | 0.30( 0.30) | 0.99 | 44915.6 | 12111.00 |
| 27 | 39654.30 | 101.62 | 1.070 | 0.30( 0.30) | 0.99 | 45555.4 | 10700.00 |
| 28 | 39642.91 | 101.73 | 1.069 | 0.30( 0.30) | 0.99 | 45585.0 | 12231.00 |
| 29 | 39331.55 | 104.54 | 1.057 | 0.30( 0.30) | 0.99 | 46285.0 | 12101.10 |
| 30 | 39232.20 | 105.38 | 1.053 | 0.30( 0.30) | 0.99 | 46485.2 | 12261.00 |
| 31 | 38832.19 | 108.48 | 1.039 | 0.30( 0.30) | 0.99 | 47134.1 | 10400.00 |
| 32 | 38489.96 | 110.44 | 1.030 | 0.30( 0.30) | 0.99 | 47494.5 | 10200.00 |
| 33 | 37331.12 | 116.25 | 1.004 | 0.30( 0.30) | 0.99 | 48449.2 | 12010.00 |
| 34 | 37316.06 | 116.32 | 1.004 | 0.30( 0.30) | 0.99 | 48457.4 | 10300.00 |
| 35 | 36058.22 | 121.90 | 0.982 | 0.30( 0.30) | 0.99 | 48763.0 | 10210.00 |
| 36 | 35698.59 | 124.51 | 0.975 | 0.30( 0.30) | 0.99 | 48873.8 | 12000.00 |
| 37 | 32751.58 | 147.31 | 0.915 | 0.30( 0.30) | 0.99 | 49495.7 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 100-YR EV FEB 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU00EV26.DAT
  TIME/DATE OF STUDY: 08:47 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.101
   2)   10.00;  3.900
   3)   15.00;  3.005
   4)   20.00;  2.465
   5)   25.00;  2.128
   6)   30.00;  1.900
   7)   40.00;  1.644
   8)   50.00;  1.419
   9)   60.00;  1.320
  10)   90.00;  1.119
  11)  120.00;  0.983
  12)  180.00;  0.826
  13)  360.00;  0.617
  14) 1200.00;  0.271
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV19.DNA                    S19
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    29570.59   32.04  0.30( 0.30) 0.99   12005.8   40100.00
      2    31252.79   37.20  0.30( 0.30) 0.99   13857.0   11831.00
      3    32067.32   39.75  0.30( 0.30) 0.99   14809.9   11801.00
      4    35190.11   49.76  0.30( 0.30) 0.99   19106.7   11530.00
      5    37652.28   58.70  0.30( 0.30) 0.99   24112.3   11910.00
      6    39865.90   66.10  0.30( 0.30) 0.99   28694.0   11330.00
      7    41015.88   72.60  0.30( 0.30) 0.99   33125.0   11130.00
      8    40995.41   80.17  0.30( 0.30) 0.99   37118.9   12330.00
      9    40963.71   82.76  0.30( 0.30) 0.99   38533.8   12410.00
     10    40817.93   86.78  0.30( 0.30) 0.99   40462.1   12400.00
     11    40699.58   89.16  0.30( 0.30) 0.99   41523.1   11111.00
     12    40360.44   95.38  0.30( 0.30) 0.99   43830.9   12201.00
     13    39933.41   99.27  0.30( 0.30) 0.99   44915.6   12111.00
     14    39654.30  101.62  0.30( 0.30) 0.99   45555.4   10700.00
     15    39331.55  104.54  0.30( 0.30) 0.99   46285.0   12101.10
     16    38832.19  108.48  0.30( 0.30) 0.99   47134.1   10400.00
     17    37331.12  116.25  0.30( 0.30) 0.99   48449.2   12010.00
     18    36058.22  121.90  0.30( 0.30) 0.99   48763.0   10210.00
     19    35698.59  124.51  0.30( 0.30) 0.99   48873.8   12000.00
     20    32751.58  147.31  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    29570.59   32.04  0.30( 0.30) 0.99   12005.8   40100.00
      2    31252.79   37.20  0.30( 0.30) 0.99   13857.0   11831.00
      3    32067.32   39.75  0.30( 0.30) 0.99   14809.9   11801.00
      4    35190.11   49.76  0.30( 0.30) 0.99   19106.7   11530.00
      5    37652.28   58.70  0.30( 0.30) 0.99   24112.3   11910.00
      6    39865.90   66.10  0.30( 0.30) 0.99   28694.0   11330.00
      7    41015.88   72.60  0.30( 0.30) 0.99   33125.0   11130.00
      8    40995.41   80.17  0.30( 0.30) 0.99   37118.9   12330.00
      9    40963.71   82.76  0.30( 0.30) 0.99   38533.8   12410.00
     10    40817.93   86.78  0.30( 0.30) 0.99   40462.1   12400.00
     11    40699.58   89.16  0.30( 0.30) 0.99   41523.1   11111.00
     12    40360.44   95.38  0.30( 0.30) 0.99   43830.9   12201.00
     13    39933.41   99.27  0.30( 0.30) 0.99   44915.6   12111.00
```

```
    14    39654.30  101.62  0.30( 0.30) 0.99   45555.4   10700.00
    15    39331.55  104.54  0.30( 0.30) 0.99   46285.0   12101.10
    16    38832.19  108.48  0.30( 0.30) 0.99   47134.1   10400.00
    17    37331.12  116.25  0.30( 0.30) 0.99   48449.2   12010.00
    18    36058.22  121.90  0.30( 0.30) 0.99   48763.0   10210.00
    19    35698.59  124.51  0.30( 0.30) 0.99   48873.8   12000.00
    20    32751.58  147.31  0.30( 0.30) 0.99   49495.7   10100.00
  TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.227
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41021.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  19.73
  AVERAGE FLOW DEPTH(FEET) =   8.56   TRAVEL TIME(MIN.) =   1.24
  Tc(MIN.) =   73.84
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =   11.77
  EFFECTIVE AREA(ACRES) =  33139.07     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   41015.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.56   FLOW VELOCITY(FEET/SEC.) =  19.73
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

S26-3-1



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O00EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      117.77   16.39  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    29570.59   33.42    1.812  0.30( 0.30) 0.99   12019.9   40100.00
      2    31252.79   38.56    1.681  0.30( 0.30) 0.99   13871.1   11831.00
      3    32067.32   41.09    1.619  0.30( 0.30) 0.99   14824.0   11801.00
      4    35190.11   51.07    1.408  0.30( 0.30) 0.99   19120.8   11530.00
      5    37652.28   59.97    1.320  0.30( 0.30) 0.99   24126.4   11910.00
      6    39865.90   67.36    1.271  0.30( 0.30) 0.99   28708.1   11330.00
      7    41015.88   73.84    1.227  0.30( 0.30) 0.99   33139.1   11130.00
      8    40995.41   81.41    1.177  0.30( 0.30) 0.99   37133.0   12330.00
      9    40963.71   84.01    1.159  0.30( 0.30) 0.99   38547.9   12410.00
     10    40817.93   88.03    1.132  0.30( 0.30) 0.99   40476.2   12400.00
     11    40699.58   90.41    1.117  0.30( 0.30) 0.99   41537.2   11111.00
     12    40360.44   96.63    1.089  0.30( 0.30) 0.99   43845.0   12201.00
     13    39933.41  100.52    1.071  0.30( 0.30) 0.99   44929.7   12111.00
     14    39654.30  102.87    1.061  0.30( 0.30) 0.99   45569.5   10700.00
     15    39331.55  105.80    1.047  0.30( 0.30) 0.99   46299.1   12101.10
     16    38832.19  109.74    1.029  0.30( 0.30) 0.99   47148.2   10400.00
     17    37331.12  117.53    0.994  0.30( 0.30) 0.99   48463.4   12010.00
     18    36058.22  123.19    0.975  0.30( 0.30) 0.99   48777.1   10210.00
     19    35698.59  125.81    0.968  0.30( 0.30) 0.99   48887.9   12000.00
     20    32751.58  148.64    0.908  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     117.77   16.39    2.855  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24602.09   16.39    2.855  0.30( 0.30) 0.99    5946.4     600.00
      2    29640.42   33.42    1.812  0.30( 0.30) 0.99   12071.0   40100.00
      3    31316.57   38.56    1.681  0.30( 0.30) 0.99   13922.2   11831.00
      4    32128.28   41.09    1.619  0.30( 0.30) 0.99   14875.1   11801.00
      5    35241.36   51.07    1.408  0.30( 0.30) 0.99   19171.9   11530.00
      6    37699.48   59.97    1.320  0.30( 0.30) 0.99   24177.5   11910.00
      7    39910.82   67.36    1.271  0.30( 0.30) 0.99   28759.2   11330.00
      8    41058.80   73.84    1.227  0.30( 0.30) 0.99   33190.2   11130.00
      9    41036.00   81.41    1.177  0.30( 0.30) 0.99   37184.1   12330.00
```

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```
     10    41003.50   84.01    1.159  0.30( 0.30) 0.99   38599.0   12410.00
     11    40856.48   88.03    1.132  0.30( 0.30) 0.99   40527.3   12400.00
     12    40737.44   90.41    1.117  0.30( 0.30) 0.99   41588.3   11111.00
     13    40397.00   96.63    1.089  0.30( 0.30) 0.99   43896.1   12201.00
     14    39969.16  100.52    1.071  0.30( 0.30) 0.99   44980.8   12111.00
     15    39689.56  102.87    1.061  0.30( 0.30) 0.99   45620.6   10700.00
     16    39366.20  105.80    1.047  0.30( 0.30) 0.99   46350.2   12101.10
     17    38866.02  109.74    1.029  0.30( 0.30) 0.99   47199.3   10400.00
     18    37363.33  117.53    0.994  0.30( 0.30) 0.99   48514.5   12010.00
     19    36089.53  123.19    0.975  0.30( 0.30) 0.99   48828.2   10210.00
     20    35729.58  125.81    0.968  0.30( 0.30) 0.99   48939.0   12000.00
     21    32779.82  148.64    0.908  0.30( 0.30) 0.99   49560.9   10100.00
    TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    41058.80  Tc(MIN.) =   73.838
  EFFECTIVE AREA(ACRES) =  33190.17  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.18
  CHANNEL FLOW THRU SUBAREA(CFS) =   41058.80
  FLOW VELOCITY(FEET/SEC.) =  18.18   FLOW DEPTH(FEET) =   9.18
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =   75.39
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 4E00EVRL.DNA                              E
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      557.65    9.11  0.30( 0.16) 0.52     148.3     800.00
      2      502.46   12.67  0.30( 0.17) 0.57     168.2     818.00
      3      475.51   13.76  0.30( 0.17) 0.58     171.0     810.00
    TOTAL AREA(ACRES) =      171.0

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



```
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    24602.09   18.23    2.656  0.30( 0.30) 0.99    5946.4     600.00
      2    29640.42   35.15    1.768  0.30( 0.30) 0.99   12071.0   40100.00
      3    31316.57   40.25    1.638  0.30( 0.30) 0.99   13922.2   11831.00
      4    32128.28   42.77    1.582  0.30( 0.30) 0.99   14875.1   11801.00
      5    35241.36   52.70    1.392  0.30( 0.30) 0.99   19171.9   11530.00
      6    37699.48   61.57    1.309  0.30( 0.30) 0.99   24177.5   11910.00
      7    39910.82   68.92    1.260  0.30( 0.30) 0.99   28759.2   11330.00
      8    41058.80   75.39    1.217  0.30( 0.30) 0.99   33190.2   11130.00
      9    41036.00   82.96    1.166  0.30( 0.30) 0.99   37184.1   12330.00
     10    41003.50   85.55    1.149  0.30( 0.30) 0.99   38599.0   12410.00
     11    40856.48   89.58    1.122  0.30( 0.30) 0.99   40527.3   12400.00
     12    40737.44   91.96    1.110  0.30( 0.30) 0.99   41588.3   11111.00
     13    40397.00   98.18    1.082  0.30( 0.30) 0.99   43896.1   12201.00
     14    39969.16  102.08    1.064  0.30( 0.30) 0.99   44980.8   12111.00
     15    39689.56  104.44    1.054  0.30( 0.30) 0.99   45620.6   10700.00
     16    39366.20  107.37    1.040  0.30( 0.30) 0.99   46350.2   12101.10
     17    38866.02  111.32    1.022  0.30( 0.30) 0.99   47199.3   10400.00
     18    37363.33  119.13    0.987  0.30( 0.30) 0.99   48514.5   12010.00
     19    36089.53  124.81    0.970  0.30( 0.30) 0.99   48828.2   10210.00
     20    35729.58  127.43    0.964  0.30( 0.30) 0.99   48939.0   12000.00
     21    32779.82  150.31    0.904  0.30( 0.30) 0.99   49560.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1      557.65    9.11    4.292  0.30( 0.16) 0.52     148.3     800.00
      2      502.46   12.67    3.422  0.30( 0.17) 0.57     168.2     818.00
      3      475.51   13.76    3.227  0.30( 0.17) 0.58     171.0     810.00
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE  12603.00 =    3814.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1    21378.80    9.11    4.292  0.30( 0.29) 0.97    3119.7     800.00
      2    23153.40   12.67    3.422  0.30( 0.29) 0.98    4300.3     818.00
      3    23539.47   13.76    3.227  0.30( 0.29) 0.98    4659.0     810.00
      4    24988.67   18.23    2.656  0.30( 0.29) 0.98    6117.4     600.00
      5    29888.71   35.15    1.768  0.30( 0.30) 0.99   12242.0   40100.00
      6    31544.63   40.25    1.638  0.30( 0.30) 0.99   14093.2   11831.00
      7    32347.51   42.77    1.582  0.30( 0.30) 0.99   15046.1   11801.00
      8    35431.11   52.70    1.392  0.30( 0.30) 0.99   19342.9   11530.00
      9    37876.33   61.57    1.309  0.30( 0.30) 0.99   24348.5   11910.00
     10    40080.00   68.92    1.260  0.30( 0.30) 0.99   28930.2   11330.00
     11    41221.23   75.39    1.217  0.30( 0.30) 0.99   33361.2   11130.00
     12    41190.53   82.96    1.166  0.30( 0.30) 0.99   37355.1   12330.00
     13    41155.32   85.55    1.149  0.30( 0.30) 0.99   38770.0   12410.00
     14    41004.10   89.58    1.122  0.30( 0.30) 0.99   40698.3   12400.00
     15    40883.23   91.96    1.110  0.30( 0.30) 0.99   41759.3   11111.00
     16    40538.40   98.18    1.082  0.30( 0.30) 0.99   44067.1   12201.00
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    17    40107.81  102.08    1.064  0.30( 0.30) 0.99   45151.8   12111.00
    18    39826.55  104.44    1.054  0.30( 0.30) 0.99   45791.6   10700.00
    19    39501.12  107.37    1.040  0.30( 0.30) 0.99   46521.2   12101.10
    20    38998.15  111.32    1.022  0.30( 0.30) 0.99   47370.3   10400.00
    21    37489.94  119.13    0.987  0.30( 0.30) 0.99   48685.5   12010.00
    22    36213.57  124.81    0.970  0.30( 0.30) 0.99   48999.2   10210.00
    23    35852.55  127.43    0.964  0.30( 0.30) 0.99   49110.0   12000.00
    24    32893.47  150.31    0.904  0.30( 0.30) 0.99   49731.9   10100.00
   TOTAL AREA(ACRES) =     49731.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    41221.23  Tc(MIN.) =   75.387
  EFFECTIVE AREA(ACRES) =  33361.17  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49731.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.30      0.30     1.000    66
  PUBLIC PARK                 B        1.30      0.30     0.850    56
  COMMERCIAL                  B        1.40      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       12.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.911
  SUBAREA AREA(ACRES) =   18.30      SUBAREA RUNOFF(CFS) =   15.54
  EFFECTIVE AREA(ACRES) =  33379.47   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49750.2       PEAK FLOW RATE(CFS) =   41221.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B       26.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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S26.3-2

S26.3-2



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   22.20
  EFFECTIVE AREA(ACRES) =  33406.37   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49777.1       PEAK FLOW RATE(CFS) =   41221.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"      B        0.40      0.30     1.000    72
  NATURAL FAIR COVER
  "GRASS"                     B        0.60      0.30     1.000    69
  PUBLIC PARK                 B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"      B        0.70      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =    3.30      SUBAREA RUNOFF(CFS) =    2.75
  EFFECTIVE AREA(ACRES) =  33409.67   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49780.4       PEAK FLOW RATE(CFS) =   41221.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"      B        2.90      0.30     1.000    72
```

S26.3-3

S26.3-3

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
 SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    9.01
 EFFECTIVE AREA(ACRES) =  33420.47   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   41221.23
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   75.39                                    S26.3-3
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   12.05
 EFFECTIVE AREA(ACRES) =  33435.07   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   41221.23
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.46
 CHANNEL FLOW THRU SUBAREA(CFS) =   41221.23
 FLOW VELOCITY(FEET/SEC.) =  15.63   FLOW DEPTH(FEET) =  10.46
 TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =   76.33
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   76.33                                    S26.3-5
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.211
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
```



```
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
 PUBLIC PARK                B        1.30      0.30     0.850    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
 PUBLIC PARK                B        2.10      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
 SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    6.57
 EFFECTIVE AREA(ACRES) =  33442.87   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   41221.23
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   76.33                                    S26.3-5
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.211
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.20      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
 PUBLIC PARK                B        6.10      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
 SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   10.74
 EFFECTIVE AREA(ACRES) =  33455.67   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   41221.23
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.23
 CHANNEL FLOW THRU SUBAREA(CFS) =   41221.23
 FLOW VELOCITY(FEET/SEC.) =  18.15   FLOW DEPTH(FEET) =   9.23
 TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   78.31
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

>>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F00EVRL.DNA

F

MEMORY BANK # 3 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 1276.24 | 9.90 | 0.30( 0.24) | 0.79 | 382.4 | 940.00 |
| 2 | 1276.37 | 10.13 | 0.30( 0.24) | 0.79 | 389.7 | 930.00 |
| 3 | 1319.64 | 12.80 | 0.30( 0.25) | 0.82 | 465.0 | 910.00 |
| 4 | 1294.78 | 16.16 | 0.30( 0.25) | 0.85 | 548.0 | 920.00 |
| 5 | 1265.04 | 16.96 | 0.30( 0.25) | 0.85 | 553.7 | 950.00 |
| 6 | 1224.20 | 17.72 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |

TOTAL AREA(ACRES) = 553.8

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 21378.80 | 12.75 | 3.407 | 0.30( 0.29) | 0.97 | 3214.2 | 800.00 |
| 2 | 23153.40 | 16.21 | 2.874 | 0.30( 0.29) | 0.98 | 4394.8 | 818.00 |
| 3 | 23539.47 | 17.29 | 2.758 | 0.30( 0.29) | 0.98 | 4753.5 | 810.00 |
| 4 | 24988.67 | 21.69 | 2.351 | 0.30( 0.29) | 0.98 | 6211.9 | 600.00 |
| 5 | 29888.71 | 38.40 | 1.685 | 0.30( 0.30) | 0.99 | 12336.5 | 40100.00 |
| 6 | 31544.63 | 43.45 | 1.566 | 0.30( 0.30) | 0.99 | 14187.7 | 11831.00 |
| 7 | 32347.51 | 45.94 | 1.510 | 0.30( 0.30) | 0.99 | 15140.6 | 11801.00 |
| 8 | 35431.11 | 55.77 | 1.362 | 0.30( 0.30) | 0.99 | 19437.4 | 11530.00 |
| 9 | 37876.33 | 64.58 | 1.289 | 0.30( 0.30) | 0.99 | 24443.0 | 11910.00 |
| 10 | 40080.00 | 71.87 | 1.240 | 0.30( 0.30) | 0.99 | 29024.7 | 11330.00 |
| 11 | 41221.23 | 78.31 | 1.197 | 0.30( 0.30) | 0.99 | 33455.7 | 11130.00 |
| 12 | 41190.53 | 85.89 | 1.147 | 0.30( 0.30) | 0.99 | 37449.6 | 12330.00 |
| 13 | 41155.32 | 88.48 | 1.129 | 0.30( 0.30) | 0.99 | 38864.5 | 12410.00 |
| 14 | 41004.10 | 92.51 | 1.108 | 0.30( 0.30) | 0.99 | 40792.8 | 12400.00 |
| 15 | 40883.23 | 94.89 | 1.097 | 0.30( 0.30) | 0.99 | 41853.8 | 11111.00 |
| 16 | 40538.40 | 101.12 | 1.069 | 0.30( 0.30) | 0.99 | 44161.6 | 12201.00 |
| 17 | 40107.81 | 105.04 | 1.051 | 0.30( 0.30) | 0.99 | 45246.3 | 12111.00 |
| 18 | 39826.55 | 107.40 | 1.040 | 0.30( 0.30) | 0.99 | 45886.1 | 10700.00 |
| 19 | 39501.12 | 110.33 | 1.027 | 0.30( 0.30) | 0.99 | 46615.7 | 12101.10 |
| 20 | 38998.15 | 114.30 | 1.009 | 0.30( 0.30) | 0.99 | 47464.8 | 10400.00 |
| 21 | 37489.94 | 122.15 | 0.977 | 0.30( 0.30) | 0.99 | 48780.0 | 12010.00 |
| 22 | 36213.57 | 127.86 | 0.962 | 0.30( 0.30) | 0.99 | 49093.7 | 10210.00 |
| 23 | 35852.55 | 130.50 | 0.956 | 0.30( 0.30) | 0.99 | 49204.5 | 12000.00 |
| 24 | 32893.47 | 153.46 | 0.895 | 0.30( 0.30) | 0.99 | 49826.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 1276.24 | 9.90 | 3.945 | 0.30( 0.24) | 0.79 | 382.4 | 940.00 |
| 2 | 1276.37 | 10.13 | 3.877 | 0.30( 0.24) | 0.79 | 389.7 | 930.00 |
| 3 | 1319.64 | 12.80 | 3.399 | 0.30( 0.25) | 0.82 | 465.0 | 910.00 |
| 4 | 1294.78 | 16.16 | 2.880 | 0.30( 0.25) | 0.85 | 548.0 | 920.00 |
| 5 | 1265.04 | 16.96 | 2.793 | 0.30( 0.25) | 0.85 | 553.7 | 950.00 |
| 6 | 1224.20 | 17.72 | 2.711 | 0.30( 0.25) | 0.85 | 553.8 | 900.00 |



LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 20731.83 | 9.90 | 3.945 | 0.30( 0.28) | 0.95 | 2876.9 | 940.00 |
| 2 | 20817.58 | 10.13 | 3.877 | 0.30( 0.28) | 0.95 | 2943.0 | 930.00 |
| 3 | 22697.71 | 12.75 | 3.407 | 0.30( 0.29) | 0.95 | 3678.0 | 800.00 |
| 4 | 22721.49 | 12.80 | 3.399 | 0.30( 0.29) | 0.95 | 3694.6 | 910.00 |
| 5 | 24421.30 | 16.16 | 2.880 | 0.30( 0.29) | 0.96 | 4924.9 | 920.00 |
| 6 | 24446.23 | 16.21 | 2.874 | 0.30( 0.29) | 0.96 | 4943.2 | 818.00 |
| 7 | 24687.81 | 16.96 | 2.793 | 0.30( 0.29) | 0.96 | 5198.8 | 950.00 |
| 8 | 24787.11 | 17.29 | 2.758 | 0.30( 0.29) | 0.96 | 5307.2 | 810.00 |
| 9 | 24907.54 | 17.72 | 2.711 | 0.30( 0.29) | 0.96 | 5452.0 | 900.00 |
| 10 | 26033.70 | 21.69 | 2.351 | 0.30( 0.29) | 0.97 | 6765.7 | 600.00 |
| 11 | 30601.55 | 38.40 | 1.685 | 0.30( 0.29) | 0.98 | 12890.3 | 40100.00 |
| 12 | 32198.41 | 43.45 | 1.566 | 0.30( 0.29) | 0.98 | 14741.5 | 11831.00 |
| 13 | 32973.32 | 45.94 | 1.510 | 0.30( 0.29) | 0.98 | 15694.4 | 11801.00 |
| 14 | 35982.94 | 55.77 | 1.362 | 0.30( 0.30) | 0.99 | 19991.2 | 11530.00 |
| 15 | 38392.01 | 64.58 | 1.289 | 0.30( 0.30) | 0.99 | 24996.8 | 11910.00 |
| 16 | 40571.31 | 71.87 | 1.240 | 0.30( 0.30) | 0.99 | 29578.5 | 11330.00 |
| 17 | 41691.03 | 78.31 | 1.197 | 0.30( 0.30) | 0.99 | 34009.5 | 11130.00 |
| 18 | 41635.03 | 85.89 | 1.147 | 0.30( 0.30) | 0.99 | 38003.4 | 12330.00 |
| 19 | 41591.16 | 88.48 | 1.129 | 0.30( 0.30) | 0.99 | 39418.3 | 12410.00 |
| 20 | 41429.21 | 92.51 | 1.108 | 0.30( 0.30) | 0.99 | 41346.6 | 12400.00 |
| 21 | 41302.96 | 94.89 | 1.097 | 0.30( 0.30) | 0.99 | 42407.6 | 11111.00 |
| 22 | 40944.05 | 101.12 | 1.069 | 0.30( 0.30) | 0.99 | 44715.4 | 12201.00 |
| 23 | 40504.62 | 105.04 | 1.051 | 0.30( 0.30) | 0.99 | 45800.1 | 12111.00 |
| 24 | 40218.02 | 107.40 | 1.040 | 0.30( 0.30) | 0.99 | 46439.9 | 10700.00 |
| 25 | 39885.96 | 110.33 | 1.027 | 0.30( 0.30) | 0.99 | 47169.5 | 12101.10 |
| 26 | 39374.02 | 114.30 | 1.009 | 0.30( 0.30) | 0.99 | 48018.6 | 10400.00 |
| 27 | 37850.14 | 122.15 | 0.977 | 0.30( 0.30) | 0.99 | 49333.8 | 12010.00 |
| 28 | 36566.32 | 127.86 | 0.962 | 0.30( 0.30) | 0.99 | 49647.5 | 10210.00 |
| 29 | 36201.86 | 130.50 | 0.956 | 0.30( 0.30) | 0.99 | 49758.3 | 12000.00 |
| 30 | 33212.82 | 153.46 | 0.895 | 0.30( 0.30) | 0.99 | 50380.2 | 10100.00 |

TOTAL AREA(ACRES) = 50380.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41691.03 Tc(MIN.) = 78.314
EFFECTIVE AREA(ACRES) = 34009.47 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 78.31
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197

S26.3-6

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER "CHAPARRAL,BROADLEAF" | B | 0.30 | 0.30 | 1.000 | 63 |
| NATURAL FAIR COVER "GRASS" | B | 0.30 | 0.30 | 1.000 | 69 |

```
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        0.60      0.30     1.000    72
  COMMERCIAL                 B        1.10      0.30     0.100    56
  PUBLIC PARK                B        0.80      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.666
  SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =    3.14
  EFFECTIVE AREA(ACRES) =  34012.97   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50383.7       PEAK FLOW RATE(CFS) =   41691.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   78.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.197
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.50      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.80      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    6.86
  EFFECTIVE AREA(ACRES) =  34021.47   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50392.2       PEAK FLOW RATE(CFS) =   41691.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   78.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.197
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.30      0.30     1.000    66
  PUBLIC PARK                B        3.70      0.30     0.850    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        3.90      0.30     1.000    72
```

S26.3-6

S26.3-6



```
  PUBLIC PARK                B        5.90      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.969
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =   37.94
  EFFECTIVE AREA(ACRES) =  34067.97   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50438.7       PEAK FLOW RATE(CFS) =   41691.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    50438.7  TC(MIN.) =     78.31
  EFFECTIVE AREA(ACRES) =  34067.97  AREA-AVERAGED Fm(INCH/HR)=  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.990
  PEAK FLOW RATE(CFS)    =   41691.03

  ** PEAK FLOW RATE TABLE **
   STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
      1    20731.83    9.90    3.945  0.30( 0.28) 0.95    2935.4     940.00
      2    20817.58   10.13    3.877  0.30( 0.28) 0.95    3001.5     930.00
      3    22697.71   12.75    3.407  0.30( 0.29) 0.95    3736.5     800.00
      4    22721.49   12.80    3.399  0.30( 0.29) 0.95    3753.1     910.00
      5    24421.30   16.16    2.880  0.30( 0.29) 0.96    4983.4     920.00
      6    24446.23   16.21    2.874  0.30( 0.29) 0.96    5001.7     818.00
      7    24687.81   16.96    2.793  0.30( 0.29) 0.96    5257.3     950.00
      8    24787.11   17.29    2.758  0.30( 0.29) 0.96    5365.7     810.00
      9    24907.54   17.72    2.711  0.30( 0.29) 0.96    5510.5     900.00
     10    26033.70   21.69    2.351  0.30( 0.29) 0.97    6824.2     600.00
     11    30601.55   38.40    1.685  0.30( 0.29) 0.98   12948.8   40100.00
     12    32198.41   43.45    1.566  0.30( 0.29) 0.98   14800.0   11831.00
     13    32973.32   45.94    1.510  0.30( 0.29) 0.98   15752.9   11801.00
     14    35982.94   55.77    1.362  0.30( 0.30) 0.99   20049.7   11530.00
     15    38392.01   64.58    1.289  0.30( 0.30) 0.99   25055.3   11910.00
     16    40571.31   71.87    1.240  0.30( 0.30) 0.99   29637.0   11330.00
     17    41691.03   78.31    1.197  0.30( 0.30) 0.99   34068.0   11130.00
     18    41635.03   85.89    1.147  0.30( 0.30) 0.99   38061.9   12330.00
     19    41591.16   88.48    1.129  0.30( 0.30) 0.99   39476.8   12410.00
     20    41429.21   92.51    1.108  0.30( 0.30) 0.99   41405.1   12400.00
     21    41302.96   94.89    1.097  0.30( 0.30) 0.99   42466.1   11111.00
     22    40944.05  101.12    1.069  0.30( 0.30) 0.99   44773.9   12201.00
     23    40504.62  105.04    1.051  0.30( 0.30) 0.99   45858.6   12111.00
     24    40218.02  107.40    1.040  0.30( 0.30) 0.99   46498.4   10700.00
     25    39885.96  110.33    1.027  0.30( 0.30) 0.99   47228.0   12101.10
     26    39374.02  114.30    1.009  0.30( 0.30) 0.99   48077.1   10400.00
     27    37850.14  122.15    0.977  0.30( 0.30) 0.99   49392.3   12010.00
     28    36566.32  127.86    0.962  0.30( 0.30) 0.99   49706.0   10210.00
     29    36201.86  130.50    0.956  0.30( 0.30) 0.99   49816.8   12000.00
     30    33212.82  153.46    0.895  0.30( 0.30) 0.99   50438.7   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 100-YR EV FEB 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU00EV27.DAT
  TIME/DATE OF STUDY: 08:50 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.027
   2)   10.00;  3.864
   3)   15.00;  2.981
   4)   20.00;  2.449
   5)   25.00;  2.118
   6)   30.00;  1.891
   7)   40.00;  1.635
   8)   50.00;  1.412
   9)   60.00;  1.310
  10)   90.00;  1.109
  11)  120.00;  0.972
  12)  180.00;  0.816
  13)  360.00;  0.607
  14) 1200.00;  0.266
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV26.DNA                    S26
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22721.49   12.80  0.30( 0.29) 0.95    3753.1     910.00
      2    24907.54   17.72  0.30( 0.29) 0.96    5510.5     900.00
      3    26033.70   21.69  0.30( 0.29) 0.97    6824.2     600.00
      4    30601.55   38.40  0.30( 0.29) 0.98   12948.8   40100.00
      5    32973.32   45.94  0.30( 0.29) 0.98   15752.9   11801.00
      6    35982.94   55.77  0.30( 0.30) 0.99   20049.7   11530.00
      7    38392.01   64.58  0.30( 0.30) 0.99   25055.3   11910.00
      8    40571.31   71.87  0.30( 0.30) 0.99   29637.0   11330.00
      9    41691.03   78.31  0.30( 0.30) 0.99   34068.0   11130.00
     10    41635.03   85.89  0.30( 0.30) 0.99   38061.9   12330.00
     11    41591.16   88.48  0.30( 0.30) 0.99   39476.8   12410.00
     12    41429.21   92.51  0.30( 0.30) 0.99   41405.1   12400.00
     13    40944.05  101.12  0.30( 0.30) 0.99   44773.9   12201.00
     14    40504.62  105.04  0.30( 0.30) 0.99   45858.6   12111.00
     15    39885.96  110.33  0.30( 0.30) 0.99   47228.0   12101.10
     16    39374.02  114.30  0.30( 0.30) 0.99   48077.1   10400.00
     17    37850.14  122.15  0.30( 0.30) 0.99   49392.3   12010.00
     18    36566.32  127.86  0.30( 0.30) 0.99   49706.0   10210.00
     19    36201.86  130.50  0.30( 0.30) 0.99   49816.8   12000.00
     20    33212.82  153.46  0.30( 0.30) 0.99   50438.7   10100.00
    TOTAL AREA(ACRES) =    50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22721.49   12.80  0.30( 0.29) 0.95    3753.1     910.00
      2    24907.54   17.72  0.30( 0.29) 0.96    5510.5     900.00
      3    26033.70   21.69  0.30( 0.29) 0.97    6824.2     600.00
      4    30601.55   38.40  0.30( 0.29) 0.98   12948.8   40100.00
      5    32973.32   45.94  0.30( 0.29) 0.98   15752.9   11801.00
      6    35982.94   55.77  0.30( 0.30) 0.99   20049.7   11530.00
      7    38392.01   64.58  0.30( 0.30) 0.99   25055.3   11910.00
      8    40571.31   71.87  0.30( 0.30) 0.99   29637.0   11330.00
      9    41691.03   78.31  0.30( 0.30) 0.99   34068.0   11130.00
     10    41635.03   85.89  0.30( 0.30) 0.99   38061.9   12330.00
     11    41591.16   88.48  0.30( 0.30) 0.99   39476.8   12410.00
     12    41429.21   92.51  0.30( 0.30) 0.99   41405.1   12400.00
     13    40944.05  101.12  0.30( 0.30) 0.99   44773.9   12201.00
```

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     14    40504.62  105.04  0.30( 0.30) 0.99   45858.6   12111.00
     15    39885.96  110.33  0.30( 0.30) 0.99   47228.0   12101.10
     16    39374.02  114.30  0.30( 0.30) 0.99   48077.1   10400.00
     17    37850.14  122.15  0.30( 0.30) 0.99   49392.3   12010.00
     18    36566.32  127.86  0.30( 0.30) 0.99   49706.0   10210.00
     19    36201.86  130.50  0.30( 0.30) 0.99   49816.8   12000.00
     20    33212.82  153.46  0.30( 0.30) 0.99   50438.7   10100.00
    TOTAL AREA(ACRES) =     50438.7

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.56                    S27.3-1
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.179
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30      0.500    56
  PUBLIC PARK                B        0.90      0.30      0.850    56
  COMMERCIAL                 B        3.40      0.30      0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30      1.000    65
  PUBLIC PARK                B       10.10      0.30      0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30      1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41706.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.60
  AVERAGE FLOW DEPTH(FEET) =   9.56   TRAVEL TIME(MIN.) =   1.19
  Tc(MIN.) =   79.51
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   29.93
  EFFECTIVE AREA(ACRES) =  34104.07     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50474.8         PEAK FLOW RATE(CFS) =   41691.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.56   FLOW VELOCITY(FEET/SEC.) =  17.59
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   41691.03
  FLOW VELOCITY(FEET/SEC.) =  16.68   FLOW DEPTH(FEET) =  10.00
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   79.65
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 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.) =   79.65
  RAINFALL INTENSITY(INCH/HR) =   1.18
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34104.07
  TOTAL STREAM AREA(ACRES) =   50474.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41691.03

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20          S27-11
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.174
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30      1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     16.97
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     16.97

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
*ESTIMATED CHANNEL HEIGHT(FEET) =   0.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.856
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                B       26.94      0.30      1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.03
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.63
AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   2.27
Tc(MIN.) =   16.18
SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   61.97
EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      77.05
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) =   0.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   6.62
LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.616
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       14.73      0.30      1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.41
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.60
 AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   2.25
 Tc(MIN.) =   18.43
 SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   30.71
 EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =     100.54
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.06

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.06   FLOW VELOCITY(FEET/SEC.) =   7.80
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 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.74
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.410
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B      105.64      0.30      1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     200.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.83
 AVERAGE FLOW DEPTH(FEET) =   1.70   TRAVEL TIME(MIN.) =   2.17
 Tc(MIN.) =   20.60
 SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  200.56
 EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     292.13
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.09

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.09   FLOW VELOCITY(FEET/SEC.) =   9.87
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.74
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.259
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B      127.13      0.30      1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     404.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.66
```

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AVERAGE FLOW DEPTH(FEET) = 2.71 TRAVEL TIME(MIN.) = 2.27
Tc(MIN.) = 22.87
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 224.18
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 495.51
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.02 FLOW VELOCITY(FEET/SEC.) = 10.21
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 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.) = 22.87
RAINFALL INTENSITY(INCH/HR) = 2.26
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 281.00
TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 495.51

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22721.49 | 14.44 | 3.080 | 0.30( 0.29) | 0.95 | 3789.2 | 910.00 |
| 1 | 24907.54 | 19.31 | 2.522 | 0.30( 0.29) | 0.96 | 5546.6 | 900.00 |
| 1 | 26033.70 | 23.25 | 2.234 | 0.30( 0.29) | 0.97 | 6860.3 | 600.00 |
| 1 | 30601.55 | 39.89 | 1.638 | 0.30( 0.29) | 0.98 | 12984.9 | 40100.00 |
| 1 | 32973.32 | 47.39 | 1.470 | 0.30( 0.29) | 0.98 | 15789.0 | 11801.00 |
| 1 | 35982.94 | 57.18 | 1.339 | 0.30( 0.30) | 0.99 | 20085.8 | 11530.00 |
| 1 | 38392.01 | 65.95 | 1.270 | 0.30( 0.30) | 0.99 | 25091.4 | 11910.00 |
| 1 | 40571.31 | 73.23 | 1.221 | 0.30( 0.30) | 0.99 | 29673.1 | 11330.00 |
| 1 | 41691.03 | 79.65 | 1.178 | 0.30( 0.30) | 0.99 | 34104.1 | 11130.00 |
| 1 | 41635.03 | 87.23 | 1.128 | 0.30( 0.30) | 0.99 | 38098.0 | 12330.00 |
| 1 | 41591.16 | 89.82 | 1.110 | 0.30( 0.30) | 0.99 | 39512.9 | 12410.00 |
| 1 | 41429.21 | 93.85 | 1.091 | 0.30( 0.30) | 0.99 | 41441.2 | 12400.00 |
| 1 | 40944.05 | 102.47 | 1.052 | 0.30( 0.30) | 0.99 | 44810.0 | 12201.00 |
| 1 | 40504.62 | 106.39 | 1.034 | 0.30( 0.30) | 0.99 | 45894.7 | 12111.00 |
| 1 | 39885.96 | 111.70 | 1.010 | 0.30( 0.30) | 0.99 | 47264.1 | 12101.10 |
| 1 | 39374.02 | 115.67 | 0.992 | 0.30( 0.30) | 0.99 | 48113.2 | 10400.00 |
| 1 | 37850.14 | 123.53 | 0.963 | 0.30( 0.30) | 0.99 | 49428.4 | 12010.00 |
| 1 | 36566.32 | 129.26 | 0.948 | 0.30( 0.30) | 0.99 | 49742.1 | 10210.00 |
| 1 | 36201.86 | 131.90 | 0.941 | 0.30( 0.30) | 0.99 | 49852.9 | 12000.00 |
| 1 | 33212.82 | 154.91 | 0.881 | 0.30( 0.30) | 0.99 | 50474.8 | 10100.00 |
| 2 | 495.51 | 22.87 | 2.259 | 0.30( 0.30) | 1.00 | 281.0 | 12710.00 |

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



** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 23165.47 | 14.44 | 3.080 | 0.30( 0.29) | 0.95 | 3966.6 | 910.00 |
| 2 | 25382.20 | 19.31 | 2.522 | 0.30( 0.29) | 0.97 | 5784.0 | 900.00 |
| 3 | 26418.42 | 22.87 | 2.259 | 0.30( 0.29) | 0.97 | 7012.1 | 12710.00 |
| 4 | 26522.72 | 23.25 | 2.234 | 0.30( 0.29) | 0.97 | 7141.3 | 600.00 |
| 5 | 30939.91 | 39.89 | 1.638 | 0.30( 0.29) | 0.98 | 13265.9 | 40100.00 |
| 6 | 33269.25 | 47.39 | 1.470 | 0.30( 0.29) | 0.98 | 16070.0 | 11801.00 |
| 7 | 36245.64 | 57.18 | 1.339 | 0.30( 0.30) | 0.99 | 20366.8 | 11530.00 |
| 8 | 38637.35 | 65.95 | 1.270 | 0.30( 0.30) | 0.99 | 25372.4 | 11910.00 |
| 9 | 40804.33 | 73.23 | 1.221 | 0.30( 0.30) | 0.99 | 29954.1 | 11330.00 |
| 10 | 41913.16 | 79.65 | 1.178 | 0.30( 0.30) | 0.99 | 34385.1 | 11130.00 |
| 11 | 41844.31 | 87.23 | 1.128 | 0.30( 0.30) | 0.99 | 38379.0 | 12330.00 |
| 12 | 41796.06 | 89.82 | 1.110 | 0.30( 0.30) | 0.99 | 39793.9 | 12410.00 |
| 13 | 41629.36 | 93.85 | 1.091 | 0.30( 0.30) | 0.99 | 41722.2 | 12400.00 |
| 14 | 41134.24 | 102.47 | 1.052 | 0.30( 0.30) | 0.99 | 45091.0 | 12201.00 |
| 15 | 40690.29 | 106.39 | 1.034 | 0.30( 0.30) | 0.99 | 46175.7 | 12111.00 |
| 16 | 40065.50 | 111.70 | 1.010 | 0.30( 0.30) | 0.99 | 47545.1 | 12101.10 |
| 17 | 39548.98 | 115.67 | 0.992 | 0.30( 0.30) | 0.99 | 48394.2 | 10400.00 |
| 18 | 38017.77 | 123.53 | 0.963 | 0.30( 0.30) | 0.99 | 49709.4 | 12010.00 |
| 19 | 36730.18 | 129.26 | 0.948 | 0.30( 0.30) | 0.99 | 50023.1 | 10210.00 |
| 20 | 36363.98 | 131.90 | 0.941 | 0.30( 0.30) | 0.99 | 50133.9 | 12000.00 |
| 21 | 33359.82 | 154.91 | 0.881 | 0.30( 0.30) | 0.99 | 50755.8 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41913.16 Tc(MIN.) = 79.65
EFFECTIVE AREA(ACRES) = 34385.07 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 10.20
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL POOR COVER "BARREN" | B | 0.20 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER "OPEN BRUSH" | B | 0.20 | 0.30 | 1.000 | 66 |
| NATURAL FAIR COVER "WOODLAND,GRASS" | B | 0.30 | 0.30 | 1.000 | 65 |
| COMMERCIAL | B | 0.30 | 0.30 | 0.100 | 56 |
| NATURAL FAIR COVER | | | | | |

