Appendix B

100-Year Pre-Project Modified Rational Method Analyses

Drainage Basin 100

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          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15965                                                       *
* 11/4/08 Pre-project (on-site)                                           *
* 100-yr Basin 100                                                        *
 **************************************************************************

  FILE NAME: MWB1H100.DAT
  TIME/DATE OF STUDY: 09:17 11/04/2008
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  ======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
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```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    813.00
 DOWNSTREAM ELEVATION(FEET) =    780.00
 ELEVATION DIFFERENCE(FEET) =     33.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    105.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.4667
 CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.358
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.48
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.83
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   2.61
 Tc(MIN.) =   9.30
 SUBAREA AREA(ACRES) =     2.10       SUBAREA RUNOFF(CFS) =    4.01
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      2.30         PEAK FLOW RATE(CFS) =       4.39

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   4.54
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    105.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.30
 RAINFALL INTENSITY(INCH/HR) =   6.36
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.39

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
```

```
 UPSTREAM ELEVATION(FEET) =     694.00
 DOWNSTREAM ELEVATION(FEET) =     660.00
 ELEVATION DIFFERENCE(FEET) =      34.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =       0.71
 TOTAL AREA(ACRES) =       0.30   TOTAL RUNOFF(CFS) =       0.71

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     660.00  DOWNSTREAM(FEET) =     500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    450.00   CHANNEL SLOPE =  0.3556
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.436
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.79
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.08
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   2.44
 Tc(MIN.) =   9.12
 SUBAREA AREA(ACRES) =      3.20        SUBAREA RUNOFF(CFS) =     6.18
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =       3.50          PEAK FLOW RATE(CFS) =        6.76

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   3.86
 LONGEST FLOWPATH FROM NODE    103.00 TO NODE    105.00 =   550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.12
 RAINFALL INTENSITY(INCH/HR) =   6.44
 TOTAL STREAM AREA(ACRES) =      3.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.76

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         4.39      9.30         6.358          2.30
     2         6.76      9.12         6.436          3.50

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        11.06      9.12        6.436
     2        11.06      9.30        6.358

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     11.06   Tc(MIN.) =     9.30
 TOTAL AREA(ACRES) =      5.80
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    105.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    478.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.1100
 CHANNEL BASE(FEET) =   35.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.965
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     15.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.46
 AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   0.96
 Tc(MIN.) =  10.26
 SUBAREA AREA(ACRES) =     5.40       SUBAREA RUNOFF(CFS) =    9.66
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     11.20         PEAK FLOW RATE(CFS) =      20.04

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   3.72
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    106.00 =   900.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     11.20  TC(MIN.) =     10.26
 PEAK FLOW RATE(CFS)    =     20.04
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
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Drainage Basin 200

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          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                            San Diego, California 92110
                          619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 200                                                      *
 **************************************************************************

  FILE NAME: MW200100.DAT
  TIME/DATE OF STUDY: 12:20 07/10/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00  0.0313  0.167  0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    987.50
 DOWNSTREAM ELEVATION(FEET) =    950.00
 ELEVATION DIFFERENCE(FEET) =     37.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    204.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    950.00  DOWNSTREAM(FEET) =    530.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1405.00   CHANNEL SLOPE =  0.2989
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.602
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.84
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.06
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   4.63
 Tc(MIN.) =  11.31
 SUBAREA AREA(ACRES) =    10.90       SUBAREA RUNOFF(CFS) =   18.32
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     11.10        PEAK FLOW RATE(CFS) =      18.65

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   6.22
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    204.00 =  1505.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.31
 RAINFALL INTENSITY(INCH/HR) =   5.60
 TOTAL STREAM AREA(ACRES) =    11.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.65

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
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```
 UPSTREAM ELEVATION(FEET) =     865.00
 DOWNSTREAM ELEVATION(FEET) =     825.00
 ELEVATION DIFFERENCE(FEET) =      40.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.341
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.137
 SUBAREA RUNOFF(CFS) =       0.49
 TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       0.49