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"MEADOWS"                  B        0.50      0.30     1.000    70
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41913.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.36
AVERAGE FLOW DEPTH(FEET) =  10.20   TRAVEL TIME(MIN.) =   2.72
Tc(MIN.) =   82.37
SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.39
EFFECTIVE AREA(ACRES) =  34386.77     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
TOTAL AREA(ACRES) =    50757.5         PEAK FLOW RATE(CFS) =   41913.16
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) =  10.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 10.20   FLOW VELOCITY(FEET/SEC.) =  16.36
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   82.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 B        0.50      0.30     0.850    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B        0.70      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.50      0.30     1.000    66
 COMMERCIAL                  B        1.40      0.30     0.100    56
 COMMERCIAL                  B        2.30      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                     B        9.30      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
 SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   13.07
 EFFECTIVE AREA(ACRES) =  34402.47   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    50773.2       PEAK FLOW RATE(CFS) =   41913.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   82.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
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 "WOODLAND,GRASS"            B       11.20      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"            B       11.40      0.30     1.000    65
 NATURAL FAIR COVER
 "CHAPARRAL,NARROWLEAF"      B       11.80      0.30     1.000    72
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       27.70      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   48.07
 EFFECTIVE AREA(ACRES) =  34464.57   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =    50835.3       PEAK FLOW RATE(CFS) =   41913.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 3C00EVRL.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
     1     2587.27   12.43  0.30( 0.13) 0.42     866.7     410.00
     2     2620.20   13.81  0.30( 0.13) 0.42     948.0     420.00
     3     2688.04   17.65  0.30( 0.13) 0.42    1158.3     310.00
     4     2683.83   17.96  0.30( 0.13) 0.42    1171.6     400.00
     5     2574.38   20.61  0.30( 0.13) 0.42    1248.0     430.00
     6     2557.64   21.17  0.30( 0.13) 0.42    1263.6     300.00
     7     2553.07   21.34  0.30( 0.13) 0.42    1267.8     320.00
     8     2212.77   26.96  0.30( 0.13) 0.43    1292.3     390.00
   TOTAL AREA(ACRES) =     1292.3

****************************************************************************
 FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1    23165.47   17.75    2.689  0.30( 0.29) 0.95    4046.1     910.00
     2    25382.20   22.52    2.282  0.30( 0.29) 0.97    5863.5     900.00
     3    26418.42   26.03    2.071  0.30( 0.29) 0.97    7091.6   12710.00
     4    26522.72   26.41    2.054  0.30( 0.29) 0.97    7220.8     600.00
     5    30939.91   42.89    1.571  0.30( 0.29) 0.98   13345.4   40100.00
     6    33269.25   50.32    1.409  0.30( 0.29) 0.98   16149.5   11801.00
     7    36245.64   60.03    1.310  0.30( 0.30) 0.99   20446.3   11530.00
     8    38637.35   68.74    1.251  0.30( 0.30) 0.99   25451.9   11910.00
     9    40804.33   75.97    1.203  0.30( 0.30) 0.99   30033.6   11330.00
    10    41913.16   82.37    1.160  0.30( 0.30) 0.99   34464.6   11130.00
    11    41844.31   89.95    1.109  0.30( 0.30) 0.99   38458.5   12330.00
    12    41796.06   92.55    1.097  0.30( 0.30) 0.99   39873.4   12410.00
    13    41629.36   96.58    1.079  0.30( 0.30) 0.99   41801.7   12400.00
    14    41134.24  105.21    1.040  0.30( 0.30) 0.99   45170.5   12201.00
    15    40690.29  109.13    1.022  0.30( 0.30) 0.99   46255.2   12111.00
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   16    40065.50  114.45    0.997  0.30( 0.30) 0.99   47624.6   12101.10
   17    39548.98  118.44    0.979  0.30( 0.30) 0.99   48473.7   10400.00
   18    38017.77  126.33    0.956  0.30( 0.30) 0.99   49788.9   12010.00
   19    36730.18  132.10    0.941  0.30( 0.30) 0.99   50102.6   10210.00
   20    36363.98  134.75    0.934  0.30( 0.30) 0.99   50213.4   12000.00
   21    33359.82  157.83    0.874  0.30( 0.30) 0.99   50835.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1     2587.27   12.43    3.435  0.30( 0.13) 0.42     866.7     410.00
    2     2620.20   13.81    3.190  0.30( 0.13) 0.42     948.0     420.00
    3     2688.04   17.65    2.699  0.30( 0.13) 0.42    1158.3     310.00
    4     2683.83   17.96    2.666  0.30( 0.13) 0.42    1171.6     400.00
    5     2574.38   20.61    2.408  0.30( 0.13) 0.42    1248.0     430.00
    6     2557.64   21.17    2.372  0.30( 0.13) 0.42    1263.6     300.00
    7     2553.07   21.34    2.360  0.30( 0.13) 0.42    1267.8     320.00
    8     2212.77   26.96    2.029  0.30( 0.13) 0.43    1292.3     390.00
LONGEST FLOWPATH FROM NODE    390.00 TO NODE  12720.50 =   13248.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1    23849.39   12.43    3.435  0.30( 0.25) 0.83    3700.1     410.00
    2    24417.39   13.81    3.190  0.30( 0.25) 0.83    4097.8     420.00
    3    25827.49   17.65    2.699  0.30( 0.25) 0.83    5183.7     310.00
    4    25852.26   17.75    2.689  0.30( 0.25) 0.83    5208.4     910.00
    5    25949.91   17.96    2.666  0.30( 0.25) 0.84    5300.2     400.00
    6    27071.06   20.61    2.408  0.30( 0.26) 0.86    6385.5     430.00
    7    27313.25   21.17    2.372  0.30( 0.26) 0.86    6613.4     300.00
    8    27388.08   21.34    2.360  0.30( 0.26) 0.86    6682.7     320.00
    9    27863.95   22.52    2.282  0.30( 0.26) 0.87    7136.4     900.00
   10    28687.70   26.03    2.071  0.30( 0.27) 0.89    8379.8   12710.00
   11    28768.82   26.41    2.054  0.30( 0.27) 0.89    8510.7     600.00
   12    28883.13   26.96    2.029  0.30( 0.27) 0.89    8717.8     390.00
   13    32618.83   42.89    1.571  0.30( 0.28) 0.93   14637.7   40100.00
   14    34759.62   50.32    1.409  0.30( 0.28) 0.94   17441.8   11801.00
   15    37620.79   60.03    1.310  0.30( 0.29) 0.95   21738.6   11530.00
   16    39944.47   68.74    1.251  0.30( 0.29) 0.96   26744.2   11910.00
   17    42055.07   75.97    1.203  0.30( 0.29) 0.97   31325.9   11330.00
   18    43113.90   82.37    1.160  0.30( 0.29) 0.97   35756.9   11130.00
   19    42985.90   89.95    1.109  0.30( 0.29) 0.97   39750.8   12330.00
   20    42923.74   92.55    1.097  0.30( 0.29) 0.97   41165.7   12410.00
   21    42735.59   96.58    1.079  0.30( 0.29) 0.97   43094.0   12400.00
   22    42194.55  105.21    1.040  0.30( 0.29) 0.97   46462.8   12201.00
   23    41729.72  109.13    1.022  0.30( 0.29) 0.97   47547.5   12111.00
   24    41076.63  114.45    0.997  0.30( 0.29) 0.97   48916.9   12101.10
   25    40538.93  118.44    0.979  0.30( 0.29) 0.97   49766.0   10400.00
   26    38980.21  126.33    0.956  0.30( 0.29) 0.97   51081.2   12010.00
   27    37675.17  132.10    0.941  0.30( 0.29) 0.98   51394.9   10210.00
   28    37300.95  134.75    0.934  0.30( 0.29) 0.98   51505.7   12000.00
   29    34226.86  157.83    0.874  0.30( 0.29) 0.98   52127.6   10100.00
  TOTAL AREA(ACRES) =     52127.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    43113.90  Tc(MIN.) =   82.373
EFFECTIVE AREA(ACRES) =  35756.88  AREA-AVERAGED Fm(INCH/HR) =  0.29
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  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    52127.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12722.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    258.00  DOWNSTREAM(FEET) =    255.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1269.00   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.148
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30      0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30      1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30      1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30      1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30      1.000    66
  COMMERCIAL                 B        0.40      0.30      0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.732
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   43114.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.77
  AVERAGE FLOW DEPTH(FEET) =  13.65   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =   84.17
  SUBAREA AREA(ACRES) =     1.40       SUBAREA RUNOFF(CFS) =    1.17
  EFFECTIVE AREA(ACRES) =  35758.27     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52129.0         PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.65   FLOW VELOCITY(FEET/SEC.) =  11.77
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12722.00 =  109948.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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S27.3-4

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==========================================================================
  MAINLINE Tc(MIN.) =   84.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.148
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.60      0.30     1.000    86
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    3.47
  EFFECTIVE AREA(ACRES) =  35762.47   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52133.2       PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   84.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.148
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   15.42
  EFFECTIVE AREA(ACRES) =  35782.67   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52153.4       PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
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S27.3-4



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  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.143
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
  COMMERCIAL                 B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   43115.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.84
  AVERAGE FLOW DEPTH(FEET) =  11.32   TRAVEL TIME(MIN.) =   0.70
  Tc(MIN.) =   84.87
  SUBAREA AREA(ACRES) =     4.60      SUBAREA RUNOFF(CFS) =    3.88
  EFFECTIVE AREA(ACRES) =  35787.27     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52158.0         PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.32   FLOW VELOCITY(FEET/SEC.) =  14.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   84.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.143
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   20.34
  EFFECTIVE AREA(ACRES) =  35813.27   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52184.0       PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.143
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   29.60
  EFFECTIVE AREA(ACRES) =  35852.27   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52223.0       PEAK FLOW RATE(CFS) =   43113.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   84.87
  RAINFALL INTENSITY(INCH/HR) =   1.14
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =   35852.27
  TOTAL STREAM AREA(ACRES) =   52222.99
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   43113.90

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
```

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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.189
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     16.46
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     16.46

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.766
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.06
  AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   17.02
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   76.83
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      90.88
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   5.96
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.463
```

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```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B       59.52      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.97
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.77
 AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   2.85
 Tc(MIN.) =   19.87
 SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =  115.88
 EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     195.61
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.92

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.92   FLOW VELOCITY(FEET/SEC.) =   7.36
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.45
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.197
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B       64.05      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     250.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.99
 AVERAGE FLOW DEPTH(FEET) =   2.41   TRAVEL TIME(MIN.) =   3.94
 Tc(MIN.) =   23.81
 SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =  109.35
 EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     280.87
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.57   FLOW VELOCITY(FEET/SEC.) =   7.23
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.
```

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****************************************************************************
 FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.36
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.008
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B       26.02      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     300.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.69
 AVERAGE FLOW DEPTH(FEET) =   2.35   TRAVEL TIME(MIN.) =   3.61
 Tc(MIN.) =   27.42
 SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   40.00
 EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     292.94
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   8.61
 LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 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.) =   27.42
 RAINFALL INTENSITY(INCH/HR) =   2.01
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =     190.54
 TOTAL STREAM AREA(ACRES) =     190.54
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     292.94

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1    23849.39   15.45    2.934  0.30( 0.25) 0.83    3795.5     410.00
     1    24417.39   16.81    2.788  0.30( 0.25) 0.83    4193.2     420.00
     1    25827.49   20.60    2.410  0.30( 0.25) 0.84    5279.1     310.00
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    1    25852.26   20.69    2.404  0.30( 0.25) 0.84    5303.8     910.00
    1    25949.91   20.90    2.389  0.30( 0.25) 0.84    5395.6     400.00
    1    27071.06   23.51    2.217  0.30( 0.26) 0.86    6480.9     430.00
    1    27313.25   24.06    2.180  0.30( 0.26) 0.86    6708.8     300.00
    1    27388.08   24.23    2.169  0.30( 0.26) 0.86    6778.1     320.00
    1    27863.95   25.39    2.100  0.30( 0.26) 0.87    7231.8     900.00
    1    28687.70   28.87    1.942  0.30( 0.27) 0.89    8475.2   12710.00
    1    28768.82   29.25    1.925  0.30( 0.27) 0.89    8606.1     600.00
    1    28883.13   29.80    1.900  0.30( 0.27) 0.89    8813.2     390.00
    1    32618.83   45.62    1.510  0.30( 0.28) 0.93   14733.1   40100.00
    1    34759.62   53.00    1.381  0.30( 0.28) 0.94   17537.2   11801.00
    1    37620.79   62.64    1.292  0.30( 0.29) 0.95   21834.0   11530.00
    1    39944.47   71.30    1.234  0.30( 0.29) 0.96   26839.6   11910.00
    1    42055.07   78.49    1.186  0.30( 0.29) 0.97   31421.3   11330.00
    1    43113.90   84.87    1.143  0.30( 0.29) 0.97   35852.3   11130.00
    1    42985.90   92.45    1.098  0.30( 0.29) 0.97   39846.2   12330.00
    1    42923.74   95.05    1.086  0.30( 0.29) 0.97   41261.1   12410.00
    1    42735.59   99.08    1.068  0.30( 0.29) 0.97   43189.4   12400.00
    1    42194.55  107.72    1.028  0.30( 0.29) 0.97   46558.2   12201.00
    1    41729.72  111.66    1.010  0.30( 0.29) 0.97   47642.9   12111.00
    1    41076.63  116.99    0.986  0.30( 0.29) 0.97   49012.3   12101.10
    1    40538.93  120.98    0.969  0.30( 0.29) 0.97   49861.4   10400.00
    1    38980.21  128.91    0.949  0.30( 0.29) 0.97   51176.6   12010.00
    1    37675.17  134.70    0.934  0.30( 0.29) 0.98   51490.3   10210.00
    1    37300.95  137.36    0.927  0.30( 0.29) 0.98   51601.1   12000.00
    1    34226.86  160.52    0.867  0.30( 0.29) 0.98   52223.0   10100.00
    2      292.94   27.42    2.008  0.30( 0.30) 1.00     190.5   12730.00

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

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1    24103.81   15.45    2.934  0.30( 0.25) 0.84    3902.8     410.00
    2    24679.03   16.81    2.788  0.30( 0.25) 0.84    4310.0     420.00
    3    26099.24   20.60    2.410  0.30( 0.25) 0.84    5422.2     310.00
    4    26124.44   20.69    2.404  0.30( 0.25) 0.84    5447.6     910.00
    5    26223.04   20.90    2.389  0.30( 0.25) 0.84    5540.9     400.00
    6    27352.90   23.51    2.217  0.30( 0.26) 0.86    6644.3     430.00
    7    27596.20   24.06    2.180  0.30( 0.26) 0.86    6876.0     300.00
    8    27671.32   24.23    2.169  0.30( 0.26) 0.86    6946.4     320.00
    9    28149.84   25.39    2.100  0.30( 0.26) 0.87    7408.2     900.00
   10    28636.48   27.42    2.008  0.30( 0.26) 0.88    8146.3   12730.00
   11    28969.31   28.87    1.942  0.30( 0.27) 0.89    8665.7   12710.00
   12    29047.48   29.25    1.925  0.30( 0.27) 0.89    8796.7     600.00
   13    29157.52   29.80    1.900  0.30( 0.27) 0.89    9003.8     390.00
   14    32826.29   45.62    1.510  0.30( 0.28) 0.93   14923.6   40100.00
   15    34945.07   53.00    1.381  0.30( 0.28) 0.94   17727.7   11801.00
   16    37790.96   62.64    1.292  0.30( 0.29) 0.95   22024.5   11530.00
   17    40104.68   71.30    1.234  0.30( 0.29) 0.96   27030.2   11910.00
   18    42207.03   78.49    1.186  0.30( 0.29) 0.97   31611.8   11330.00
   19    43258.53   84.87    1.143  0.30( 0.29) 0.97   36042.8   11130.00
   20    43122.71   92.45    1.098  0.30( 0.29) 0.97   40036.8   12330.00
   21    43058.52   95.05    1.086  0.30( 0.29) 0.97   41451.6   12410.00
   22    42867.21   99.08    1.068  0.30( 0.29) 0.97   43380.0   12400.00
   23    42319.41  107.72    1.028  0.30( 0.29) 0.97   46748.7   12201.00
   24    41851.49  111.66    1.010  0.30( 0.29) 0.97   47833.4   12111.00
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   25    41194.23  116.99    0.986  0.30( 0.29) 0.97   49202.9   12101.10
   26    40653.73  120.98    0.969  0.30( 0.29) 0.97   50051.9   10400.00
   27    39091.47  128.91    0.949  0.30( 0.29) 0.97   51367.1   12010.00
   28    37783.86  134.70    0.934  0.30( 0.29) 0.98   51680.8   10210.00
   29    37408.45  137.36    0.927  0.30( 0.29) 0.98   51791.7   12000.00
   30    34324.03  160.52    0.867  0.30( 0.29) 0.98   52413.5   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   43258.53    Tc(MIN.) =    84.87
  EFFECTIVE AREA(ACRES) =   36042.81   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    52413.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    252.10  DOWNSTREAM(FEET) =    240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0099
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.30      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  COMMERCIAL                 B        0.40      0.30     0.100    56
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  PUBLIC PARK                B        3.20      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.784
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   43261.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  19.20
  AVERAGE FLOW DEPTH(FEET) =   9.17   TRAVEL TIME(MIN.) =   1.06
  Tc(MIN.) =   85.93
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    5.19
  EFFECTIVE AREA(ACRES) =  36049.21     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =    52419.9         PEAK FLOW RATE(CFS) =   43258.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.17   FLOW VELOCITY(FEET/SEC.) =  19.20
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

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FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81

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

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MAINLINE Tc(MIN.) = 85.93

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* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.136

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER "GRASS" | B | 3.90 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "GRASS" | B | 8.70 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER "WOODLAND,GRASS" | B | 10.30 | 0.30 | 1.000 | 65 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 17.24

EFFECTIVE AREA(ACRES) = 36072.11 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 52442.8 PEAK FLOW RATE(CFS) = 43258.53

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52442.8 TC(MIN.) = 85.93

EFFECTIVE AREA(ACRES) = 36072.11 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970

PEAK FLOW RATE(CFS) = 43258.53

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24103.81 | 16.73 | 2.797 | 0.30( 0.25) | 0.84 | 3932.1 | 410.00 |
| 2 | 24679.03 | 18.09 | 2.652 | 0.30( 0.25) | 0.84 | 4339.3 | 420.00 |
| 3 | 26099.24 | 21.85 | 2.327 | 0.30( 0.25) | 0.84 | 5451.5 | 310.00 |
| 4 | 26124.44 | 21.94 | 2.321 | 0.30( 0.25) | 0.84 | 5476.9 | 910.00 |
| 5 | 26223.04 | 22.15 | 2.307 | 0.30( 0.25) | 0.84 | 5570.2 | 400.00 |
| 6 | 27352.90 | 24.74 | 2.135 | 0.30( 0.26) | 0.86 | 6673.6 | 430.00 |
| 7 | 27596.20 | 25.29 | 2.105 | 0.30( 0.26) | 0.86 | 6905.3 | 300.00 |
| 8 | 27671.32 | 25.46 | 2.097 | 0.30( 0.26) | 0.86 | 6975.7 | 320.00 |
| 9 | 28149.84 | 26.61 | 2.045 | 0.30( 0.26) | 0.87 | 7437.5 | 900.00 |
| 10 | 28636.48 | 28.63 | 1.953 | 0.30( 0.26) | 0.88 | 8175.6 | 12730.00 |
| 11 | 28969.31 | 30.08 | 1.889 | 0.30( 0.27) | 0.89 | 8695.0 | 12710.00 |
| 12 | 29047.48 | 30.46 | 1.879 | 0.30( 0.27) | 0.89 | 8826.0 | 600.00 |
| 13 | 29157.52 | 31.01 | 1.865 | 0.30( 0.27) | 0.89 | 9033.1 | 390.00 |
| 14 | 32826.29 | 46.78 | 1.484 | 0.30( 0.28) | 0.93 | 14952.9 | 40100.00 |
| 15 | 34945.07 | 54.13 | 1.370 | 0.30( 0.28) | 0.94 | 17757.0 | 11801.00 |
| 16 | 37790.96 | 63.74 | 1.285 | 0.30( 0.29) | 0.95 | 22053.8 | 11530.00 |
| 17 | 40104.68 | 72.39 | 1.227 | 0.30( 0.29) | 0.96 | 27059.5 | 11910.00 |
| 18 | 42207.03 | 79.55 | 1.179 | 0.30( 0.29) | 0.97 | 31641.1 | 11330.00 |
| 19 | 43258.53 | 85.93 | 1.136 | 0.30( 0.29) | 0.97 | 36072.1 | 11130.00 |
| 20 | 43122.71 | 93.51 | 1.093 | 0.30( 0.29) | 0.97 | 40066.1 | 12330.00 |
| 21 | 43058.52 | 96.11 | 1.081 | 0.30( 0.29) | 0.97 | 41480.9 | 12410.00 |
| 22 | 42867.21 | 100.14 | 1.063 | 0.30( 0.29) | 0.97 | 43409.3 | 12400.00 |
| 23 | 42319.41 | 108.79 | 1.023 | 0.30( 0.29) | 0.97 | 46778.0 | 12201.00 |
| 24 | 41851.49 | 112.73 | 1.005 | 0.30( 0.29) | 0.97 | 47862.7 | 12111.00 |
| 25 | 41194.23 | 118.07 | 0.981 | 0.30( 0.29) | 0.97 | 49232.2 | 12101.10 |
| 26 | 40653.73 | 122.06 | 0.967 | 0.30( 0.29) | 0.97 | 50081.2 | 10400.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | 39091.47 | 130.01 | 0.946 | 0.30( 0.29) | 0.97 | 51396.4 | 12010.00 |
| 28 | 37783.86 | 135.81 | 0.931 | 0.30( 0.29) | 0.98 | 51710.1 | 10210.00 |
| 29 | 37408.45 | 138.47 | 0.924 | 0.30( 0.29) | 0.98 | 51821.0 | 12000.00 |
| 30 | 34324.03 | 161.66 | 0.864 | 0.30( 0.29) | 0.98 | 52442.8 | 10100.00 |

==========

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END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 100-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RU00EV28.DAT
  TIME/DATE OF STUDY: 08:51 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.027
   2)   10.00;  3.864
   3)   15.00;  2.981
   4)   20.00;  2.449
   5)   25.00;  2.118
   6)   30.00;  1.891
   7)   40.00;  1.635
   8)   50.00;  1.412
   9)   60.00;  1.310
  10)   90.00;  1.109
  11)  120.00;  0.972
  12)  180.00;  0.816
  13)  360.00;  0.607
  14) 1200.00;  0.266
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV27.DNA                      S27
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)     NODE
      1    24679.03   18.09  0.30( 0.25) 0.84    4339.3     420.00
      2    26223.04   22.15  0.30( 0.25) 0.84    5570.2     400.00
      3    29157.52   31.01  0.30( 0.27) 0.89    9033.1     390.00
      4    32826.29   46.78  0.30( 0.28) 0.93   14952.9   40100.00
      5    34945.07   54.13  0.30( 0.28) 0.94   17757.0   11801.00
      6    37790.96   63.74  0.30( 0.29) 0.95   22053.8   11530.00
      7    40104.68   72.39  0.30( 0.29) 0.96   27059.5   11910.00
      8    42207.03   79.55  0.30( 0.29) 0.97   31641.1   11330.00
      9    43258.53   85.93  0.30( 0.29) 0.97   36072.1   11130.00
     10    43122.71   93.51  0.30( 0.29) 0.97   40066.1   12330.00
     11    43058.52   96.11  0.30( 0.29) 0.97   41480.9   12410.00
     12    42867.21  100.14  0.30( 0.29) 0.97   43409.3   12400.00
     13    42319.41  108.79  0.30( 0.29) 0.97   46778.0   12201.00
     14    41851.49  112.73  0.30( 0.29) 0.97   47862.7   12111.00
     15    41194.23  118.07  0.30( 0.29) 0.97   49232.2   12101.10
     16    40653.73  122.06  0.30( 0.29) 0.97   50081.2   10400.00
     17    39091.47  130.01  0.30( 0.29) 0.97   51396.4   12010.00
     18    37783.86  135.81  0.30( 0.29) 0.98   51710.1   10210.00
     19    37408.45  138.47  0.30( 0.29) 0.98   51821.0   12000.00
     20    34324.03  161.66  0.30( 0.29) 0.98   52442.8   10100.00
   TOTAL AREA(ACRES) =    52442.8

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610501Y.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:                            HZ-501
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)     NODE
      1     1712.17   25.43  0.30( 0.29) 0.98    1025.4   50120.00
      2     1673.65   26.63  0.30( 0.29) 0.98    1040.0   50150.00
      3     1553.32   30.32  0.30( 0.29) 0.98    1063.4   50100.00
   TOTAL AREA(ACRES) =     1063.4

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
```

```
 NUMBER      (CFS)   (MIN.)   (INCH/HR)          (ACRES)    NODE
    1      1712.17   25.43  0.30( 0.29) 0.98    1025.4   50120.00
    2      1673.65   26.63  0.30( 0.29) 0.98    1040.0   50150.00
    3      1553.32   30.32  0.30( 0.29) 0.98    1063.4   50100.00
  TOTAL AREA(ACRES) =      1063.4

****************************************************************************
 FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     1712.17   25.43    2.098  0.30( 0.29) 0.98    1025.4   50120.00
    2     1673.65   26.63    2.044  0.30( 0.29) 0.98    1040.0   50150.00
    3     1553.32   30.32    1.883  0.30( 0.29) 0.98    1063.4   50100.00
 LONGEST FLOWPATH FROM NODE  50150.00 TO NODE  12800.00 =   11349.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    24679.03   18.09    2.652  0.30( 0.25) 0.84    4339.3     420.00
    2    26223.04   22.15    2.307  0.30( 0.25) 0.84    5570.2     400.00
    3    29157.52   31.01    1.865  0.30( 0.27) 0.89    9033.1     390.00
    4    32826.29   46.78    1.484  0.30( 0.28) 0.93   14952.9   40100.00
    5    34945.07   54.13    1.370  0.30( 0.28) 0.94   17757.0   11801.00
    6    37790.96   63.74    1.285  0.30( 0.29) 0.95   22053.8   11530.00
    7    40104.68   72.39    1.227  0.30( 0.29) 0.96   27059.5   11910.00
    8    42207.03   79.55    1.179  0.30( 0.29) 0.97   31641.1   11330.00
    9    43258.53   85.93    1.136  0.30( 0.29) 0.97   36072.1   11130.00
   10    43122.71   93.51    1.093  0.30( 0.29) 0.97   40066.1   12330.00
   11    43058.52   96.11    1.081  0.30( 0.29) 0.97   41480.9   12410.00
   12    42867.21  100.14    1.063  0.30( 0.29) 0.97   43409.3   12400.00
   13    42319.41  108.79    1.023  0.30( 0.29) 0.97   46778.0   12201.00
   14    41851.49  112.73    1.005  0.30( 0.29) 0.97   47862.7   12111.00
   15    41194.23  118.07    0.981  0.30( 0.29) 0.97   49232.2   12101.10
   16    40653.73  122.06    0.967  0.30( 0.29) 0.97   50081.2   10400.00
   17    39091.47  130.01    0.946  0.30( 0.29) 0.97   51396.4   12010.00
   18    37783.86  135.81    0.931  0.30( 0.29) 0.98   51710.1   10210.00
   19    37408.45  138.47    0.924  0.30( 0.29) 0.98   51821.0   12000.00
   20    34324.03  161.66    0.864  0.30( 0.29) 0.98   52442.8   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    26270.74   18.09    2.652  0.30( 0.26) 0.86    5068.6     420.00
    2    27886.42   22.15    2.307  0.30( 0.26) 0.86    6463.3     400.00
    3    29022.34   25.43    2.098  0.30( 0.26) 0.88    7878.5   50120.00
    4    29380.33   26.63    2.044  0.30( 0.26) 0.88    8360.9   50150.00
    5    30481.50   30.32    1.883  0.30( 0.27) 0.90    9825.8   50100.00
    6    30693.51   31.01    1.865  0.30( 0.27) 0.90   10096.5     390.00
    7    33989.41   46.78    1.484  0.30( 0.28) 0.94   16016.3   40100.00
    8    35996.68   54.13    1.370  0.30( 0.28) 0.95   18820.4   11801.00
    9    38759.51   63.74    1.285  0.30( 0.29) 0.95   23117.2   11530.00
   10    41016.59   72.39    1.227  0.30( 0.29) 0.96   28122.9   11910.00
```



```
   11    43072.00   79.55    1.179  0.30( 0.29) 0.97   32704.5   11330.00
   12    44081.72   85.93    1.136  0.30( 0.29) 0.97   37135.5   11130.00
   13    43903.54   93.51    1.093  0.30( 0.29) 0.97   41129.5   12330.00
   14    43827.77   96.11    1.081  0.30( 0.29) 0.97   42544.3   12410.00
   15    43618.44  100.14    1.063  0.30( 0.29) 0.97   44472.6   12400.00
   16    43032.02  108.79    1.023  0.30( 0.29) 0.97   47841.4   12201.00
   17    42546.52  112.73    1.005  0.30( 0.29) 0.97   48926.1   12111.00
   18    41865.43  118.07    0.981  0.30( 0.29) 0.97   50295.6   12101.10
   19    41311.04  122.06    0.967  0.30( 0.29) 0.97   51144.6   10400.00
   20    39728.59  130.01    0.946  0.30( 0.29) 0.98   52459.8   12010.00
   21    38406.22  135.81    0.931  0.30( 0.29) 0.98   52773.5   10210.00
   22    38024.04  138.47    0.924  0.30( 0.29) 0.98   52884.4   12000.00
   23    34880.65  161.66    0.864  0.30( 0.29) 0.98   53506.2   10100.00
  TOTAL AREA(ACRES) =     53506.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    44081.72  Tc(MIN.) =   85.930
 EFFECTIVE AREA(ACRES) =  37135.50  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
 TOTAL AREA(ACRES) =    53506.2
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =    53506.2  TC(MIN.) =     85.93
 EFFECTIVE AREA(ACRES) =  37135.50  AREA-AVERAGED Fm(INCH/HR)=  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.970
 PEAK FLOW RATE(CFS)   =   44081.72

 ** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    26270.74   18.09    2.652  0.30( 0.26) 0.86    5068.6     420.00
    2    27886.42   22.15    2.307  0.30( 0.26) 0.86    6463.3     400.00
    3    29022.34   25.43    2.098  0.30( 0.26) 0.88    7878.5   50120.00
    4    29380.33   26.63    2.044  0.30( 0.26) 0.88    8360.9   50150.00
    5    30481.50   30.32    1.883  0.30( 0.27) 0.90    9825.8   50100.00
    6    30693.51   31.01    1.865  0.30( 0.27) 0.90   10096.5     390.00
    7    33989.41   46.78    1.484  0.30( 0.28) 0.94   16016.3   40100.00
    8    35996.68   54.13    1.370  0.30( 0.28) 0.95   18820.4   11801.00
    9    38759.51   63.74    1.285  0.30( 0.29) 0.95   23117.2   11530.00
   10    41016.59   72.39    1.227  0.30( 0.29) 0.96   28122.9   11910.00
   11    43072.00   79.55    1.179  0.30( 0.29) 0.97   32704.5   11330.00
   12    44081.72   85.93    1.136  0.30( 0.29) 0.97   37135.5   11130.00
   13    43903.54   93.51    1.093  0.30( 0.29) 0.97   41129.5   12330.00
   14    43827.77   96.11    1.081  0.30( 0.29) 0.97   42544.3   12410.00
   15    43618.44  100.14    1.063  0.30( 0.29) 0.97   44472.6   12400.00
   16    43032.02  108.79    1.023  0.30( 0.29) 0.97   47841.4   12201.00
   17    42546.52  112.73    1.005  0.30( 0.29) 0.97   48926.1   12111.00
   18    41865.43  118.07    0.981  0.30( 0.29) 0.97   50295.6   12101.10
   19    41311.04  122.06    0.967  0.30( 0.29) 0.97   51144.6   10400.00
   20    39728.59  130.01    0.946  0.30( 0.29) 0.98   52459.8   12010.00
   21    38406.22  135.81    0.931  0.30( 0.29) 0.98   52773.5   10210.00
   22    38024.04  138.47    0.924  0.30( 0.29) 0.98   52884.4   12000.00
   23    34880.65  161.66    0.864  0.30( 0.29) 0.98   53506.2   10100.00
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* RMV PA-3 BODR 2022 - NODE 129 FREE DRAINING                         *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5              *
* 100-YR EV FEB 2023 ROKAMOTO                                        *
 **********************************************************************

  FILE NAME: RU00EV29.DAT
  TIME/DATE OF STUDY: 08:52 02/15/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.007
   2)   10.00;  3.854
   3)   15.00;  2.975
   4)   20.00;  2.446
   5)   25.00;  2.115
   6)   30.00;  1.889
   7)   40.00;  1.633
   8)   50.00;  1.411
   9)   60.00;  1.307
  10)   90.00;  1.106
  11)  120.00;  0.970
  12)  180.00;  0.813
  13)  360.00;  0.605
  14) 1200.00;  0.265
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    26270.74   18.09  0.30( 0.26) 0.86    5068.6     420.00
      2    27886.42   22.15  0.30( 0.26) 0.86    6463.3     400.00
      3    29380.33   26.63  0.30( 0.26) 0.88    8360.9   50150.00
      4    30693.51   31.01  0.30( 0.27) 0.90   10096.5     390.00
      5    33989.41   46.78  0.30( 0.28) 0.94   16016.3   40100.00
      6    35996.68   54.13  0.30( 0.28) 0.95   18820.4   11801.00
      7    38759.51   63.74  0.30( 0.29) 0.95   23117.2   11530.00
      8    41016.59   72.39  0.30( 0.29) 0.96   28122.9   11910.00
      9    43072.00   79.55  0.30( 0.29) 0.97   32704.5   11330.00
     10    44081.72   85.93  0.30( 0.29) 0.97   37135.5   11130.00
     11    43903.54   93.51  0.30( 0.29) 0.97   41129.5   12330.00
     12    43618.44  100.14  0.30( 0.29) 0.97   44472.6   12400.00
     13    43032.02  108.79  0.30( 0.29) 0.97   47841.4   12201.00
     14    42546.52  112.73  0.30( 0.29) 0.97   48926.1   12111.00
     15    41865.43  118.07  0.30( 0.29) 0.97   50295.6   12101.10
     16    41311.04  122.06  0.30( 0.29) 0.97   51144.6   10400.00
     17    39728.59  130.01  0.30( 0.29) 0.98   52459.8   12010.00
     18    38406.22  135.81  0.30( 0.29) 0.98   52773.5   10210.00
     19    38024.04  138.47  0.30( 0.29) 0.98   52884.4   12000.00
     20    34880.65  161.66  0.30( 0.29) 0.98   53506.2   10100.00
   TOTAL AREA(ACRES) =    53506.2

**************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    26270.74   18.09  0.30( 0.26) 0.86    5068.6     420.00
      2    27886.42   22.15  0.30( 0.26) 0.86    6463.3     400.00
      3    29380.33   26.63  0.30( 0.26) 0.88    8360.9   50150.00
      4    30693.51   31.01  0.30( 0.27) 0.90   10096.5     390.00
      5    33989.41   46.78  0.30( 0.28) 0.94   16016.3   40100.00
      6    35996.68   54.13  0.30( 0.28) 0.95   18820.4   11801.00
      7    38759.51   63.74  0.30( 0.29) 0.95   23117.2   11530.00
      8    41016.59   72.39  0.30( 0.29) 0.96   28122.9   11910.00
      9    43072.00   79.55  0.30( 0.29) 0.97   32704.5   11330.00
     10    44081.72   85.93  0.30( 0.29) 0.97   37135.5   11130.00
     11    43903.54   93.51  0.30( 0.29) 0.97   41129.5   12330.00
     12    43618.44  100.14  0.30( 0.29) 0.97   44472.6   12400.00
     13    43032.02  108.79  0.30( 0.29) 0.97   47841.4   12201.00
```

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```
     14    42546.52  112.73  0.30( 0.29) 0.97   48926.1   12111.00
     15    41865.43  118.07  0.30( 0.29) 0.97   50295.6   12101.10
     16    41311.04  122.06  0.30( 0.29) 0.97   51144.6   10400.00
     17    39728.59  130.01  0.30( 0.29) 0.98   52459.8   12010.00
     18    38406.22  135.81  0.30( 0.29) 0.98   52773.5   10210.00
     19    38024.04  138.47  0.30( 0.29) 0.98   52884.4   12000.00
     20    34880.65  161.66  0.30( 0.29) 0.98   53506.2   10100.00
    TOTAL AREA(ACRES) =     53506.2

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.95
  CHANNEL FLOW THRU SUBAREA(CFS) =   44081.72
  FLOW VELOCITY(FEET/SEC.) =  17.73   FLOW DEPTH(FEET) =   9.95
  TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =   88.86
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   21.21
  EFFECTIVE AREA(ACRES) =  37159.20   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53529.9       PEAK FLOW RATE(CFS) =   44081.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
```

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```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.58
  EFFECTIVE AREA(ACRES) =  37162.30   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53533.0       PEAK FLOW RATE(CFS) =   44081.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
```

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```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    7.18
  EFFECTIVE AREA(ACRES) =  37171.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53542.2       PEAK FLOW RATE(CFS) =   44081.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
```

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```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30      1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30      0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30      0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30      0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30      1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30      1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   27.19
  EFFECTIVE AREA(ACRES) =  37207.00   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53577.7       PEAK FLOW RATE(CFS) =   44081.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30      1.000    69
  PUBLIC PARK               B       38.60      0.30      0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   39.27
  EFFECTIVE AREA(ACRES) =  37258.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    53629.2       PEAK FLOW RATE(CFS) =   44081.72
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.78
  CHANNEL FLOW THRU SUBAREA(CFS) =   44081.72
  FLOW VELOCITY(FEET/SEC.) =  18.11   FLOW DEPTH(FEET) =   9.78
  TRAVEL TIME(MIN.) =   0.11   Tc(MIN.) =   88.98
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```

S29.2-1



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E502XXCE.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       72.40   11.09  0.30( 0.27) 0.91      28.7   50200.00
    TOTAL AREA(ACRES) =       28.7

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    26270.74   21.70    2.333  0.30( 0.26) 0.86    5191.6     420.00
      2    27886.42   25.69    2.084  0.30( 0.26) 0.86    6586.3     400.00
      3    29380.33   30.11    1.886  0.30( 0.26) 0.88    8483.9   50150.00
      4    30693.51   34.44    1.775  0.30( 0.27) 0.90   10219.5     390.00
      5    33989.41   50.09    1.410  0.30( 0.28) 0.94   16139.3   40100.00
      6    35996.68   57.39    1.334  0.30( 0.28) 0.94   18943.4   11801.00
      7    38759.51   66.92    1.261  0.30( 0.29) 0.95   23240.2   11530.00
      8    41016.59   75.51    1.203  0.30( 0.29) 0.96   28245.9   11910.00
      9    43072.00   82.62    1.155  0.30( 0.29) 0.97   32827.5   11330.00
     10    44081.72   88.98    1.113  0.30( 0.29) 0.97   37258.5   11130.00
     11    43903.54   96.56    1.076  0.30( 0.29) 0.97   41252.5   12330.00
     12    43618.44  103.20    1.046  0.30( 0.29) 0.97   44595.6   12400.00
     13    43032.02  111.86    1.007  0.30( 0.29) 0.97   47964.4   12201.00
     14    42546.52  115.81    0.989  0.30( 0.29) 0.97   49049.1   12111.00
     15    41865.43  121.16    0.967  0.30( 0.29) 0.97   50418.6   12101.10
     16    41311.04  125.17    0.956  0.30( 0.29) 0.97   51267.6   10400.00
     17    39728.59  133.16    0.936  0.30( 0.29) 0.97   52582.8   12010.00
     18    38406.22  138.99    0.920  0.30( 0.29) 0.97   52896.5   10210.00
     19    38024.04  141.67    0.913  0.30( 0.29) 0.97   53007.4   12000.00
     20    34880.65  164.95    0.852  0.30( 0.29) 0.98   53629.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       72.40   11.09    3.662  0.30( 0.27) 0.91      28.7   50200.00
  LONGEST FLOWPATH FROM NODE  50200.00 TO NODE  12902.00 =    1426.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    22092.76   11.09    3.662  0.30( 0.26) 0.86    2682.5   50200.00
      2    26314.76   21.70    2.333  0.30( 0.26) 0.86    5220.3     420.00
      3    27925.11   25.69    2.084  0.30( 0.26) 0.86    6615.0     400.00
      4    29414.79   30.11    1.886  0.30( 0.26) 0.88    8512.6   50150.00
      5    30725.61   34.44    1.775  0.30( 0.27) 0.90   10248.2     390.00
      6    34013.70   50.09    1.410  0.30( 0.28) 0.94   16168.0   40100.00
```