****************************************************************************
 FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     825.00  DOWNSTREAM(FEET) =     530.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.2950
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.632
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.42
 AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   4.88
 Tc(MIN.) =  11.22
 SUBAREA AREA(ACRES) =     6.90       SUBAREA RUNOFF(CFS) =   11.66
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      7.10          PEAK FLOW RATE(CFS) =      12.00

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   4.58
 LONGEST FLOWPATH FROM NODE     202.00 TO NODE     204.00 =  1090.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.22
 RAINFALL INTENSITY(INCH/HR) =   5.63
 TOTAL STREAM AREA(ACRES) =      7.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      12.00

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        18.65     11.31        5.602         11.10
     2        12.00     11.22        5.632          7.10

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        30.50    11.22       5.632
    2        30.59    11.31       5.602

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     30.59   Tc(MIN.) =   11.31
 TOTAL AREA(ACRES) =     18.20
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    204.00 =  1505.00 FEET..

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    209.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    477.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   570.00   CHANNEL SLOPE =  0.0930
 CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.170
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.34
 AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   1.50
 Tc(MIN.) =  12.81
 SUBAREA AREA(ACRES) =     6.50       SUBAREA RUNOFF(CFS) =    9.75
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.297
 TOTAL AREA(ACRES) =     24.70          PEAK FLOW RATE(CFS) =      37.98

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.37   FLOW VELOCITY(FEET/SEC.) =   6.50
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    209.00 =  2075.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    209.00 TO NODE    209.00 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.) =  12.81
 RAINFALL INTENSITY(INCH/HR) =   5.17
 TOTAL STREAM AREA(ACRES) =    24.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.98

****************************************************************************
 FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    791.00
 DOWNSTREAM ELEVATION(FEET) =    750.00
 ELEVATION DIFFERENCE(FEET) =     41.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.71
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    207.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    650.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.4762
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.124
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.16
 AVERAGE FLOW DEPTH(FEET) =   0.03   TRAVEL TIME(MIN.) =   1.11
 Tc(MIN.) =   7.79
 SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    4.92
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      2.60         PEAK FLOW RATE(CFS) =       5.56

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.05   FLOW VELOCITY(FEET/SEC.) =   3.80
 LONGEST FLOWPATH FROM NODE    205.00 TO NODE    207.00 =   310.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    207.00 TO NODE    208.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    650.00  DOWNSTREAM(FEET) =    578.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00   CHANNEL SLOPE =  0.1532
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.338
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.05
 AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =   1.55
 Tc(MIN.) =   9.34
 SUBAREA AREA(ACRES) =    13.40       SUBAREA RUNOFF(CFS) =   25.48
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     16.00         PEAK FLOW RATE(CFS) =      30.42
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.24   FLOW VELOCITY(FEET/SEC.) =   6.21
 LONGEST FLOWPATH FROM NODE    205.00 TO NODE    208.00 =   780.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    208.00 TO NODE    209.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    578.00  DOWNSTREAM(FEET) =   477.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1070.00   CHANNEL SLOPE =  0.0944
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.271
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     36.47
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.77
 AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   3.09
 Tc(MIN.) =  12.43
 SUBAREA AREA(ACRES) =     8.20       SUBAREA RUNOFF(CFS) =   12.10
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.293
 TOTAL AREA(ACRES) =     24.20         PEAK FLOW RATE(CFS) =      37.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   5.77
 LONGEST FLOWPATH FROM NODE    205.00 TO NODE    209.00 =  1850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    209.00 TO NODE    209.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.43
 RAINFALL INTENSITY(INCH/HR) =   5.27
 TOTAL STREAM AREA(ACRES) =    24.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.40

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        37.98     12.81         5.170         24.70
     2        37.40     12.43         5.271         24.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        74.65     12.43         5.271
```

```
     2        74.66     12.81        5.170

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      74.66   Tc(MIN.) =   12.81
  TOTAL AREA(ACRES) =      48.90
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    209.00 =  2075.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    477.00  DOWNSTREAM(FEET) =    430.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0587
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.718
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     83.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.83
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   1.95
  Tc(MIN.) =  14.76
  SUBAREA AREA(ACRES) =    13.20       SUBAREA RUNOFF(CFS) =   17.44
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.292
  TOTAL AREA(ACRES) =     62.10         PEAK FLOW RATE(CFS) =      85.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =  6.91
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    210.00 =  2875.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     62.10  TC(MIN.) =     14.76
  PEAK FLOW RATE(CFS)    =     85.58
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 300

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                            San Diego, California 92110
                          619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 11/05/08                                              *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 300                                                      *
 **************************************************************************

  FILE NAME: MWB3H100.DAT
  TIME/DATE OF STUDY: 10:53 11/14/2008
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    822.50
 DOWNSTREAM ELEVATION(FEET) =    780.00
 ELEVATION DIFFERENCE(FEET) =     42.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    545.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1005.00   CHANNEL SLOPE =  0.2338
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.934
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.15
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.58
 AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   3.66
 Tc(MIN.) =  10.34
 SUBAREA AREA(ACRES) =    10.60       SUBAREA RUNOFF(CFS) =   18.87
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     10.80         PEAK FLOW RATE(CFS) =      19.23

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   6.01
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =  1105.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    306.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    545.00  DOWNSTREAM(FEET) =    426.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1330.00   CHANNEL SLOPE =  0.0895
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.672
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.09
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.77
 AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   4.65
 Tc(MIN.) =  14.99
 SUBAREA AREA(ACRES) =    24.00       SUBAREA RUNOFF(CFS) =   31.39
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.286
 TOTAL AREA(ACRES) =     34.80         PEAK FLOW RATE(CFS) =      46.53
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.28   FLOW VELOCITY(FEET/SEC.) =   5.40
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    306.00 =  2435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.99
  RAINFALL INTENSITY(INCH/HR) =   4.67
  TOTAL STREAM AREA(ACRES) =    34.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.53

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    304.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    827.00
  DOWNSTREAM ELEVATION(FEET) =    810.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
  FLOW PROCESS FROM NODE    304.00 TO NODE    305.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    810.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.00   CHANNEL SLOPE =  0.2909
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.379
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      8.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.03
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   2.56
  Tc(MIN.) =   9.25
  SUBAREA AREA(ACRES) =     8.60       SUBAREA RUNOFF(CFS) =   16.46
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =      8.80        PEAK FLOW RATE(CFS) =      16.84
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   7.74
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    305.00 =  1028.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    305.00 TO NODE    306.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    540.00  DOWNSTREAM(FEET) =    426.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1300.00   CHANNEL SLOPE =  0.0877
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.988
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     27.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
 AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   4.30
 Tc(MIN.) =  13.54
 SUBAREA AREA(ACRES) =    14.90       SUBAREA RUNOFF(CFS) =   21.55
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.294
 TOTAL AREA(ACRES) =     23.70        PEAK FLOW RATE(CFS) =      34.72

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.30   FLOW VELOCITY(FEET/SEC.) =   5.49
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =  2328.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.54
 RAINFALL INTENSITY(INCH/HR) =   4.99
 TOTAL STREAM AREA(ACRES) =    23.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.72

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        46.53     14.99         4.672          34.80
     2        34.72     13.54         4.988          23.70

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        76.76     13.54         4.988
     2        79.05     14.99         4.672
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     79.05   Tc(MIN.) =   14.99
  TOTAL AREA(ACRES) =     58.50
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    306.00 =  2435.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     58.50  TC(MIN.) =     14.99
  PEAK FLOW RATE(CFS)    =     79.05
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 400

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                        San Diego, California 92110
                      619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 11/05/08                                              *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 400                                                      *
 **************************************************************************