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 | 36019.35 | 57.39 | 1.334 | 0.30( 0.28) | 0.94 | 18972.1 | 11801.00 |
| 8 | 38780.61 | 66.92 | 1.261 | 0.30( 0.29) | 0.95 | 23268.9 | 11530.00 |
| 9 | 41036.46 | 75.51 | 1.203 | 0.30( 0.29) | 0.96 | 28274.6 | 11910.00 |
| 10 | 43090.85 | 82.62 | 1.155 | 0.30( 0.29) | 0.97 | 32856.2 | 11330.00 |
| 11 | 44099.66 | 88.98 | 1.113 | 0.30( 0.29) | 0.97 | 37287.2 | 11130.00 |
| 12 | 43920.70 | 96.56 | 1.076 | 0.30( 0.29) | 0.97 | 41281.2 | 12330.00 |
| 13 | 43634.96 | 103.20 | 1.046 | 0.30( 0.29) | 0.97 | 44624.3 | 12400.00 |
| 14 | 43047.70 | 111.86 | 1.007 | 0.30( 0.29) | 0.97 | 47993.1 | 12201.00 |
| 15 | 42561.81 | 115.81 | 0.989 | 0.30( 0.29) | 0.97 | 49077.8 | 12111.00 |
| 16 | 41880.25 | 121.16 | 0.967 | 0.30( 0.29) | 0.97 | 50447.3 | 12101.10 |
| 17 | 41325.64 | 125.17 | 0.956 | 0.30( 0.29) | 0.97 | 51296.3 | 10400.00 |
| 18 | 39742.74 | 133.16 | 0.936 | 0.30( 0.29) | 0.97 | 52611.5 | 12010.00 |
| 19 | 38420.05 | 138.99 | 0.920 | 0.30( 0.29) | 0.97 | 52925.2 | 10210.00 |
| 20 | 38037.71 | 141.67 | 0.913 | 0.30( 0.29) | 0.97 | 53036.1 | 12000.00 |
| 21 | 34893.03 | 164.95 | 0.852 | 0.30( 0.29) | 0.98 | 53657.9 | 10100.00 |

TOTAL AREA(ACRES) = 53657.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44099.66 Tc(MIN.) = 88.975
EFFECTIVE AREA(ACRES) = 37287.20 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53657.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115035.28 FEET.

```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E503XXCE.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```

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| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 552.75 | 24.39 | 0.30( 0.30) | 0.99 | 366.4 | 50300.00 |

TOTAL AREA(ACRES) = 366.4

```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22092.76 | 11.09 | 3.662 | 0.30( 0.26) | 0.86 | 2682.5 | 50200.00 |
| 2 | 26314.76 | 21.70 | 2.333 | 0.30( 0.26) | 0.86 | 5220.3 | 420.00 |
| 3 | 27925.11 | 25.69 | 2.084 | 0.30( 0.26) | 0.86 | 6615.0 | 400.00 |
| 4 | 29414.79 | 30.11 | 1.886 | 0.30( 0.26) | 0.88 | 8512.6 | 50150.00 |
| 5 | 30725.61 | 34.44 | 1.775 | 0.30( 0.27) | 0.90 | 10248.2 | 390.00 |
| 6 | 34013.70 | 50.09 | 1.410 | 0.30( 0.28) | 0.94 | 16168.0 | 40100.00 |
| 7 | 36019.35 | 57.39 | 1.334 | 0.30( 0.28) | 0.94 | 18972.1 | 11801.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | 38780.61 | 66.92 | 1.261 | 0.30( 0.29) | 0.95 | 23268.9 | 11530.00 |
| 9 | 41036.46 | 75.51 | 1.203 | 0.30( 0.29) | 0.96 | 28274.6 | 11910.00 |
| 10 | 43090.85 | 82.62 | 1.155 | 0.30( 0.29) | 0.97 | 32856.2 | 11330.00 |
| 11 | 44099.66 | 88.98 | 1.113 | 0.30( 0.29) | 0.97 | 37287.2 | 11130.00 |
| 12 | 43920.70 | 96.56 | 1.076 | 0.30( 0.29) | 0.97 | 41281.2 | 12330.00 |
| 13 | 43634.96 | 103.20 | 1.046 | 0.30( 0.29) | 0.97 | 44624.3 | 12400.00 |
| 14 | 43047.70 | 111.86 | 1.007 | 0.30( 0.29) | 0.97 | 47993.1 | 12201.00 |
| 15 | 42561.81 | 115.81 | 0.989 | 0.30( 0.29) | 0.97 | 49077.8 | 12111.00 |
| 16 | 41880.25 | 121.16 | 0.967 | 0.30( 0.29) | 0.97 | 50447.3 | 12101.10 |
| 17 | 41325.64 | 125.17 | 0.956 | 0.30( 0.29) | 0.97 | 51296.3 | 10400.00 |
| 18 | 39742.74 | 133.16 | 0.936 | 0.30( 0.29) | 0.97 | 52611.5 | 12010.00 |
| 19 | 38420.05 | 138.99 | 0.920 | 0.30( 0.29) | 0.97 | 52925.2 | 10210.00 |
| 20 | 38037.71 | 141.67 | 0.913 | 0.30( 0.29) | 0.97 | 53036.1 | 12000.00 |
| 21 | 34893.03 | 164.95 | 0.852 | 0.30( 0.29) | 0.98 | 53657.9 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115035.28 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 552.75 | 24.39 | 2.155 | 0.30( 0.30) | 0.99 | 366.4 | 50300.00 |

LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 22547.81 | 11.09 | 3.662 | 0.30( 0.26) | 0.86 | 2849.2 | 50200.00 |
| 2 | 26853.66 | 21.70 | 2.333 | 0.30( 0.26) | 0.86 | 5546.4 | 420.00 |
| 3 | 27952.40 | 24.39 | 2.155 | 0.30( 0.26) | 0.87 | 6526.3 | 50300.00 |
| 4 | 28456.57 | 25.69 | 2.084 | 0.30( 0.26) | 0.87 | 6981.4 | 400.00 |
| 5 | 29887.54 | 30.11 | 1.886 | 0.30( 0.27) | 0.89 | 8879.0 | 50150.00 |
| 6 | 31165.43 | 34.44 | 1.775 | 0.30( 0.27) | 0.90 | 10614.6 | 390.00 |
| 7 | 34344.93 | 50.09 | 1.410 | 0.30( 0.28) | 0.94 | 16534.4 | 40100.00 |
| 8 | 36328.05 | 57.39 | 1.334 | 0.30( 0.28) | 0.94 | 19338.5 | 11801.00 |
| 9 | 39067.45 | 66.92 | 1.261 | 0.30( 0.29) | 0.95 | 23635.3 | 11530.00 |
| 10 | 41306.20 | 75.51 | 1.203 | 0.30( 0.29) | 0.96 | 28641.0 | 11910.00 |
| 11 | 43346.42 | 82.62 | 1.155 | 0.30( 0.29) | 0.97 | 33222.6 | 11330.00 |
| 12 | 44342.58 | 88.98 | 1.113 | 0.30( 0.29) | 0.97 | 37653.6 | 11130.00 |
| 13 | 44152.74 | 96.56 | 1.076 | 0.30( 0.29) | 0.97 | 41647.6 | 12330.00 |
| 14 | 43858.05 | 103.20 | 1.046 | 0.30( 0.29) | 0.97 | 44990.7 | 12400.00 |
| 15 | 43259.13 | 111.86 | 1.007 | 0.30( 0.29) | 0.97 | 48359.5 | 12201.00 |
| 16 | 42767.92 | 115.81 | 0.989 | 0.30( 0.29) | 0.97 | 49444.2 | 12111.00 |
| 17 | 42079.81 | 121.16 | 0.967 | 0.30( 0.29) | 0.97 | 50813.7 | 12101.10 |
| 18 | 41522.08 | 125.17 | 0.956 | 0.30( 0.29) | 0.97 | 51662.7 | 10400.00 |
| 19 | 39932.97 | 133.16 | 0.936 | 0.30( 0.29) | 0.97 | 52977.9 | 12010.00 |
| 20 | 38605.74 | 138.99 | 0.920 | 0.30( 0.29) | 0.97 | 53291.6 | 10210.00 |
| 21 | 38221.32 | 141.67 | 0.913 | 0.30( 0.29) | 0.97 | 53402.5 | 12000.00 |
| 22 | 35058.54 | 164.95 | 0.852 | 0.30( 0.29) | 0.98 | 54024.3 | 10100.00 |

TOTAL AREA(ACRES) = 54024.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44342.58 Tc(MIN.) = 88.975
EFFECTIVE AREA(ACRES) = 37653.59 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 54024.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115035.28 FEET.

```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
```

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

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.01
  CHANNEL FLOW THRU SUBAREA(CFS) =   44342.58
  FLOW VELOCITY(FEET/SEC.) =   9.14   FLOW DEPTH(FEET) =  17.01
  TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =   90.61
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: E504XXCE.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1      136.04   17.00  0.30( 0.29) 0.97       70.5   50400.00
    TOTAL AREA(ACRES) =       70.5

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
      1    22547.81   13.10     3.308  0.30( 0.26) 0.86    2849.2   50200.00
      2    26853.66   23.61     2.207  0.30( 0.26) 0.86    5546.4     420.00
      3    27952.40   26.27     2.058  0.30( 0.26) 0.87    6526.3   50300.00
      4    28456.57   27.56     1.999  0.30( 0.26) 0.87    6981.4     400.00
      5    29887.54   31.95     1.839  0.30( 0.27) 0.89    8879.0   50150.00
      6    31165.43   36.25     1.729  0.30( 0.27) 0.90   10614.6     390.00
      7    34344.93   51.86     1.392  0.30( 0.28) 0.94   16534.4   40100.00
      8    36328.05   59.12     1.316  0.30( 0.28) 0.94   19338.5   11801.00
      9    39067.45   68.62     1.249  0.30( 0.29) 0.95   23635.3   11530.00
     10    41306.20   77.17     1.192  0.30( 0.29) 0.96   28641.0   11910.00
     11    43346.42   84.27     1.144  0.30( 0.29) 0.97   33222.6   11330.00
     12    44342.58   90.61     1.103  0.30( 0.29) 0.97   37653.6   11130.00
     13    44152.74   98.20     1.069  0.30( 0.29) 0.97   41647.6   12330.00
     14    43858.05  104.84     1.039  0.30( 0.29) 0.97   44990.7   12400.00
     15    43259.13  113.50     0.999  0.30( 0.29) 0.97   48359.5   12201.00
     16    42767.92  117.46     0.982  0.30( 0.29) 0.97   49444.2   12111.00
     17    42079.81  122.82     0.963  0.30( 0.29) 0.97   50813.7   12101.10
```

HZ-504



```
     18    41522.08  126.84     0.952  0.30( 0.29) 0.97   51662.7   10400.00
     19    39932.97  134.84     0.931  0.30( 0.29) 0.97   52977.9   12010.00
     20    38605.74  140.70     0.916  0.30( 0.29) 0.97   53291.6   10210.00
     21    38221.32  143.38     0.909  0.30( 0.29) 0.97   53402.5   12000.00
     22    35058.54  166.70     0.848  0.30( 0.29) 0.98   54024.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
      1     136.04   17.00     2.763  0.30( 0.29) 0.97       70.5   50400.00
  LONGEST FLOWPATH FROM NODE  50400.00 TO NODE  12903.00 =    3607.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
      1    22675.77   13.10     3.308  0.30( 0.26) 0.87    2903.5   50200.00
      2    24281.14   17.00     2.763  0.30( 0.26) 0.87    3920.2   50400.00
      3    26959.11   23.61     2.207  0.30( 0.26) 0.87    5616.9     420.00
      4    28049.62   26.27     2.058  0.30( 0.26) 0.87    6596.8   50300.00
      5    28550.58   27.56     1.999  0.30( 0.26) 0.87    7051.9     400.00
      6    29972.75   31.95     1.839  0.30( 0.27) 0.89    8949.5   50150.00
      7    31244.57   36.25     1.729  0.30( 0.27) 0.91   10685.1     390.00
      8    34405.53   51.86     1.392  0.30( 0.28) 0.94   16604.9   40100.00
      9    36384.49   59.12     1.316  0.30( 0.28) 0.94   19409.0   11801.00
     10    39120.21   68.62     1.249  0.30( 0.29) 0.95   23705.8   11530.00
     11    41355.81   77.17     1.192  0.30( 0.29) 0.96   28711.5   11910.00
     12    43393.42   84.27     1.144  0.30( 0.29) 0.97   33293.1   11330.00
     13    44387.31   90.61     1.103  0.30( 0.29) 0.97   37724.1   11130.00
     14    44195.57   98.20     1.069  0.30( 0.29) 0.97   41718.1   12330.00
     15    43899.24  104.84     1.039  0.30( 0.29) 0.97   45061.2   12400.00
     16    43298.15  113.50     0.999  0.30( 0.29) 0.97   48430.0   12201.00
     17    42805.95  117.46     0.982  0.30( 0.29) 0.97   49514.7   12111.00
     18    42116.80  122.82     0.963  0.30( 0.29) 0.97   50884.2   12101.10
     19    41558.50  126.84     0.952  0.30( 0.29) 0.97   51733.2   10400.00
     20    39968.23  134.84     0.931  0.30( 0.29) 0.97   53048.4   12010.00
     21    38640.16  140.70     0.916  0.30( 0.29) 0.97   53362.1   10210.00
     22    38255.36  143.38     0.909  0.30( 0.29) 0.97   53473.0   12000.00
     23    35089.21  166.70     0.848  0.30( 0.29) 0.98   54094.8   10100.00
    TOTAL AREA(ACRES) =     54094.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    44387.31  Tc(MIN.) =   90.607
  EFFECTIVE AREA(ACRES) =  37724.09  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54094.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    214.00  DOWNSTREAM(FEET) =    213.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   767.57   CHANNEL SLOPE =  0.0013
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.32
  CHANNEL FLOW THRU SUBAREA(CFS) =   44387.31
  FLOW VELOCITY(FEET/SEC.) =   9.66   FLOW DEPTH(FEET) =  16.32
  TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   91.93
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3B00EVRL.DNA                          B
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      475.93   16.32  0.30( 0.13) 0.43     195.5     203.00
      2      468.57   18.88  0.30( 0.13) 0.43     213.7     210.00
    TOTAL AREA(ACRES) =      213.7

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22675.77   14.74    3.021  0.30( 0.26) 0.87    2903.5   50200.00
      2    24281.14   18.60    2.594  0.30( 0.26) 0.87    3920.2   50400.00
      3    26959.11   25.15    2.108  0.30( 0.26) 0.87    5616.9     420.00
      4    28049.62   27.80    1.989  0.30( 0.26) 0.87    6596.8   50300.00
      5    28550.58   29.08    1.931  0.30( 0.26) 0.87    7051.9     400.00
      6    29972.75   33.44    1.801  0.30( 0.27) 0.89    8949.5   50150.00
      7    31244.57   37.73    1.691  0.30( 0.27) 0.91   10685.1     390.00
      8    34405.53   53.29    1.377  0.30( 0.28) 0.94   16604.9   40100.00
      9    36384.49   60.53    1.303  0.30( 0.28) 0.94   19409.0   11801.00
     10    39120.21   69.99    1.240  0.30( 0.29) 0.95   23705.8   11530.00
     11    41355.81   78.53    1.183  0.30( 0.29) 0.96   28711.5   11910.00
     12    43393.42   85.60    1.135  0.30( 0.29) 0.97   33293.1   11330.00
     13    44387.31   91.93    1.097  0.30( 0.29) 0.97   37724.1   11130.00
     14    44195.57   99.52    1.063  0.30( 0.29) 0.97   41718.1   12330.00
     15    43899.24  106.17    1.033  0.30( 0.29) 0.97   45061.2   12400.00
     16    43298.15  114.84    0.993  0.30( 0.29) 0.97   48430.0   12201.00
     17    42805.95  118.80    0.975  0.30( 0.29) 0.97   49514.7   12111.00
     18    42116.80  124.17    0.959  0.30( 0.29) 0.97   50884.2   12101.10
     19    41558.50  128.19    0.949  0.30( 0.29) 0.97   51733.2   10400.00
     20    39968.23  136.21    0.928  0.30( 0.29) 0.97   53048.4   12010.00
     21    38640.16  142.08    0.912  0.30( 0.29) 0.97   53362.1   10210.00
     22    38255.36  144.76    0.905  0.30( 0.29) 0.97   53473.0   12000.00
     23    35089.21  168.13    0.844  0.30( 0.29) 0.98   54094.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.
```



```
  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      475.93   16.32    2.835  0.30( 0.13) 0.43     195.5     203.00
      2      468.57   18.88    2.564  0.30( 0.13) 0.43     213.7     210.00
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE  12904.00 =    7986.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23135.08   14.74    3.021  0.30( 0.25) 0.84    3080.0   50200.00
      2    23809.78   16.32    2.835  0.30( 0.25) 0.84    3515.8     203.00
      3    24750.52   18.60    2.594  0.30( 0.25) 0.84    4131.9   50400.00
      4    24866.32   18.88    2.564  0.30( 0.25) 0.84    4207.8     210.00
      5    27339.96   25.15    2.108  0.30( 0.25) 0.85    5830.6     420.00
      6    28407.49   27.80    1.989  0.30( 0.26) 0.85    6810.5   50300.00
      7    28897.30   29.08    1.931  0.30( 0.26) 0.85    7265.6     400.00
      8    30294.49   33.44    1.801  0.30( 0.26) 0.88    9163.2   50150.00
      9    31545.22   37.73    1.691  0.30( 0.27) 0.90   10898.8     390.00
     10    34645.72   53.29    1.377  0.30( 0.28) 0.93   16818.6   40100.00
     11    36610.57   60.53    1.303  0.30( 0.28) 0.94   19622.7   11801.00
     12    39334.10   69.99    1.240  0.30( 0.28) 0.95   23919.5   11530.00
     13    41558.70   78.53    1.183  0.30( 0.29) 0.96   28925.2   11910.00
     14    43587.20   85.60    1.135  0.30( 0.29) 0.96   33506.8   11330.00
     15    44573.73   91.93    1.097  0.30( 0.29) 0.97   37937.8   11130.00
     16    44375.38   99.52    1.063  0.30( 0.29) 0.97   41931.8   12330.00
     17    44073.25  106.17    1.033  0.30( 0.29) 0.97   45274.9   12400.00
     18    43464.60  114.84    0.993  0.30( 0.29) 0.97   48643.7   12201.00
     19    42968.95  118.80    0.975  0.30( 0.29) 0.97   49728.4   12111.00
     20    42276.66  124.17    0.959  0.30( 0.29) 0.97   51097.9   12101.10
     21    41716.32  128.19    0.949  0.30( 0.29) 0.97   51946.9   10400.00
     22    40122.03  136.21    0.928  0.30( 0.29) 0.97   53262.1   12010.00
     23    38791.00  142.08    0.912  0.30( 0.29) 0.97   53575.8   10210.00
     24    38404.85  144.76    0.905  0.30( 0.29) 0.97   53686.7   12000.00
     25    35226.95  168.13    0.844  0.30( 0.29) 0.97   54308.5   10100.00
    TOTAL AREA(ACRES) =     54308.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    44573.73  Tc(MIN.) =   91.932
  EFFECTIVE AREA(ACRES) =  37937.79  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    54308.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12904.00 =  116698.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.097                  S29.2-4
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.10      0.30      0.900    56
  NATURAL FAIR COVER
```

```
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  COMMERCIAL                 B        1.20      0.30     0.100    56
  COMMERCIAL                 B        1.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.641
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    5.54
  EFFECTIVE AREA(ACRES) =  37944.59   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54315.3       PEAK FLOW RATE(CFS) =   44573.73
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.93                                    S29.2-4
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.097
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.60      0.30     1.000    69
  PUBLIC PARK                B       15.10      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B       20.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.941
  SUBAREA AREA(ACRES) =   38.70      SUBAREA RUNOFF(CFS) =   28.38
  EFFECTIVE AREA(ACRES) =  37983.29   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    54354.0       PEAK FLOW RATE(CFS) =   44573.73
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    54354.0  TC(MIN.) =     91.93
  EFFECTIVE AREA(ACRES) =  37983.29  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.966
  PEAK FLOW RATE(CFS)   =   44573.73

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    23135.08   14.74    3.021  0.30( 0.25) 0.84    3125.5   50200.00
      2    23809.78   16.32    2.835  0.30( 0.25) 0.84    3561.3     203.00
      3    24750.52   18.60    2.594  0.30( 0.25) 0.84    4177.4   50400.00
      4    24866.32   18.88    2.564  0.30( 0.25) 0.84    4253.3     210.00
      5    27339.96   25.15    2.108  0.30( 0.25) 0.85    5876.1     420.00
      6    28407.49   27.80    1.989  0.30( 0.26) 0.85    6856.0   50300.00
      7    28897.30   29.08    1.931  0.30( 0.26) 0.85    7311.1     400.00
      8    30294.49   33.44    1.801  0.30( 0.26) 0.88    9208.7   50150.00
      9    31545.22   37.73    1.691  0.30( 0.27) 0.90   10944.3     390.00
     10    34645.72   53.29    1.377  0.30( 0.28) 0.93   16864.1   40100.00
     11    36610.57   60.53    1.303  0.30( 0.28) 0.94   19668.2   11801.00
```



```
     12    39334.10   69.99    1.240  0.30( 0.28) 0.95   23965.0   11530.00
     13    41558.70   78.53    1.183  0.30( 0.29) 0.96   28970.7   11910.00
     14    43587.20   85.60    1.135  0.30( 0.29) 0.96   33552.3   11330.00
     15    44573.73   91.93    1.097  0.30( 0.29) 0.97   37983.3   11130.00
     16    44375.38   99.52    1.063  0.30( 0.29) 0.97   41977.3   12330.00
     17    44073.25  106.17    1.033  0.30( 0.29) 0.97   45320.4   12400.00
     18    43464.60  114.84    0.993  0.30( 0.29) 0.97   48689.2   12201.00
     19    42968.95  118.80    0.975  0.30( 0.29) 0.97   49773.9   12111.00
     20    42276.66  124.17    0.959  0.30( 0.29) 0.97   51143.4   12101.10
     21    41716.32  128.19    0.949  0.30( 0.29) 0.97   51992.4   10400.00
     22    40122.03  136.21    0.928  0.30( 0.29) 0.97   53307.6   12010.00
     23    38791.00  142.08    0.912  0.30( 0.29) 0.97   53621.3   10210.00
     24    38404.85  144.76    0.905  0.30( 0.29) 0.97   53732.2   12000.00
     25    35226.95  168.13    0.844  0.30( 0.29) 0.97   54354.0   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 100-YR EV JULY 2022 ROKAMOTO                                         *
 ************************************************************************

  FILE NAME: RU00EV33.DAT
  TIME/DATE OF STUDY: 09:24 07/06/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.876
   2)   10.00;  3.789
   3)   15.00;  2.933
   4)   20.00;  2.419
   5)   25.00;  2.096
   6)   30.00;  1.873
   7)   40.00;  1.617
   8)   50.00;  1.400
   9)   60.00;  1.290
  10)   90.00;  1.088
  11)  120.00;  0.951
  12)  180.00;  0.795
  13)  360.00;  0.588
  14) 1200.00;  0.256
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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)
```



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    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: S31X00.DNA                        S31
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     3200.10   33.81  0.30( 0.24) 0.81    2538.8   13100.00
      2     3223.67   57.47  0.30( 0.24) 0.81    3777.0   13000.00
      3     3120.61   59.66  0.30( 0.24) 0.81    3796.8   13010.00
    TOTAL AREA(ACRES) =     3796.8

************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: S32X00.DNA                        S32
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1444.32   32.09  0.30( 0.25) 0.83    1115.4   13210.00
      2     1446.69   32.62  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =     1127.6

************************************************************************
  FLOW PROCESS FROM NODE  13221.00 TO NODE  13222.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1444.32   32.09  0.30( 0.25) 0.83    1115.4   13210.00
      2     1446.69   32.62  0.30( 0.25) 0.83    1127.6   13200.00
    TOTAL AREA(ACRES) =      1127.6

************************************************************************
  FLOW PROCESS FROM NODE  13112.00 TO NODE  13222.00 IS CODE =  11
------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
========================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1444.32   32.09    1.820  0.30( 0.25) 0.83    1115.4   13210.00
      2     1446.69   32.62    1.806  0.30( 0.25) 0.83    1127.6   13200.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13222.00 =   16821.05 FEET.
```

```
** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1     3200.10   33.81    1.775  0.30( 0.24) 0.81    2538.8   13100.00
    2     3223.67   57.47    1.318  0.30( 0.24) 0.81    3777.0   13000.00
    3     3120.61   59.66    1.294  0.30( 0.24) 0.81    3796.8   13010.00
LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

** PEAK FLOW RATE TABLE **
 STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
 NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1     4568.68   32.09    1.820  0.30( 0.24) 0.82    3524.7   13210.00
    2     4595.23   32.62    1.806  0.30( 0.24) 0.82    3576.6   13200.00
    3     4618.34   33.81    1.775  0.30( 0.24) 0.82    3666.4   13100.00
    4     4217.04   57.47    1.318  0.30( 0.24) 0.81    4904.6   13000.00
    5     4091.56   59.66    1.294  0.30( 0.24) 0.81    4924.4   13010.00
  TOTAL AREA(ACRES) =      4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     4618.34  Tc(MIN.) =   33.814
EFFECTIVE AREA(ACRES) =   3666.43  AREA-AVERAGED Fm(INCH/HR) =  0.24
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
TOTAL AREA(ACRES) =     4924.4
LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13222.00 =   32126.49 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.40      0.30      0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       15.60      0.30      1.000    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.10      0.30      0.600    56
 AGRICULTURAL POOR COVER
```

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```
 "ROW CROPS,CONTOURED"      B        5.30      0.30      1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30      1.000    86
 COMMERCIAL                 B       22.60      0.30      0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4649.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.04
 AVERAGE FLOW DEPTH(FEET) =   5.39   TRAVEL TIME(MIN.) =   3.24
 Tc(MIN.) =   37.05
 SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   62.49
 EFFECTIVE AREA(ACRES) =   3711.63     AREA-AVERAGED Fm(INCH/HR) =   0.24
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.81
 TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    4840.40
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.51

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.51   FLOW VELOCITY(FEET/SEC.) =  13.20
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.05
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.00      0.30      1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30      1.000    86
 COMMERCIAL                 B        7.40      0.30      0.100    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        4.70      0.30      1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.90      0.30      1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
 SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   22.48
 EFFECTIVE AREA(ACRES) =   3728.13   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    4862.88

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.05
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

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HZ-31111

```
  NATURAL POOR COVER
  "BARREN"                  B        1.30      0.30     1.000    86
  COMMERCIAL                B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    9.95
  EFFECTIVE AREA(ACRES) =   3736.03   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    4872.83

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   27.57
  EFFECTIVE AREA(ACRES) =   3758.03   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    4900.40

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



HZ-31111

```
  "OPEN BRUSH"              B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   18.80
  EFFECTIVE AREA(ACRES) =   3773.03   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    4919.20

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.356
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.02
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.02

****************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.224
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.50      0.30     1.000    63
```

HZ-31100

HZ-31101

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.10
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   0.32
  Tc(MIN.) =    8.96
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    4.59
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       8.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   7.66
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.30
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   0.41
  Tc(MIN.) =    9.37
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    7.77
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      15.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   8.85
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

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```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.757
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.52
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   0.82
  Tc(MIN.) =   10.19
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =   11.20
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      25.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.12   FLOW VELOCITY(FEET/SEC.) =   6.81
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.641
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.08
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   0.68
  Tc(MIN.) =   10.86
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   19.24
```

HZ-31104

HZ-31105

```
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      44.20

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   7.45
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.19
  AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =   0.70
  Tc(MIN.) =   11.57
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   31.31
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      73.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.69   FLOW VELOCITY(FEET/SEC.) =   8.64
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
```

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```
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.297
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.89
  AVERAGE FLOW DEPTH(FEET) =   2.00   TRAVEL TIME(MIN.) =   1.31
  Tc(MIN.) =   12.87
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   40.73
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =     109.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.11   FLOW VELOCITY(FEET/SEC.) =   8.20
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.163
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
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HZ-31106

HZ-31107

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  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     133.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.00
  AVERAGE FLOW DEPTH(FEET) =   2.35   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =   13.66
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   47.15
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     151.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.48   FLOW VELOCITY(FEET/SEC.) =   8.25
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     169.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.10
  AVERAGE FLOW DEPTH(FEET) =   2.49   TRAVEL TIME(MIN.) =   0.95
  Tc(MIN.) =   14.61
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   35.47
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     178.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =   9.24
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

HZ-31108



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============================================================================
  MAINLINE Tc(MIN.) =   14.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   79.69
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     258.28

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     267.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.60
  AVERAGE FLOW DEPTH(FEET) =   3.05   TRAVEL TIME(MIN.) =   2.47
  Tc(MIN.) =   17.08
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   18.08
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```

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 TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     258.28
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.01   FLOW VELOCITY(FEET/SEC.) =   9.51
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   17.08                                    HZ-31109
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                    B        0.30      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        9.60      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
 SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   47.48
 EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     297.03

****************************************************************************
 FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00        HZ-31110
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.375
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        4.90      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
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 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     313.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.56
 AVERAGE FLOW DEPTH(FEET) =   3.50   TRAVEL TIME(MIN.) =   3.60
 Tc(MIN.) =   20.67
 SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   33.83
 EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     297.03
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.42   FLOW VELOCITY(FEET/SEC.) =   8.45
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      297.03   20.67    2.375  0.30( 0.30) 1.00     154.5   31100.00
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     4877.60   35.34    1.736  0.30( 0.24) 0.81    3631.3   13210.00
     2     4903.16   35.86    1.723  0.30( 0.24) 0.81    3683.2   13200.00
     3     4919.20   37.05    1.692  0.30( 0.24) 0.81    3773.0   13100.00
     4     4697.24   60.80    1.285  0.30( 0.24) 0.81    5011.2   13000.00
     5     4648.20   63.02    1.270  0.30( 0.24) 0.81    5031.0   13010.00
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     4372.57   20.67    2.375  0.30( 0.25) 0.83    2278.9   31100.00
     2     5083.18   35.34    1.736  0.30( 0.25) 0.82    3785.8   13210.00
     3     5106.83   35.86    1.723  0.30( 0.25) 0.82    3837.7   13200.00
     4     5118.50   37.05    1.692  0.30( 0.25) 0.82    3927.5   13100.00
     5     4838.17   60.80    1.285  0.30( 0.24) 0.82    5165.7   13000.00
     6     4786.99   63.02    1.270  0.30( 0.24) 0.82    5185.5   13010.00
   TOTAL AREA(ACRES) =      5185.5

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     5118.50  Tc(MIN.) =   37.052
 EFFECTIVE AREA(ACRES) =   3927.53  AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5185.5
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 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13301.00 =   34659.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.62                    S33-02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        1.20      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
 NATURAL POOR COVER
 "BARREN"                   B        0.90      0.30     1.000    86
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.80      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5124.16
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.23
 AVERAGE FLOW DEPTH(FEET) =   7.62   TRAVEL TIME(MIN.) =   2.06
 Tc(MIN.) =   39.11
 SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =   11.33
 EFFECTIVE AREA(ACRES) =   3936.93     AREA-AVERAGED Fm(INCH/HR) =   0.25
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
 TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    5118.50
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.61

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.61   FLOW VELOCITY(FEET/SEC.) =   9.23
 LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13302.00 =   35800.91 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.11
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640                HZ-31112
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B       13.80      0.30     1.000    86
 NATURAL POOR COVER
 "BARREN"                   B        2.60      0.30     1.000    86
 COMMERCIAL                 B        1.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
 SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   34.24
 EFFECTIVE AREA(ACRES) =   3965.03   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    5118.50
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.11                                  HZ-31112
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
 COMMERCIAL                 B        0.10      0.30     0.100    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
 SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    3.83
 EFFECTIVE AREA(ACRES) =   3968.13   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    5118.50
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.11
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

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```
  NATURAL POOR COVER
  "BARREN"                  B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   24.36
  EFFECTIVE AREA(ACRES) =   3988.33   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    5118.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       11.60      0.30     1.000    79
  APARTMENTS                B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"     B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   92.21
  EFFECTIVE AREA(ACRES) =   4064.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    5118.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
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       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"      B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =  138.20
  EFFECTIVE AREA(ACRES) =   4179.33   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    5230.66

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.92
  CHANNEL FLOW THRU SUBAREA(CFS) =    5230.66
  FLOW VELOCITY(FEET/SEC.) =  10.68   FLOW DEPTH(FEET) =   6.92
  TRAVEL TIME(MIN.) =   3.42   Tc(MIN.) =   42.54
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13303.00 =   37994.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                  B        0.80      0.30     1.000    86
  COMMERCIAL                B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                   B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    8.97
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  EFFECTIVE AREA(ACRES) =   4186.93   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  COMMERCIAL                 B        3.60      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        4.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   17.68
  EFFECTIVE AREA(ACRES) =   4201.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =   27.94
  EFFECTIVE AREA(ACRES) =   4226.33   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

HZ-207

HZ-207



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****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.60      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B       31.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
  SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =   40.19
  EFFECTIVE AREA(ACRES) =   4261.63   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =   12.41
  EFFECTIVE AREA(ACRES) =   4272.13   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

HZ-31113

HZ-31113

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****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.54                                  HZ-31113
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =   13.43
  EFFECTIVE AREA(ACRES) =   4283.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.97                     S33-05.5
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.524
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
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  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5234.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.89
  AVERAGE FLOW DEPTH(FEET) =   7.97   TRAVEL TIME(MIN.) =   1.74
  Tc(MIN.) =   44.27
  SUBAREA AREA(ACRES) =     6.70      SUBAREA RUNOFF(CFS) =    7.38
  EFFECTIVE AREA(ACRES) =   4290.43    AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5548.4        PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.97   FLOW VELOCITY(FEET/SEC.) =   8.88
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13304.00 =   38920.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.27
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.524              S33-05.5
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =     7.10      SUBAREA RUNOFF(CFS) =    7.82
  EFFECTIVE AREA(ACRES) =   4297.53   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.27                                  HZ-31114
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.524
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
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  "OPEN BRUSH"                B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"       B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   25.13
  EFFECTIVE AREA(ACRES) =   4320.33   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.27
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.524
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.20      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"       B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    3.75
  EFFECTIVE AREA(ACRES) =   4323.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                    B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                     B        0.60      0.30     1.000    69
```

HZ-31114

S33-05.6



```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                    B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                     B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5235.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.69
  AVERAGE FLOW DEPTH(FEET) =   6.46   TRAVEL TIME(MIN.) =   4.23
  Tc(MIN.) =   48.50
  SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    9.38
  EFFECTIVE AREA(ACRES) =   4332.93    AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5590.9        PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.45   FLOW VELOCITY(FEET/SEC.) =  11.69
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   18.55
  EFFECTIVE AREA(ACRES) =   4351.13   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
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S33-05.6

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

HZ-31115

MAINLINE Tc(MIN.) = 48.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 18.40 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER | | | | | |
| "MEADOWS" | B | 1.20 | 0.30 | 1.000 | 70 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.10 | 0.30 | 1.000 | 65 |
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 26.60 | 0.30 | 1.000 | 86 |
| COMMERCIAL | B | 3.90 | 0.30 | 0.100 | 56 |
| AGRICULTURAL POOR COVER | | | | | |
| "FALLOW" | B | 3.00 | 0.30 | 1.000 | 86 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934
SUBAREA AREA(ACRES) = 53.20 SUBAREA RUNOFF(CFS) = 55.17
EFFECTIVE AREA(ACRES) = 4404.33 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 5230.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

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

HZ-31115

MAINLINE Tc(MIN.) = 48.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,CONTOURED" | B | 1.10 | 0.30 | 1.000 | 79 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.20 | 0.30 | 1.000 | 65 |
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 14.00 | 0.30 | 1.000 | 86 |
| COMMERCIAL | B | 4.30 | 0.30 | 0.100 | 56 |
| AGRICULTURAL POOR COVER | | | | | |
| "FALLOW" | B | 5.30 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 2.70 | 0.30 | 1.000 | 69 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860
SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 29.18
EFFECTIVE AREA(ACRES) = 4431.93 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 5230.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81



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

HZ-31115

MAINLINE Tc(MIN.) = 48.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER | | | | | |
| "MEADOWS" | B | 3.20 | 0.30 | 1.000 | 70 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 6.10 | 0.30 | 1.000 | 66 |
| RESIDENTIAL | | | | | |
| ".4 DWELLING/ACRE" | B | 7.50 | 0.30 | 0.900 | 56 |
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,CONTOURED" | B | 5.40 | 0.30 | 1.000 | 79 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 1.60 | 0.30 | 1.000 | 65 |
| NATURAL POOR COVER | | | | | |
| "BARREN" | B | 1.90 | 0.30 | 1.000 | 86 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971
SUBAREA AREA(ACRES) = 25.70 SUBAREA RUNOFF(CFS) = 26.40
EFFECTIVE AREA(ACRES) = 4457.63 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5715.6 PEAK FLOW RATE(CFS) = 5230.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

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

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MAINLINE Tc(MIN.) = 48.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| COMMERCIAL | B | 2.00 | 0.30 | 0.100 | 56 |
| AGRICULTURAL POOR COVER | | | | | |
| "FALLOW" | B | 3.70 | 0.30 | 1.000 | 86 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 2.10 | 0.30 | 1.000 | 66 |
| RESIDENTIAL | | | | | |
| ".4 DWELLING/ACRE" | B | 2.60 | 0.30 | 0.900 | 56 |
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,CONTOURED" | B | 0.20 | 0.30 | 1.000 | 79 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.10 | 0.30 | 1.000 | 65 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807
SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 11.46
EFFECTIVE AREA(ACRES) = 4468.33 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5726.3 PEAK FLOW RATE(CFS) = 5230.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   48.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    9.09
  EFFECTIVE AREA(ACRES) =   4477.03   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    5230.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A00EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     1221.20   13.34  0.30( 0.13) 0.43     436.8     120.00
      2     1221.18   13.34  0.30( 0.13) 0.43     436.8     110.00
      3     1039.13   20.29  0.30( 0.13) 0.43     504.5     100.00
      4      976.70   22.82  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     4517.54   32.64    1.805  0.30( 0.26) 0.85    2828.4    31100.00
      2     5211.46   46.80    1.469  0.30( 0.25) 0.84    4335.3    13210.00
      3     5229.87   47.31    1.458  0.30( 0.25) 0.84    4387.2    13200.00
      4     5230.66   48.50    1.433  0.30( 0.25) 0.84    4477.0    13100.00
      5     4989.11   72.42    1.206  0.30( 0.25) 0.83    5715.2    13000.00
      6     4934.16   74.68    1.191  0.30( 0.25) 0.83    5735.0    13010.00
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     1221.20   13.34    3.218  0.30( 0.13) 0.43     436.8     120.00
      2     1221.18   13.34    3.218  0.30( 0.13) 0.43     436.8     110.00
      3     1039.13   20.29    2.401  0.30( 0.13) 0.43     504.5     100.00
```

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      4      976.70   22.82    2.237  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     4748.97   13.34    3.218  0.30( 0.22) 0.74    1592.2     120.00
      2     4749.03   13.34    3.218  0.30( 0.22) 0.74    1592.4     110.00
      3     4924.69   20.29    2.401  0.30( 0.23) 0.76    2262.1     100.00
      4     5013.91   22.82    2.237  0.30( 0.23) 0.77    2487.1     150.00
      5     5294.11   32.64    1.805  0.30( 0.24) 0.79    3338.6    31100.00
      6     5832.32   46.80    1.469  0.30( 0.24) 0.80    4845.5    13210.00
      7     5845.58   47.31    1.458  0.30( 0.24) 0.80    4897.4    13200.00
      8     5834.41   48.50    1.433  0.30( 0.24) 0.80    4987.2    13100.00
      9     5488.05   72.42    1.206  0.30( 0.24) 0.80    6225.4    13000.00
     10     5426.04   74.68    1.191  0.30( 0.24) 0.80    6245.2    13010.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     5845.58  Tc(MIN.) =   47.312
  EFFECTIVE AREA(ACRES) =   4897.35  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13305.00 =   41886.54 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                    B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                     B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                    B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        4.10      0.30     1.000    63
```

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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5854.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.37
  AVERAGE FLOW DEPTH(FEET) =   6.34   TRAVEL TIME(MIN.) =   5.49
  Tc(MIN.) =   52.81
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =   17.70
  EFFECTIVE AREA(ACRES) =   4915.75     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.34   FLOW VELOCITY(FEET/SEC.) =  13.37
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13306.00 =   46294.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   47.73
  EFFECTIVE AREA(ACRES) =   4965.35   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
```

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```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.77
  EFFECTIVE AREA(ACRES) =   4966.15   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    1.27
  EFFECTIVE AREA(ACRES) =   4967.45   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
```

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```
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =     7.60      SUBAREA RUNOFF(CFS) =     7.68
  EFFECTIVE AREA(ACRES) =   4975.05   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81                                  HZ-31116
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   50.19
  EFFECTIVE AREA(ACRES) =   5022.65   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   52.81                                  HZ-31116
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   55.98
  EFFECTIVE AREA(ACRES) =   5080.83   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    5845.58
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.25
  CHANNEL FLOW THRU SUBAREA(CFS) =    5845.58
  FLOW VELOCITY(FEET/SEC.) =  13.60   FLOW DEPTH(FEET) =   6.25
  TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   54.70
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13307.00 =   47838.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.70                                  HZ-31010
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.348
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =     7.70      SUBAREA RUNOFF(CFS) =     7.39
  EFFECTIVE AREA(ACRES) =   5088.53   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.70                                  HZ-31010
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.348
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
```

```
  NATURAL FAIR COVER
  "GRASS"                    B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =     6.10      SUBAREA RUNOFF(CFS) =     5.76
  EFFECTIVE AREA(ACRES) =   5094.63   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.46
  CHANNEL FLOW THRU SUBAREA(CFS) =    5845.58
  FLOW VELOCITY(FEET/SEC.) =  10.83   FLOW DEPTH(FEET) =   7.46
  TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =   56.12
  LONGEST FLOWPATH FROM NODE  13010.00 TO NODE  13308.00 =   48763.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.00      0.30     1.000    65
  COMMERCIAL                 B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =     9.50      SUBAREA RUNOFF(CFS) =     9.61
  EFFECTIVE AREA(ACRES) =   5104.13   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

HZ-208



```
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  COMMERCIAL                 B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =    75.60      SUBAREA RUNOFF(CFS) =    80.51
  EFFECTIVE AREA(ACRES) =   5179.73   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.90      0.30     1.000    79
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       13.20      0.30     1.000    65
  APARTMENTS                 B        0.50      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
  SUBAREA AREA(ACRES) =    15.60      SUBAREA RUNOFF(CFS) =    14.64
  EFFECTIVE AREA(ACRES) =   5195.33   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

HZ-208

```
==========================================================================
  MAINLINE Tc(MIN.) =   56.12                                  HZ-208
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       33.90      0.30      0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B       17.60      0.30      1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       16.80      0.30      1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"        B        0.60      0.30      0.200    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        1.50      0.30      0.400    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"       B       10.00      0.30      1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   83.33
  EFFECTIVE AREA(ACRES) =   5275.73   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   56.12                                  HZ-208
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                      B        0.30      0.30      0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.70      0.30      1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.96
  EFFECTIVE AREA(ACRES) =   5276.73   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   56.12                                HZ-31010.2
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                     B        0.30      0.30      1.000    69
```



```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.80      0.30      1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        0.50      0.30      1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.20      0.30      1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        0.30      0.30      1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.95
  EFFECTIVE AREA(ACRES) =   5278.83   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   56.12                               HZ-31113.2
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                     B        1.20      0.30      1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.50      0.30      1.000    66
  PUBLIC PARK                 B        1.70      0.30      0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        7.20      0.30      1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.00      0.30      1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =   10.85
  EFFECTIVE AREA(ACRES) =   5290.44   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    5845.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
--------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV29.DNA                      S29
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)    NODE
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 24866.32 | 18.88 | 0.30( 0.25) | 0.84 | 4253.3 | 210.00 | |
| 2 | 27339.96 | 25.15 | 0.30( 0.25) | 0.85 | 5876.1 | 420.00 | |
| 3 | 28897.30 | 29.08 | 0.30( 0.26) | 0.85 | 7311.1 | 400.00 | |
| 4 | 30294.49 | 33.44 | 0.30( 0.26) | 0.88 | 9208.7 | 50150.00 | |
| 5 | 31545.22 | 37.73 | 0.30( 0.27) | 0.90 | 10944.3 | 390.00 | |
| 6 | 34645.72 | 53.29 | 0.30( 0.28) | 0.93 | 16864.1 | 40100.00 | |
| 7 | 36610.57 | 60.53 | 0.30( 0.28) | 0.94 | 19668.2 | 11801.00 | |
| 8 | 39334.10 | 69.99 | 0.30( 0.28) | 0.95 | 23965.0 | 11530.00 | |
| 9 | 41558.70 | 78.53 | 0.30( 0.29) | 0.96 | 28970.7 | 11910.00 | |
| 10 | 43587.20 | 85.60 | 0.30( 0.29) | 0.96 | 33552.3 | 11330.00 | |
| 11 | 44573.73 | 91.93 | 0.30( 0.29) | 0.97 | 37983.3 | 11130.00 | |
| 12 | 44375.38 | 99.52 | 0.30( 0.29) | 0.97 | 41977.3 | 12330.00 | |
| 13 | 44073.25 | 106.17 | 0.30( 0.29) | 0.97 | 45320.4 | 12400.00 | |
| 14 | 43464.60 | 114.84 | 0.30( 0.29) | 0.97 | 48689.2 | 12201.00 | |
| 15 | 42968.95 | 118.80 | 0.30( 0.29) | 0.97 | 49773.9 | 12111.00 | |
| 16 | 42276.66 | 124.17 | 0.30( 0.29) | 0.97 | 51143.4 | 12101.10 | |
| 17 | 41716.32 | 128.19 | 0.30( 0.29) | 0.97 | 51992.4 | 10400.00 | |
| 18 | 40122.03 | 136.21 | 0.30( 0.29) | 0.97 | 53307.6 | 12010.00 | |
| 19 | 38791.00 | 142.08 | 0.30( 0.29) | 0.97 | 53621.3 | 10210.00 | |
| 20 | 35226.95 | 168.13 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 | |

TOTAL AREA(ACRES) = 54354.0

**********

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 24866.32 | 18.88 | 0.30( 0.25) | 0.84 | 4253.3 | 210.00 |
| 2 | 27339.96 | 25.15 | 0.30( 0.25) | 0.85 | 5876.1 | 420.00 |
| 3 | 28897.30 | 29.08 | 0.30( 0.26) | 0.85 | 7311.1 | 400.00 |
| 4 | 30294.49 | 33.44 | 0.30( 0.26) | 0.88 | 9208.7 | 50150.00 |
| 5 | 31545.22 | 37.73 | 0.30( 0.27) | 0.90 | 10944.3 | 390.00 |
| 6 | 34645.72 | 53.29 | 0.30( 0.28) | 0.93 | 16864.1 | 40100.00 |
| 7 | 36610.57 | 60.53 | 0.30( 0.28) | 0.94 | 19668.2 | 11801.00 |
| 8 | 39334.10 | 69.99 | 0.30( 0.28) | 0.95 | 23965.0 | 11530.00 |
| 9 | 41558.70 | 78.53 | 0.30( 0.29) | 0.96 | 28970.7 | 11910.00 |
| 10 | 43587.20 | 85.60 | 0.30( 0.29) | 0.96 | 33552.3 | 11330.00 |
| 11 | 44573.73 | 91.93 | 0.30( 0.29) | 0.97 | 37983.3 | 11130.00 |
| 12 | 44375.38 | 99.52 | 0.30( 0.29) | 0.97 | 41977.3 | 12330.00 |
| 13 | 44073.25 | 106.17 | 0.30( 0.29) | 0.97 | 45320.4 | 12400.00 |
| 14 | 43464.60 | 114.84 | 0.30( 0.29) | 0.97 | 48689.2 | 12201.00 |
| 15 | 42968.95 | 118.80 | 0.30( 0.29) | 0.97 | 49773.9 | 12111.00 |
| 16 | 42276.66 | 124.17 | 0.30( 0.29) | 0.97 | 51143.4 | 12101.10 |
| 17 | 41716.32 | 128.19 | 0.30( 0.29) | 0.97 | 51992.4 | 10400.00 |
| 18 | 40122.03 | 136.21 | 0.30( 0.29) | 0.97 | 53307.6 | 12010.00 |
| 19 | 38791.00 | 142.08 | 0.30( 0.29) | 0.97 | 53621.3 | 10210.00 |
| 20 | 35226.95 | 168.13 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

TOTAL AREA(ACRES) = 54354.0

**********

FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

---

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

>>>>>TRAVELTIME THRU SUBAREA<<<<<



==========

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 19.19

CHANNEL FLOW THRU SUBAREA(CFS) = 44573.73

FLOW VELOCITY(FEET/SEC.) = 7.85 FLOW DEPTH(FEET) = 19.19

TRAVEL TIME(MIN.) = 2.95 Tc(MIN.) = 94.88

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

**********

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

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** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24866.32 | 22.40 | 2.264 | 0.30( 0.25) | 0.84 | 4253.3 | 210.00 |
| 2 | 27339.96 | 28.57 | 1.937 | 0.30( 0.25) | 0.85 | 5876.1 | 420.00 |
| 3 | 28897.30 | 32.44 | 1.811 | 0.30( 0.26) | 0.85 | 7311.1 | 400.00 |
| 4 | 30294.49 | 36.76 | 1.700 | 0.30( 0.26) | 0.88 | 9208.7 | 50150.00 |
| 5 | 31545.22 | 41.00 | 1.595 | 0.30( 0.27) | 0.90 | 10944.3 | 390.00 |
| 6 | 34645.72 | 56.47 | 1.329 | 0.30( 0.28) | 0.93 | 16864.1 | 40100.00 |
| 7 | 36610.57 | 63.66 | 1.265 | 0.30( 0.28) | 0.94 | 19668.2 | 11801.00 |
| 8 | 39334.10 | 73.05 | 1.202 | 0.30( 0.28) | 0.95 | 23965.0 | 11530.00 |
| 9 | 41558.70 | 81.54 | 1.145 | 0.30( 0.29) | 0.96 | 28970.7 | 11910.00 |
| 10 | 43587.20 | 88.57 | 1.098 | 0.30( 0.29) | 0.96 | 33552.3 | 11330.00 |
| 11 | 44573.73 | 94.88 | 1.066 | 0.30( 0.29) | 0.97 | 37983.3 | 11130.00 |
| 12 | 44375.38 | 102.48 | 1.031 | 0.30( 0.29) | 0.97 | 41977.3 | 12330.00 |
| 13 | 44073.25 | 109.13 | 1.001 | 0.30( 0.29) | 0.97 | 45320.4 | 12400.00 |
| 14 | 43464.60 | 117.81 | 0.961 | 0.30( 0.29) | 0.97 | 48689.2 | 12201.00 |
| 15 | 42968.95 | 121.78 | 0.946 | 0.30( 0.29) | 0.97 | 49773.9 | 12111.00 |
| 16 | 42276.66 | 127.16 | 0.932 | 0.30( 0.29) | 0.97 | 51143.4 | 12101.10 |
| 17 | 41716.32 | 131.20 | 0.922 | 0.30( 0.29) | 0.97 | 51992.4 | 10400.00 |
| 18 | 40122.03 | 139.25 | 0.901 | 0.30( 0.29) | 0.97 | 53307.6 | 12010.00 |
| 19 | 38791.00 | 145.15 | 0.886 | 0.30( 0.29) | 0.97 | 53621.3 | 10210.00 |
| 20 | 35226.95 | 171.29 | 0.818 | 0.30( 0.29) | 0.97 | 54354.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 4748.97 | 22.72 | 2.244 | 0.30( 0.22) | 0.74 | 1985.3 | 120.00 |
| 2 | 4749.03 | 22.72 | 2.243 | 0.30( 0.22) | 0.74 | 1985.4 | 110.00 |
| 3 | 4924.69 | 29.56 | 1.893 | 0.30( 0.23) | 0.76 | 2655.2 | 100.00 |
| 4 | 5013.91 | 32.04 | 1.821 | 0.30( 0.23) | 0.77 | 2880.2 | 150.00 |
| 5 | 5294.11 | 41.72 | 1.580 | 0.30( 0.24) | 0.79 | 3731.7 | 31100.00 |
| 6 | 5832.32 | 55.61 | 1.338 | 0.30( 0.24) | 0.79 | 5238.5 | 13210.00 |
| 7 | 5845.58 | 56.12 | 1.333 | 0.30( 0.24) | 0.79 | 5290.4 | 13200.00 |
| 8 | 5834.41 | 57.32 | 1.320 | 0.30( 0.24) | 0.79 | 5380.3 | 13100.00 |
| 9 | 5488.05 | 81.39 | 1.146 | 0.30( 0.24) | 0.80 | 6618.5 | 13000.00 |
| 10 | 5426.04 | 83.68 | 1.131 | 0.30( 0.24) | 0.80 | 6638.3 | 13010.00 |

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 29596.64 | 22.40 | 2.264 | 0.30( 0.24) | 0.81 | 6211.2 | 210.00 |
| 2 | 29741.29 | 22.72 | 2.244 | 0.30( 0.24) | 0.81 | 6321.3 | 120.00 |
| 3 | 29741.82 | 22.72 | 2.243 | 0.30( 0.24) | 0.81 | 6321.7 | 110.00 |
| 4 | 32239.20 | 28.57 | 1.937 | 0.30( 0.25) | 0.82 | 8434.2 | 420.00 |
| 5 | 32663.64 | 29.56 | 1.893 | 0.30( 0.25) | 0.82 | 8898.9 | 100.00 |
| 6 | 33752.01 | 32.04 | 1.821 | 0.30( 0.25) | 0.83 | 10044.6 | 150.00 |
| 7 | 33922.66 | 32.44 | 1.811 | 0.30( 0.25) | 0.83 | 10226.1 | 400.00 |
| 8 | 35444.91 | 36.76 | 1.700 | 0.30( 0.25) | 0.85 | 12503.8 | 50150.00 |
| 9 | 36818.54 | 41.00 | 1.595 | 0.30( 0.26) | 0.87 | 14612.8 | 390.00 |
| 10 | 36983.21 | 41.72 | 1.580 | 0.30( 0.26) | 0.87 | 14950.7 | 31100.00 |
| 11 | 40306.25 | 55.61 | 1.338 | 0.30( 0.27) | 0.90 | 21774.7 | 13210.00 |
| 12 | 40421.94 | 56.12 | 1.333 | 0.30( 0.27) | 0.90 | 22022.1 | 13200.00 |
| 13 | 40488.06 | 56.47 | 1.329 | 0.30( 0.27) | 0.90 | 22180.6 | 40100.00 |
| 14 | 40711.76 | 57.32 | 1.320 | 0.30( 0.27) | 0.90 | 22575.0 | 13100.00 |
| 15 | 42353.79 | 63.66 | 1.265 | 0.30( 0.27) | 0.91 | 25374.5 | 11801.00 |
| 16 | 44942.09 | 73.05 | 1.202 | 0.30( 0.28) | 0.92 | 30154.7 | 11530.00 |
| 17 | 47008.18 | 81.39 | 1.146 | 0.30( 0.28) | 0.93 | 35502.3 | 13000.00 |
| 18 | 47042.77 | 81.54 | 1.145 | 0.30( 0.28) | 0.93 | 35590.4 | 11910.00 |
| 19 | 47603.55 | 83.68 | 1.131 | 0.30( 0.28) | 0.93 | 37006.6 | 13010.00 |
| 20 | 48813.08 | 88.57 | 1.098 | 0.30( 0.28) | 0.93 | 40190.6 | 11330.00 |
| 21 | 49605.33 | 94.88 | 1.066 | 0.30( 0.28) | 0.94 | 44621.6 | 11130.00 |
| 22 | 49195.93 | 102.48 | 1.031 | 0.30( 0.28) | 0.95 | 48615.6 | 12330.00 |
| 23 | 48709.07 | 109.13 | 1.001 | 0.30( 0.28) | 0.95 | 51958.8 | 12400.00 |
| 24 | 47859.11 | 117.81 | 0.961 | 0.30( 0.28) | 0.95 | 55327.5 | 12201.00 |
| 25 | 47274.50 | 121.78 | 0.946 | 0.30( 0.29) | 0.95 | 56412.2 | 12111.00 |
| 26 | 46497.06 | 127.16 | 0.932 | 0.30( 0.29) | 0.95 | 57781.7 | 12101.10 |
| 27 | 45872.91 | 131.20 | 0.922 | 0.30( 0.29) | 0.95 | 58630.7 | 10400.00 |
| 28 | 44151.16 | 139.25 | 0.901 | 0.30( 0.29) | 0.95 | 59945.9 | 12010.00 |
| 29 | 42726.84 | 145.15 | 0.886 | 0.30( 0.29) | 0.95 | 60259.6 | 10210.00 |
| 30 | 38749.27 | 171.29 | 0.818 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

TOTAL AREA(ACRES) = 60992.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 49605.33 Tc(MIN.) = 94.883
EFFECTIVE AREA(ACRES) = 44621.61 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 60992.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60992.3 TC(MIN.) = 94.88
EFFECTIVE AREA(ACRES) = 44621.61 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 49605.33

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 29596.64 | 22.40 | 2.264 | 0.30( 0.24) | 0.81 | 6211.2 | 210.00 |
| 2 | 29741.29 | 22.72 | 2.244 | 0.30( 0.24) | 0.81 | 6321.3 | 120.00 |
| 3 | 29741.82 | 22.72 | 2.243 | 0.30( 0.24) | 0.81 | 6321.7 | 110.00 |
| 4 | 32239.20 | 28.57 | 1.937 | 0.30( 0.25) | 0.82 | 8434.2 | 420.00 |
| 5 | 32663.64 | 29.56 | 1.893 | 0.30( 0.25) | 0.82 | 8898.9 | 100.00 |
| 6 | 33752.01 | 32.04 | 1.821 | 0.30( 0.25) | 0.83 | 10044.6 | 150.00 |
| 7 | 33922.66 | 32.44 | 1.811 | 0.30( 0.25) | 0.83 | 10226.1 | 400.00 |
| 8 | 35444.91 | 36.76 | 1.700 | 0.30( 0.25) | 0.85 | 12503.8 | 50150.00 |
| 9 | 36818.54 | 41.00 | 1.595 | 0.30( 0.26) | 0.87 | 14612.8 | 390.00 |
| 10 | 36983.21 | 41.72 | 1.580 | 0.30( 0.26) | 0.87 | 14950.7 | 31100.00 |
| 11 | 40306.25 | 55.61 | 1.338 | 0.30( 0.27) | 0.90 | 21774.7 | 13210.00 |
| 12 | 40421.94 | 56.12 | 1.333 | 0.30( 0.27) | 0.90 | 22022.1 | 13200.00 |
| 13 | 40488.06 | 56.47 | 1.329 | 0.30( 0.27) | 0.90 | 22180.6 | 40100.00 |
| 14 | 40711.76 | 57.32 | 1.320 | 0.30( 0.27) | 0.90 | 22575.0 | 13100.00 |
| 15 | 42353.79 | 63.66 | 1.265 | 0.30( 0.27) | 0.91 | 25374.5 | 11801.00 |
| 16 | 44942.09 | 73.05 | 1.202 | 0.30( 0.28) | 0.92 | 30154.7 | 11530.00 |
| 17 | 47008.18 | 81.39 | 1.146 | 0.30( 0.28) | 0.93 | 35502.3 | 13000.00 |
| 18 | 47042.77 | 81.54 | 1.145 | 0.30( 0.28) | 0.93 | 35590.4 | 11910.00 |
| 19 | 47603.55 | 83.68 | 1.131 | 0.30( 0.28) | 0.93 | 37006.6 | 13010.00 |
| 20 | 48813.08 | 88.57 | 1.098 | 0.30( 0.28) | 0.93 | 40190.6 | 11330.00 |
| 21 | 49605.33 | 94.88 | 1.066 | 0.30( 0.28) | 0.94 | 44621.6 | 11130.00 |
| 22 | 49195.93 | 102.48 | 1.031 | 0.30( 0.28) | 0.95 | 48615.6 | 12330.00 |
| 23 | 48709.07 | 109.13 | 1.001 | 0.30( 0.28) | 0.95 | 51958.8 | 12400.00 |
| 24 | 47859.11 | 117.81 | 0.961 | 0.30( 0.28) | 0.95 | 55327.5 | 12201.00 |
| 25 | 47274.50 | 121.78 | 0.946 | 0.30( 0.29) | 0.95 | 56412.2 | 12111.00 |
| 26 | 46497.06 | 127.16 | 0.932 | 0.30( 0.29) | 0.95 | 57781.7 | 12101.10 |
| 27 | 45872.91 | 131.20 | 0.922 | 0.30( 0.29) | 0.95 | 58630.7 | 10400.00 |
| 28 | 44151.16 | 139.25 | 0.901 | 0.30( 0.29) | 0.95 | 59945.9 | 12010.00 |
| 29 | 42726.84 | 145.15 | 0.886 | 0.30( 0.29) | 0.95 | 60259.6 | 10210.00 |
| 30 | 38749.27 | 171.29 | 0.818 | 0.30( 0.29) | 0.95 | 60992.3 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 100-YR EV FEB 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RU00EV34.DAT
  TIME/DATE OF STUDY: 09:01 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.847
   2)   10.00;  3.775
   3)   15.00;  2.924
   4)   20.00;  2.413
   5)   25.00;  2.092
   6)   30.00;  1.869
   7)   40.00;  1.613
   8)   50.00;  1.397
   9)   60.00;  1.287
  10)   90.00;  1.084
  11)  120.00;  0.947
  12)  180.00;  0.791
  13)  360.00;  0.584
  14) 1200.00;  0.255
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV33.DNA                          S33
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    29741.82   22.72  0.30( 0.24) 0.81    6321.7     110.00
      2    32663.64   29.56  0.30( 0.25) 0.82    8898.9     100.00
      3    33922.66   32.44  0.30( 0.25) 0.83   10226.1     400.00
      4    35444.91   36.76  0.30( 0.25) 0.85   12503.8   50150.00
      5    36983.21   41.72  0.30( 0.26) 0.87   14950.7   31100.00
      6    40711.76   57.32  0.30( 0.27) 0.90   22575.0   13100.00
      7    42353.79   63.66  0.30( 0.27) 0.91   25374.5   11801.00
      8    44942.09   73.05  0.30( 0.28) 0.92   30154.7   11530.00
      9    47603.55   83.68  0.30( 0.28) 0.93   37006.6   13010.00
     10    48813.08   88.57  0.30( 0.28) 0.93   40190.6   11330.00
     11    49605.33   94.88  0.30( 0.28) 0.94   44621.6   11130.00
     12    49195.93  102.48  0.30( 0.28) 0.95   48615.6   12330.00
     13    48709.07  109.13  0.30( 0.28) 0.95   51958.8   12400.00
     14    47859.11  117.81  0.30( 0.28) 0.95   55327.5   12201.00
     15    47274.50  121.78  0.30( 0.29) 0.95   56412.2   12111.00
     16    46497.06  127.16  0.30( 0.29) 0.95   57781.7   12101.10
     17    45872.91  131.20  0.30( 0.29) 0.95   58630.7   10400.00
     18    44151.16  139.25  0.30( 0.29) 0.95   59945.9   12010.00
     19    42726.84  145.15  0.30( 0.29) 0.95   60259.6   10210.00
     20    38749.27  171.29  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =    60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    29741.82   22.72  0.30( 0.24) 0.81    6321.7     110.00
      2    32663.64   29.56  0.30( 0.25) 0.82    8898.9     100.00
      3    33922.66   32.44  0.30( 0.25) 0.83   10226.1     400.00
      4    35444.91   36.76  0.30( 0.25) 0.85   12503.8   50150.00
      5    36983.21   41.72  0.30( 0.26) 0.87   14950.7   31100.00
      6    40711.76   57.32  0.30( 0.27) 0.90   22575.0   13100.00
      7    42353.79   63.66  0.30( 0.27) 0.91   25374.5   11801.00
      8    44942.09   73.05  0.30( 0.28) 0.92   30154.7   11530.00
      9    47603.55   83.68  0.30( 0.28) 0.93   37006.6   13010.00
     10    48813.08   88.57  0.30( 0.28) 0.93   40190.6   11330.00
     11    49605.33   94.88  0.30( 0.28) 0.94   44621.6   11130.00
     12    49195.93  102.48  0.30( 0.28) 0.95   48615.6   12330.00
     13    48709.07  109.13  0.30( 0.28) 0.95   51958.8   12400.00
```

```
    14    47859.11  117.81  0.30( 0.28) 0.95   55327.5   12201.00
    15    47274.50  121.78  0.30( 0.29) 0.95   56412.2   12111.00
    16    46497.06  127.16  0.30( 0.29) 0.95   57781.7   12101.10
    17    45872.91  131.20  0.30( 0.29) 0.95   58630.7   10400.00
    18    44151.16  139.25  0.30( 0.29) 0.95   59945.9   12010.00
    19    42726.84  145.15  0.30( 0.29) 0.95   60259.6   10210.00
    20    38749.27  171.29  0.30( 0.29) 0.95   60992.3   10100.00
   TOTAL AREA(ACRES) =     60992.3

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0096
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.98
  CHANNEL FLOW THRU SUBAREA(CFS) =   49605.33
  FLOW VELOCITY(FEET/SEC.) =  19.88   FLOW DEPTH(FEET) =   9.98
  TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =   95.41
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610505Y.DNA                  HZ-505
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      299.75   19.45  0.30( 0.30) 0.99     153.2   50500.00
    TOTAL AREA(ACRES) =      153.2

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    29741.82   23.34    2.199  0.30( 0.24) 0.81    6321.7     110.00
      2    32663.64   30.16    1.865  0.30( 0.25) 0.82    8898.9     100.00
      3    33922.66   33.03    1.791  0.30( 0.25) 0.83   10226.1     400.00
      4    35444.91   37.34    1.681  0.30( 0.25) 0.85   12503.8   50150.00
      5    36983.21   42.29    1.563  0.30( 0.26) 0.87   14950.7   31100.00
      6    40711.76   57.87    1.310  0.30( 0.27) 0.90   22575.0   13100.00
      7    42353.79   64.21    1.259  0.30( 0.27) 0.91   25374.5   11801.00
      8    44942.09   73.59    1.195  0.30( 0.28) 0.92   30154.7   11530.00
      9    47603.55   84.21    1.123  0.30( 0.28) 0.93   37006.6   13010.00
     10    48813.08   89.09    1.090  0.30( 0.28) 0.93   40190.6   11330.00
     11    49605.33   95.41    1.059  0.30( 0.28) 0.94   44621.6   11130.00
     12    49195.93  103.00    1.025  0.30( 0.28) 0.95   48615.6   12330.00
```



```
    13    48709.07  109.65    0.994  0.30( 0.28) 0.95   51958.8   12400.00
    14    47859.11  118.34    0.955  0.30( 0.28) 0.95   55327.5   12201.00
    15    47274.50  122.31    0.941  0.30( 0.29) 0.95   56412.2   12111.00
    16    46497.06  127.70    0.927  0.30( 0.29) 0.95   57781.7   12101.10
    17    45872.91  131.73    0.916  0.30( 0.29) 0.95   58630.7   10400.00
    18    44151.16  139.80    0.896  0.30( 0.29) 0.95   59945.9   12010.00
    19    42726.84  145.70    0.880  0.30( 0.29) 0.95   60259.6   10210.00
    20    38749.27  171.86    0.812  0.30( 0.29) 0.95   60992.3   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      299.75   19.45    2.469  0.30( 0.30) 0.99     153.2   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    6247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28516.99   19.45    2.469  0.30( 0.25) 0.82    5421.8   50500.00
      2    30004.26   23.34    2.199  0.30( 0.25) 0.82    6474.9     110.00
      3    32880.03   30.16    1.865  0.30( 0.25) 0.83    9052.1     100.00
      4    34128.92   33.03    1.791  0.30( 0.25) 0.83   10379.3     400.00
      5    35635.94   37.34    1.681  0.30( 0.26) 0.85   12657.0   50150.00
      6    37158.02   42.29    1.563  0.30( 0.26) 0.87   15103.9   31100.00
      7    40851.67   57.87    1.310  0.30( 0.27) 0.90   22728.2   13100.00
      8    42486.55   64.21    1.259  0.30( 0.27) 0.91   25527.7   11801.00
      9    45066.10   73.59    1.195  0.30( 0.28) 0.92   30307.8   11530.00
     10    47717.65   84.21    1.123  0.30( 0.28) 0.93   37159.8   13010.00
     11    48922.62   89.09    1.090  0.30( 0.28) 0.94   40343.8   11330.00
     12    49710.62   95.41    1.059  0.30( 0.28) 0.94   44774.8   11130.00
     13    49296.43  103.00    1.025  0.30( 0.28) 0.95   48768.8   12330.00
     14    48805.38  109.65    0.994  0.30( 0.28) 0.95   52111.9   12400.00
     15    47949.95  118.34    0.955  0.30( 0.28) 0.95   55480.7   12201.00
     16    47363.46  122.31    0.941  0.30( 0.29) 0.95   56565.4   12111.00
     17    46584.10  127.70    0.927  0.30( 0.29) 0.95   57934.8   12101.10
     18    45958.50  131.73    0.916  0.30( 0.29) 0.95   58783.9   10400.00
     19    44233.86  139.80    0.896  0.30( 0.29) 0.95   60099.1   12010.00
     20    42807.42  145.70    0.880  0.30( 0.29) 0.95   60412.8   10210.00
     21    38820.47  171.86    0.812  0.30( 0.29) 0.95   61145.5   10100.00
    TOTAL AREA(ACRES) =     61145.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    49710.62  Tc(MIN.) =   95.406
  EFFECTIVE AREA(ACRES) =  44774.79  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61145.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.97
  CHANNEL FLOW THRU SUBAREA(CFS) =   49710.62
  FLOW VELOCITY(FEET/SEC.) =  15.98   FLOW DEPTH(FEET) =  11.97
  TRAVEL TIME(MIN.) =   0.41   Tc(MIN.) =   95.82
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610506Y.DNA                    HZ-506
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      107.09   17.21  0.30( 0.30) 1.00      49.6   50600.00
    TOTAL AREA(ACRES) =       49.6

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28516.99   19.94    2.419  0.30( 0.25) 0.82    5421.8   50500.00
      2    30004.26   23.82    2.168  0.30( 0.25) 0.82    6474.9     110.00
      3    32880.03   30.63    1.853  0.30( 0.25) 0.83    9052.1     100.00
      4    34128.92   33.49    1.780  0.30( 0.25) 0.83   10379.3     400.00
      5    35635.94   37.80    1.669  0.30( 0.26) 0.85   12657.0   50150.00
      6    37158.02   42.75    1.554  0.30( 0.26) 0.87   15103.9   31100.00
      7    40851.67   58.31    1.306  0.30( 0.27) 0.90   22728.2   13100.00
      8    42486.55   64.64    1.256  0.30( 0.27) 0.91   25527.7   11801.00
      9    45066.10   74.02    1.192  0.30( 0.28) 0.92   30307.8   11530.00
     10    47717.65   84.63    1.120  0.30( 0.28) 0.93   37159.8   13010.00
     11    48922.62   89.51    1.087  0.30( 0.28) 0.94   40343.8   11330.00
     12    49710.62   95.82    1.057  0.30( 0.28) 0.94   44774.8   11130.00
     13    49296.43  103.42    1.023  0.30( 0.28) 0.95   48768.8   12330.00
     14    48805.38  110.07    0.992  0.30( 0.28) 0.95   52111.9   12400.00
     15    47949.95  118.76    0.953  0.30( 0.28) 0.95   55480.7   12201.00
     16    47363.46  122.73    0.940  0.30( 0.29) 0.95   56565.4   12111.00
     17    46584.10  128.12    0.926  0.30( 0.29) 0.95   57934.8   12101.10
     18    45958.50  132.16    0.915  0.30( 0.29) 0.95   58783.9   10400.00
     19    44233.86  140.23    0.894  0.30( 0.29) 0.95   60099.1   12010.00
     20    42807.42  146.13    0.879  0.30( 0.29) 0.95   60412.8   10210.00
     21    38820.47  172.31    0.811  0.30( 0.29) 0.95   61145.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     107.09   17.21    2.698  0.30( 0.30) 1.00      49.6   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27877.19   17.21    2.698  0.30( 0.25) 0.82    4727.9   50600.00
      2    28611.61   19.94    2.419  0.30( 0.25) 0.82    5471.4   50500.00
      3    30087.65   23.82    2.168  0.30( 0.25) 0.82    6524.5     110.00
      4    32949.37   30.63    1.853  0.30( 0.25) 0.83    9101.7     100.00
      5    34194.98   33.49    1.780  0.30( 0.25) 0.83   10428.9     400.00
      6    35697.08   37.80    1.669  0.30( 0.26) 0.85   12706.6   50150.00
      7    37214.00   42.75    1.554  0.30( 0.26) 0.87   15153.5   31100.00
      8    40896.57   58.31    1.306  0.30( 0.27) 0.90   22777.8   13100.00
      9    42529.21   64.64    1.256  0.30( 0.27) 0.91   25577.3   11801.00
     10    45105.93   74.02    1.192  0.30( 0.28) 0.92   30357.4   11530.00
     11    47754.28   84.63    1.120  0.30( 0.28) 0.93   37209.4   13010.00
     12    48957.77   89.51    1.087  0.30( 0.28) 0.94   40393.4   11330.00
     13    49744.44   95.82    1.057  0.30( 0.28) 0.94   44824.4   11130.00
     14    49328.70  103.42    1.023  0.30( 0.28) 0.95   48818.3   12330.00
     15    48836.30  110.07    0.992  0.30( 0.28) 0.95   52161.5   12400.00
     16    47979.10  118.76    0.953  0.30( 0.28) 0.95   55530.3   12201.00
     17    47392.04  122.73    0.940  0.30( 0.29) 0.95   56615.0   12111.00
     18    46612.05  128.12    0.926  0.30( 0.29) 0.95   57984.4   12101.10
     19    45985.98  132.16    0.915  0.30( 0.29) 0.95   58833.5   10400.00
     20    44260.41  140.23    0.894  0.30( 0.29) 0.95   60148.7   12010.00
     21    42833.27  146.13    0.879  0.30( 0.29) 0.95   60462.4   10210.00
     22    38843.29  172.31    0.811  0.30( 0.29) 0.95   61195.1   10100.00
   TOTAL AREA(ACRES) =     61195.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    49744.44  Tc(MIN.) =   95.818
  EFFECTIVE AREA(ACRES) =  44824.38  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    61195.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1601.97   CHANNEL SLOPE =  0.0075
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.73
  CHANNEL FLOW THRU SUBAREA(CFS) =   49744.44
  FLOW VELOCITY(FEET/SEC.) =  18.27   FLOW DEPTH(FEET) =  10.73
  TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =   97.28
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.051
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

HZ-209

| LAND USE | GROUP | (ACRES) | (INCH/HR) | (DECIMAL) | CN |
|---|---|---|---|---|---|
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 0.20 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 4.00 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |
| "GRASS" | B | 2.00 | 0.30 | 1.000 | 69 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 9.70 | 0.30 | 1.000 | 66 |
| NATURAL FAIR COVER | | | | | |
| "OPEN BRUSH" | B | 2.60 | 0.30 | 1.000 | 66 |
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,STRAIGHT ROW" | B | 1.80 | 0.30 | 1.000 | 81 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 20.30 SUBAREA RUNOFF(CFS) = 13.72
EFFECTIVE AREA(ACRES) = 44844.68 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 61215.4 PEAK FLOW RATE(CFS) = 49744.44
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81
---
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========

HZ-209

MAINLINE Tc(MIN.) = 97.28
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.051
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| AGRICULTURAL POOR COVER | | | | | |
| "ROW CROPS,STRAIGHT ROW" | B | 3.50 | 0.30 | 1.000 | 81 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 7.20 | 0.30 | 1.000 | 65 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 5.80 | 0.30 | 1.000 | 65 |
| NATURAL FAIR COVER | | | | | |
| "WOODLAND,GRASS" | B | 0.10 | 0.30 | 1.000 | 65 |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 11.22
EFFECTIVE AREA(ACRES) = 44861.28 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 61232.0 PEAK FLOW RATE(CFS) = 49744.44
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 12
---
>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 15.1
---
>>>>>DEFINE MEMORY BANK # 1 <<<<<
==========



S34.2

PEAK FLOWRATE TABLE FILE NAME: 2p00evbb.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 842.59 | 9.80 | 0.30( 0.11) | 0.38 | 246.8 | 429.00 |
| 2 | 890.71 | 11.26 | 0.30( 0.11) | 0.38 | 283.5 | 425.00 |
| 3 | 905.71 | 11.71 | 0.30( 0.11) | 0.38 | 294.8 | 400.00 |
| 4 | 943.25 | 13.11 | 0.30( 0.11) | 0.38 | 330.1 | 300.00 |
| 5 | 1001.68 | 18.01 | 0.30( 0.11) | 0.38 | 440.3 | 210.00 |
| 6 | 980.97 | 20.12 | 0.30( 0.11) | 0.38 | 468.0 | 410.00 |
| 7 | 972.01 | 21.00 | 0.30( 0.11) | 0.38 | 479.3 | 200.00 |
| 8 | 969.62 | 21.61 | 0.30( 0.11) | 0.38 | 486.7 | 230.00 |
| 9 | 947.95 | 22.69 | 0.30( 0.11) | 0.37 | 491.2 | 220.50 |

TOTAL AREA(ACRES) = 491.2

**********
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 11
---
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27877.19 | 18.97 | 2.518 | 0.30( 0.25) | 0.82 | 4764.8 | 50600.00 |
| 2 | 28611.61 | 21.69 | 2.304 | 0.30( 0.25) | 0.82 | 5508.3 | 50500.00 |
| 3 | 30087.65 | 25.54 | 2.068 | 0.30( 0.25) | 0.82 | 6561.4 | 110.00 |
| 4 | 32949.37 | 32.30 | 1.810 | 0.30( 0.25) | 0.83 | 9138.6 | 100.00 |
| 5 | 34194.98 | 35.15 | 1.737 | 0.30( 0.25) | 0.83 | 10465.8 | 400.00 |
| 6 | 35697.08 | 39.43 | 1.628 | 0.30( 0.26) | 0.85 | 12743.5 | 50150.00 |
| 7 | 37214.00 | 44.35 | 1.519 | 0.30( 0.26) | 0.87 | 15190.4 | 31100.00 |
| 8 | 40896.57 | 59.87 | 1.288 | 0.30( 0.27) | 0.90 | 22814.7 | 13100.00 |
| 9 | 42529.21 | 66.18 | 1.245 | 0.30( 0.27) | 0.91 | 25614.2 | 11801.00 |
| 10 | 45105.93 | 75.53 | 1.182 | 0.30( 0.28) | 0.92 | 30394.3 | 11530.00 |
| 11 | 47754.28 | 86.11 | 1.110 | 0.30( 0.28) | 0.93 | 37246.3 | 13010.00 |
| 12 | 48957.77 | 90.98 | 1.080 | 0.30( 0.28) | 0.94 | 40430.3 | 11330.00 |
| 13 | 49744.44 | 97.28 | 1.051 | 0.30( 0.28) | 0.94 | 44861.3 | 11130.00 |
| 14 | 49328.70 | 104.88 | 1.016 | 0.30( 0.28) | 0.95 | 48855.2 | 12330.00 |
| 15 | 48836.30 | 111.54 | 0.986 | 0.30( 0.28) | 0.95 | 52198.4 | 12400.00 |
| 16 | 47979.10 | 120.24 | 0.946 | 0.30( 0.28) | 0.95 | 55567.2 | 12201.00 |
| 17 | 47392.04 | 124.22 | 0.936 | 0.30( 0.29) | 0.95 | 56651.9 | 12111.00 |
| 18 | 46612.05 | 129.61 | 0.922 | 0.30( 0.29) | 0.95 | 58021.3 | 12101.10 |
| 19 | 45985.98 | 133.66 | 0.911 | 0.30( 0.29) | 0.95 | 58870.4 | 10400.00 |
| 20 | 44260.41 | 141.74 | 0.890 | 0.30( 0.29) | 0.95 | 60185.6 | 12010.00 |
| 21 | 42833.27 | 147.67 | 0.875 | 0.30( 0.29) | 0.95 | 60499.3 | 10210.00 |
| 22 | 38843.29 | 173.89 | 0.807 | 0.30( 0.29) | 0.95 | 61232.0 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120708.25 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 842.59 | 9.80 | 3.858 | 0.30( 0.11) | 0.38 | 246.8 | 429.00 |
| 2 | 890.71 | 11.26 | 3.560 | 0.30( 0.11) | 0.38 | 283.5 | 425.00 |
| 3 | 905.71 | 11.71 | 3.484 | 0.30( 0.11) | 0.38 | 294.8 | 400.00 |
| 4 | 943.25 | 13.11 | 3.246 | 0.30( 0.11) | 0.38 | 330.1 | 300.00 |
| 5 | 1001.68 | 18.01 | 2.616 | 0.30( 0.11) | 0.38 | 440.3 | 210.00 |
| 6 | 980.97 | 20.12 | 2.406 | 0.30( 0.11) | 0.38 | 468.0 | 410.00 |
| 7 | 972.01 | 21.00 | 2.349 | 0.30( 0.11) | 0.38 | 479.3 | 200.00 |

```
     8      969.62   21.61    2.309  0.30( 0.11) 0.38     486.7     230.00
     9      947.95   22.69    2.240  0.30( 0.11) 0.37     491.2     220.50
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13406.00 =   11903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
      1    23734.79    9.80    3.858  0.30( 0.23) 0.78    2707.6     429.00
      2    25032.09   11.26    3.560  0.30( 0.23) 0.78    3112.4     425.00
      3    25428.96   11.71    3.484  0.30( 0.23) 0.78    3235.9     400.00
      4    26376.03   13.11    3.246  0.30( 0.23) 0.78    3622.2     300.00
      5    28609.80   18.01    2.616  0.30( 0.23) 0.78    4962.9     210.00
      6    28869.38   18.97    2.518  0.30( 0.23) 0.78    5217.8   50600.00
      7    29166.60   20.12    2.406  0.30( 0.23) 0.78    5545.0     410.00
      8    29396.12   21.00    2.349  0.30( 0.24) 0.78    5797.8     200.00
      9    29559.73   21.61    2.309  0.30( 0.24) 0.78    5973.2     230.00
     10    29579.63   21.69    2.304  0.30( 0.24) 0.78    5995.3   50500.00
     11    29943.17   22.69    2.240  0.30( 0.24) 0.79    6273.2     220.50
     12    30958.83   25.54    2.068  0.30( 0.24) 0.79    7052.6     110.00
     13    33705.74   32.30    1.810  0.30( 0.24) 0.80    9629.8     100.00
     14    34918.91   35.15    1.737  0.30( 0.24) 0.81   10957.0     400.00
     15    36372.18   39.43    1.628  0.30( 0.25) 0.83   13234.7   50150.00
     16    37840.66   44.35    1.519  0.30( 0.26) 0.86   15681.6   31100.00
     17    41420.53   59.87    1.288  0.30( 0.27) 0.89   23305.9   13100.00
     18    43033.91   66.18    1.245  0.30( 0.27) 0.90   26105.4   11801.00
     19    45582.44   75.53    1.182  0.30( 0.27) 0.91   30885.5   11530.00
     20    48198.87   86.11    1.110  0.30( 0.28) 0.92   37737.5   13010.00
     21    49388.65   90.98    1.080  0.30( 0.28) 0.93   40921.5   11330.00
     22    50162.50   97.28    1.051  0.30( 0.28) 0.93   45352.5   11130.00
     23    49731.29  104.88    1.016  0.30( 0.28) 0.94   49346.4   12330.00
     24    49225.34  111.54    0.986  0.30( 0.28) 0.94   52689.6   12400.00
     25    48350.66  120.24    0.946  0.30( 0.28) 0.95   56058.4   12201.00
     26    47758.99  124.22    0.936  0.30( 0.28) 0.95   57143.1   12111.00
     27    46972.75  129.61    0.922  0.30( 0.28) 0.95   58512.5   12101.10
     28    46342.00  133.66    0.911  0.30( 0.28) 0.95   59361.6   10400.00
     29    44607.05  141.74    0.890  0.30( 0.28) 0.95   60676.8   12010.00
     30    43173.05  147.67    0.875  0.30( 0.28) 0.95   60990.5   10210.00
     31    39152.70  173.89    0.807  0.30( 0.28) 0.95   61723.2   10100.00
    TOTAL AREA(ACRES) =     61723.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    50162.50  Tc(MIN.) =   97.279
  EFFECTIVE AREA(ACRES) =  45352.48  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    61723.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.88
```



S36-86.5

```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.039
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.00      0.30      1.000     -
  USER-DEFINED               -        3.30      0.30      1.000     -
  USER-DEFINED               -        0.40      0.30      0.100     -
  USER-DEFINED               -        1.40      0.30      1.000     -
  USER-DEFINED               -        0.30      0.30      0.100     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   50166.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.27
  AVERAGE FLOW DEPTH(FEET) =  11.88   TRAVEL TIME(MIN.) =   2.52
  Tc(MIN.) =   99.80
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    8.42
  EFFECTIVE AREA(ACRES) =  45364.88     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    61735.6         PEAK FLOW RATE(CFS) =   50162.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.88   FLOW VELOCITY(FEET/SEC.) =  16.27
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0610507Y.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)     NODE
      1      459.67   19.60  0.30( 0.30) 0.99     236.8   50700.00
    TOTAL AREA(ACRES) =      236.8

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
      1    23734.79   13.01    3.262  0.30( 0.23) 0.78    2720.0     429.00
      2    25032.09   14.42    3.023  0.30( 0.23) 0.78    3124.8     425.00
      3    25428.96   14.85    2.949  0.30( 0.23) 0.78    3248.3     400.00
```