  FILE NAME: 400.DAT
  TIME/DATE OF STUDY: 11:05 11/07/2008
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    506.00
 DOWNSTREAM ELEVATION(FEET) =    480.00
 ELEVATION DIFFERENCE(FEET) =     26.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    480.00  DOWNSTREAM(FEET) =    430.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   305.00   CHANNEL SLOPE =  0.1639
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.717
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.74
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.85
 Tc(MIN.) =   8.54
 SUBAREA AREA(ACRES) =     1.60       SUBAREA RUNOFF(CFS) =    3.22
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      1.80          PEAK FLOW RATE(CFS) =       3.63

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   3.43
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =   405.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    403.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    430.00  DOWNSTREAM(FEET) =    384.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   925.00   CHANNEL SLOPE =  0.0497
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   5.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.377
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.38
 AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   3.52
 Tc(MIN.) =  12.06
 SUBAREA AREA(ACRES) =     9.30       SUBAREA RUNOFF(CFS) =   14.00
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.283
 TOTAL AREA(ACRES) =     11.10          PEAK FLOW RATE(CFS) =      16.90
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   4.98
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    403.00 =  1330.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      11.10  TC(MIN.) =     12.06
 PEAK FLOW RATE(CFS)    =      16.90
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 700A

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2003 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

                            RICK ENGINEERING COMPANY
                                5620 Friars Road
                             San Diego, California 92110
                            619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 700A                                                     *
 *************************************************************************

  FILE NAME: MW700A00.DAT
  TIME/DATE OF STUDY: 20:19 07/16/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00  0.0313  0.167  0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    700.00 TO NODE    701.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    770.00
 DOWNSTREAM ELEVATION(FEET) =    740.00
 ELEVATION DIFFERENCE(FEET) =     30.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      1.42
 TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      1.42

****************************************************************************
 FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    740.00  DOWNSTREAM(FEET) =    350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2230.00   CHANNEL SLOPE =  0.1749
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   4.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.942
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     37.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.21
 AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   3.64
 Tc(MIN.) =  10.33
 SUBAREA AREA(ACRES) =    38.40       SUBAREA RUNOFF(CFS) =   70.73
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
 TOTAL AREA(ACRES) =     39.00         PEAK FLOW RATE(CFS) =      71.80

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =  12.18
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =  2330.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    702.00 TO NODE    704.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    339.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =   330.00   CHANNEL SLOPE =  0.0330
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.643
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     78.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.41
 AVERAGE FLOW DEPTH(FEET) =   0.95   TRAVEL TIME(MIN.) =   0.86
 Tc(MIN.) =  11.18
 SUBAREA AREA(ACRES) =     7.20       SUBAREA RUNOFF(CFS) =   12.60
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
 TOTAL AREA(ACRES) =     46.20         PEAK FLOW RATE(CFS) =      80.79
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.96   FLOW VELOCITY(FEET/SEC.) =   6.50
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    704.00 =  2660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    704.00 TO NODE    710.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    339.10  DOWNSTREAM(FEET) =    327.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   190.00   CHANNEL SLOPE =  0.0637
 CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.532
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     81.13
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
 AVERAGE FLOW DEPTH(FEET) =   1.19   TRAVEL TIME(MIN.) =   0.35
 Tc(MIN.) =  11.53
 SUBAREA AREA(ACRES) =     0.40       SUBAREA RUNOFF(CFS) =    0.69
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
 TOTAL AREA(ACRES) =     46.60         PEAK FLOW RATE(CFS) =      80.79

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =   9.08
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    710.00 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    710.00 TO NODE    710.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.53
 RAINFALL INTENSITY(INCH/HR) =   5.53
 TOTAL STREAM AREA(ACRES) =    46.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.79

****************************************************************************
 FLOW PROCESS FROM NODE    706.00 TO NODE    708.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    538.00
 DOWNSTREAM ELEVATION(FEET) =    520.00
 ELEVATION DIFFERENCE(FEET) =     18.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.601
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.929
SUBAREA RUNOFF(CFS) =      0.74
TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
 FLOW PROCESS FROM NODE    708.00 TO NODE    710.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    520.00  DOWNSTREAM(FEET) =    327.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.1379
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  14.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.615
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.00
 AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   4.67
 Tc(MIN.) =  11.27
 SUBAREA AREA(ACRES) =    15.20       SUBAREA RUNOFF(CFS) =   26.46
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
 TOTAL AREA(ACRES) =     15.50       PEAK FLOW RATE(CFS) =      26.98

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   6.07
 LONGEST FLOWPATH FROM NODE    706.00 TO NODE    710.00 =  1500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    710.00 TO NODE    710.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.27
 RAINFALL INTENSITY(INCH/HR) =   5.62
 TOTAL STREAM AREA(ACRES) =    15.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.98

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        80.79     11.53         5.532         46.60
     2        26.98     11.27         5.615         15.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       105.93     11.27         5.615
     2       107.37     11.53         5.532
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    107.37   Tc(MIN.) =   11.53
 TOTAL AREA(ACRES) =     62.10
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    710.00 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    710.00 TO NODE    712.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    327.00  DOWNSTREAM(FEET) =    290.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.0507
 CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   4.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.140
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    115.18
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.74
 AVERAGE FLOW DEPTH(FEET) =   1.58   TRAVEL TIME(MIN.) =   1.39
 Tc(MIN.) =  12.92
 SUBAREA AREA(ACRES) =     9.80       SUBAREA RUNOFF(CFS) =   15.62
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
 TOTAL AREA(ACRES) =     71.90        PEAK FLOW RATE(CFS) =     114.55

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.58   FLOW VELOCITY(FEET/SEC.) =   8.75
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    712.00 =  3580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.92
 RAINFALL INTENSITY(INCH/HR) =   5.14
 TOTAL STREAM AREA(ACRES) =    71.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.55

+--------------------------------------------------------------------------+
| Flow Information From Node Number 506                                    |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    506.00 TO NODE    506.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =  17.18   RAIN INTENSITY(INCH/HOUR) =  4.28
```

```
 TOTAL AREA(ACRES) =    88.10   TOTAL RUNOFF(CFS) =    110.57

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  17.18
 RAINFALL INTENSITY(INCH/HR) =   4.28
 TOTAL STREAM AREA(ACRES) =    88.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    110.57

+--------------------------------------------------------------------------+
| Flow Information From Node Number 604                                    |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =  15.71   RAIN INTENSITY(INCH/HOUR) =  4.53
 TOTAL AREA(ACRES) =    32.00   TOTAL RUNOFF(CFS) =    38.05

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.71
 RAINFALL INTENSITY(INCH/HR) =   4.53
 TOTAL STREAM AREA(ACRES) =    32.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    38.05

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       114.55     12.92         5.140          71.90
     2       110.57     17.18         4.278          88.10
     3        38.05     15.71         4.533          32.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       229.03     12.92         5.140
     2       240.16     15.71         4.533
```

```
     3       241.82     17.18        4.278

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    241.82   Tc(MIN.) =   17.18
  TOTAL AREA(ACRES) =    192.00
  LONGEST FLOWPATH FROM NODE    700.00 TO NODE    712.00 =  3580.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    192.00  TC(MIN.) =     17.18
  PEAK FLOW RATE(CFS)    =    241.82
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Flow Information For Drainage
Basin 700 A
(Node 506)

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                            San Diego, California 92110
                          619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Pre-project (on-site)                                            *
* (Node 506)                                                              *
 **************************************************************************

  FILE NAME: MW500100.DAT
  TIME/DATE OF STUDY: 12:30 07/10/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    800.00
 DOWNSTREAM ELEVATION(FEET) =    750.00
 ELEVATION DIFFERENCE(FEET) =     50.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    600.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.4286
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.078
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.19
 Tc(MIN.) =   7.87
 SUBAREA AREA(ACRES) =     3.20       SUBAREA RUNOFF(CFS) =    6.79
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      3.40         PEAK FLOW RATE(CFS) =       7.22