HZ-507

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 26376.03 | 16.21 | 2.800 | 0.30( 0.23) | 0.78 | 3634.6 | 300.00 |
| 5 | 28609.80 | 21.03 | 2.347 | 0.30( 0.23) | 0.78 | 4975.3 | 210.00 |
| 6 | 28869.38 | 21.98 | 2.286 | 0.30( 0.23) | 0.78 | 5230.2 | 50600.00 |
| 7 | 29166.60 | 23.12 | 2.213 | 0.30( 0.24) | 0.78 | 5557.4 | 410.00 |
| 8 | 29396.12 | 23.99 | 2.157 | 0.30( 0.24) | 0.78 | 5810.2 | 200.00 |
| 9 | 29559.73 | 24.60 | 2.118 | 0.30( 0.24) | 0.78 | 5985.6 | 230.00 |
| 10 | 29579.63 | 24.68 | 2.113 | 0.30( 0.24) | 0.78 | 6007.7 | 50500.00 |
| 11 | 29943.17 | 25.67 | 2.062 | 0.30( 0.24) | 0.79 | 6285.6 | 220.50 |
| 12 | 30958.83 | 28.48 | 1.937 | 0.30( 0.24) | 0.79 | 7065.0 | 110.00 |
| 13 | 33705.74 | 35.16 | 1.737 | 0.30( 0.24) | 0.81 | 9642.2 | 100.00 |
| 14 | 34918.91 | 37.97 | 1.665 | 0.30( 0.24) | 0.81 | 10969.4 | 400.00 |
| 15 | 36372.18 | 42.22 | 1.565 | 0.30( 0.25) | 0.83 | 13247.1 | 50150.00 |
| 16 | 37840.66 | 47.11 | 1.459 | 0.30( 0.26) | 0.86 | 15694.0 | 31100.00 |
| 17 | 41420.53 | 62.55 | 1.270 | 0.30( 0.27) | 0.89 | 23318.3 | 13100.00 |
| 18 | 43033.91 | 68.82 | 1.227 | 0.30( 0.27) | 0.90 | 26117.8 | 11801.00 |
| 19 | 45582.44 | 78.12 | 1.164 | 0.30( 0.27) | 0.91 | 30897.9 | 11530.00 |
| 20 | 48198.87 | 88.66 | 1.093 | 0.30( 0.28) | 0.92 | 37749.9 | 13010.00 |
| 21 | 49388.65 | 93.51 | 1.068 | 0.30( 0.28) | 0.93 | 40933.9 | 11330.00 |
| 22 | 50162.50 | 99.80 | 1.039 | 0.30( 0.28) | 0.93 | 45364.9 | 11130.00 |
| 23 | 49731.29 | 107.41 | 1.005 | 0.30( 0.28) | 0.94 | 49358.8 | 12330.00 |
| 24 | 49225.34 | 114.07 | 0.974 | 0.30( 0.28) | 0.94 | 52702.0 | 12400.00 |
| 25 | 48350.66 | 122.78 | 0.940 | 0.30( 0.28) | 0.95 | 56070.8 | 12201.00 |
| 26 | 47758.99 | 126.77 | 0.929 | 0.30( 0.28) | 0.95 | 57155.5 | 12111.00 |
| 27 | 46972.75 | 132.18 | 0.915 | 0.30( 0.28) | 0.95 | 58524.9 | 12101.10 |
| 28 | 46342.00 | 136.24 | 0.905 | 0.30( 0.28) | 0.95 | 59374.0 | 10400.00 |
| 29 | 44607.05 | 144.36 | 0.884 | 0.30( 0.28) | 0.95 | 60689.2 | 12010.00 |
| 30 | 43173.05 | 150.31 | 0.868 | 0.30( 0.28) | 0.95 | 61002.9 | 10210.00 |
| 31 | 39152.70 | 176.61 | 0.800 | 0.30( 0.28) | 0.95 | 61735.6 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 459.67 | 19.60 | 2.454 | 0.30( 0.30) | 0.99 | 236.8 | 50700.00 |

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24154.38 | 13.01 | 3.262 | 0.30( 0.24) | 0.79 | 2877.3 | 429.00 |
| 2 | 25459.50 | 14.42 | 3.023 | 0.30( 0.24) | 0.79 | 3299.0 | 425.00 |
| 3 | 25857.29 | 14.85 | 2.949 | 0.30( 0.24) | 0.79 | 3427.7 | 400.00 |
| 4 | 26817.29 | 16.21 | 2.800 | 0.30( 0.24) | 0.79 | 3830.5 | 300.00 |
| 5 | 28407.05 | 19.60 | 2.454 | 0.30( 0.24) | 0.79 | 4814.5 | 50700.00 |
| 6 | 29046.67 | 21.03 | 2.347 | 0.30( 0.24) | 0.79 | 5212.0 | 210.00 |
| 7 | 29293.16 | 21.98 | 2.286 | 0.30( 0.24) | 0.79 | 5467.0 | 50600.00 |
| 8 | 29574.88 | 23.12 | 2.213 | 0.30( 0.24) | 0.79 | 5794.2 | 410.00 |
| 9 | 29792.42 | 23.99 | 2.157 | 0.30( 0.24) | 0.79 | 6047.0 | 200.00 |
| 10 | 29947.70 | 24.60 | 2.118 | 0.30( 0.24) | 0.79 | 6222.4 | 230.00 |
| 11 | 29966.53 | 24.68 | 2.113 | 0.30( 0.24) | 0.79 | 6244.4 | 50500.00 |
| 12 | 30319.33 | 25.67 | 2.062 | 0.30( 0.24) | 0.79 | 6522.3 | 220.50 |
| 13 | 31308.20 | 28.48 | 1.937 | 0.30( 0.24) | 0.80 | 7301.8 | 110.00 |
| 14 | 34012.53 | 35.16 | 1.737 | 0.30( 0.24) | 0.81 | 9879.0 | 100.00 |
| 15 | 35210.35 | 37.97 | 1.665 | 0.30( 0.25) | 0.82 | 11206.1 | 400.00 |
| 16 | 36642.35 | 42.22 | 1.565 | 0.30( 0.25) | 0.84 | 13483.8 | 50150.00 |
| 17 | 38088.32 | 47.11 | 1.459 | 0.30( 0.26) | 0.86 | 15930.7 | 31100.00 |
| 18 | 41627.75 | 62.55 | 1.270 | 0.30( 0.27) | 0.89 | 23555.0 | 13100.00 |
| 19 | 43232.07 | 68.82 | 1.227 | 0.30( 0.27) | 0.90 | 26354.6 | 11801.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | 45767.18 | 78.12 | 1.164 | 0.30( 0.27) | 0.91 | 31134.7 | 11530.00 |
| 21 | 48368.41 | 88.66 | 1.093 | 0.30( 0.28) | 0.92 | 37986.7 | 13010.00 |
| 22 | 49552.85 | 93.51 | 1.068 | 0.30( 0.28) | 0.93 | 41170.6 | 11330.00 |
| 23 | 50320.58 | 99.80 | 1.039 | 0.30( 0.28) | 0.94 | 45601.7 | 11130.00 |
| 24 | 49881.96 | 107.41 | 1.005 | 0.30( 0.28) | 0.94 | 49595.6 | 12330.00 |
| 25 | 49369.52 | 114.07 | 0.974 | 0.30( 0.28) | 0.94 | 52938.8 | 12400.00 |
| 26 | 48487.52 | 122.78 | 0.940 | 0.30( 0.28) | 0.95 | 56307.6 | 12201.00 |
| 27 | 47893.64 | 126.77 | 0.929 | 0.30( 0.28) | 0.95 | 57392.3 | 12111.00 |
| 28 | 47104.41 | 132.18 | 0.915 | 0.30( 0.28) | 0.95 | 58761.7 | 12101.10 |
| 29 | 46471.41 | 136.24 | 0.905 | 0.30( 0.28) | 0.95 | 59610.8 | 10400.00 |
| 30 | 44731.96 | 144.36 | 0.884 | 0.30( 0.28) | 0.95 | 60925.9 | 12010.00 |
| 31 | 43294.66 | 150.31 | 0.868 | 0.30( 0.28) | 0.95 | 61239.7 | 10210.00 |
| 32 | 39259.73 | 176.61 | 0.800 | 0.30( 0.28) | 0.95 | 61972.4 | 10100.00 |

TOTAL AREA(ACRES) = 61972.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 50320.58 Tc(MIN.) = 99.797
EFFECTIVE AREA(ACRES) = 45601.66 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 61972.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

**********
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.41
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.034 S36-86.6
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 0.40 | 0.30 | 1.000 | - |
| USER-DEFINED | - | 2.90 | 0.30 | 1.000 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 50321.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.05
AVERAGE FLOW DEPTH(FEET) = 13.41 TRAVEL TIME(MIN.) = 1.13
Tc(MIN.) = 100.93
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 2.18
EFFECTIVE AREA(ACRES) = 45604.96 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 61975.7 PEAK FLOW RATE(CFS) = 50320.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 13.41 FLOW VELOCITY(FEET/SEC.) = 14.05
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124119.34 FEET.

```
****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
```

S36

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 2776.71 | 27.02 | 0.30( 0.27) | 0.90 | 1487.3 | 110.00 |
| 2 | 2879.22 | 29.39 | 0.30( 0.27) | 0.90 | 1661.9 | 100.00 |
| 3 | 2888.80 | 30.54 | 0.30( 0.27) | 0.90 | 1737.8 | 100.00 |
| 4 | 2912.73 | 33.54 | 0.30( 0.27) | 0.91 | 1918.1 | 130.00 |
| 5 | 3088.57 | 46.09 | 0.30( 0.28) | 0.93 | 2647.7 | 20100.00 |
| 6 | 3029.31 | 51.27 | 0.30( 0.28) | 0.93 | 2829.1 | 13600.00 |
| 7 | 2905.42 | 85.17 | 0.30( 0.28) | 0.93 | 3796.8 | 13510.00 |
| 8 | 2757.25 | 93.58 | 0.30( 0.28) | 0.93 | 3859.7 | 13500.00 |

TOTAL AREA(ACRES) =  3859.7

```
****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 24154.38 | 14.44 | 3.019 | 0.30( 0.24) | 0.79 | 2880.6 | 429.00 |
| 2 | 25459.50 | 15.82 | 2.840 | 0.30( 0.24) | 0.79 | 3302.3 | 425.00 |
| 3 | 25857.29 | 16.25 | 2.796 | 0.30( 0.24) | 0.79 | 3431.0 | 400.00 |
| 4 | 26817.29 | 17.59 | 2.659 | 0.30( 0.24) | 0.79 | 3833.8 | 300.00 |
| 5 | 28407.05 | 20.95 | 2.352 | 0.30( 0.24) | 0.79 | 4817.8 | 50700.00 |
| 6 | 29046.67 | 22.37 | 2.261 | 0.30( 0.24) | 0.79 | 5215.3 | 210.00 |
| 7 | 29293.16 | 23.32 | 2.200 | 0.30( 0.24) | 0.79 | 5470.3 | 50600.00 |
| 8 | 29574.88 | 24.45 | 2.127 | 0.30( 0.24) | 0.79 | 5797.5 | 410.00 |
| 9 | 29792.42 | 25.33 | 2.077 | 0.30( 0.24) | 0.79 | 6050.3 | 200.00 |
| 10 | 29947.70 | 25.93 | 2.050 | 0.30( 0.24) | 0.79 | 6225.7 | 230.00 |
| 11 | 29966.53 | 26.01 | 2.047 | 0.30( 0.24) | 0.79 | 6247.7 | 50500.00 |
| 12 | 30319.33 | 26.99 | 2.003 | 0.30( 0.24) | 0.79 | 6525.6 | 220.50 |
| 13 | 31308.20 | 29.80 | 1.878 | 0.30( 0.24) | 0.80 | 7305.1 | 110.00 |
| 14 | 34012.53 | 36.44 | 1.704 | 0.30( 0.24) | 0.81 | 9882.3 | 100.00 |
| 15 | 35210.35 | 39.24 | 1.633 | 0.30( 0.25) | 0.82 | 11209.4 | 400.00 |
| 16 | 36642.35 | 43.47 | 1.538 | 0.30( 0.25) | 0.84 | 13487.1 | 50150.00 |
| 17 | 38088.32 | 48.34 | 1.433 | 0.30( 0.26) | 0.86 | 15934.0 | 31100.00 |
| 18 | 41627.75 | 63.74 | 1.262 | 0.30( 0.27) | 0.89 | 23558.3 | 13100.00 |
| 19 | 43232.07 | 70.01 | 1.219 | 0.30( 0.27) | 0.90 | 26357.9 | 11801.00 |
| 20 | 45767.18 | 79.29 | 1.156 | 0.30( 0.27) | 0.91 | 31138.0 | 11530.00 |
| 21 | 48368.41 | 89.81 | 1.085 | 0.30( 0.28) | 0.92 | 37990.0 | 13010.00 |
| 22 | 49552.85 | 94.64 | 1.063 | 0.30( 0.28) | 0.93 | 41173.9 | 11330.00 |
| 23 | 50320.58 | 100.93 | 1.034 | 0.30( 0.28) | 0.94 | 45605.0 | 11130.00 |
| 24 | 49881.96 | 108.54 | 0.999 | 0.30( 0.28) | 0.94 | 49598.9 | 12330.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | 49369.52 | 115.21 | 0.969 | 0.30( 0.28) | 0.94 | 52942.1 | 12400.00 |
| 26 | 48487.52 | 123.93 | 0.937 | 0.30( 0.28) | 0.95 | 56310.9 | 12201.00 |
| 27 | 47893.64 | 127.92 | 0.926 | 0.30( 0.28) | 0.95 | 57395.6 | 12111.00 |
| 28 | 47104.41 | 133.33 | 0.912 | 0.30( 0.28) | 0.95 | 58765.0 | 12101.10 |
| 29 | 46471.41 | 137.40 | 0.902 | 0.30( 0.28) | 0.95 | 59614.1 | 10400.00 |
| 30 | 44731.96 | 145.53 | 0.881 | 0.30( 0.28) | 0.95 | 60929.2 | 12010.00 |
| 31 | 43294.66 | 151.49 | 0.865 | 0.30( 0.28) | 0.95 | 61243.0 | 10210.00 |
| 32 | 39259.73 | 177.84 | 0.797 | 0.30( 0.28) | 0.95 | 61975.7 | 10100.00 |

LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 2776.71 | 27.02 | 2.002 | 0.30( 0.27) | 0.90 | 1487.3 | 110.00 |
| 2 | 2879.22 | 29.39 | 1.896 | 0.30( 0.27) | 0.90 | 1661.9 | 100.00 |
| 3 | 2888.80 | 30.54 | 1.855 | 0.30( 0.27) | 0.90 | 1737.8 | 100.00 |
| 4 | 2912.73 | 33.54 | 1.778 | 0.30( 0.27) | 0.91 | 1918.1 | 130.00 |
| 5 | 3088.57 | 46.09 | 1.482 | 0.30( 0.28) | 0.93 | 2647.7 | 20100.00 |
| 6 | 3029.31 | 51.27 | 1.383 | 0.30( 0.28) | 0.93 | 2829.1 | 13600.00 |
| 7 | 2905.42 | 85.17 | 1.117 | 0.30( 0.28) | 0.93 | 3796.8 | 13510.00 |
| 8 | 2757.25 | 93.58 | 1.068 | 0.30( 0.28) | 0.93 | 3859.7 | 13500.00 |

LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =  41710.10 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 26510.51 | 14.44 | 3.019 | 0.30( 0.24) | 0.82 | 3675.5 | 429.00 |
| 2 | 27872.79 | 15.82 | 2.840 | 0.30( 0.24) | 0.82 | 4173.3 | 425.00 |
| 3 | 28293.49 | 16.25 | 2.796 | 0.30( 0.24) | 0.82 | 4325.5 | 400.00 |
| 4 | 29311.50 | 17.59 | 2.659 | 0.30( 0.24) | 0.81 | 4802.1 | 300.00 |
| 5 | 30995.62 | 20.95 | 2.352 | 0.30( 0.24) | 0.81 | 5971.2 | 50700.00 |
| 6 | 31689.54 | 22.37 | 2.261 | 0.30( 0.24) | 0.81 | 6446.9 | 210.00 |
| 7 | 31963.87 | 23.32 | 2.200 | 0.30( 0.24) | 0.81 | 6754.3 | 50600.00 |
| 8 | 32269.62 | 24.45 | 2.127 | 0.30( 0.24) | 0.81 | 7143.6 | 410.00 |
| 9 | 32508.69 | 25.33 | 2.077 | 0.30( 0.24) | 0.81 | 7444.4 | 200.00 |
| 10 | 32687.40 | 25.93 | 2.050 | 0.30( 0.24) | 0.81 | 7653.2 | 230.00 |
| 11 | 32709.08 | 26.01 | 2.047 | 0.30( 0.24) | 0.81 | 7679.6 | 50500.00 |
| 12 | 33095.30 | 26.99 | 2.003 | 0.30( 0.24) | 0.81 | 8011.6 | 220.50 |
| 13 | 33104.34 | 27.02 | 2.002 | 0.30( 0.24) | 0.81 | 8019.5 | 110.00 |
| 14 | 34045.48 | 29.39 | 1.896 | 0.30( 0.24) | 0.81 | 8855.1 | 100.00 |
| 15 | 34190.78 | 29.80 | 1.878 | 0.30( 0.24) | 0.82 | 8993.6 | 110.00 |
| 16 | 34500.10 | 30.54 | 1.855 | 0.30( 0.24) | 0.82 | 9331.7 | 100.00 |
| 17 | 35745.42 | 33.54 | 1.778 | 0.30( 0.25) | 0.82 | 10676.0 | 130.00 |
| 18 | 36965.88 | 36.44 | 1.704 | 0.30( 0.25) | 0.83 | 11968.9 | 100.00 |
| 19 | 38202.92 | 39.24 | 1.633 | 0.30( 0.25) | 0.83 | 13458.8 | 400.00 |
| 20 | 39694.18 | 43.47 | 1.538 | 0.30( 0.26) | 0.85 | 15982.4 | 50150.00 |
| 21 | 40508.41 | 46.09 | 1.482 | 0.30( 0.26) | 0.86 | 17450.5 | 20100.00 |
| 22 | 41151.10 | 48.34 | 1.433 | 0.30( 0.26) | 0.87 | 18660.7 | 31100.00 |
| 23 | 41789.68 | 51.27 | 1.383 | 0.30( 0.26) | 0.87 | 20210.8 | 13600.00 |
| 24 | 44611.46 | 63.74 | 1.262 | 0.30( 0.27) | 0.89 | 26743.6 | 13100.00 |
| 25 | 46192.91 | 70.01 | 1.219 | 0.30( 0.27) | 0.90 | 29721.9 | 11801.00 |
| 26 | 48694.11 | 79.29 | 1.156 | 0.30( 0.27) | 0.91 | 34766.9 | 11530.00 |
| 27 | 50127.73 | 85.17 | 1.117 | 0.30( 0.28) | 0.92 | 38767.8 | 13510.00 |
| 28 | 51192.22 | 89.81 | 1.085 | 0.30( 0.28) | 0.92 | 41821.4 | 13010.00 |
| 29 | 52050.86 | 93.58 | 1.068 | 0.30( 0.28) | 0.93 | 44336.8 | 13500.00 |
| 30 | 52293.18 | 94.64 | 1.063 | 0.30( 0.28) | 0.93 | 45033.6 | 11330.00 |
| 31 | 52960.45 | 100.93 | 1.034 | 0.30( 0.28) | 0.94 | 49464.6 | 11130.00 |
| 32 | 52400.13 | 108.54 | 0.999 | 0.30( 0.28) | 0.94 | 53458.6 | 12330.00 |

```
     33    51781.07  115.21    0.969  0.30( 0.28) 0.94   56801.8   12400.00
     34    50786.72  123.93    0.937  0.30( 0.28) 0.94   60170.6   12201.00
     35    50156.50  127.92    0.926  0.30( 0.28) 0.95   61255.2   12111.00
     36    49317.98  133.33    0.912  0.30( 0.28) 0.95   62624.7   12101.10
     37    48648.01  137.40    0.902  0.30( 0.28) 0.95   63473.8   10400.00
     38    46834.54  145.53    0.881  0.30( 0.28) 0.95   64788.9   12010.00
     39    45342.96  151.49    0.865  0.30( 0.28) 0.95   65102.6   10210.00
     40    41068.25  177.84    0.797  0.30( 0.28) 0.95   65835.4   10100.00
    TOTAL AREA(ACRES) =     65835.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    52960.45  Tc(MIN.) =  100.927
  EFFECTIVE AREA(ACRES) =  49464.65  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    65835.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.10
  CHANNEL FLOW THRU SUBAREA(CFS) =   52960.45
  FLOW VELOCITY(FEET/SEC.) =  20.94   FLOW DEPTH(FEET) =  10.10
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  101.06
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101b.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      683.96   36.50  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```

HZ-101



```
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    26510.51   14.61    2.990  0.30( 0.24) 0.82    3675.5     429.00
    2    27872.79   15.99    2.823  0.30( 0.24) 0.82    4173.3     425.00
    3    28293.49   16.41    2.779  0.30( 0.24) 0.82    4325.5     400.00
    4    29311.50   17.76    2.642  0.30( 0.24) 0.81    4802.1     300.00
    5    30995.62   21.11    2.341  0.30( 0.24) 0.81    5971.2   50700.00
    6    31689.54   22.53    2.250  0.30( 0.24) 0.81    6446.9     210.00
    7    31963.87   23.48    2.189  0.30( 0.24) 0.81    6754.3   50600.00
    8    32269.62   24.61    2.117  0.30( 0.24) 0.81    7143.6     410.00
    9    32508.69   25.48    2.070  0.30( 0.24) 0.81    7444.4     200.00
   10    32687.40   26.09    2.043  0.30( 0.24) 0.81    7653.2     230.00
   11    32709.08   26.17    2.040  0.30( 0.24) 0.81    7679.6   50500.00
   12    33095.30   27.15    1.996  0.30( 0.24) 0.81    8011.6     220.50
   13    33104.34   27.18    1.995  0.30( 0.24) 0.81    8019.5     110.00
   14    34045.48   29.55    1.889  0.30( 0.24) 0.81    8855.1     100.00
   15    34190.78   29.95    1.871  0.30( 0.24) 0.82    8993.6     110.00
   16    34500.10   30.70    1.851  0.30( 0.24) 0.82    9331.7     100.00
   17    35745.42   33.70    1.774  0.30( 0.25) 0.82   10676.0     130.00
   18    36965.88   36.59    1.700  0.30( 0.25) 0.83   11968.9     100.00
   19    38202.92   39.39    1.629  0.30( 0.25) 0.83   13458.8     400.00
   20    39694.18   43.62    1.535  0.30( 0.26) 0.85   15982.4   50150.00
   21    40508.41   46.24    1.478  0.30( 0.26) 0.86   17450.5   20100.00
   22    41151.10   48.49    1.430  0.30( 0.26) 0.87   18660.7   31100.00
   23    41789.68   51.41    1.381  0.30( 0.26) 0.87   20210.8   13600.00
   24    44611.46   63.89    1.261  0.30( 0.27) 0.89   26743.6   13100.00
   25    46192.91   70.15    1.218  0.30( 0.27) 0.90   29721.9   11801.00
   26    48694.11   79.42    1.156  0.30( 0.27) 0.91   34766.9   11530.00
   27    50127.73   85.31    1.116  0.30( 0.28) 0.92   38767.8   13510.00
   28    51192.22   89.94    1.084  0.30( 0.28) 0.92   41821.4   13010.00
   29    52050.86   93.72    1.067  0.30( 0.28) 0.93   44336.8   13500.00
   30    52293.18   94.78    1.062  0.30( 0.28) 0.93   45033.6   11330.00
   31    52960.45  101.06    1.033  0.30( 0.28) 0.94   49464.6   11130.00
   32    52400.13  108.68    0.999  0.30( 0.28) 0.94   53458.6   12330.00
   33    51781.07  115.34    0.968  0.30( 0.28) 0.94   56801.8   12400.00
   34    50786.72  124.06    0.936  0.30( 0.28) 0.94   60170.6   12201.00
   35    50156.50  128.06    0.926  0.30( 0.28) 0.95   61255.2   12111.00
   36    49317.98  133.47    0.912  0.30( 0.28) 0.95   62624.7   12101.10
   37    48648.01  137.53    0.901  0.30( 0.28) 0.95   63473.8   10400.00
   38    46834.54  145.67    0.880  0.30( 0.28) 0.95   64788.9   12010.00
   39    45342.96  151.63    0.865  0.30( 0.28) 0.95   65102.6   10210.00
   40    41068.25  177.98    0.796  0.30( 0.28) 0.95   65835.4   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      683.96   36.50    1.703  0.30( 0.30) 0.98     591.0   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    27034.73   14.61    2.990  0.30( 0.25) 0.83    3912.0     429.00
    2    28410.87   15.99    2.823  0.30( 0.25) 0.83    4432.2     425.00
    3    28836.37   16.41    2.779  0.30( 0.25) 0.82    4591.3     400.00
    4    29866.34   17.76    2.642  0.30( 0.25) 0.82    5089.6     300.00
    5    31570.83   21.11    2.341  0.30( 0.25) 0.82    6313.1   50700.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | 32276.07 | 22.53 | 2.250 | 0.30( 0.25) | 0.82 | 6811.7 | 210.00 |
| 7 | 32556.08 | 23.48 | 2.189 | 0.30( 0.25) | 0.82 | 7134.5 | 50600.00 |
| 8 | 32866.55 | 24.61 | 2.117 | 0.30( 0.25) | 0.82 | 7542.1 | 410.00 |
| 9 | 33110.99 | 25.48 | 2.070 | 0.30( 0.25) | 0.82 | 7857.0 | 200.00 |
| 10 | 33294.64 | 26.09 | 2.043 | 0.30( 0.25) | 0.82 | 8075.6 | 230.00 |
| 11 | 33316.92 | 26.17 | 2.040 | 0.30( 0.25) | 0.82 | 8103.2 | 50500.00 |
| 12 | 33710.13 | 27.15 | 1.996 | 0.30( 0.25) | 0.82 | 8451.2 | 220.50 |
| 13 | 33719.33 | 27.18 | 1.995 | 0.30( 0.25) | 0.82 | 8459.4 | 110.00 |
| 14 | 34672.54 | 29.55 | 1.889 | 0.30( 0.25) | 0.82 | 9333.5 | 100.00 |
| 15 | 34819.23 | 29.95 | 1.871 | 0.30( 0.25) | 0.82 | 9478.5 | 110.00 |
| 16 | 35136.00 | 30.70 | 1.851 | 0.30( 0.25) | 0.82 | 9828.7 | 100.00 |
| 17 | 36409.01 | 33.70 | 1.774 | 0.30( 0.25) | 0.83 | 11221.5 | 130.00 |
| 18 | 37612.61 | 36.50 | 1.703 | 0.30( 0.25) | 0.83 | 12520.5 | 10100.00 |
| 19 | 37648.75 | 36.59 | 1.700 | 0.30( 0.25) | 0.83 | 12559.9 | 100.00 |
| 20 | 38851.00 | 39.39 | 1.629 | 0.30( 0.25) | 0.84 | 14049.8 | 400.00 |
| 21 | 40296.70 | 43.62 | 1.535 | 0.30( 0.26) | 0.86 | 16573.4 | 50150.00 |
| 22 | 41083.43 | 46.24 | 1.478 | 0.30( 0.26) | 0.86 | 18041.5 | 20100.00 |
| 23 | 41702.47 | 48.49 | 1.430 | 0.30( 0.26) | 0.87 | 19251.7 | 31100.00 |
| 24 | 42317.63 | 51.41 | 1.381 | 0.30( 0.26) | 0.88 | 20801.8 | 13600.00 |
| 25 | 45080.73 | 63.89 | 1.261 | 0.30( 0.27) | 0.90 | 27334.6 | 13100.00 |
| 26 | 46641.59 | 70.15 | 1.218 | 0.30( 0.27) | 0.90 | 30312.9 | 11801.00 |
| 27 | 49112.28 | 79.42 | 1.156 | 0.30( 0.27) | 0.91 | 35357.9 | 11530.00 |
| 28 | 50526.56 | 85.31 | 1.116 | 0.30( 0.28) | 0.92 | 39358.8 | 13510.00 |
| 29 | 51575.82 | 89.94 | 1.084 | 0.30( 0.28) | 0.92 | 42412.4 | 13010.00 |
| 30 | 52426.01 | 93.72 | 1.067 | 0.30( 0.28) | 0.93 | 44927.8 | 13500.00 |
| 31 | 52665.97 | 94.78 | 1.062 | 0.30( 0.28) | 0.93 | 45624.6 | 11330.00 |
| 32 | 53319.30 | 101.06 | 1.033 | 0.30( 0.28) | 0.94 | 50055.6 | 11130.00 |
| 33 | 52742.09 | 108.68 | 0.999 | 0.30( 0.28) | 0.94 | 54049.6 | 12330.00 |
| 34 | 52108.23 | 115.34 | 0.968 | 0.30( 0.28) | 0.94 | 57392.8 | 12400.00 |
| 35 | 51098.41 | 124.06 | 0.936 | 0.30( 0.28) | 0.94 | 60761.6 | 12201.00 |
| 36 | 50463.14 | 128.06 | 0.926 | 0.30( 0.28) | 0.95 | 61846.2 | 12111.00 |
| 37 | 49617.79 | 133.47 | 0.912 | 0.30( 0.28) | 0.95 | 63215.7 | 12101.10 |
| 38 | 48942.68 | 137.53 | 0.901 | 0.30( 0.28) | 0.95 | 64064.8 | 10400.00 |
| 39 | 47118.93 | 145.67 | 0.880 | 0.30( 0.28) | 0.95 | 65379.9 | 12010.00 |
| 40 | 45619.81 | 151.63 | 0.865 | 0.30( 0.28) | 0.95 | 65693.6 | 10210.00 |
| 41 | 41311.81 | 177.98 | 0.796 | 0.30( 0.28) | 0.95 | 66426.4 | 10100.00 |

TOTAL AREA(ACRES) = 66426.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 53319.30 Tc(MIN.) = 101.062
EFFECTIVE AREA(ACRES) = 50055.65 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 66426.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 173.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0151
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.16
CHANNEL FLOW THRU SUBAREA(CFS) = 53319.30
FLOW VELOCITY(FEET/SEC.) = 23.69 FLOW DEPTH(FEET) = 9.16



TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 101.24
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
>>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
PEAK FLOWRATE TABLE FILE NAME: 0610508Y.DNA HZ-131.3
MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 246.57 | 20.47 | 0.30( 0.30) | 0.99 | 131.3 | 50800.00 |

TOTAL AREA(ACRES) = 131.3

****************************************************************************
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27034.73 | 14.84 | 2.951 | 0.30( 0.25) | 0.83 | 3912.0 | 429.00 |
| 2 | 28410.87 | 16.22 | 2.800 | 0.30( 0.25) | 0.83 | 4432.2 | 425.00 |
| 3 | 28836.37 | 16.64 | 2.756 | 0.30( 0.25) | 0.82 | 4591.3 | 400.00 |
| 4 | 29866.34 | 17.98 | 2.620 | 0.30( 0.25) | 0.82 | 5089.6 | 300.00 |
| 5 | 31570.83 | 21.33 | 2.327 | 0.30( 0.25) | 0.82 | 6313.1 | 50700.00 |
| 6 | 32276.07 | 22.75 | 2.237 | 0.30( 0.25) | 0.82 | 6811.7 | 210.00 |
| 7 | 32556.08 | 23.70 | 2.175 | 0.30( 0.25) | 0.82 | 7134.5 | 50600.00 |
| 8 | 32866.55 | 24.83 | 2.103 | 0.30( 0.25) | 0.82 | 7542.1 | 410.00 |
| 9 | 33110.99 | 25.70 | 2.061 | 0.30( 0.25) | 0.82 | 7857.0 | 200.00 |
| 10 | 33294.64 | 26.31 | 2.034 | 0.30( 0.25) | 0.82 | 8075.6 | 230.00 |
| 11 | 33316.92 | 26.38 | 2.030 | 0.30( 0.25) | 0.82 | 8103.2 | 50500.00 |
| 12 | 33710.13 | 27.36 | 1.987 | 0.30( 0.25) | 0.82 | 8451.2 | 220.50 |
| 13 | 33719.33 | 27.39 | 1.985 | 0.30( 0.25) | 0.82 | 8459.4 | 110.00 |
| 14 | 34672.54 | 29.76 | 1.880 | 0.30( 0.25) | 0.82 | 9333.5 | 100.00 |
| 15 | 34819.23 | 30.16 | 1.865 | 0.30( 0.25) | 0.82 | 9478.5 | 110.00 |
| 16 | 35136.00 | 30.91 | 1.846 | 0.30( 0.25) | 0.82 | 9828.7 | 100.00 |
| 17 | 36409.01 | 33.90 | 1.769 | 0.30( 0.25) | 0.83 | 11221.5 | 130.00 |
| 18 | 37612.61 | 36.71 | 1.697 | 0.30( 0.25) | 0.83 | 12520.5 | 10100.00 |
| 19 | 37648.75 | 36.80 | 1.695 | 0.30( 0.25) | 0.83 | 12559.9 | 100.00 |
| 20 | 38851.00 | 39.59 | 1.623 | 0.30( 0.25) | 0.84 | 14049.8 | 400.00 |
| 21 | 40296.70 | 43.82 | 1.531 | 0.30( 0.26) | 0.86 | 16573.4 | 50150.00 |
| 22 | 41083.43 | 46.43 | 1.474 | 0.30( 0.26) | 0.86 | 18041.5 | 20100.00 |
| 23 | 41702.47 | 48.69 | 1.425 | 0.30( 0.26) | 0.87 | 19251.7 | 31100.00 |
| 24 | 42317.63 | 51.61 | 1.379 | 0.30( 0.26) | 0.88 | 20801.8 | 13600.00 |
| 25 | 45080.73 | 64.08 | 1.259 | 0.30( 0.27) | 0.90 | 27334.6 | 13100.00 |
| 26 | 46641.59 | 70.34 | 1.217 | 0.30( 0.27) | 0.90 | 30312.9 | 11801.00 |
| 27 | 49112.28 | 79.61 | 1.154 | 0.30( 0.27) | 0.91 | 35357.9 | 11530.00 |
| 28 | 50526.56 | 85.49 | 1.114 | 0.30( 0.28) | 0.92 | 39358.8 | 13510.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 29 | 51575.82 | 90.13 | 1.083 | 0.30( 0.28) | 0.92 | 42412.4 | 13010.00 |
| 30 | 52426.01 | 93.90 | 1.066 | 0.30( 0.28) | 0.93 | 44927.8 | 13500.00 |
| 31 | 52665.97 | 94.96 | 1.061 | 0.30( 0.28) | 0.93 | 45624.6 | 11330.00 |
| 32 | 53319.30 | 101.24 | 1.033 | 0.30( 0.28) | 0.94 | 50055.6 | 11130.00 |
| 33 | 52742.09 | 108.86 | 0.998 | 0.30( 0.28) | 0.94 | 54049.6 | 12330.00 |
| 34 | 52108.23 | 115.53 | 0.967 | 0.30( 0.28) | 0.94 | 57392.8 | 12400.00 |
| 35 | 51098.41 | 124.25 | 0.936 | 0.30( 0.28) | 0.94 | 60761.6 | 12201.00 |
| 36 | 50463.14 | 128.24 | 0.926 | 0.30( 0.28) | 0.95 | 61846.2 | 12111.00 |
| 37 | 49617.79 | 133.66 | 0.911 | 0.30( 0.28) | 0.95 | 63215.7 | 12101.10 |
| 38 | 48942.68 | 137.72 | 0.901 | 0.30( 0.28) | 0.95 | 64064.8 | 10400.00 |
| 39 | 47118.93 | 145.86 | 0.880 | 0.30( 0.28) | 0.95 | 65379.9 | 12010.00 |
| 40 | 45619.81 | 151.83 | 0.864 | 0.30( 0.28) | 0.95 | 65693.6 | 10210.00 |
| 41 | 41311.81 | 178.18 | 0.796 | 0.30( 0.28) | 0.95 | 66426.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 246.57 | 20.47 | 2.383 | 0.30( 0.30) | 0.99 | 131.3 | 50800.00 |

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27262.19 | 14.84 | 2.951 | 0.30( 0.25) | 0.83 | 4007.2 | 429.00 |
| 2 | 28645.24 | 16.22 | 2.800 | 0.30( 0.25) | 0.83 | 4536.2 | 425.00 |
| 3 | 29072.70 | 16.64 | 2.756 | 0.30( 0.25) | 0.83 | 4698.0 | 400.00 |
| 4 | 30107.48 | 17.98 | 2.620 | 0.30( 0.25) | 0.83 | 5204.9 | 300.00 |
| 5 | 31378.21 | 20.47 | 2.383 | 0.30( 0.25) | 0.83 | 6129.1 | 50800.00 |
| 6 | 31810.84 | 21.33 | 2.327 | 0.30( 0.25) | 0.83 | 6444.4 | 50700.00 |
| 7 | 32505.34 | 22.75 | 2.237 | 0.30( 0.25) | 0.83 | 6943.0 | 210.00 |
| 8 | 32778.13 | 23.70 | 2.175 | 0.30( 0.25) | 0.83 | 7265.8 | 50600.00 |
| 9 | 33080.05 | 24.83 | 2.103 | 0.30( 0.25) | 0.82 | 7673.3 | 410.00 |
| 10 | 33319.49 | 25.70 | 2.061 | 0.30( 0.25) | 0.82 | 7988.3 | 200.00 |
| 11 | 33499.95 | 26.31 | 2.034 | 0.30( 0.25) | 0.82 | 8206.9 | 230.00 |
| 12 | 33521.82 | 26.38 | 2.030 | 0.30( 0.25) | 0.82 | 8234.5 | 50500.00 |
| 13 | 33909.86 | 27.36 | 1.987 | 0.30( 0.25) | 0.82 | 8582.5 | 220.50 |
| 14 | 33918.93 | 27.39 | 1.985 | 0.30( 0.25) | 0.82 | 8590.7 | 110.00 |
| 15 | 34859.63 | 29.76 | 1.880 | 0.30( 0.25) | 0.83 | 9464.8 | 100.00 |
| 16 | 35004.57 | 30.16 | 1.865 | 0.30( 0.25) | 0.83 | 9609.8 | 110.00 |
| 17 | 35319.09 | 30.91 | 1.846 | 0.30( 0.25) | 0.83 | 9959.9 | 100.00 |
| 18 | 36583.04 | 33.90 | 1.769 | 0.30( 0.25) | 0.83 | 11352.8 | 130.00 |
| 19 | 37778.15 | 36.71 | 1.697 | 0.30( 0.25) | 0.84 | 12651.8 | 10100.00 |
| 20 | 37814.02 | 36.80 | 1.695 | 0.30( 0.25) | 0.84 | 12691.2 | 100.00 |
| 21 | 39007.81 | 39.59 | 1.623 | 0.30( 0.25) | 0.84 | 14181.1 | 400.00 |
| 22 | 40442.54 | 43.82 | 1.531 | 0.30( 0.26) | 0.86 | 16704.7 | 50150.00 |
| 23 | 41222.58 | 46.43 | 1.474 | 0.30( 0.26) | 0.87 | 18172.8 | 20100.00 |
| 24 | 41835.88 | 48.69 | 1.425 | 0.30( 0.26) | 0.87 | 19383.0 | 31100.00 |
| 25 | 42445.60 | 51.61 | 1.379 | 0.30( 0.26) | 0.88 | 20933.0 | 13600.00 |
| 26 | 45194.52 | 64.08 | 1.259 | 0.30( 0.27) | 0.90 | 27465.9 | 13100.00 |
| 27 | 46750.38 | 70.34 | 1.217 | 0.30( 0.27) | 0.90 | 30444.1 | 11801.00 |
| 28 | 49213.65 | 79.61 | 1.154 | 0.30( 0.27) | 0.91 | 35489.1 | 11530.00 |
| 29 | 50623.23 | 85.49 | 1.114 | 0.30( 0.28) | 0.92 | 39490.1 | 13510.00 |
| 30 | 51668.81 | 90.13 | 1.083 | 0.30( 0.28) | 0.93 | 42543.7 | 13010.00 |
| 31 | 52516.97 | 93.90 | 1.066 | 0.30( 0.28) | 0.93 | 45059.0 | 13500.00 |
| 32 | 52756.36 | 94.96 | 1.061 | 0.30( 0.28) | 0.93 | 45755.9 | 11330.00 |
| 33 | 53406.30 | 101.24 | 1.033 | 0.30( 0.28) | 0.94 | 50186.9 | 11130.00 |
| 34 | 52824.98 | 108.86 | 0.998 | 0.30( 0.28) | 0.94 | 54180.9 | 12330.00 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 35 | 52187.52 | 115.53 | 0.967 | 0.30( 0.28) | 0.94 | 57524.1 | 12400.00 |
| 36 | 51173.98 | 124.25 | 0.936 | 0.30( 0.28) | 0.95 | 60892.8 | 12201.00 |
| 37 | 50537.48 | 128.24 | 0.926 | 0.30( 0.28) | 0.95 | 61977.5 | 12111.00 |
| 38 | 49690.46 | 133.66 | 0.911 | 0.30( 0.28) | 0.95 | 63347.0 | 12101.10 |
| 39 | 49014.11 | 137.72 | 0.901 | 0.30( 0.28) | 0.95 | 64196.1 | 10400.00 |
| 40 | 47187.86 | 145.86 | 0.880 | 0.30( 0.28) | 0.95 | 65511.2 | 12010.00 |
| 41 | 45686.91 | 151.83 | 0.864 | 0.30( 0.28) | 0.95 | 65824.9 | 10210.00 |
| 42 | 41370.81 | 178.18 | 0.796 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

TOTAL AREA(ACRES) = 66557.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 53406.30 Tc(MIN.) = 101.245
EFFECTIVE AREA(ACRES) = 50186.91 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 66557.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66557.6 TC(MIN.) = 101.24
EFFECTIVE AREA(ACRES) = 50186.91 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.936
PEAK FLOW RATE(CFS) = 53406.30

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27262.19 | 14.84 | 2.951 | 0.30( 0.25) | 0.83 | 4007.2 | 429.00 |
| 2 | 28645.24 | 16.22 | 2.800 | 0.30( 0.25) | 0.83 | 4536.2 | 425.00 |
| 3 | 29072.70 | 16.64 | 2.756 | 0.30( 0.25) | 0.83 | 4698.0 | 400.00 |
| 4 | 30107.48 | 17.98 | 2.620 | 0.30( 0.25) | 0.83 | 5204.9 | 300.00 |
| 5 | 31378.21 | 20.47 | 2.383 | 0.30( 0.25) | 0.83 | 6129.1 | 50800.00 |
| 6 | 31810.84 | 21.33 | 2.327 | 0.30( 0.25) | 0.83 | 6444.4 | 50700.00 |
| 7 | 32505.34 | 22.75 | 2.237 | 0.30( 0.25) | 0.83 | 6943.0 | 210.00 |
| 8 | 32778.13 | 23.70 | 2.175 | 0.30( 0.25) | 0.83 | 7265.8 | 50600.00 |
| 9 | 33080.05 | 24.83 | 2.103 | 0.30( 0.25) | 0.82 | 7673.3 | 410.00 |
| 10 | 33319.49 | 25.70 | 2.061 | 0.30( 0.25) | 0.82 | 7988.3 | 200.00 |
| 11 | 33499.95 | 26.31 | 2.034 | 0.30( 0.25) | 0.82 | 8206.9 | 230.00 |
| 12 | 33521.82 | 26.38 | 2.030 | 0.30( 0.25) | 0.82 | 8234.5 | 50500.00 |
| 13 | 33909.86 | 27.36 | 1.987 | 0.30( 0.25) | 0.82 | 8582.5 | 220.50 |
| 14 | 33918.93 | 27.39 | 1.985 | 0.30( 0.25) | 0.82 | 8590.7 | 110.00 |
| 15 | 34859.63 | 29.76 | 1.880 | 0.30( 0.25) | 0.83 | 9464.8 | 100.00 |
| 16 | 35004.57 | 30.16 | 1.865 | 0.30( 0.25) | 0.83 | 9609.8 | 110.00 |
| 17 | 35319.09 | 30.91 | 1.846 | 0.30( 0.25) | 0.83 | 9959.9 | 100.00 |
| 18 | 36583.04 | 33.90 | 1.769 | 0.30( 0.25) | 0.83 | 11352.8 | 130.00 |
| 19 | 37778.15 | 36.71 | 1.697 | 0.30( 0.25) | 0.84 | 12651.8 | 10100.00 |
| 20 | 37814.02 | 36.80 | 1.695 | 0.30( 0.25) | 0.84 | 12691.2 | 100.00 |
| 21 | 39007.81 | 39.59 | 1.623 | 0.30( 0.25) | 0.84 | 14181.1 | 400.00 |
| 22 | 40442.54 | 43.82 | 1.531 | 0.30( 0.26) | 0.86 | 16704.7 | 50150.00 |
| 23 | 41222.58 | 46.43 | 1.474 | 0.30( 0.26) | 0.87 | 18172.8 | 20100.00 |
| 24 | 41835.88 | 48.69 | 1.425 | 0.30( 0.26) | 0.87 | 19383.0 | 31100.00 |
| 25 | 42445.60 | 51.61 | 1.379 | 0.30( 0.26) | 0.88 | 20933.0 | 13600.00 |
| 26 | 45194.52 | 64.08 | 1.259 | 0.30( 0.27) | 0.90 | 27465.9 | 13100.00 |
| 27 | 46750.38 | 70.34 | 1.217 | 0.30( 0.27) | 0.90 | 30444.1 | 11801.00 |
| 28 | 49213.65 | 79.61 | 1.154 | 0.30( 0.27) | 0.91 | 35489.1 | 11530.00 |
| 29 | 50623.23 | 85.49 | 1.114 | 0.30( 0.28) | 0.92 | 39490.1 | 13510.00 |
| 30 | 51668.81 | 90.13 | 1.083 | 0.30( 0.28) | 0.93 | 42543.7 | 13010.00 |
| 31 | 52516.97 | 93.90 | 1.066 | 0.30( 0.28) | 0.93 | 45059.0 | 13500.00 |
| 32 | 52756.36 | 94.96 | 1.061 | 0.30( 0.28) | 0.93 | 45755.9 | 11330.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 33 | 53406.30 | 101.24 | 1.033 | 0.30( 0.28) | 0.94 | 50186.9 | 11130.00 |
| 34 | 52824.98 | 108.86 | 0.998 | 0.30( 0.28) | 0.94 | 54180.9 | 12330.00 |
| 35 | 52187.52 | 115.53 | 0.967 | 0.30( 0.28) | 0.94 | 57524.1 | 12400.00 |
| 36 | 51173.98 | 124.25 | 0.936 | 0.30( 0.28) | 0.95 | 60892.8 | 12201.00 |
| 37 | 50537.48 | 128.24 | 0.926 | 0.30( 0.28) | 0.95 | 61977.5 | 12111.00 |
| 38 | 49690.46 | 133.66 | 0.911 | 0.30( 0.28) | 0.95 | 63347.0 | 12101.10 |
| 39 | 49014.11 | 137.72 | 0.901 | 0.30( 0.28) | 0.95 | 64196.1 | 10400.00 |
| 40 | 47187.86 | 145.86 | 0.880 | 0.30( 0.28) | 0.95 | 65511.2 | 12010.00 |
| 41 | 45686.91 | 151.83 | 0.864 | 0.30( 0.28) | 0.95 | 65824.9 | 10210.00 |
| 42 | 41370.81 | 178.18 | 0.796 | 0.30( 0.28) | 0.95 | 66557.6 | 10100.00 |

END OF RATIONAL METHOD ANALYSIS

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****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 FREE DRAINING                              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                   *
* 100-YR EV FEB 2023 ROKAMOTO                                             *
 ***************************************************************************

  FILE NAME: RU00EV36.DAT
  TIME/DATE OF STUDY: 09:01 02/15/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.786
   2)   10.00;  3.745
   3)   15.00;  2.905
   4)   20.00;  2.401
   5)   25.00;  2.083
   6)   30.00;  1.861
   7)   40.00;  1.606
   8)   50.00;  1.392
   9)   60.00;  1.279
  10)   90.00;  1.075
  11)  120.00;  0.938
  12)  180.00;  0.782
  13)  360.00;  0.577
  14) 1200.00;  0.251
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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)
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```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.578
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    69   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.00
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =     10.00

****************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.289
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   1.72
  Tc(MIN.) =   12.71
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   20.04
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      29.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   4.67
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.899
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.53
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =   15.06
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   72.42
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      97.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.25   FLOW VELOCITY(FEET/SEC.) =   6.28
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.62
  AVERAGE FLOW DEPTH(FEET) =   1.43   TRAVEL TIME(MIN.) =   2.99
  Tc(MIN.) =   18.04
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   48.32
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     134.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.52   FLOW VELOCITY(FEET/SEC.) =   6.83
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.384
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     154.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.44
  AVERAGE FLOW DEPTH(FEET) =   1.77   TRAVEL TIME(MIN.) =   2.23
  Tc(MIN.) =   20.27
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   39.83
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     162.03
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.82   FLOW VELOCITY(FEET/SEC.) =   6.53
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X00.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1365.67   51.63  0.30( 0.28) 0.95    1517.0   13510.00
      2     1241.97   59.58  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1365.67   51.63  0.30( 0.28) 0.95    1517.0   13510.00
      2     1241.97   59.58  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.344
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1378.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.05
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.76   TRAVEL TIME(MIN.) =   2.63
  Tc(MIN.) =   54.26
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   24.90
  EFFECTIVE AREA(ACRES) =   1543.46     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1471.93
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.87   FLOW VELOCITY(FEET/SEC.) =  13.31
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.344
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.36
  EFFECTIVE AREA(ACRES) =   1544.91   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1473.29

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1473.29   54.26    1.344  0.30( 0.28) 0.95    1544.9   13510.00
      2     1417.77   62.30    1.263  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      162.03   20.27    2.384  0.30( 0.30) 1.00      86.4   13600.00
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1252.61   20.27    2.384  0.30( 0.29) 0.95     663.6   13600.00
```

```
     2     1554.47   54.26    1.344  0.30( 0.29) 0.95    1631.3   13510.00
     3     1492.69   62.30    1.263  0.30( 0.28) 0.95    1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1554.47  Tc(MIN.) =   54.262
  EFFECTIVE AREA(ACRES) =   1631.31  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1694.2
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.324
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.39      0.30     1.000     -
  USER-DEFINED               -       16.30      0.30     1.000     -
  USER-DEFINED               -        4.08      0.30     1.000     -
  USER-DEFINED               -       12.36      0.30     1.000     -
  USER-DEFINED               -       11.23      0.30     1.000     -
  USER-DEFINED               -        5.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1579.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
  AVERAGE FLOW DEPTH(FEET) =   3.02   TRAVEL TIME(MIN.) =   1.72
  Tc(MIN.) =   55.98
  SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   50.27
  EFFECTIVE AREA(ACRES) =   1685.83     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1576.17
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.02   FLOW VELOCITY(FEET/SEC.) =  13.38
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.324
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.93      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        3.98      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   53.81
  EFFECTIVE AREA(ACRES) =   1744.19   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1629.97

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P201XXCE.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      262.78   16.94  0.30( 0.26) 0.85     133.8   20100.00
    TOTAL AREA(ACRES) =      133.8

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1382.80   22.11    2.267  0.30( 0.29) 0.96     776.4   13600.00
      2     1629.97   55.98    1.324  0.30( 0.29) 0.95    1744.2   13510.00
      3     1571.28   64.04    1.252  0.30( 0.29) 0.95    1807.1   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      262.78   16.94    2.709  0.30( 0.26) 0.85     133.8   20100.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1559.40   16.94    2.709  0.30( 0.28) 0.94     728.9   20100.00
      2     1598.22   22.11    2.267  0.30( 0.28) 0.95     910.2   13600.00
      3     1744.40   55.98    1.324  0.30( 0.28) 0.95    1878.0   13510.00
      4     1677.90   64.04    1.252  0.30( 0.28) 0.94    1940.9   13500.00
    TOTAL AREA(ACRES) =      1940.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1744.40  Tc(MIN.) =   55.984
  EFFECTIVE AREA(ACRES) =   1877.99  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1940.9
```

```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1774.01
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.37
 AVERAGE FLOW DEPTH(FEET) =   4.06   TRAVEL TIME(MIN.) =   4.81
 Tc(MIN.) =   60.80
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   59.22
 EFFECTIVE AREA(ACRES) =   1945.57     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1744.40
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.02   FLOW VELOCITY(FEET/SEC.) =  10.31
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
```



```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   91.75
 EFFECTIVE AREA(ACRES) =   2050.27   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1823.72

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    7.04
 EFFECTIVE AREA(ACRES) =   2058.30   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1830.76

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.67      0.30     1.000     -
 USER-DEFINED               -       24.24      0.30     1.000     -
 USER-DEFINED               -        1.34      0.30     1.000     -
 USER-DEFINED               -       74.98      0.30     1.000     -
 USER-DEFINED               -      101.12      0.30     1.000     -
 USER-DEFINED               -       16.90      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1923.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.06
 AVERAGE FLOW DEPTH(FEET) =   4.42   TRAVEL TIME(MIN.) =   4.66
 Tc(MIN.) =   65.46
 SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  185.87
 EFFECTIVE AREA(ACRES) =   2277.55     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
 TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1957.90
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.46   FLOW VELOCITY(FEET/SEC.) =  10.12
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  182.64
  EFFECTIVE AREA(ACRES) =   2492.98   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    2140.54

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   14.18
  EFFECTIVE AREA(ACRES) =   2509.70   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    2154.71

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.17      0.30     1.000     -
  USER-DEFINED               -        9.19      0.30     1.000     -
  USER-DEFINED               -       67.57      0.30     1.000     -
  USER-DEFINED               -       35.19      0.30     1.000     -
  USER-DEFINED               -       30.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2214.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.20
  AVERAGE FLOW DEPTH(FEET) =   4.53   TRAVEL TIME(MIN.) =   4.34
  Tc(MIN.) =   69.79
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =  119.09
  EFFECTIVE AREA(ACRES) =   2654.71     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    2207.20
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.53   FLOW VELOCITY(FEET/SEC.) =  11.19
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   69.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       20.65      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  USER-DEFINED               -        8.45      0.30     1.000     -
  USER-DEFINED               -       96.93      0.30     1.000     -
  USER-DEFINED               -       13.19      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =  117.27
  EFFECTIVE AREA(ACRES) =   2797.51   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    2324.47

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

```
     1     2290.19   30.99    1.836  0.30( 0.29) 0.97    1648.4   20100.00
     2     2328.11   36.10    1.706  0.30( 0.29) 0.97    1829.8   13600.00
     3     2324.47   69.79    1.212  0.30( 0.29) 0.96    2797.5   13510.00
     4     2234.36   78.00    1.157  0.30( 0.29) 0.96    2860.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2328.11  Tc(MIN.) =   36.10
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1829.77

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       42.54      0.30     1.000     -
  USER-DEFINED               -       16.96      0.30     1.000     -
  USER-DEFINED               -       80.60      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        2.00      0.30     1.000     -
  USER-DEFINED               -        3.11      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  185.67
  EFFECTIVE AREA(ACRES) =   1976.54   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    2513.78

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2546.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
  AVERAGE FLOW DEPTH(FEET) =   4.40   TRAVEL TIME(MIN.) =   1.98
```



```
  Tc(MIN.) =   38.08
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   66.22
  EFFECTIVE AREA(ACRES) =   2030.84     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    2513.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.37   FLOW VELOCITY(FEET/SEC.) =  13.35
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        9.52      0.30     1.000     -
  USER-DEFINED               -        0.71      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -       39.42      0.30     1.000     -
  USER-DEFINED               -        0.62      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   62.39
  EFFECTIVE AREA(ACRES) =   2082.00   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    2552.63

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.11      0.30     1.000     -
  USER-DEFINED               -        0.77      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    4.62
  EFFECTIVE AREA(ACRES) =   2085.79   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    2557.25
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2557.45   32.97    1.785  0.30( 0.29) 0.98    1904.4   20100.00
     2     2557.25   38.08    1.655  0.30( 0.29) 0.98    2085.8   13600.00
     3     2497.40   71.79    1.199  0.30( 0.29) 0.97    3053.5   13510.00
     4     2393.19   80.02    1.143  0.30( 0.29) 0.97    3116.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2557.45  Tc(MIN.) =   32.97
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1904.44

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 2P00EVAA.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      589.23   13.84  0.30( 0.11) 0.36     173.5     110.00
     2      590.10   16.35  0.30( 0.11) 0.38     204.6     100.00
     3      582.95   17.51  0.30( 0.11) 0.38     213.9     100.00
     4      519.41   20.54  0.30( 0.12) 0.40     221.1     130.00
   TOTAL AREA(ACRES) =      221.1

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
 FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
 DEPTH OF FLOW IN 114.0 INCH PIPE IS  84.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  45.37
 ESTIMATED PIPE DIAMETER(INCH) = 114.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    2557.45
 PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   33.29
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2557.45   33.29    1.777  0.30( 0.29) 0.98    1904.4   20100.00
```



```
     2     2557.25   38.40    1.647  0.30( 0.29) 0.98    2085.8   13600.00
     3     2497.40   72.12    1.197  0.30( 0.29) 0.97    3053.5   13510.00
     4     2393.19   80.35    1.141  0.30( 0.29) 0.97    3116.4   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      589.23   13.84    3.100  0.30( 0.11) 0.36     173.5     110.00
     2      590.10   16.35    2.769  0.30( 0.11) 0.38     204.6     100.00
     3      582.95   17.51    2.652  0.30( 0.11) 0.38     213.9     100.00
     4      519.41   20.54    2.367  0.30( 0.12) 0.40     221.1     130.00
 LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2600.15   13.84    3.100  0.30( 0.26) 0.87     965.1     110.00
     2     2685.54   16.35    2.769  0.30( 0.26) 0.87    1139.7     100.00
     3     2721.21   17.51    2.652  0.30( 0.26) 0.87    1215.6     100.00
     4     2724.13   20.54    2.367  0.30( 0.27) 0.89    1395.9     130.00
     5     2940.50   33.29    1.777  0.30( 0.28) 0.92    2125.5   20100.00
     6     2910.19   38.40    1.647  0.30( 0.28) 0.92    2306.9   13600.00
     7     2746.24   72.12    1.197  0.30( 0.28) 0.93    3274.6   13510.00
     8     2629.09   80.35    1.141  0.30( 0.28) 0.93    3337.5   13500.00
   TOTAL AREA(ACRES) =      3337.5

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     2940.50  Tc(MIN.) =   33.292
 EFFECTIVE AREA(ACRES) =   2125.54  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
 TOTAL AREA(ACRES) =     3337.5
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   33.29
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.777
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                    B        1.11      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                    B        0.44      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                     B        1.49      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                     B        1.70      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.09      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       18.57      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   32.44
  EFFECTIVE AREA(ACRES) =   2149.94   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2940.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        5.19      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   64.82
  EFFECTIVE AREA(ACRES) =   2198.70   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2970.23

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        0.22      0.30     1.000     -
  USER-DEFINED              -        9.23      0.30     1.000     -
  USER-DEFINED              -        0.54      0.30     1.000     -
  USER-DEFINED              -        5.66      0.30     1.000     -
  USER-DEFINED              -        3.66      0.30     1.000     -
  USER-DEFINED              -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2983.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.83
```



```
  AVERAGE FLOW DEPTH(FEET) =   5.81   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =   34.73
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   25.90
  EFFECTIVE AREA(ACRES) =   2218.68     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    2970.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.79

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.79   FLOW VELOCITY(FEET/SEC.) =  10.82
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        1.56      0.30     1.000     -
  USER-DEFINED              -        9.40      0.30     1.000     -
  USER-DEFINED              -        2.76      0.30     1.000     -
  USER-DEFINED              -       17.38      0.30     1.000     -
  USER-DEFINED              -        2.46      0.30     1.000     -
  USER-DEFINED              -        5.56      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   50.72
  EFFECTIVE AREA(ACRES) =   2257.80   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    2974.31

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        0.65      0.30     1.000     -
  USER-DEFINED              -        1.70      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    3.05
  EFFECTIVE AREA(ACRES) =   2260.15   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    2977.36

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

```
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   34.73
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.29      0.30     1.000     -
 USER-DEFINED               -       31.25      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        6.26      0.30     1.000     -
 USER-DEFINED               -        0.07      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   56.15
 EFFECTIVE AREA(ACRES) =   2303.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    3033.51

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   34.73
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        2.47      0.30     0.850     -
 USER-DEFINED               -        3.06      0.30     0.850     -
 USER-DEFINED               -       17.76      0.30     0.500     -
 USER-DEFINED               -        7.31      0.30     0.500     -
 USER-DEFINED               -        0.34      0.30     1.000     -
 USER-DEFINED               -        8.22      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
 SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   54.38
 EFFECTIVE AREA(ACRES) =   2342.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    3087.88

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   34.73
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
```



```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.53      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.69
 EFFECTIVE AREA(ACRES) =   2343.15   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    3088.57

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.58
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        5.28      0.30     1.000     -
 USER-DEFINED               -        0.52      0.30     1.000     -
 USER-DEFINED               -        3.61      0.30     1.000     -
 USER-DEFINED               -        0.67      0.30     1.000     -
 USER-DEFINED               -        1.37      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3095.60
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.86
 AVERAGE FLOW DEPTH(FEET) =   5.58   TRAVEL TIME(MIN.) =   4.02
 Tc(MIN.) =   38.75
 SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =   14.05
 EFFECTIVE AREA(ACRES) =   2354.82     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
 TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    3088.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.57

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.57   FLOW VELOCITY(FEET/SEC.) =  11.86
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
```

```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        6.90      0.30     1.000     -
 USER-DEFINED               -       23.04      0.30     1.000     -
 USER-DEFINED               -        1.18      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       53.20      0.30     1.000     -
 USER-DEFINED               -        2.08      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =  105.92
 EFFECTIVE AREA(ACRES) =   2442.78   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    3088.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        0.18      0.30     1.000     -
 USER-DEFINED               -        0.38      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        7.73      0.30     1.000     -
 USER-DEFINED               -        4.37      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   15.52
 EFFECTIVE AREA(ACRES) =   2455.67   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    3088.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        2.57      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.97      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.00      0.30     1.000    69
 NATURAL FAIR COVER
```



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 "GRASS"                    B        2.98      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.39      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.67      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   15.15
 EFFECTIVE AREA(ACRES) =   2468.25   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    3088.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.44      0.30     1.000    66
 PUBLIC PARK                B        2.65      0.30     0.850    56
 PUBLIC PARK                B        1.16      0.30     0.850    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
 SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   30.61
 EFFECTIVE AREA(ACRES) =   2493.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    3088.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.08      0.30     1.000     -
 USER-DEFINED               -        6.75      0.30     1.000     -
 USER-DEFINED               -        0.02      0.30     1.000     -
 USER-DEFINED               -        0.93      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   17.80
```

```
  EFFECTIVE AREA(ACRES) =   2508.24   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.49      0.30     1.000     -
  USER-DEFINED               -       13.31      0.30     1.000     -
  USER-DEFINED               -        0.87      0.30     1.000     -
  USER-DEFINED               -       20.26      0.30     1.000     -
  USER-DEFINED               -        1.21      0.30     1.000     -
  USER-DEFINED               -        0.05      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3113.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.08
  AVERAGE FLOW DEPTH(FEET) =   5.89   TRAVEL TIME(MIN.) =   3.80
  Tc(MIN.) =   42.55
  SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   49.78
  EFFECTIVE AREA(ACRES) =   2552.43     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.86   FLOW VELOCITY(FEET/SEC.) =  11.07
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.56      0.30     1.000     -
  USER-DEFINED               -        0.81      0.30     1.000     -
  USER-DEFINED               -        0.01      0.30     1.000     -
```



```
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        0.59      0.30     1.000     -
  USER-DEFINED               -        3.04      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =   20.41
  EFFECTIVE AREA(ACRES) =   2570.55   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.70      0.30     0.850    56
  PUBLIC PARK                B        0.10      0.30     0.850    56
  PUBLIC PARK                B        2.90      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    7.26
  EFFECTIVE AREA(ACRES) =   2576.75   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.10      0.30     0.500    56
  CONDOMINIUMS               B        0.10      0.30     0.350    56
  PUBLIC PARK                B        6.90      0.30     0.850    56
  PUBLIC PARK                B        0.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    8.77
  EFFECTIVE AREA(ACRES) =   2584.25   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    3088.57
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.55      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.01      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.35      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.44      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.67      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    6.85
  EFFECTIVE AREA(ACRES) =   2590.33   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
  AGRICULTURAL POOR COVER
```



```
  "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   39.07
  EFFECTIVE AREA(ACRES) =   2625.02   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   16.12
  EFFECTIVE AREA(ACRES) =   2639.33   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.13
  CHANNEL FLOW THRU SUBAREA(CFS) =    3088.57
  FLOW VELOCITY(FEET/SEC.) =  17.64   FLOW DEPTH(FEET) =   4.13
  TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =   42.82
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.476
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.23      0.30     1.000     -
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -        0.06      0.30     1.000     -
  USER-DEFINED               -        0.13      0.30     1.000     -
  USER-DEFINED               -        6.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3093.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.41
  AVERAGE FLOW DEPTH(FEET) =   6.60   TRAVEL TIME(MIN.) =   3.27
  Tc(MIN.) =   46.09
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    8.88
  EFFECTIVE AREA(ACRES) =   2647.72     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    3088.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.60   FLOW VELOCITY(FEET/SEC.) =   9.40
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     3859.7  TC(MIN.) =     46.09
  EFFECTIVE AREA(ACRES) =   2647.72  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.928
  PEAK FLOW RATE(CFS)   =    3088.57

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2776.71   27.02    1.993  0.30( 0.27) 0.90    1487.3     110.00
      2     2879.22   29.39    1.888  0.30( 0.27) 0.90    1661.9     100.00
      3     2888.80   30.54    1.847  0.30( 0.27) 0.90    1737.8     100.00
      4     2912.73   33.54    1.771  0.30( 0.27) 0.91    1918.1     130.00
      5     3088.57   46.09    1.476  0.30( 0.28) 0.93    2647.7   20100.00
      6     3029.31   51.27    1.378  0.30( 0.28) 0.93    2829.1   13600.00
      7     2905.42   85.17    1.108  0.30( 0.28) 0.93    3796.8   13510.00
      8     2757.25   93.58    1.059  0.30( 0.28) 0.93    3859.7   13500.00
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 FREE DRAINING                          *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5               *
* 100-YR EV AUG 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU00EV37.DAT
  TIME/DATE OF STUDY: 13:28 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.768
   2)   10.00;  3.736
   3)   15.00;  2.899
   4)   20.00;  2.397
   5)   25.00;  2.080
   6)   30.00;  1.859
   7)   40.00;  1.604
   8)   50.00;  1.391
   9)   60.00;  1.276
  10)   90.00;  1.073
  11)  120.00;  0.936
  12)  180.00;  0.780
  13)  360.00;  0.574
  14) 1200.00;  0.249
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    30067.92   17.94  0.30( 0.25) 0.83    5183.1     300.00
      2    33868.66   27.35  0.30( 0.25) 0.82    8551.7     110.00
      3    36513.46   33.87  0.30( 0.25) 0.83   11291.0     130.00
      4    39004.34   39.71  0.30( 0.25) 0.84   14190.1     400.00
      5    42408.58   51.58  0.30( 0.26) 0.88   20858.5   13600.00
      6    45192.20   64.19  0.30( 0.27) 0.90   27470.1   13100.00
      7    46748.45   70.45  0.30( 0.27) 0.90   30448.3   11801.00
      8    49211.76   79.72  0.30( 0.27) 0.91   35493.2   11530.00
      9    50587.44   85.46  0.30( 0.28) 0.92   39397.9   13510.00
     10    51665.11   90.24  0.30( 0.28) 0.93   42544.8   13010.00
     11    52753.16   95.07  0.30( 0.28) 0.93   45755.9   11330.00
     12    53403.18  101.35  0.30( 0.28) 0.94   50186.9   11130.00
     13    52821.84  108.97  0.30( 0.28) 0.94   54180.9   12330.00
     14    52184.39  115.64  0.30( 0.28) 0.94   57524.1   12400.00
     15    51172.14  124.36  0.30( 0.28) 0.95   60892.8   12201.00
     16    49688.65  133.77  0.30( 0.28) 0.95   63347.0   12101.10
     17    49012.29  137.83  0.30( 0.28) 0.95   64196.1   10400.00
     18    47186.02  145.97  0.30( 0.28) 0.95   65511.2   12010.00
     19    45685.05  151.94  0.30( 0.28) 0.95   65824.9   10210.00
     20    41368.90  178.30  0.30( 0.28) 0.95   66557.6   10100.00
   TOTAL AREA(ACRES) =    66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    30067.92   17.94  0.30( 0.25) 0.83    5183.1     300.00
      2    33868.66   27.35  0.30( 0.25) 0.82    8551.7     110.00
      3    36513.46   33.87  0.30( 0.25) 0.83   11291.0     130.00
      4    39004.34   39.71  0.30( 0.25) 0.84   14190.1     400.00
      5    42408.58   51.58  0.30( 0.26) 0.88   20858.5   13600.00
      6    45192.20   64.19  0.30( 0.27) 0.90   27470.1   13100.00
      7    46748.45   70.45  0.30( 0.27) 0.90   30448.3   11801.00
      8    49211.76   79.72  0.30( 0.27) 0.91   35493.2   11530.00
      9    50587.44   85.46  0.30( 0.28) 0.92   39397.9   13510.00
     10    51665.11   90.24  0.30( 0.28) 0.93   42544.8   13010.00
     11    52753.16   95.07  0.30( 0.28) 0.93   45755.9   11330.00
     12    53403.18  101.35  0.30( 0.28) 0.94   50186.9   11130.00
     13    52821.84  108.97  0.30( 0.28) 0.94   54180.9   12330.00
```

```
     14    52184.39  115.64  0.30( 0.28) 0.94   57524.1   12400.00
     15    51172.14  124.36  0.30( 0.28) 0.95   60892.8   12201.00
     16    49688.65  133.77  0.30( 0.28) 0.95   63347.0   12101.10
     17    49012.29  137.83  0.30( 0.28) 0.95   64196.1   10400.00
     18    47186.02  145.97  0.30( 0.28) 0.95   65511.2   12010.00
     19    45685.05  151.94  0.30( 0.28) 0.95   65824.9   10210.00
     20    41368.90  178.30  0.30( 0.28) 0.95   66557.6   10100.00
    TOTAL AREA(ACRES) =     66557.6

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.34
  CHANNEL FLOW THRU SUBAREA(CFS) =   53403.18
  FLOW VELOCITY(FEET/SEC.) =  12.58   FLOW DEPTH(FEET) =  15.34
  TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  103.86
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      406.54   14.41  0.30( 0.29) 0.96     189.8   10230.00
      2      372.26   23.72  0.30( 0.29) 0.95     240.3   10200.00
      3      368.40   24.34  0.30( 0.29) 0.95     241.8   10250.00
      4      339.08   28.10  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    30067.92   20.94    2.337  0.30( 0.25) 0.83    5183.1     300.00
      2    33868.66   30.24    1.853  0.30( 0.25) 0.82    8551.7     110.00
      3    36513.46   36.69    1.688  0.30( 0.25) 0.83   11291.0     130.00
```



```
      4    39004.34   42.47    1.551  0.30( 0.25) 0.84   14190.1     400.00
      5    42408.58   54.26    1.342  0.30( 0.26) 0.88   20858.5   13600.00
      6    45192.20   66.83    1.230  0.30( 0.27) 0.90   27470.1   13100.00
      7    46748.45   73.06    1.188  0.30( 0.27) 0.90   30448.3   11801.00
      8    49211.76   82.29    1.125  0.30( 0.27) 0.91   35493.2   11530.00
      9    50587.44   88.01    1.086  0.30( 0.28) 0.92   39397.9   13510.00
     10    51665.11   92.77    1.060  0.30( 0.28) 0.93   42544.8   13010.00
     11    52753.16   97.59    1.038  0.30( 0.28) 0.93   45755.9   11330.00
     12    53403.18  103.86    1.010  0.30( 0.28) 0.94   50186.9   11130.00
     13    52821.84  111.48    0.975  0.30( 0.28) 0.94   54180.9   12330.00
     14    52184.39  118.16    0.944  0.30( 0.28) 0.94   57524.1   12400.00
     15    51172.14  126.90    0.918  0.30( 0.28) 0.95   60892.8   12201.00
     16    49688.65  136.33    0.894  0.30( 0.28) 0.95   63347.0   12101.10
     17    49012.29  140.40    0.883  0.30( 0.28) 0.95   64196.1   10400.00
     18    47186.02  148.57    0.862  0.30( 0.28) 0.95   65511.2   12010.00
     19    45685.05  154.57    0.846  0.30( 0.28) 0.95   65824.9   10210.00
     20    41368.90  181.01    0.779  0.30( 0.28) 0.95   66557.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      406.54   14.41    2.998  0.30( 0.29) 0.96     189.8   10230.00
    2      372.26   23.72    2.161  0.30( 0.29) 0.95     240.3   10200.00
    3      368.40   24.34    2.122  0.30( 0.29) 0.95     241.8   10250.00
    4      339.08   28.10    1.943  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    27638.39   14.41    2.998  0.30( 0.25) 0.83    3756.6   10230.00
    2    30450.41   20.94    2.337  0.30( 0.25) 0.83    5408.4     300.00
    3    31575.84   23.72    2.161  0.30( 0.25) 0.83    6430.0   10200.00
    4    31826.78   24.34    2.122  0.30( 0.25) 0.83    6657.3   10250.00
    5    33334.09   28.10    1.943  0.30( 0.25) 0.83    8023.7   10220.00
    6    34189.32   30.24    1.853  0.30( 0.25) 0.83    8798.0     110.00
    7    36800.46   36.69    1.688  0.30( 0.25) 0.83   11537.3     130.00
    8    39263.27   42.47    1.551  0.30( 0.25) 0.84   14436.4     400.00
    9    42624.66   54.26    1.342  0.30( 0.26) 0.88   21104.8   13600.00
   10    45385.33   66.83    1.230  0.30( 0.27) 0.90   27716.3   13100.00
   11    46932.95   73.06    1.188  0.30( 0.27) 0.90   30694.5   11801.00
   12    49383.48   82.29    1.125  0.30( 0.27) 0.91   35739.5   11530.00
   13    50751.24   88.01    1.086  0.30( 0.28) 0.92   39644.1   13510.00
   14    51823.57   92.77    1.060  0.30( 0.28) 0.93   42791.0   13010.00
   15    52907.11   97.59    1.038  0.30( 0.28) 0.93   46002.2   11330.00
   16    53551.28  103.86    1.010  0.30( 0.28) 0.94   50433.2   11130.00
   17    52962.81  111.48    0.975  0.30( 0.28) 0.94   54427.1   12330.00
   18    52319.11  118.16    0.944  0.30( 0.28) 0.94   57770.3   12400.00
   19    51301.47  126.90    0.918  0.30( 0.28) 0.95   61139.1   12201.00
   20    49812.96  136.33    0.894  0.30( 0.28) 0.95   63593.2   12101.10
   21    49134.44  140.40    0.883  0.30( 0.28) 0.95   64442.3   10400.00
   22    47303.82  148.57    0.862  0.30( 0.28) 0.95   65757.5   12010.00
   23    45799.66  154.57    0.846  0.30( 0.28) 0.95   66071.2   10210.00
   24    41469.75  181.01    0.779  0.30( 0.28) 0.95   66803.9   10100.00
  TOTAL AREA(ACRES) =     66803.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    53551.28  Tc(MIN.) =  103.858
  EFFECTIVE AREA(ACRES) =  50433.17  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    66803.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.75
  CHANNEL FLOW THRU SUBAREA(CFS) =   53551.28
  FLOW VELOCITY(FEET/SEC.) =  12.20   FLOW DEPTH(FEET) =  15.75
  TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  106.68
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      810.21   17.74  0.30( 0.23) 0.76     399.5   10300.00
      2      813.53   18.53  0.30( 0.23) 0.76     413.0   10380.00
      3      800.95   20.83  0.30( 0.23) 0.76     438.9   10320.00
      4      771.92   23.06  0.30( 0.23) 0.76     451.6   10360.00
      5      728.08   25.86  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27638.39   17.88    2.610  0.30( 0.25) 0.83    3756.6   10230.00
      2    30450.41   24.30    2.124  0.30( 0.25) 0.83    5408.4     300.00
      3    31575.84   27.04    1.990  0.30( 0.25) 0.83    6430.0   10200.00
      4    31826.78   27.66    1.962  0.30( 0.25) 0.83    6657.3   10250.00
      5    33334.09   31.37    1.824  0.30( 0.25) 0.83    8023.7   10220.00
```



```
      6    34189.32   33.48    1.770  0.30( 0.25) 0.83    8798.0     110.00
      7    36800.46   39.86    1.608  0.30( 0.25) 0.83   11537.3     130.00
      8    39263.27   45.58    1.485  0.30( 0.25) 0.84   14436.4     400.00
      9    42624.66   57.29    1.307  0.30( 0.26) 0.88   21104.8   13600.00
     10    45385.33   69.80    1.210  0.30( 0.27) 0.90   27716.3   13100.00
     11    46932.95   76.00    1.168  0.30( 0.27) 0.90   30694.5   11801.00
     12    49383.48   85.19    1.106  0.30( 0.27) 0.91   35739.5   11530.00
     13    50751.24   90.88    1.069  0.30( 0.28) 0.92   39644.1   13510.00
     14    51823.57   95.62    1.047  0.30( 0.28) 0.93   42791.0   13010.00
     15    52907.11  100.42    1.025  0.30( 0.28) 0.93   46002.2   11330.00
     16    53551.28  106.68    0.997  0.30( 0.28) 0.94   50433.2   11130.00
     17    52962.81  114.31    0.962  0.30( 0.28) 0.94   54427.1   12330.00
     18    52319.11  121.01    0.933  0.30( 0.28) 0.94   57770.3   12400.00
     19    51301.47  129.76    0.911  0.30( 0.28) 0.95   61139.1   12201.00
     20    49812.96  139.22    0.886  0.30( 0.28) 0.95   63593.2   12101.10
     21    49134.44  143.30    0.875  0.30( 0.28) 0.95   64442.3   10400.00
     22    47303.82  151.51    0.854  0.30( 0.28) 0.95   65757.5   12010.00
     23    45799.66  157.53    0.838  0.30( 0.28) 0.95   66071.2   10210.00
     24    41469.75  184.06    0.775  0.30( 0.28) 0.95   66803.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      810.21   17.74    2.623  0.30( 0.23) 0.76     399.5   10300.00
    2      813.53   18.53    2.544  0.30( 0.23) 0.76     413.0   10380.00
    3      800.95   20.83    2.345  0.30( 0.23) 0.76     438.9   10320.00
    4      771.92   23.06    2.203  0.30( 0.23) 0.76     451.6   10360.00
    5      728.08   25.86    2.042  0.30( 0.23) 0.76     460.8   10340.00
LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    28397.17   17.74    2.623  0.30( 0.25) 0.83    4127.6   10300.00
    2    28449.17   17.88    2.610  0.30( 0.25) 0.83    4158.5   10230.00
    3    28738.41   18.53    2.544  0.30( 0.25) 0.83    4337.9   10380.00
    4    29729.39   20.83    2.345  0.30( 0.25) 0.83    4953.3   10320.00
    5    30675.34   23.06    2.203  0.30( 0.25) 0.83    5538.7   10360.00
    6    31202.83   24.30    2.124  0.30( 0.25) 0.83    5864.1     300.00
    7    31818.92   25.86    2.042  0.30( 0.25) 0.83    6450.5   10340.00
    8    32282.96   27.04    1.990  0.30( 0.25) 0.83    6890.8   10200.00
    9    32522.97   27.66    1.962  0.30( 0.25) 0.83    7118.1   10250.00
   10    33974.71   31.37    1.824  0.30( 0.25) 0.83    8484.5   10220.00
   11    34808.31   33.48    1.770  0.30( 0.25) 0.83    9258.8     110.00
   12    37354.17   39.86    1.608  0.30( 0.25) 0.83   11998.1     130.00
   13    39767.78   45.58    1.485  0.30( 0.25) 0.84   14897.2     400.00
   14    43057.66   57.29    1.307  0.30( 0.26) 0.88   21565.6   13600.00
   15    45779.19   69.80    1.210  0.30( 0.27) 0.90   28177.1   13100.00
   16    47309.97   76.00    1.168  0.30( 0.27) 0.90   31155.3   11801.00
   17    49735.53   85.19    1.106  0.30( 0.27) 0.91   36200.3   11530.00
   18    51088.60   90.88    1.069  0.30( 0.28) 0.92   40104.9   13510.00
   19    52152.23   95.62    1.047  0.30( 0.28) 0.92   43251.8   13010.00
   20    53226.97  100.42    1.025  0.30( 0.28) 0.93   46463.0   11330.00
   21    53859.65  106.68    0.997  0.30( 0.28) 0.93   50894.0   11130.00
   22    53257.18  114.31    0.962  0.30( 0.28) 0.94   54887.9   12330.00
   23    52602.01  121.01    0.933  0.30( 0.28) 0.94   58231.1   12400.00
   24    51575.23  129.76    0.911  0.30( 0.28) 0.94   61599.9   12201.00
```

```
     25    50076.84  139.22    0.886  0.30( 0.28) 0.95   64054.0   12101.10
     26    49394.05  143.30    0.875  0.30( 0.28) 0.95   64903.1   10400.00
     27    47554.86  151.51    0.854  0.30( 0.28) 0.95   66218.2   12010.00
     28    46044.42  157.53    0.838  0.30( 0.28) 0.95   66532.0   10210.00
     29    41689.17  184.06    0.775  0.30( 0.28) 0.95   67264.7   10100.00
    TOTAL AREA(ACRES) =     67264.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    53859.65  Tc(MIN.) =  106.683
  EFFECTIVE AREA(ACRES) =  50893.97  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    67264.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.16
  CHANNEL FLOW THRU SUBAREA(CFS) =   53859.65
  FLOW VELOCITY(FEET/SEC.) =  43.04   FLOW DEPTH(FEET) =   9.16
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  106.82
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       82.60   19.10  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28397.17   17.92    2.606  0.30( 0.25) 0.83    4127.6   10300.00
```



```
      2    28449.17   18.05    2.593  0.30( 0.25) 0.83    4158.5   10230.00
      3    28738.41   18.71    2.527  0.30( 0.25) 0.83    4337.9   10380.00
      4    29729.39   21.00    2.334  0.30( 0.25) 0.83    4953.3   10320.00
      5    30675.34   23.22    2.193  0.30( 0.25) 0.83    5538.7   10360.00
      6    31202.83   24.47    2.113  0.30( 0.25) 0.83    5864.1     300.00
      7    31818.92   26.03    2.034  0.30( 0.25) 0.83    6450.5   10340.00
      8    32282.96   27.21    1.982  0.30( 0.25) 0.83    6890.8   10200.00
      9    32522.97   27.83    1.955  0.30( 0.25) 0.83    7118.1   10250.00
     10    33974.71   31.53    1.820  0.30( 0.25) 0.83    8484.5   10220.00
     11    34808.31   33.64    1.766  0.30( 0.25) 0.83    9258.8     110.00
     12    37354.17   40.01    1.604  0.30( 0.25) 0.83   11998.1     130.00
     13    39767.78   45.73    1.482  0.30( 0.25) 0.84   14897.2     400.00
     14    43057.66   57.45    1.305  0.30( 0.26) 0.88   21565.6   13600.00
     15    45779.19   69.95    1.209  0.30( 0.27) 0.90   28177.1   13100.00
     16    47309.97   76.15    1.167  0.30( 0.27) 0.90   31155.3   11801.00
     17    49735.53   85.33    1.105  0.30( 0.27) 0.91   36200.3   11530.00
     18    51088.60   91.02    1.068  0.30( 0.28) 0.92   40104.9   13510.00
     19    52152.23   95.76    1.047  0.30( 0.28) 0.92   43251.8   13010.00
     20    53226.97  100.56    1.025  0.30( 0.28) 0.93   46463.0   11330.00
     21    53859.65  106.82    0.996  0.30( 0.28) 0.93   50894.0   11130.00
     22    53257.18  114.46    0.961  0.30( 0.28) 0.94   54887.9   12330.00
     23    52602.01  121.15    0.933  0.30( 0.28) 0.94   58231.1   12400.00
     24    51575.23  129.90    0.910  0.30( 0.28) 0.94   61599.9   12201.00
     25    50076.84  139.36    0.886  0.30( 0.28) 0.95   64054.0   12101.10
     26    49394.05  143.45    0.875  0.30( 0.28) 0.95   64903.1   10400.00
     27    47554.86  151.65    0.854  0.30( 0.28) 0.95   66218.2   12010.00
     28    46044.42  157.68    0.838  0.30( 0.28) 0.95   66532.0   10210.00
     29    41689.17  184.21    0.775  0.30( 0.28) 0.95   67264.7   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       82.60   19.10    2.487  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    28478.75   17.92    2.606  0.30( 0.25) 0.83    4169.2   10300.00
    2    28530.89   18.05    2.593  0.30( 0.25) 0.83    4200.4   10230.00
    3    28820.73   18.71    2.527  0.30( 0.25) 0.83    4381.3   10380.00
    4    28991.58   19.10    2.487  0.30( 0.25) 0.83    4488.2   10400.00
    5    29806.35   21.00    2.334  0.30( 0.25) 0.83    4997.6   10320.00
    6    30747.12   23.22    2.193  0.30( 0.25) 0.83    5583.0   10360.00
    7    31271.69   24.47    2.113  0.30( 0.25) 0.83    5908.4     300.00
    8    31884.88   26.03    2.034  0.30( 0.25) 0.83    6494.8   10340.00
    9    32347.01   27.21    1.982  0.30( 0.25) 0.83    6935.1   10200.00
   10    32586.02   27.83    1.955  0.30( 0.25) 0.83    7162.4   10250.00
   11    34032.79   31.53    1.820  0.30( 0.25) 0.83    8528.8   10220.00
   12    34864.41   33.64    1.766  0.30( 0.25) 0.83    9303.1     110.00
   13    37404.30   40.01    1.604  0.30( 0.25) 0.83   12042.4     130.00
   14    39813.43   45.73    1.482  0.30( 0.25) 0.84   14941.5     400.00
   15    43096.83   57.45    1.305  0.30( 0.26) 0.88   21609.9   13600.00
   16    45814.81   69.95    1.209  0.30( 0.27) 0.90   28221.4   13100.00
   17    47344.04   76.15    1.167  0.30( 0.27) 0.90   31199.6   11801.00
   18    49767.32   85.33    1.105  0.30( 0.27) 0.91   36244.6   11530.00
   19    51119.05   91.02    1.068  0.30( 0.28) 0.92   40149.2   13510.00
```

```
     20    52181.89   95.76    1.047  0.30( 0.28) 0.92   43296.1   13010.00
     21    53255.83  100.56    1.025  0.30( 0.28) 0.93   46507.3   11330.00
     22    53887.46  106.82    0.996  0.30( 0.28) 0.93   50938.3   11130.00
     23    53283.71  114.46    0.961  0.30( 0.28) 0.94   54932.2   12330.00
     24    52627.49  121.15    0.933  0.30( 0.28) 0.94   58275.4   12400.00
     25    51599.88  129.90    0.910  0.30( 0.28) 0.94   61644.2   12201.00
     26    50100.59  139.36    0.886  0.30( 0.28) 0.94   64098.3   12101.10
     27    49417.41  143.45    0.875  0.30( 0.28) 0.95   64947.4   10400.00
     28    47577.43  151.65    0.854  0.30( 0.28) 0.95   66262.5   12010.00
     29    46066.41  157.68    0.838  0.30( 0.28) 0.95   66576.3   10210.00
     30    41708.86  184.21    0.775  0.30( 0.28) 0.95   67309.0   10100.00
    TOTAL AREA(ACRES) =     67309.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    53887.46  Tc(MIN.) =  106.824
  EFFECTIVE AREA(ACRES) =  50938.27  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67309.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13802.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    141.00  DOWNSTREAM(FEET) =    135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1533.41   CHANNEL SLOPE =  0.0039
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.41
  CHANNEL FLOW THRU SUBAREA(CFS) =   53887.46
  FLOW VELOCITY(FEET/SEC.) =  16.86   FLOW DEPTH(FEET) =  18.41
  TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  108.34
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506105i.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      447.60   14.36  0.30( 0.27) 0.90     208.7   10520.00
      2      533.75   30.45  0.30( 0.28) 0.93     403.6   10500.00
    TOTAL AREA(ACRES) =      403.6

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13802.00 IS CODE =  11
----------------------------------------------------------------------------
```



```
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28478.75   19.73    2.424  0.30( 0.25) 0.83    4169.2   10300.00
      2    28530.89   19.87    2.410  0.30( 0.25) 0.83    4200.4   10230.00
      3    28820.73   20.52    2.364  0.30( 0.25) 0.83    4381.3   10380.00
      4    28991.58   20.91    2.339  0.30( 0.25) 0.83    4488.2   10400.00
      5    29806.35   22.79    2.220  0.30( 0.25) 0.83    4997.6   10320.00
      6    30747.12   25.00    2.080  0.30( 0.25) 0.83    5583.0   10360.00
      7    31271.69   26.24    2.025  0.30( 0.25) 0.83    5908.4     300.00
      8    31884.88   27.79    1.957  0.30( 0.25) 0.83    6494.8   10340.00
      9    32347.01   28.96    1.905  0.30( 0.25) 0.83    6935.1   10200.00
     10    32586.02   29.57    1.878  0.30( 0.25) 0.83    7162.4   10250.00
     11    34032.79   33.26    1.776  0.30( 0.25) 0.83    8528.8   10220.00
     12    34864.41   35.36    1.722  0.30( 0.25) 0.83    9303.1     110.00
     13    37404.30   41.69    1.568  0.30( 0.25) 0.83   12042.4     130.00
     14    39813.43   47.38    1.447  0.30( 0.25) 0.84   14941.5     400.00
     15    43096.83   59.06    1.287  0.30( 0.26) 0.88   21609.9   13600.00
     16    45814.81   71.54    1.198  0.30( 0.27) 0.90   28221.4   13100.00
     17    47344.04   77.72    1.156  0.30( 0.27) 0.90   31199.6   11801.00
     18    49767.32   86.88    1.094  0.30( 0.27) 0.91   36244.6   11530.00
     19    51119.05   92.56    1.061  0.30( 0.28) 0.92   40149.2   13510.00
     20    52181.89   97.29    1.040  0.30( 0.28) 0.92   43296.1   13010.00
     21    53255.83  102.08    1.018  0.30( 0.28) 0.93   46507.3   11330.00
     22    53887.46  108.34    0.989  0.30( 0.28) 0.93   50938.3   11130.00
     23    53283.71  115.98    0.954  0.30( 0.28) 0.94   54932.2   12330.00
     24    52627.49  122.67    0.929  0.30( 0.28) 0.94   58275.4   12400.00
     25    51599.88  131.44    0.906  0.30( 0.28) 0.94   61644.2   12201.00
     26    50100.59  140.91    0.882  0.30( 0.28) 0.94   64098.3   12101.10
     27    49417.41  145.00    0.871  0.30( 0.28) 0.95   64947.4   10400.00
     28    47577.43  153.22    0.850  0.30( 0.28) 0.95   66262.5   12010.00
     29    46066.41  159.26    0.834  0.30( 0.28) 0.95   66576.3   10210.00
     30    41708.86  185.84    0.773  0.30( 0.28) 0.95   67309.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      447.60   14.36    3.006  0.30( 0.27) 0.90     208.7   10520.00
      2      533.75   30.45    1.848  0.30( 0.28) 0.93     403.6   10500.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  13802.00 =   12187.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    26719.31   14.36    3.006  0.30( 0.25) 0.83    3243.3   10520.00
      2    28955.11   19.73    2.424  0.30( 0.25) 0.83    4443.0   10300.00
      3    29007.97   19.87    2.410  0.30( 0.25) 0.83    4475.8   10230.00
      4    29301.28   20.52    2.364  0.30( 0.25) 0.83    4664.6   10380.00
      5    29474.23   20.91    2.339  0.30( 0.25) 0.83    4776.2   10400.00
      6    30299.08   22.79    2.220  0.30( 0.25) 0.83    5308.4   10320.00
      7    31251.68   25.00    2.080  0.30( 0.25) 0.83    5920.6   10360.00
      8    31782.90   26.24    2.025  0.30( 0.25) 0.83    6261.0     300.00
      9    32404.38   27.79    1.957  0.30( 0.25) 0.83    6866.2   10340.00
     10    32872.78   28.96    1.905  0.30( 0.25) 0.83    7320.6   10200.00
```

```
    11    33115.07   29.57    1.878  0.30( 0.25) 0.83    7555.4   10250.00
    12    33464.32   30.45    1.848  0.30( 0.25) 0.83    7891.4   10500.00
    13    34542.18   33.26    1.776  0.30( 0.25) 0.83    8932.4   10220.00
    14    35355.60   35.36    1.722  0.30( 0.25) 0.83    9706.7     110.00
    15    37842.96   41.69    1.568  0.30( 0.25) 0.83   12446.0     130.00
    16    40210.88   47.38    1.447  0.30( 0.25) 0.84   15345.1     400.00
    17    43439.91   59.06    1.287  0.30( 0.26) 0.88   22013.5   13600.00
    18    46127.65   71.54    1.198  0.30( 0.27) 0.90   28625.0   13100.00
    19    47642.66   77.72    1.156  0.30( 0.27) 0.90   31603.2   11801.00
    20    50044.85   86.88    1.094  0.30( 0.27) 0.91   36648.2   11530.00
    21    51385.43   92.56    1.061  0.30( 0.28) 0.92   40552.8   13510.00
    22    52440.93   97.29    1.040  0.30( 0.28) 0.92   43699.7   13010.00
    23    53507.42  102.08    1.018  0.30( 0.28) 0.93   46910.9   11330.00
    24    54129.33  108.34    0.989  0.30( 0.28) 0.93   51341.9   11130.00
    25    53513.73  115.98    0.954  0.30( 0.28) 0.94   55335.8   12330.00
    26    52848.89  122.67    0.929  0.30( 0.28) 0.94   58679.0   12400.00
    27    51813.53  131.44    0.906  0.30( 0.28) 0.94   62047.8   12201.00
    28    50305.87  140.91    0.882  0.30( 0.28) 0.94   64501.9   12101.10
    29    49619.07  145.00    0.871  0.30( 0.28) 0.95   65351.0   10400.00
    30    47771.82  153.22    0.850  0.30( 0.28) 0.95   66666.1   12010.00
    31    46255.46  159.26    0.834  0.30( 0.28) 0.95   66979.9   10210.00
    32    41877.30  185.84    0.773  0.30( 0.28) 0.95   67712.6   10100.00
  TOTAL AREA(ACRES) =     67712.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    54129.33  Tc(MIN.) =  108.340
  EFFECTIVE AREA(ACRES) =  51341.88  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    67712.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13802.00 =  130406.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    135.00  DOWNSTREAM(FEET) =    134.99
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.23   CHANNEL SLOPE =  0.0000
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  52.26
  CHANNEL FLOW THRU SUBAREA(CFS) =   54129.33
  FLOW VELOCITY(FEET/SEC.) =   3.35   FLOW DEPTH(FEET) =  52.26
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  109.37
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13803.00 =  130613.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  109.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "1 DWELLING/ACRE"          B       48.80      0.30     0.800    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA AREA(ACRES) =   48.80      SUBAREA RUNOFF(CFS) =   32.70
  EFFECTIVE AREA(ACRES) =  51390.68   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    67761.4       PEAK FLOW RATE(CFS) =   54129.33
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13802.00 TO NODE  13803.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506106b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       73.36   17.31  0.30( 0.20) 0.67      36.9   10600.00
    TOTAL AREA(ACRES) =       36.9

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    26719.31   15.60    2.839  0.30( 0.25) 0.83    3292.1   10520.00
      2    28955.11   20.94    2.337  0.30( 0.25) 0.83    4491.8   10300.00
      3    29007.97   21.08    2.329  0.30( 0.25) 0.83    4524.6   10230.00
      4    29301.28   21.72    2.288  0.30( 0.25) 0.83    4713.4   10380.00
      5    29474.23   22.11    2.263  0.30( 0.25) 0.83    4825.0   10400.00
      6    30299.08   23.99    2.144  0.30( 0.25) 0.83    5357.2   10320.00
      7    31251.68   26.19    2.028  0.30( 0.25) 0.83    5969.4   10360.00
      8    31782.90   27.42    1.973  0.30( 0.25) 0.83    6309.8     300.00
      9    32404.38   28.96    1.905  0.30( 0.25) 0.83    6915.0   10340.00
     10    32872.78   30.13    1.856  0.30( 0.25) 0.83    7369.4   10200.00
     11    33115.07   30.74    1.840  0.30( 0.25) 0.83    7604.2   10250.00
     12    33464.32   31.62    1.818  0.30( 0.25) 0.83    7940.2   10500.00
     13    34542.18   34.42    1.746  0.30( 0.25) 0.83    8981.2   10220.00
     14    35355.60   36.51    1.693  0.30( 0.25) 0.83    9755.5     110.00
     15    37842.96   42.82    1.544  0.30( 0.25) 0.83   12494.8     130.00
     16    40210.88   48.50    1.423  0.30( 0.25) 0.84   15393.9     400.00
     17    43439.91   60.15    1.275  0.30( 0.26) 0.88   22062.3   13600.00
     18    46127.65   72.61    1.191  0.30( 0.27) 0.90   28673.8   13100.00
     19    47642.66   78.78    1.149  0.30( 0.27) 0.90   31652.0   11801.00
     20    50044.85   87.93    1.087  0.30( 0.27) 0.91   36697.0   11530.00
     21    51385.43   93.61    1.057  0.30( 0.28) 0.92   40601.6   13510.00
     22    52440.93   98.33    1.035  0.30( 0.28) 0.92   43748.5   13010.00
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 23 | 53507.42 | 103.12 | 1.013 | 0.30( 0.28) | 0.93 | 46959.7 | 11330.00 |
| 24 | 54129.33 | 109.37 | 0.985 | 0.30( 0.28) | 0.93 | 51390.7 | 11130.00 |
| 25 | 53513.73 | 117.01 | 0.950 | 0.30( 0.28) | 0.94 | 55384.6 | 12330.00 |
| 26 | 52848.89 | 123.71 | 0.926 | 0.30( 0.28) | 0.94 | 58727.8 | 12400.00 |
| 27 | 51813.53 | 132.48 | 0.904 | 0.30( 0.28) | 0.94 | 62096.6 | 12201.00 |
| 28 | 50305.87 | 141.96 | 0.879 | 0.30( 0.28) | 0.94 | 64550.7 | 12101.10 |
| 29 | 49619.07 | 146.06 | 0.868 | 0.30( 0.28) | 0.95 | 65399.8 | 10400.00 |
| 30 | 47771.82 | 154.29 | 0.847 | 0.30( 0.28) | 0.95 | 66714.9 | 12010.00 |
| 31 | 46255.46 | 160.33 | 0.831 | 0.30( 0.28) | 0.95 | 67028.7 | 10210.00 |
| 32 | 41877.30 | 186.94 | 0.772 | 0.30( 0.28) | 0.95 | 67761.4 | 10100.00 |

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 73.36 | 17.31 | 2.667 | 0.30( 0.20) | 0.67 | 36.9 | 10600.00 |

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 26790.03 | 15.60 | 2.839 | 0.30( 0.25) | 0.83 | 3325.3 | 10520.00 |
| 2 | 27507.79 | 17.31 | 2.667 | 0.30( 0.25) | 0.83 | 3712.7 | 10600.00 |
| 3 | 29018.65 | 20.94 | 2.337 | 0.30( 0.25) | 0.83 | 4528.7 | 10300.00 |
| 4 | 29071.26 | 21.08 | 2.329 | 0.30( 0.25) | 0.83 | 4561.5 | 10230.00 |
| 5 | 29363.36 | 21.72 | 2.288 | 0.30( 0.25) | 0.83 | 4750.3 | 10380.00 |
| 6 | 29535.57 | 22.11 | 2.263 | 0.30( 0.25) | 0.83 | 4861.9 | 10400.00 |
| 7 | 30356.88 | 23.99 | 2.144 | 0.30( 0.25) | 0.83 | 5394.1 | 10320.00 |
| 8 | 31306.01 | 26.19 | 2.028 | 0.30( 0.25) | 0.83 | 6006.3 | 10360.00 |
| 9 | 31835.61 | 27.42 | 1.973 | 0.30( 0.25) | 0.83 | 6346.7 | 300.00 |
| 10 | 32455.06 | 28.96 | 1.905 | 0.30( 0.25) | 0.83 | 6951.9 | 10340.00 |
| 11 | 32922.00 | 30.13 | 1.856 | 0.30( 0.25) | 0.83 | 7406.3 | 10200.00 |
| 12 | 33163.82 | 30.74 | 1.840 | 0.30( 0.25) | 0.83 | 7641.1 | 10250.00 |
| 13 | 33512.41 | 31.62 | 1.818 | 0.30( 0.25) | 0.83 | 7977.1 | 10500.00 |
| 14 | 34588.15 | 34.42 | 1.746 | 0.30( 0.25) | 0.83 | 9018.1 | 10220.00 |
| 15 | 35399.98 | 36.51 | 1.693 | 0.30( 0.25) | 0.83 | 9792.4 | 110.00 |
| 16 | 37882.91 | 42.82 | 1.544 | 0.30( 0.25) | 0.83 | 12531.7 | 130.00 |
| 17 | 40247.23 | 48.50 | 1.423 | 0.30( 0.25) | 0.84 | 15430.8 | 400.00 |
| 18 | 43471.86 | 60.15 | 1.275 | 0.30( 0.26) | 0.88 | 22099.2 | 13600.00 |
| 19 | 46157.09 | 72.61 | 1.191 | 0.30( 0.27) | 0.90 | 28710.7 | 13100.00 |
| 20 | 47670.86 | 78.78 | 1.149 | 0.30( 0.27) | 0.90 | 31688.9 | 11801.00 |
| 21 | 50071.21 | 87.93 | 1.087 | 0.30( 0.27) | 0.91 | 36733.9 | 11530.00 |
| 22 | 51410.88 | 93.61 | 1.057 | 0.30( 0.28) | 0.92 | 40638.5 | 13510.00 |
| 23 | 52465.74 | 98.33 | 1.035 | 0.30( 0.28) | 0.92 | 43785.4 | 13010.00 |
| 24 | 53531.58 | 103.12 | 1.013 | 0.30( 0.28) | 0.93 | 46996.6 | 11330.00 |
| 25 | 54152.64 | 109.37 | 0.985 | 0.30( 0.28) | 0.93 | 51427.6 | 11130.00 |
| 26 | 53536.00 | 117.01 | 0.950 | 0.30( 0.28) | 0.94 | 55421.5 | 12330.00 |
| 27 | 52870.47 | 123.71 | 0.926 | 0.30( 0.28) | 0.94 | 58764.7 | 12400.00 |
| 28 | 51834.43 | 132.48 | 0.904 | 0.30( 0.28) | 0.94 | 62133.5 | 12201.00 |
| 29 | 50326.03 | 141.96 | 0.879 | 0.30( 0.28) | 0.94 | 64587.6 | 12101.10 |
| 30 | 49638.91 | 146.06 | 0.868 | 0.30( 0.28) | 0.95 | 65436.7 | 10400.00 |
| 31 | 47791.04 | 154.29 | 0.847 | 0.30( 0.28) | 0.95 | 66751.8 | 12010.00 |
| 32 | 46274.21 | 160.33 | 0.831 | 0.30( 0.28) | 0.95 | 67065.6 | 10210.00 |
| 33 | 41894.29 | 186.94 | 0.772 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

TOTAL AREA(ACRES) = 67798.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 54152.64 Tc(MIN.) = 109.370



EFFECTIVE AREA(ACRES) = 51427.57 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67798.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 67798.3 TC(MIN.) = 109.37
EFFECTIVE AREA(ACRES) = 51427.57 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.934
PEAK FLOW RATE(CFS) = 54152.64

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 26790.03 | 15.60 | 2.839 | 0.30( 0.25) | 0.83 | 3325.3 | 10520.00 |
| 2 | 27507.79 | 17.31 | 2.667 | 0.30( 0.25) | 0.83 | 3712.7 | 10600.00 |
| 3 | 29018.65 | 20.94 | 2.337 | 0.30( 0.25) | 0.83 | 4528.7 | 10300.00 |
| 4 | 29071.26 | 21.08 | 2.329 | 0.30( 0.25) | 0.83 | 4561.5 | 10230.00 |
| 5 | 29363.36 | 21.72 | 2.288 | 0.30( 0.25) | 0.83 | 4750.3 | 10380.00 |
| 6 | 29535.57 | 22.11 | 2.263 | 0.30( 0.25) | 0.83 | 4861.9 | 10400.00 |
| 7 | 30356.88 | 23.99 | 2.144 | 0.30( 0.25) | 0.83 | 5394.1 | 10320.00 |
| 8 | 31306.01 | 26.19 | 2.028 | 0.30( 0.25) | 0.83 | 6006.3 | 10360.00 |
| 9 | 31835.61 | 27.42 | 1.973 | 0.30( 0.25) | 0.83 | 6346.7 | 300.00 |
| 10 | 32455.06 | 28.96 | 1.905 | 0.30( 0.25) | 0.83 | 6951.9 | 10340.00 |
| 11 | 32922.00 | 30.13 | 1.856 | 0.30( 0.25) | 0.83 | 7406.3 | 10200.00 |
| 12 | 33163.82 | 30.74 | 1.840 | 0.30( 0.25) | 0.83 | 7641.1 | 10250.00 |
| 13 | 33512.41 | 31.62 | 1.818 | 0.30( 0.25) | 0.83 | 7977.1 | 10500.00 |
| 14 | 34588.15 | 34.42 | 1.746 | 0.30( 0.25) | 0.83 | 9018.1 | 10220.00 |
| 15 | 35399.98 | 36.51 | 1.693 | 0.30( 0.25) | 0.83 | 9792.4 | 110.00 |
| 16 | 37882.91 | 42.82 | 1.544 | 0.30( 0.25) | 0.83 | 12531.7 | 130.00 |
| 17 | 40247.23 | 48.50 | 1.423 | 0.30( 0.25) | 0.84 | 15430.8 | 400.00 |
| 18 | 43471.86 | 60.15 | 1.275 | 0.30( 0.26) | 0.88 | 22099.2 | 13600.00 |
| 19 | 46157.09 | 72.61 | 1.191 | 0.30( 0.27) | 0.90 | 28710.7 | 13100.00 |
| 20 | 47670.86 | 78.78 | 1.149 | 0.30( 0.27) | 0.90 | 31688.9 | 11801.00 |
| 21 | 50071.21 | 87.93 | 1.087 | 0.30( 0.27) | 0.91 | 36733.9 | 11530.00 |
| 22 | 51410.88 | 93.61 | 1.057 | 0.30( 0.28) | 0.92 | 40638.5 | 13510.00 |
| 23 | 52465.74 | 98.33 | 1.035 | 0.30( 0.28) | 0.92 | 43785.4 | 13010.00 |
| 24 | 53531.58 | 103.12 | 1.013 | 0.30( 0.28) | 0.93 | 46996.6 | 11330.00 |
| 25 | 54152.64 | 109.37 | 0.985 | 0.30( 0.28) | 0.93 | 51427.6 | 11130.00 |
| 26 | 53536.00 | 117.01 | 0.950 | 0.30( 0.28) | 0.94 | 55421.5 | 12330.00 |
| 27 | 52870.47 | 123.71 | 0.926 | 0.30( 0.28) | 0.94 | 58764.7 | 12400.00 |
| 28 | 51834.43 | 132.48 | 0.904 | 0.30( 0.28) | 0.94 | 62133.5 | 12201.00 |
| 29 | 50326.03 | 141.96 | 0.879 | 0.30( 0.28) | 0.94 | 64587.6 | 12101.10 |
| 30 | 49638.91 | 146.06 | 0.868 | 0.30( 0.28) | 0.95 | 65436.7 | 10400.00 |
| 31 | 47791.04 | 154.29 | 0.847 | 0.30( 0.28) | 0.95 | 66751.8 | 12010.00 |
| 32 | 46274.21 | 160.33 | 0.831 | 0.30( 0.28) | 0.95 | 67065.6 | 10210.00 |
| 33 | 41894.29 | 186.94 | 0.772 | 0.30( 0.28) | 0.95 | 67798.3 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 100-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU00EV38.DAT
  TIME/DATE OF STUDY: 13:28 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.750
   2)   10.00;  3.727
   3)   15.00;  2.893
   4)   20.00;  2.393
   5)   25.00;  2.078
   6)   30.00;  1.857
   7)   40.00;  1.601
   8)   50.00;  1.389
   9)   60.00;  1.274
  10)   90.00;  1.070
  11)  120.00;  0.933
  12)  180.00;  0.777
  13)  360.00;  0.572
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    27507.79   17.31  0.30( 0.25) 0.83    3712.7   10600.00
      2    30356.88   23.99  0.30( 0.25) 0.83    5394.1   10320.00
      3    35399.98   36.51  0.30( 0.25) 0.83    9792.4     110.00
      4    37882.91   42.82  0.30( 0.25) 0.83   12531.7     130.00
      5    40247.23   48.50  0.30( 0.25) 0.84   15430.8     400.00
      6    43471.86   60.15  0.30( 0.26) 0.88   22099.2   13600.00
      7    46157.09   72.61  0.30( 0.27) 0.90   28710.7   13100.00
      8    47670.86   78.78  0.30( 0.27) 0.90   31688.9   11801.00
      9    50071.21   87.93  0.30( 0.27) 0.91   36733.9   11530.00
     10    51410.88   93.61  0.30( 0.28) 0.92   40638.5   13510.00
     11    52465.74   98.33  0.30( 0.28) 0.92   43785.4   13010.00
     12    53531.58  103.12  0.30( 0.28) 0.93   46996.6   11330.00
     13    54152.64  109.37  0.30( 0.28) 0.93   51427.6   11130.00
     14    53536.00  117.01  0.30( 0.28) 0.94   55421.5   12330.00
     15    52870.47  123.71  0.30( 0.28) 0.94   58764.7   12400.00
     16    51834.43  132.48  0.30( 0.28) 0.94   62133.5   12201.00
     17    50326.03  141.96  0.30( 0.28) 0.94   64587.6   12101.10
     18    47791.04  154.29  0.30( 0.28) 0.95   66751.8   12010.00
     19    46274.21  160.33  0.30( 0.28) 0.95   67065.6   10210.00
     20    41894.29  186.94  0.30( 0.28) 0.95   67798.3   10100.00
   TOTAL AREA(ACRES) =    67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    27507.79   17.31  0.30( 0.25) 0.83    3712.7   10600.00
      2    30356.88   23.99  0.30( 0.25) 0.83    5394.1   10320.00
      3    35399.98   36.51  0.30( 0.25) 0.83    9792.4     110.00
      4    37882.91   42.82  0.30( 0.25) 0.83   12531.7     130.00
      5    40247.23   48.50  0.30( 0.25) 0.84   15430.8     400.00
      6    43471.86   60.15  0.30( 0.26) 0.88   22099.2   13600.00
      7    46157.09   72.61  0.30( 0.27) 0.90   28710.7   13100.00
      8    47670.86   78.78  0.30( 0.27) 0.90   31688.9   11801.00
      9    50071.21   87.93  0.30( 0.27) 0.91   36733.9   11530.00
     10    51410.88   93.61  0.30( 0.28) 0.92   40638.5   13510.00
     11    52465.74   98.33  0.30( 0.28) 0.92   43785.4   13010.00
     12    53531.58  103.12  0.30( 0.28) 0.93   46996.6   11330.00
     13    54152.64  109.37  0.30( 0.28) 0.93   51427.6   11130.00
```

```
     14    53536.00  117.01  0.30( 0.28) 0.94   55421.5   12330.00
     15    52870.47  123.71  0.30( 0.28) 0.94   58764.7   12400.00
     16    51834.43  132.48  0.30( 0.28) 0.94   62133.5   12201.00
     17    50326.03  141.96  0.30( 0.28) 0.94   64587.6   12101.10
     18    47791.04  154.29  0.30( 0.28) 0.95   66751.8   12010.00
     19    46274.21  160.33  0.30( 0.28) 0.95   67065.6   10210.00
     20    41894.29  186.94  0.30( 0.28) 0.95   67798.3   10100.00
    TOTAL AREA(ACRES) =     67798.3

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  25.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.975
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   54162.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.53
  AVERAGE FLOW DEPTH(FEET) =  25.48   TRAVEL TIME(MIN.) =   1.47
  Tc(MIN.) =  110.84
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   19.24
  EFFECTIVE AREA(ACRES) =  51459.02     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    67829.7         PEAK FLOW RATE(CFS) =   54152.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  25.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 25.47   FLOW VELOCITY(FEET/SEC.) =  10.53
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 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.) =  110.84
  RAINFALL INTENSITY(INCH/HR) =   0.97
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   51459.02
  TOTAL STREAM AREA(ACRES) =   67829.72
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   54152.64

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.345
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    56   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.29
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     15.29

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.044
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.45
  AVERAGE FLOW DEPTH(FEET) =   0.48   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =   14.09
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   36.53
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4         PEAK FLOW RATE(CFS) =      50.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOW VELOCITY(FEET/SEC.) =   7.49
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.27
  AVERAGE FLOW DEPTH(FEET) =   1.10   TRAVEL TIME(MIN.) =   2.16
  Tc(MIN.) =   16.25
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   40.90
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      86.15
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   5.60
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.500
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.96
  AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   18.93
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   56.24
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     133.02
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.27   FLOW VELOCITY(FEET/SEC.) =   8.34
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.94
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     133.02
  PIPE TRAVEL TIME(MIN.) =   1.75    Tc(MIN.) =   20.69
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  164.01
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     288.03

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 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.) =   20.69
  RAINFALL INTENSITY(INCH/HR) =   2.35
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
  TOTAL STREAM AREA(ACRES) =     150.29
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 288.03

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27507.79 | 19.07 | 2.486 | 0.30( 0.25) | 0.83 | 3744.2 | 10600.00 |
| 1 | 30356.88 | 25.70 | 2.047 | 0.30( 0.25) | 0.83 | 5425.6 | 10320.00 |
| 1 | 35399.98 | 38.15 | 1.648 | 0.30( 0.25) | 0.83 | 9823.8 | 110.00 |
| 1 | 37882.91 | 44.44 | 1.507 | 0.30( 0.25) | 0.83 | 12563.1 | 130.00 |
| 1 | 40247.23 | 50.09 | 1.388 | 0.30( 0.25) | 0.84 | 15462.2 | 400.00 |
| 1 | 43471.86 | 61.71 | 1.262 | 0.30( 0.26) | 0.88 | 22130.6 | 13600.00 |
| 1 | 46157.09 | 74.14 | 1.178 | 0.30( 0.27) | 0.90 | 28742.2 | 13100.00 |
| 1 | 47670.86 | 80.30 | 1.136 | 0.30( 0.27) | 0.90 | 31720.4 | 11801.00 |
| 1 | 50071.21 | 89.43 | 1.074 | 0.30( 0.27) | 0.91 | 36765.3 | 11530.00 |
| 1 | 51410.88 | 95.09 | 1.047 | 0.30( 0.28) | 0.92 | 40670.0 | 13510.00 |
| 1 | 52465.74 | 99.81 | 1.025 | 0.30( 0.28) | 0.92 | 43816.9 | 13010.00 |
| 1 | 53531.58 | 104.59 | 1.003 | 0.30( 0.28) | 0.93 | 47028.0 | 11330.00 |
| 1 | 54152.64 | 110.84 | 0.975 | 0.30( 0.28) | 0.93 | 51459.0 | 11130.00 |
| 1 | 53536.00 | 118.48 | 0.940 | 0.30( 0.28) | 0.94 | 55453.0 | 12330.00 |
| 1 | 52870.47 | 125.19 | 0.920 | 0.30( 0.28) | 0.94 | 58796.2 | 12400.00 |
| 1 | 51834.43 | 133.96 | 0.897 | 0.30( 0.28) | 0.94 | 62164.9 | 12201.00 |
| 1 | 50326.03 | 143.45 | 0.872 | 0.30( 0.28) | 0.94 | 64619.1 | 12101.10 |
| 1 | 47791.04 | 155.80 | 0.840 | 0.30( 0.28) | 0.95 | 66783.3 | 12010.00 |
| 1 | 46274.21 | 161.87 | 0.824 | 0.30( 0.28) | 0.95 | 67097.0 | 10210.00 |
| 1 | 41894.29 | 188.51 | 0.767 | 0.30( 0.28) | 0.95 | 67829.7 | 10100.00 |
| 2 | 288.03 | 20.69 | 2.350 | 0.30( 0.22) | 0.73 | 150.3 | 13810.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 27790.31 | 19.07 | 2.486 | 0.30( 0.25) | 0.83 | 3882.7 | 10600.00 |
| 2 | 28489.39 | 20.69 | 2.350 | 0.30( 0.25) | 0.83 | 4303.8 | 13810.00 |
| 3 | 30603.96 | 25.70 | 2.047 | 0.30( 0.25) | 0.83 | 5575.9 | 10320.00 |
| 4 | 35593.14 | 38.15 | 1.648 | 0.30( 0.25) | 0.83 | 9974.1 | 110.00 |
| 5 | 38056.94 | 44.44 | 1.507 | 0.30( 0.25) | 0.83 | 12713.4 | 130.00 |
| 6 | 40405.18 | 50.09 | 1.388 | 0.30( 0.25) | 0.84 | 15612.5 | 400.00 |
| 7 | 43612.82 | 61.71 | 1.262 | 0.30( 0.26) | 0.87 | 22280.9 | 13600.00 |
| 8 | 46286.61 | 74.14 | 1.178 | 0.30( 0.27) | 0.89 | 28892.4 | 13100.00 |
| 9 | 47794.71 | 80.30 | 1.136 | 0.30( 0.27) | 0.90 | 31870.7 | 11801.00 |
| 10 | 50186.67 | 89.43 | 1.074 | 0.30( 0.27) | 0.91 | 36915.6 | 11530.00 |
| 11 | 51522.67 | 95.09 | 1.047 | 0.30( 0.28) | 0.92 | 40820.3 | 13510.00 |
| 12 | 52574.62 | 99.81 | 1.025 | 0.30( 0.28) | 0.92 | 43967.1 | 13010.00 |
| 13 | 53637.50 | 104.59 | 1.003 | 0.30( 0.28) | 0.93 | 47178.3 | 11330.00 |
| 14 | 54254.71 | 110.84 | 0.975 | 0.30( 0.28) | 0.93 | 51609.3 | 11130.00 |
| 15 | 53633.34 | 118.48 | 0.940 | 0.30( 0.28) | 0.94 | 55603.3 | 12330.00 |
| 16 | 52965.05 | 125.19 | 0.920 | 0.30( 0.28) | 0.94 | 58946.5 | 12400.00 |
| 17 | 51925.93 | 133.96 | 0.897 | 0.30( 0.28) | 0.94 | 62315.2 | 12201.00 |
| 18 | 50414.19 | 143.45 | 0.872 | 0.30( 0.28) | 0.94 | 64769.4 | 12101.10 |
| 19 | 47874.85 | 155.80 | 0.840 | 0.30( 0.28) | 0.95 | 66933.6 | 12010.00 |
| 20 | 46355.89 | 161.87 | 0.824 | 0.30( 0.28) | 0.95 | 67247.3 | 10210.00 |
| 21 | 41968.28 | 188.51 | 0.767 | 0.30( 0.28) | 0.95 | 67980.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 54254.71 Tc(MIN.) = 110.84
EFFECTIVE AREA(ACRES) = 51609.30 AREA-AVERAGED Fm(INCH/HR) = 0.28



AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 67980.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56
---
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 19.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 31.60 | 0.30 | 0.683 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54265.57
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.66
AVERAGE FLOW DEPTH(FEET) = 19.48 TRAVEL TIME(MIN.) = 1.34
Tc(MIN.) = 112.18
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 21.72
EFFECTIVE AREA(ACRES) = 51640.91 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68011.6 PEAK FLOW RATE(CFS) = 54254.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 19.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 19.47 FLOW VELOCITY(FEET/SEC.) = 15.66
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

**********
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 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.) = 112.18
RAINFALL INTENSITY(INCH/HR) = 0.97
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93
EFFECTIVE STREAM AREA(ACRES) = 51640.91
TOTAL STREAM AREA(ACRES) = 68011.61
PEAK FLOW RATE(CFS) AT CONFLUENCE = 54254.71

**********
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21
---

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.083
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    56   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     12.68
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     12.68

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.711
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.06
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   2.96
  Tc(MIN.) =   16.82
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   70.68
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      81.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.95   FLOW VELOCITY(FEET/SEC.) =   7.23
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```



```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.361
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.49
  AVERAGE FLOW DEPTH(FEET) =   1.08   TRAVEL TIME(MIN.) =   3.70
  Tc(MIN.) =   20.51
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   59.77
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     129.56
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =   8.90
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     153.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.62
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   1.82
  Tc(MIN.) =   22.34
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   48.18
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     170.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.48
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   8.91
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.058
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     245.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.82
  AVERAGE FLOW DEPTH(FEET) =   1.99   TRAVEL TIME(MIN.) =   3.11
  Tc(MIN.) =   25.45
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  149.07
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     303.14
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.23   FLOW VELOCITY(FEET/SEC.) =   9.39
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     473.04
```



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  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.90
  AVERAGE FLOW DEPTH(FEET) =   3.23   TRAVEL TIME(MIN.) =   3.18
  Tc(MIN.) =   28.63
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  339.58
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     618.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.71   FLOW VELOCITY(FEET/SEC.) =   9.59
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.766
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     709.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.58
  AVERAGE FLOW DEPTH(FEET) =   4.40   TRAVEL TIME(MIN.) =   4.91
  Tc(MIN.) =   33.54
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  182.13
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     742.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.50   FLOW VELOCITY(FEET/SEC.) =   8.69
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  51.9 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  35.42
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     742.79
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   34.08
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.752
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.97      0.30     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     744.23

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 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.) =   34.08
  RAINFALL INTENSITY(INCH/HR) =   1.75
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     744.23

  ** CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27790.31   20.69    2.349  0.30( 0.25) 0.83    3914.3   10600.00
      1    28489.39   22.30    2.248  0.30( 0.25) 0.83    4335.4   13810.00
      1    30603.96   27.28    1.977  0.30( 0.25) 0.83    5607.5   10320.00
      1    35593.14   39.66    1.610  0.30( 0.25) 0.83   10005.7     110.00
      1    38056.94   45.92    1.475  0.30( 0.25) 0.83   12745.0     130.00
      1    40405.18   51.54    1.371  0.30( 0.25) 0.84   15644.1     400.00
      1    43612.82   63.13    1.253  0.30( 0.26) 0.87   22312.5   13600.00
      1    46286.61   75.54    1.168  0.30( 0.27) 0.89   28924.0   13100.00
      1    47794.71   81.69    1.126  0.30( 0.27) 0.90   31902.3   11801.00
      1    50186.67   90.80    1.066  0.30( 0.27) 0.91   36947.2   11530.00
      1    51522.67   96.46    1.041  0.30( 0.28) 0.92   40851.9   13510.00
      1    52574.62  101.16    1.019  0.30( 0.28) 0.92   43998.8   13010.00
      1    53637.50  105.93    0.997  0.30( 0.28) 0.93   47209.9   11330.00
      1    54254.71  112.18    0.969  0.30( 0.28) 0.93   51640.9   11130.00
```



```
      1    53633.34  119.83    0.934  0.30( 0.28) 0.94   55634.9   12330.00
      1    52965.05  126.54    0.916  0.30( 0.28) 0.94   58978.1   12400.00
      1    51925.93  135.32    0.893  0.30( 0.28) 0.94   62346.8   12201.00
      1    50414.19  144.82    0.868  0.30( 0.28) 0.94   64801.0   12101.10
      1    47874.85  157.19    0.836  0.30( 0.28) 0.95   66965.2   12010.00
      1    46355.89  163.27    0.821  0.30( 0.28) 0.95   67278.9   10210.00
      1    41968.28  189.96    0.766  0.30( 0.28) 0.95   68011.6   10100.00
      2      744.23   34.08    1.752  0.30( 0.29) 0.97     565.5   13830.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28426.58   20.69    2.349  0.30( 0.25) 0.84    4257.6   10600.00
      2    29141.32   22.30    2.248  0.30( 0.25) 0.84    4705.3   13810.00
      3    31291.17   27.28    1.977  0.30( 0.25) 0.84    6060.1   10320.00
      4    34089.61   34.08    1.752  0.30( 0.25) 0.84    8589.7   13830.00
      5    36264.67   39.66    1.610  0.30( 0.25) 0.83   10571.2     110.00
      6    38660.20   45.92    1.475  0.30( 0.25) 0.84   13310.5     130.00
      7    40955.40   51.54    1.371  0.30( 0.25) 0.85   16209.6     400.00
      8    44102.70   63.13    1.253  0.30( 0.26) 0.88   22878.0   13600.00
      9    46733.54   75.54    1.168  0.30( 0.27) 0.90   29489.5   13100.00
     10    48220.37   81.69    1.126  0.30( 0.27) 0.90   32467.8   11801.00
     11    50581.70   90.80    1.066  0.30( 0.27) 0.91   37512.7   11530.00
     12    51904.57   96.46    1.041  0.30( 0.28) 0.92   41417.4   13510.00
     13    52945.57  101.16    1.019  0.30( 0.28) 0.92   44564.2   13010.00
     14    53997.37  105.93    0.997  0.30( 0.28) 0.93   47775.4   11330.00
     15    54600.05  112.18    0.969  0.30( 0.28) 0.93   52206.4   11130.00
     16    53960.91  119.83    0.934  0.30( 0.28) 0.94   56200.4   12330.00
     17    53283.58  126.54    0.916  0.30( 0.28) 0.94   59543.6   12400.00
     18    52232.82  135.32    0.893  0.30( 0.28) 0.94   62912.3   12201.00
     19    50708.51  144.82    0.868  0.30( 0.28) 0.94   65366.5   12101.10
     20    48152.81  157.19    0.836  0.30( 0.28) 0.95   67530.7   12010.00
     21    46625.81  163.27    0.821  0.30( 0.28) 0.95   67844.4   10210.00
     22    42210.29  189.96    0.766  0.30( 0.28) 0.95   68577.1   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   54600.05    Tc(MIN.) =   112.18
  EFFECTIVE AREA(ACRES) =   52206.41   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68577.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.966
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        6.61      0.30      0.975     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   54602.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.91
 AVERAGE FLOW DEPTH(FEET) =  17.80   TRAVEL TIME(MIN.) =   0.61
 Tc(MIN.) =  112.79
 SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    4.01
 EFFECTIVE AREA(ACRES) =  52213.02     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    68583.7         PEAK FLOW RATE(CFS) =   54600.05
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  17.80

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 17.80   FLOW VELOCITY(FEET/SEC.) =  17.92
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 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.) =  112.79
 RAINFALL INTENSITY(INCH/HR) =   0.97
 AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93
 EFFECTIVE STREAM AREA(ACRES) =   52213.02
 TOTAL STREAM AREA(ACRES) =   68583.72
 PEAK FLOW RATE(CFS) AT CONFLUENCE =   54600.05

****************************************************************************
 FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
 ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.371
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      -        4.95      0.30      1.000    56   12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     13.68
```



```
 TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     13.68

****************************************************************************
 FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        4.02      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.63
 AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   1.26
 Tc(MIN.) =   13.40
 SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =   10.35
 EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      23.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.43   FLOW VELOCITY(FEET/SEC.) =   4.94
 LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
 CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.873
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.17      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.40
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.76
 AVERAGE FLOW DEPTH(FEET) =   0.59   TRAVEL TIME(MIN.) =   1.80
 Tc(MIN.) =   15.20
```

```
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   16.60
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      37.38
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   5.06
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.738
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.49
  AVERAGE FLOW DEPTH(FEET) =   0.71   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   16.55
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   14.84
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      50.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   5.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.487
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.38
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   2.51
  Tc(MIN.) =   19.06
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   35.74
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      80.82
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.00   FLOW VELOCITY(FEET/SEC.) =   6.72
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.50
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   3.15
  Tc(MIN.) =   22.21
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   69.40
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     141.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   6.92
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.77
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     141.59
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   24.07
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   24.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   75.19
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     208.37

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 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.) =   24.07
  RAINFALL INTENSITY(INCH/HR) =   2.14
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     208.37

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28426.58   21.43    2.303  0.30( 0.25) 0.84    4264.3   10600.00
      1    29141.32   23.02    2.203  0.30( 0.25) 0.84    4711.9   13810.00
      1    31291.17   27.99    1.946  0.30( 0.25) 0.84    6066.7   10320.00
      1    34089.61   34.78    1.735  0.30( 0.25) 0.84    8596.3   13830.00
      1    36264.67   40.35    1.594  0.30( 0.25) 0.83   10577.8     110.00
      1    38660.20   46.59    1.461  0.30( 0.25) 0.84   13317.1     130.00
      1    40955.40   52.20    1.364  0.30( 0.25) 0.85   16216.2     400.00
```



```
      1    44102.70   63.78    1.248  0.30( 0.26) 0.88   22884.6   13600.00
      1    46733.54   76.18    1.164  0.30( 0.27) 0.90   29496.2   13100.00
      1    48220.37   82.32    1.122  0.30( 0.27) 0.90   32474.4   11801.00
      1    50581.70   91.42    1.063  0.30( 0.27) 0.91   37519.3   11530.00
      1    51904.57   97.07    1.038  0.30( 0.28) 0.92   41424.0   13510.00
      1    52945.57  101.78    1.016  0.30( 0.28) 0.92   44570.9   13010.00
      1    53997.37  106.55    0.994  0.30( 0.28) 0.93   47782.0   11330.00
      1    54600.05  112.79    0.966  0.30( 0.28) 0.93   52213.0   11130.00
      1    53960.91  120.44    0.932  0.30( 0.28) 0.94   56207.0   12330.00
      1    53283.58  127.15    0.914  0.30( 0.28) 0.94   59550.2   12400.00
      1    52232.82  135.94    0.892  0.30( 0.28) 0.94   62918.9   12201.00
      1    50708.51  145.45    0.867  0.30( 0.28) 0.94   65373.1   12101.10
      1    48152.81  157.82    0.835  0.30( 0.28) 0.95   67537.3   12010.00
      1    46625.81  163.90    0.819  0.30( 0.28) 0.95   67851.0   10210.00
      1    42210.29  190.61    0.765  0.30( 0.28) 0.95   68583.7   10100.00
      2      208.37   24.07    2.136  0.30( 0.26) 0.86     123.2   13850.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    28628.50   21.43    2.303  0.30( 0.25) 0.84    4373.9   10600.00
      2    29347.62   23.02    2.203  0.30( 0.25) 0.84    4829.7   13810.00
      3    29803.07   24.07    2.136  0.30( 0.25) 0.84    5120.8   13850.00
      4    31478.39   27.99    1.946  0.30( 0.25) 0.84    6189.9   10320.00
      5    34253.41   34.78    1.735  0.30( 0.25) 0.84    8719.5   13830.00
      6    36412.84   40.35    1.594  0.30( 0.25) 0.84   10701.0     110.00
      7    38793.68   46.59    1.461  0.30( 0.25) 0.84   13440.4     130.00
      8    41078.06   52.20    1.364  0.30( 0.25) 0.85   16339.5     400.00
      9    44212.57   63.78    1.248  0.30( 0.26) 0.88   23007.8   13600.00
     10    46834.06   76.18    1.164  0.30( 0.27) 0.90   29619.4   13100.00
     11    48316.25   82.32    1.122  0.30( 0.27) 0.90   32597.6   11801.00
     12    50671.08   91.42    1.063  0.30( 0.27) 0.91   37642.5   11530.00
     13    51991.08   97.07    1.038  0.30( 0.28) 0.92   41547.2   13510.00
     14    53029.70  101.78    1.016  0.30( 0.28) 0.92   44694.1   13010.00
     15    54079.09  106.55    0.994  0.30( 0.28) 0.93   47905.2   11330.00
     16    54678.61  112.79    0.966  0.30( 0.28) 0.93   52336.2   11130.00
     17    54035.69  120.44    0.932  0.30( 0.28) 0.94   56330.2   12330.00
     18    53356.42  127.15    0.914  0.30( 0.28) 0.94   59673.4   12400.00
     19    52303.13  135.94    0.892  0.30( 0.28) 0.94   63042.2   12201.00
     20    50776.08  145.45    0.867  0.30( 0.28) 0.94   65496.3   12101.10
     21    48216.81  157.82    0.835  0.30( 0.28) 0.95   67660.5   12010.00
     22    46688.06  163.90    0.819  0.30( 0.28) 0.95   67974.2   10210.00
     23    42266.55  190.61    0.765  0.30( 0.28) 0.95   68706.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   54678.61    Tc(MIN.) =   112.79
  EFFECTIVE AREA(ACRES) =   52336.23   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    68706.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   54680.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  27.68
  AVERAGE FLOW DEPTH(FEET) =  13.00   TRAVEL TIME(MIN.) =   0.37
  Tc(MIN.) =  113.16
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.92
  EFFECTIVE AREA(ACRES) =  52341.12     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =    68711.8         PEAK FLOW RATE(CFS) =   54678.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.00   FLOW VELOCITY(FEET/SEC.) =  27.68
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 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.) =  113.16
  RAINFALL INTENSITY(INCH/HR) =   0.96
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52341.12
  TOTAL STREAM AREA(ACRES) =   68711.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   54678.61

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.823
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    56   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     16.62
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     16.62

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.555
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.16
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   2.67
  Tc(MIN.) =   18.38
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   26.41
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      41.27
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.63   FLOW VELOCITY(FEET/SEC.) =   5.81
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.30     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.11
  AVERAGE FLOW DEPTH(FEET) =   0.98   TRAVEL TIME(MIN.) =   2.86
  Tc(MIN.) =   21.24
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   60.51
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      97.38
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   6.74
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.133
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.30     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.74
  AVERAGE FLOW DEPTH(FEET) =   1.15   TRAVEL TIME(MIN.) =   2.89
  Tc(MIN.) =   24.13
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   51.87
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     140.50
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   9.14
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.30     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.03
  AVERAGE FLOW DEPTH(FEET) =   3.05   TRAVEL TIME(MIN.) =   2.41
  Tc(MIN.) =   26.54
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =  114.76
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     245.95
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.41   FLOW VELOCITY(FEET/SEC.) =   4.28
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  41.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.95
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     245.95
  PIPE TRAVEL TIME(MIN.) =   1.63    Tc(MIN.) =   28.17
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.938
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.90      0.30     0.743     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 53.86
EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 289.56

**********
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 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.) = 28.17
RAINFALL INTENSITY(INCH/HR) = 1.94
AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.90
EFFECTIVE STREAM AREA(ACRES) = 192.83
TOTAL STREAM AREA(ACRES) = 192.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 289.56

** CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28628.50 | 21.87 | 2.275 | 0.30( 0.25) | 0.84 | 4378.8 | 10600.00 |
| 1 | 29347.62 | 23.47 | 2.175 | 0.30( 0.25) | 0.84 | 4834.6 | 13810.00 |
| 1 | 29803.07 | 24.51 | 2.109 | 0.30( 0.25) | 0.84 | 5125.7 | 13850.00 |
| 1 | 31478.39 | 28.43 | 1.927 | 0.30( 0.25) | 0.84 | 6194.8 | 10320.00 |
| 1 | 34253.41 | 35.20 | 1.724 | 0.30( 0.25) | 0.84 | 8724.4 | 13830.00 |
| 1 | 36412.84 | 40.76 | 1.585 | 0.30( 0.25) | 0.84 | 10705.9 | 110.00 |
| 1 | 38793.68 | 47.00 | 1.453 | 0.30( 0.25) | 0.84 | 13445.2 | 130.00 |
| 1 | 41078.06 | 52.60 | 1.359 | 0.30( 0.25) | 0.85 | 16344.4 | 400.00 |
| 1 | 44212.57 | 64.17 | 1.246 | 0.30( 0.26) | 0.88 | 23012.7 | 13600.00 |
| 1 | 46834.06 | 76.56 | 1.161 | 0.30( 0.27) | 0.90 | 29624.3 | 13100.00 |
| 1 | 48316.25 | 82.70 | 1.120 | 0.30( 0.27) | 0.90 | 32602.5 | 11801.00 |
| 1 | 50671.08 | 91.80 | 1.062 | 0.30( 0.27) | 0.91 | 37647.4 | 11530.00 |
| 1 | 51991.08 | 97.45 | 1.036 | 0.30( 0.28) | 0.92 | 41552.1 | 13510.00 |
| 1 | 53029.70 | 102.15 | 1.015 | 0.30( 0.28) | 0.92 | 44699.0 | 13010.00 |
| 1 | 54079.09 | 106.91 | 0.993 | 0.30( 0.28) | 0.93 | 47910.1 | 11330.00 |
| 1 | 54678.61 | 113.16 | 0.964 | 0.30( 0.28) | 0.93 | 52341.1 | 11130.00 |
| 1 | 54035.69 | 120.81 | 0.931 | 0.30( 0.28) | 0.94 | 56335.1 | 12330.00 |
| 1 | 53356.42 | 127.52 | 0.913 | 0.30( 0.28) | 0.94 | 59678.3 | 12400.00 |
| 1 | 52303.13 | 136.31 | 0.891 | 0.30( 0.28) | 0.94 | 63047.1 | 12201.00 |
| 1 | 50776.08 | 145.82 | 0.866 | 0.30( 0.28) | 0.94 | 65501.2 | 12101.10 |
| 1 | 48216.81 | 158.21 | 0.834 | 0.30( 0.28) | 0.95 | 67665.4 | 12010.00 |
| 1 | 46688.06 | 164.29 | 0.818 | 0.30( 0.28) | 0.95 | 67979.1 | 10210.00 |
| 1 | 42266.55 | 191.01 | 0.764 | 0.30( 0.28) | 0.95 | 68711.8 | 10100.00 |
| 2 | 289.56 | 28.17 | 1.938 | 0.30( 0.27) | 0.90 | 192.8 | 13870.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28898.75 | 21.87 | 2.275 | 0.30( 0.25) | 0.84 | 4528.5 | 10600.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 29623.05 | 23.47 | 2.175 | 0.30( 0.25) | 0.84 | 4995.2 | 13810.00 |
| 3 | 30080.81 | 24.51 | 2.109 | 0.30( 0.25) | 0.84 | 5293.5 | 13850.00 |
| 4 | 31660.22 | 28.17 | 1.938 | 0.30( 0.25) | 0.84 | 6318.9 | 13870.00 |
| 5 | 31766.02 | 28.43 | 1.927 | 0.30( 0.25) | 0.84 | 6387.6 | 10320.00 |
| 6 | 34505.86 | 35.20 | 1.724 | 0.30( 0.25) | 0.84 | 8917.2 | 13830.00 |
| 7 | 36641.17 | 40.76 | 1.585 | 0.30( 0.25) | 0.84 | 10898.7 | 110.00 |
| 8 | 38999.06 | 47.00 | 1.453 | 0.30( 0.25) | 0.84 | 13638.1 | 130.00 |
| 9 | 41267.20 | 52.60 | 1.359 | 0.30( 0.25) | 0.85 | 16537.2 | 400.00 |
| 10 | 44382.04 | 64.17 | 1.246 | 0.30( 0.26) | 0.88 | 23205.6 | 13600.00 |
| 11 | 46988.89 | 76.56 | 1.161 | 0.30( 0.27) | 0.90 | 29817.1 | 13100.00 |
| 12 | 48463.84 | 82.70 | 1.120 | 0.30( 0.27) | 0.90 | 32795.3 | 11801.00 |
| 13 | 50808.63 | 91.80 | 1.062 | 0.30( 0.27) | 0.91 | 37840.3 | 11530.00 |
| 14 | 52124.16 | 97.45 | 1.036 | 0.30( 0.28) | 0.92 | 41744.9 | 13510.00 |
| 15 | 53159.05 | 102.15 | 1.015 | 0.30( 0.28) | 0.92 | 44891.8 | 13010.00 |
| 16 | 54204.66 | 106.91 | 0.993 | 0.30( 0.28) | 0.93 | 48102.9 | 11330.00 |
| 17 | 54799.24 | 113.16 | 0.964 | 0.30( 0.28) | 0.93 | 52534.0 | 11130.00 |
| 18 | 54150.53 | 120.81 | 0.931 | 0.30( 0.28) | 0.94 | 56527.9 | 12330.00 |
| 19 | 53468.23 | 127.52 | 0.913 | 0.30( 0.28) | 0.94 | 59871.1 | 12400.00 |
| 20 | 52410.98 | 136.31 | 0.891 | 0.30( 0.28) | 0.94 | 63239.9 | 12201.00 |
| 21 | 50879.63 | 145.82 | 0.866 | 0.30( 0.28) | 0.94 | 65694.0 | 12101.10 |
| 22 | 48314.77 | 158.21 | 0.834 | 0.30( 0.28) | 0.95 | 67858.2 | 12010.00 |
| 23 | 46783.28 | 164.29 | 0.818 | 0.30( 0.28) | 0.95 | 68171.9 | 10210.00 |
| 24 | 42352.50 | 191.01 | 0.764 | 0.30( 0.28) | 0.95 | 68904.7 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 54799.24 Tc(MIN.) = 113.16
EFFECTIVE AREA(ACRES) = 52533.95 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68904.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134066.75 FEET.

**********
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56
----------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 28.09
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.954
SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 117.69 | 0.30 | 0.724 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54838.29
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.19
AVERAGE FLOW DEPTH(FEET) = 28.09 TRAVEL TIME(MIN.) = 2.16
Tc(MIN.) = 115.31
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 78.09
EFFECTIVE AREA(ACRES) = 52651.64 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69022.3 PEAK FLOW RATE(CFS) = 54799.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  28.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 28.08   FLOW VELOCITY(FEET/SEC.) =   9.19
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 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.) =  115.31
  RAINFALL INTENSITY(INCH/HR) =   0.95
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93
  EFFECTIVE STREAM AREA(ACRES) =   52651.64
  TOTAL STREAM AREA(ACRES) =   69022.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   54799.24

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.951
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    56    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     12.71
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     12.71

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.410
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.43
  AVERAGE FLOW DEPTH(FEET) =   0.47   TRAVEL TIME(MIN.) =   1.34
  Tc(MIN.) =    8.31
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   30.07
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =      41.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =   6.26
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.868
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.24
  AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   1.34
  Tc(MIN.) =    9.65
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   40.14
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      76.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   8.88
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.09
  AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =   11.45
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   45.49
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =     113.35
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   9.50
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.157
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.68
  AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   1.97
  Tc(MIN.) =   13.42
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   73.16
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     174.82
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
```



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  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =  10.15
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.39
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     174.82
  PIPE TRAVEL TIME(MIN.) =   1.72    Tc(MIN.) =   15.14
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   28.29
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     186.13

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 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.) =   15.14
  RAINFALL INTENSITY(INCH/HR) =   2.88
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     186.13

  ** CONFLUENCE DATA **
```

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 28898.75 | 24.43 | 2.114 | 0.30( 0.25) | 0.84 | 4646.2 | 10600.00 |
| 1 | 29623.05 | 26.01 | 2.033 | 0.30( 0.25) | 0.84 | 5112.9 | 13810.00 |
| 1 | 30080.81 | 27.05 | 1.988 | 0.30( 0.25) | 0.84 | 5411.2 | 13850.00 |
| 1 | 31660.22 | 30.67 | 1.840 | 0.30( 0.25) | 0.84 | 6436.6 | 13870.00 |
| 1 | 31766.02 | 30.92 | 1.833 | 0.30( 0.25) | 0.84 | 6505.3 | 10320.00 |
| 1 | 34505.86 | 37.64 | 1.661 | 0.30( 0.25) | 0.84 | 9034.9 | 13830.00 |
| 1 | 36641.17 | 43.16 | 1.534 | 0.30( 0.25) | 0.84 | 11016.4 | 110.00 |
| 1 | 38999.06 | 49.36 | 1.403 | 0.30( 0.25) | 0.84 | 13755.8 | 130.00 |
| 1 | 41267.20 | 54.93 | 1.332 | 0.30( 0.25) | 0.85 | 16654.9 | 400.00 |
| 1 | 44382.04 | 66.45 | 1.230 | 0.30( 0.26) | 0.88 | 23323.2 | 13600.00 |
| 1 | 46988.89 | 78.81 | 1.146 | 0.30( 0.27) | 0.89 | 29934.8 | 13100.00 |
| 1 | 48463.84 | 84.93 | 1.104 | 0.30( 0.27) | 0.90 | 32913.0 | 11801.00 |
| 1 | 50808.63 | 94.00 | 1.052 | 0.30( 0.27) | 0.91 | 37957.9 | 11530.00 |
| 1 | 52124.16 | 99.63 | 1.026 | 0.30( 0.28) | 0.92 | 41862.6 | 13510.00 |
| 1 | 53159.05 | 104.32 | 1.005 | 0.30( 0.28) | 0.92 | 45009.5 | 13010.00 |
| 1 | 54204.66 | 109.08 | 0.983 | 0.30( 0.28) | 0.93 | 48220.6 | 11330.00 |
| 1 | 54799.24 | 115.31 | 0.954 | 0.30( 0.28) | 0.93 | 52651.6 | 11130.00 |
| 1 | 54150.53 | 122.97 | 0.925 | 0.30( 0.28) | 0.94 | 56645.6 | 12330.00 |
| 1 | 53468.23 | 129.69 | 0.908 | 0.30( 0.28) | 0.94 | 59988.8 | 12400.00 |
| 1 | 52410.98 | 138.49 | 0.885 | 0.30( 0.28) | 0.94 | 63357.6 | 12201.00 |
| 1 | 50879.63 | 148.02 | 0.860 | 0.30( 0.28) | 0.94 | 65811.7 | 12101.10 |
| 1 | 48314.77 | 160.44 | 0.828 | 0.30( 0.28) | 0.95 | 67975.9 | 12010.00 |
| 1 | 46783.28 | 166.54 | 0.812 | 0.30( 0.28) | 0.95 | 68289.6 | 10210.00 |
| 1 | 42352.50 | 193.32 | 0.762 | 0.30( 0.28) | 0.95 | 69022.3 | 10100.00 |
| 2 | 186.13 | 15.14 | 2.879 | 0.30( 0.28) | 0.94 | 79.6 | 13889.00 |

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

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25452.09 | 15.14 | 2.879 | 0.30( 0.25) | 0.84 | 2958.7 | 13889.00 |
| 2 | 29030.04 | 24.43 | 2.114 | 0.30( 0.25) | 0.84 | 4725.8 | 10600.00 |
| 3 | 29748.59 | 26.01 | 2.033 | 0.30( 0.25) | 0.84 | 5192.5 | 13810.00 |
| 4 | 30203.08 | 27.05 | 1.988 | 0.30( 0.25) | 0.84 | 5490.8 | 13850.00 |
| 5 | 31771.90 | 30.67 | 1.840 | 0.30( 0.25) | 0.84 | 6516.2 | 13870.00 |
| 6 | 31877.23 | 30.92 | 1.833 | 0.30( 0.25) | 0.84 | 6584.9 | 10320.00 |
| 7 | 34604.74 | 37.64 | 1.661 | 0.30( 0.25) | 0.84 | 9114.5 | 13830.00 |
| 8 | 36730.93 | 43.16 | 1.534 | 0.30( 0.25) | 0.84 | 11096.1 | 110.00 |
| 9 | 39079.41 | 49.36 | 1.403 | 0.30( 0.25) | 0.84 | 13835.4 | 130.00 |
| 10 | 41342.51 | 54.93 | 1.332 | 0.30( 0.25) | 0.85 | 16734.5 | 400.00 |
| 11 | 44450.02 | 66.45 | 1.230 | 0.30( 0.26) | 0.88 | 23402.9 | 13600.00 |
| 12 | 47050.86 | 78.81 | 1.146 | 0.30( 0.27) | 0.89 | 30014.4 | 13100.00 |
| 13 | 48522.83 | 84.93 | 1.104 | 0.30( 0.27) | 0.90 | 32992.6 | 11801.00 |
| 14 | 50863.84 | 94.00 | 1.052 | 0.30( 0.27) | 0.91 | 38037.6 | 11530.00 |
| 15 | 52177.52 | 99.63 | 1.026 | 0.30( 0.28) | 0.92 | 41942.2 | 13510.00 |
| 16 | 53210.88 | 104.32 | 1.005 | 0.30( 0.28) | 0.92 | 45089.1 | 13010.00 |
| 17 | 54254.93 | 109.08 | 0.983 | 0.30( 0.28) | 0.93 | 48300.2 | 11330.00 |
| 18 | 54847.47 | 115.31 | 0.954 | 0.30( 0.28) | 0.93 | 52731.3 | 11130.00 |
| 19 | 54196.67 | 122.97 | 0.925 | 0.30( 0.28) | 0.94 | 56725.2 | 12330.00 |
| 20 | 53513.12 | 129.69 | 0.908 | 0.30( 0.28) | 0.94 | 60068.4 | 12400.00 |
| 21 | 52454.23 | 138.49 | 0.885 | 0.30( 0.28) | 0.94 | 63437.2 | 12201.00 |
| 22 | 50921.11 | 148.02 | 0.860 | 0.30( 0.28) | 0.94 | 65891.3 | 12101.10 |
| 23 | 48353.93 | 160.44 | 0.828 | 0.30( 0.28) | 0.95 | 68055.5 | 12010.00 |
| 24 | 46821.30 | 166.54 | 0.812 | 0.30( 0.28) | 0.95 | 68369.2 | 10210.00 |



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | 42386.94 | 193.32 | 0.762 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 54847.47 Tc(MIN.) = 115.31
EFFECTIVE AREA(ACRES) = 52731.27 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 69102.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 69102.0 TC(MIN.) = 115.31
EFFECTIVE AREA(ACRES) = 52731.27 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.933
PEAK FLOW RATE(CFS) = 54847.47

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25452.09 | 15.14 | 2.879 | 0.30( 0.25) | 0.84 | 2958.7 | 13889.00 |
| 2 | 29030.04 | 24.43 | 2.114 | 0.30( 0.25) | 0.84 | 4725.8 | 10600.00 |
| 3 | 29748.59 | 26.01 | 2.033 | 0.30( 0.25) | 0.84 | 5192.5 | 13810.00 |
| 4 | 30203.08 | 27.05 | 1.988 | 0.30( 0.25) | 0.84 | 5490.8 | 13850.00 |
| 5 | 31771.90 | 30.67 | 1.840 | 0.30( 0.25) | 0.84 | 6516.2 | 13870.00 |
| 6 | 31877.23 | 30.92 | 1.833 | 0.30( 0.25) | 0.84 | 6584.9 | 10320.00 |
| 7 | 34604.74 | 37.64 | 1.661 | 0.30( 0.25) | 0.84 | 9114.5 | 13830.00 |
| 8 | 36730.93 | 43.16 | 1.534 | 0.30( 0.25) | 0.84 | 11096.1 | 110.00 |
| 9 | 39079.41 | 49.36 | 1.403 | 0.30( 0.25) | 0.84 | 13835.4 | 130.00 |
| 10 | 41342.51 | 54.93 | 1.332 | 0.30( 0.25) | 0.85 | 16734.5 | 400.00 |
| 11 | 44450.02 | 66.45 | 1.230 | 0.30( 0.26) | 0.88 | 23402.9 | 13600.00 |
| 12 | 47050.86 | 78.81 | 1.146 | 0.30( 0.27) | 0.89 | 30014.4 | 13100.00 |
| 13 | 48522.83 | 84.93 | 1.104 | 0.30( 0.27) | 0.90 | 32992.6 | 11801.00 |
| 14 | 50863.84 | 94.00 | 1.052 | 0.30( 0.27) | 0.91 | 38037.6 | 11530.00 |
| 15 | 52177.52 | 99.63 | 1.026 | 0.30( 0.28) | 0.92 | 41942.2 | 13510.00 |
| 16 | 53210.88 | 104.32 | 1.005 | 0.30( 0.28) | 0.92 | 45089.1 | 13010.00 |
| 17 | 54254.93 | 109.08 | 0.983 | 0.30( 0.28) | 0.93 | 48300.2 | 11330.00 |
| 18 | 54847.47 | 115.31 | 0.954 | 0.30( 0.28) | 0.93 | 52731.3 | 11130.00 |
| 19 | 54196.67 | 122.97 | 0.925 | 0.30( 0.28) | 0.94 | 56725.2 | 12330.00 |
| 20 | 53513.12 | 129.69 | 0.908 | 0.30( 0.28) | 0.94 | 60068.4 | 12400.00 |
| 21 | 52454.23 | 138.49 | 0.885 | 0.30( 0.28) | 0.94 | 63437.2 | 12201.00 |
| 22 | 50921.11 | 148.02 | 0.860 | 0.30( 0.28) | 0.94 | 65891.3 | 12101.10 |
| 23 | 48353.93 | 160.44 | 0.828 | 0.30( 0.28) | 0.95 | 68055.5 | 12010.00 |
| 24 | 46821.30 | 166.54 | 0.812 | 0.30( 0.28) | 0.95 | 68369.2 | 10210.00 |
| 25 | 42386.94 | 193.32 | 0.762 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 FREE DRAINING                           *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL - PHASE NOPA5                *
* 100-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU00EV39.DAT
  TIME/DATE OF STUDY: 13:29 08/09/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.744
   2)   10.00;  3.724
   3)   15.00;  2.891
   4)   20.00;  2.392
   5)   25.00;  2.077
   6)   30.00;  1.856
   7)   40.00;  1.601
   8)   50.00;  1.389
   9)   60.00;  1.273
  10)   90.00;  1.070
  11)  120.00;  0.932
  12)  180.00;  0.777
  13)  360.00;  0.571
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.581
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    56   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.81
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     11.81

****************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.56
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   1.64
  Tc(MIN.) =   12.50
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   22.92
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      33.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.41   FLOW VELOCITY(FEET/SEC.) =   7.51
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.56
  AVERAGE FLOW DEPTH(FEET) =   0.60   TRAVEL TIME(MIN.) =   1.17
  Tc(MIN.) =   13.67
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   60.49
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      92.06
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =  10.79
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.29
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      92.06
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =   14.47
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.980
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   51.37
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     139.07

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.12
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     139.07
  PIPE TRAVEL TIME(MIN.) =   2.03    Tc(MIN.) =   16.50
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.742
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   99.78
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     226.52

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 25452.09 | 15.14 | 0.30( 0.25) | 0.84 | 2958.7 | 13889.00 |
| 2 | 31877.23 | 30.92 | 0.30( 0.25) | 0.84 | 6584.9 | 10320.00 |
| 3 | 34604.74 | 37.64 | 0.30( 0.25) | 0.84 | 9114.5 | 13830.00 |
| 4 | 36730.93 | 43.16 | 0.30( 0.25) | 0.84 | 11096.1 | 110.00 |
| 5 | 39079.41 | 49.36 | 0.30( 0.25) | 0.84 | 13835.4 | 130.00 |
| 6 | 41342.51 | 54.93 | 0.30( 0.25) | 0.85 | 16734.5 | 400.00 |
| 7 | 44450.02 | 66.45 | 0.30( 0.26) | 0.88 | 23402.9 | 13600.00 |
| 8 | 47050.86 | 78.81 | 0.30( 0.27) | 0.89 | 30014.4 | 13100.00 |
| 9 | 48522.83 | 84.93 | 0.30( 0.27) | 0.90 | 32992.6 | 11801.00 |
| 10 | 50863.84 | 94.00 | 0.30( 0.27) | 0.91 | 38037.6 | 11530.00 |
| 11 | 53210.88 | 104.32 | 0.30( 0.28) | 0.92 | 45089.1 | 13010.00 |
| 12 | 54254.93 | 109.08 | 0.30( 0.28) | 0.93 | 48300.2 | 11330.00 |
| 13 | 54847.47 | 115.31 | 0.30( 0.28) | 0.93 | 52731.3 | 11130.00 |
| 14 | 54196.67 | 122.97 | 0.30( 0.28) | 0.94 | 56725.2 | 12330.00 |
| 15 | 53513.12 | 129.69 | 0.30( 0.28) | 0.94 | 60068.4 | 12400.00 |
| 16 | 52454.23 | 138.49 | 0.30( 0.28) | 0.94 | 63437.2 | 12201.00 |
| 17 | 50921.11 | 148.02 | 0.30( 0.28) | 0.94 | 65891.3 | 12101.10 |
| 18 | 48353.93 | 160.44 | 0.30( 0.28) | 0.95 | 68055.5 | 12010.00 |
| 19 | 46821.30 | 166.54 | 0.30( 0.28) | 0.95 | 68369.2 | 10210.00 |
| 20 | 42386.94 | 193.32 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

---

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

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|
| 1 | 25452.09 | 15.14 | 0.30( 0.25) | 0.84 | 2958.7 | 13889.00 |
| 2 | 31877.23 | 30.92 | 0.30( 0.25) | 0.84 | 6584.9 | 10320.00 |
| 3 | 34604.74 | 37.64 | 0.30( 0.25) | 0.84 | 9114.5 | 13830.00 |
| 4 | 36730.93 | 43.16 | 0.30( 0.25) | 0.84 | 11096.1 | 110.00 |
| 5 | 39079.41 | 49.36 | 0.30( 0.25) | 0.84 | 13835.4 | 130.00 |
| 6 | 41342.51 | 54.93 | 0.30( 0.25) | 0.85 | 16734.5 | 400.00 |
| 7 | 44450.02 | 66.45 | 0.30( 0.26) | 0.88 | 23402.9 | 13600.00 |
| 8 | 47050.86 | 78.81 | 0.30( 0.27) | 0.89 | 30014.4 | 13100.00 |
| 9 | 48522.83 | 84.93 | 0.30( 0.27) | 0.90 | 32992.6 | 11801.00 |
| 10 | 50863.84 | 94.00 | 0.30( 0.27) | 0.91 | 38037.6 | 11530.00 |
| 11 | 53210.88 | 104.32 | 0.30( 0.28) | 0.92 | 45089.1 | 13010.00 |
| 12 | 54254.93 | 109.08 | 0.30( 0.28) | 0.93 | 48300.2 | 11330.00 |
| 13 | 54847.47 | 115.31 | 0.30( 0.28) | 0.93 | 52731.3 | 11130.00 |
| 14 | 54196.67 | 122.97 | 0.30( 0.28) | 0.94 | 56725.2 | 12330.00 |
| 15 | 53513.12 | 129.69 | 0.30( 0.28) | 0.94 | 60068.4 | 12400.00 |
| 16 | 52454.23 | 138.49 | 0.30( 0.28) | 0.94 | 63437.2 | 12201.00 |
| 17 | 50921.11 | 148.02 | 0.30( 0.28) | 0.94 | 65891.3 | 12101.10 |
| 18 | 48353.93 | 160.44 | 0.30( 0.28) | 0.95 | 68055.5 | 12010.00 |
| 19 | 46821.30 | 166.54 | 0.30( 0.28) | 0.95 | 68369.2 | 10210.00 |
| 20 | 42386.94 | 193.32 | 0.30( 0.28) | 0.95 | 69102.0 | 10100.00 |

TOTAL AREA(ACRES) = 69102.0

**********

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56



---

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

>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 24.75

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.944

SUBAREA LOSS RATE DATA(AMC II):

| DEVELOPMENT TYPE/ LAND USE | SCS SOIL GROUP | AREA (ACRES) | Fp (INCH/HR) | Ap (DECIMAL) | SCS CN |
|---|---|---|---|---|---|
| USER-DEFINED | - | 96.09 | 0.30 | 0.535 | - |

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54881.35

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.14

AVERAGE FLOW DEPTH(FEET) = 24.75 TRAVEL TIME(MIN.) = 2.06

Tc(MIN.) = 117.37

SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 67.77

EFFECTIVE AREA(ACRES) = 52827.36 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 69198.1 PEAK FLOW RATE(CFS) = 54847.47

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 24.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 24.74 FLOW VELOCITY(FEET/SEC.) = 11.14

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

**********

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

---

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

==========

** MAIN STREAM CONFLUENCE DATA **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25452.09 | 17.68 | 2.624 | 0.30( 0.25) | 0.83 | 3054.8 | 13889.00 |
| 2 | 31877.23 | 33.31 | 1.772 | 0.30( 0.25) | 0.84 | 6681.0 | 10320.00 |
| 3 | 34604.74 | 39.98 | 1.602 | 0.30( 0.25) | 0.83 | 9210.6 | 13830.00 |
| 4 | 36730.93 | 45.46 | 1.485 | 0.30( 0.25) | 0.83 | 11192.1 | 110.00 |
| 5 | 39079.41 | 51.62 | 1.370 | 0.30( 0.25) | 0.84 | 13931.5 | 130.00 |
| 6 | 41342.51 | 57.15 | 1.306 | 0.30( 0.25) | 0.84 | 16830.6 | 400.00 |
| 7 | 44450.02 | 68.63 | 1.215 | 0.30( 0.26) | 0.88 | 23499.0 | 13600.00 |
| 8 | 47050.86 | 80.96 | 1.131 | 0.30( 0.27) | 0.89 | 30110.5 | 13100.00 |
| 9 | 48522.83 | 87.06 | 1.090 | 0.30( 0.27) | 0.90 | 33088.7 | 11801.00 |
| 10 | 50863.84 | 96.10 | 1.042 | 0.30( 0.27) | 0.91 | 38133.7 | 11530.00 |
| 11 | 53210.88 | 106.40 | 0.995 | 0.30( 0.28) | 0.92 | 45185.2 | 13010.00 |
| 12 | 54254.93 | 111.14 | 0.973 | 0.30( 0.28) | 0.93 | 48396.3 | 11330.00 |
| 13 | 54847.47 | 117.37 | 0.944 | 0.30( 0.28) | 0.93 | 52827.4 | 11130.00 |
| 14 | 54196.67 | 125.04 | 0.919 | 0.30( 0.28) | 0.94 | 56821.3 | 12330.00 |
| 15 | 53513.12 | 131.76 | 0.902 | 0.30( 0.28) | 0.94 | 60164.5 | 12400.00 |
| 16 | 52454.23 | 140.58 | 0.879 | 0.30( 0.28) | 0.94 | 63533.3 | 12201.00 |

```
   17    50921.11  150.12    0.854  0.30( 0.28) 0.94   65987.4   12101.10
   18    48353.93  162.57    0.822  0.30( 0.28) 0.94   68151.6   12010.00
   19    46821.30  168.69    0.806  0.30( 0.28) 0.94   68465.3   10210.00
   20    42386.94  195.53    0.759  0.30( 0.28) 0.95   69198.1   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      226.52   16.50    2.742  0.30( 0.25) 0.84     101.1   13900.00
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    25156.60   16.50    2.742  0.30( 0.25) 0.83    2951.6   13900.00
     2    25667.86   17.68    2.624  0.30( 0.25) 0.83    3155.9   13889.00
     3    32015.46   33.31    1.772  0.30( 0.25) 0.84    6782.1   10320.00
     4    34727.49   39.98    1.602  0.30( 0.25) 0.84    9311.8   13830.00
     5    36843.09   45.46    1.485  0.30( 0.25) 0.83   11293.3     110.00
     6    39181.09   51.62    1.370  0.30( 0.25) 0.84   14032.6     130.00
     7    41438.36   57.15    1.306  0.30( 0.25) 0.84   16931.7     400.00
     8    44537.55   68.63    1.215  0.30( 0.26) 0.87   23600.1   13600.00
     9    47130.79   80.96    1.131  0.30( 0.27) 0.89   30211.6   13100.00
    10    48599.00   87.06    1.090  0.30( 0.27) 0.90   33189.9   11801.00
    11    50935.64   96.10    1.042  0.30( 0.27) 0.91   38234.8   11530.00
    12    53278.37  106.40    0.995  0.30( 0.28) 0.92   45286.3   13010.00
    13    54320.44  111.14    0.973  0.30( 0.28) 0.93   48497.5   11330.00
    14    54910.37  117.37    0.944  0.30( 0.28) 0.93   52928.5   11130.00
    15    54257.29  125.04    0.919  0.30( 0.28) 0.94   56922.5   12330.00
    16    53572.15  131.76    0.902  0.30( 0.28) 0.94   60265.6   12400.00
    17    52511.19  140.58    0.879  0.30( 0.28) 0.94   63634.4   12201.00
    18    50975.82  150.12    0.854  0.30( 0.28) 0.94   66088.6   12101.10
    19    48405.72  162.57    0.822  0.30( 0.28) 0.94   68252.8   12010.00
    20    46871.65  168.69    0.806  0.30( 0.28) 0.94   68566.5   10210.00
    21    42433.01  195.53    0.759  0.30( 0.28) 0.95   69299.2   10100.00
   TOTAL AREA(ACRES) =     69299.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    54910.37  Tc(MIN.) =  117.372
 EFFECTIVE AREA(ACRES) =  52928.50  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    69299.2
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
 CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  15.43
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.943
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      134.30      0.30      0.658     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   54955.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.04
 AVERAGE FLOW DEPTH(FEET) =  15.42   TRAVEL TIME(MIN.) =   0.25
 Tc(MIN.) =  117.63
 SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   90.12
 EFFECTIVE AREA(ACRES) =  53062.80     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    69433.5         PEAK FLOW RATE(CFS) =   54910.37
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  15.42

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 15.42   FLOW VELOCITY(FEET/SEC.) =  22.03
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

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 FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  14.26
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.939
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       96.27      0.30      0.723     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   54941.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  24.52
 AVERAGE FLOW DEPTH(FEET) =  14.26   TRAVEL TIME(MIN.) =   0.95
 Tc(MIN.) =  118.57
 SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   62.53
 EFFECTIVE AREA(ACRES) =  53159.07     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =    69529.8         PEAK FLOW RATE(CFS) =   54910.37
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  14.26

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 14.26   FLOW VELOCITY(FEET/SEC.) =  24.52
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
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 END OF STUDY SUMMARY:
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TOTAL AREA(ACRES) = 69529.8 TC(MIN.) = 118.57
EFFECTIVE AREA(ACRES) = 53159.07 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.931
PEAK FLOW RATE(CFS) = 54910.37

** PEAK FLOW RATE TABLE **

| STREAM NUMBER | Q (CFS) | Tc (MIN.) | Intensity (INCH/HR) | Fp(Fm) (INCH/HR) | Ap | Ae (ACRES) | HEADWATER NODE |
|---|---|---|---|---|---|---|---|
| 1 | 25156.60 | 18.01 | 2.591 | 0.30( 0.25) | 0.82 | 3182.2 | 13900.00 |
| 2 | 25667.86 | 19.18 | 2.474 | 0.30( 0.25) | 0.82 | 3386.5 | 13889.00 |
| 3 | 32015.46 | 34.72 | 1.736 | 0.30( 0.25) | 0.83 | 7012.7 | 10320.00 |
| 4 | 34727.49 | 41.35 | 1.572 | 0.30( 0.25) | 0.83 | 9542.3 | 13830.00 |
| 5 | 36843.09 | 46.81 | 1.457 | 0.30( 0.25) | 0.83 | 11523.9 | 110.00 |
| 6 | 39181.09 | 52.94 | 1.355 | 0.30( 0.25) | 0.83 | 14263.2 | 130.00 |
| 7 | 41438.36 | 58.46 | 1.291 | 0.30( 0.25) | 0.84 | 17162.3 | 400.00 |
| 8 | 44537.55 | 69.91 | 1.206 | 0.30( 0.26) | 0.87 | 23830.7 | 13600.00 |
| 9 | 47130.79 | 82.21 | 1.123 | 0.30( 0.27) | 0.89 | 30442.2 | 13100.00 |
| 10 | 48599.00 | 88.30 | 1.081 | 0.30( 0.27) | 0.90 | 33420.4 | 11801.00 |
| 11 | 50935.64 | 97.33 | 1.036 | 0.30( 0.27) | 0.91 | 38465.4 | 11530.00 |
| 12 | 53278.37 | 107.61 | 0.989 | 0.30( 0.28) | 0.92 | 45516.9 | 13010.00 |
| 13 | 54320.44 | 112.35 | 0.967 | 0.30( 0.28) | 0.93 | 48728.0 | 11330.00 |
| 14 | 54910.37 | 118.57 | 0.939 | 0.30( 0.28) | 0.93 | 53159.1 | 11130.00 |
| 15 | 54257.29 | 126.24 | 0.916 | 0.30( 0.28) | 0.94 | 57153.0 | 12330.00 |
| 16 | 53572.15 | 132.98 | 0.898 | 0.30( 0.28) | 0.94 | 60496.2 | 12400.00 |
| 17 | 52511.19 | 141.79 | 0.876 | 0.30( 0.28) | 0.94 | 63865.0 | 12201.00 |
| 18 | 50975.82 | 151.35 | 0.851 | 0.30( 0.28) | 0.94 | 66319.1 | 12101.10 |
| 19 | 48405.72 | 163.81 | 0.819 | 0.30( 0.28) | 0.94 | 68483.3 | 12010.00 |
| 20 | 46871.65 | 169.95 | 0.803 | 0.30( 0.28) | 0.94 | 68797.0 | 10210.00 |
| 21 | 42433.01 | 196.82 | 0.758 | 0.30( 0.28) | 0.94 | 69529.8 | 10100.00 |

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END OF RATIONAL METHOD ANALYSIS