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   5.93
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =   450.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    600.00  DOWNSTREAM(FEET) =    500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   560.00   CHANNEL SLOPE =  0.1786
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.318
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.21
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.15
 AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   1.52
 Tc(MIN.) =   9.39
 SUBAREA AREA(ACRES) =     4.20       SUBAREA RUNOFF(CFS) =    7.96
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      7.60         PEAK FLOW RATE(CFS) =      14.40
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.34   FLOW VELOCITY(FEET/SEC.) =   6.61
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    503.00 =  1010.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    504.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    366.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1840.00   CHANNEL SLOPE =  0.0728
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.923
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     61.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.92
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   4.43
  Tc(MIN.) =  13.82
  SUBAREA AREA(ACRES) =    63.40       SUBAREA RUNOFF(CFS) =   93.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =     71.00        PEAK FLOW RATE(CFS) =     104.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.01   FLOW VELOCITY(FEET/SEC.) =   7.90
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    504.00 =  2850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    504.00 TO NODE    505.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    366.00  DOWNSTREAM(FEET) =    334.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   420.00   CHANNEL SLOPE =  0.0762
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.734
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    108.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.07
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   0.87
  Tc(MIN.) =  14.69
  SUBAREA AREA(ACRES) =     5.00       SUBAREA RUNOFF(CFS) =    6.63
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.299
  TOTAL AREA(ACRES) =     76.00        PEAK FLOW RATE(CFS) =     107.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.01   FLOW VELOCITY(FEET/SEC.) =   8.10
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    505.00 =  3270.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     505.00 TO NODE     506.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     334.00  DOWNSTREAM(FEET) =     303.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    910.00   CHANNEL SLOPE =  0.0341
  CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =    3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.278
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =    0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    6.08
  AVERAGE FLOW DEPTH(FEET) =    1.37   TRAVEL TIME(MIN.) =    2.49
  Tc(MIN.) =  17.18
  SUBAREA AREA(ACRES) =     12.10       SUBAREA RUNOFF(CFS) =    13.46
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.293
  TOTAL AREA(ACRES) =      88.10        PEAK FLOW RATE(CFS) =      110.57

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =   6.02
  LONGEST FLOWPATH FROM NODE     500.00 TO NODE     506.00 =  4180.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =      88.10  TC(MIN.) =      17.18
  PEAK FLOW RATE(CFS)    =     110.57
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Flow Information For Drainage
Basin 700 A
(Node 604)

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                         San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************* DESCRIPTION OF STUDY *************************
* MEADOWOOD J-15956 11/05/08                                            *
* 100-yr Pre-project (on-site)                                          *
* (Node 604)                                                            *
 ************************************************************************

  FILE NAME: MW600100.DAT
  TIME/DATE OF STUDY: 08:08 03/18/2009
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    502.00
 DOWNSTREAM ELEVATION(FEET) =    490.00
 ELEVATION DIFFERENCE(FEET) =     12.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    370.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   530.00   CHANNEL SLOPE =  0.2264
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  20.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.726
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.52
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.08
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   4.25
 Tc(MIN.) =  10.93
 SUBAREA AREA(ACRES) =     1.20       SUBAREA RUNOFF(CFS) =    2.06
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      1.40         PEAK FLOW RATE(CFS) =       2.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.04   FLOW VELOCITY(FEET/SEC.) =   2.69
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =   630.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    603.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    370.00  DOWNSTREAM(FEET) =    300.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   480.00   CHANNEL SLOPE =  0.1458
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.154
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2700
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.73
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.13
 AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   1.94
 Tc(MIN.) =  12.87
 SUBAREA AREA(ACRES) =     1.90       SUBAREA RUNOFF(CFS) =    2.64
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.283
 TOTAL AREA(ACRES) =      3.30         PEAK FLOW RATE(CFS) =       4.81
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   4.52
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    603.00 =  1110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    603.00 TO NODE    604.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   530.00   CHANNEL SLOPE =  0.0283
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  20.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.533
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     21.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.12
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   2.84
  Tc(MIN.) =  15.71
  SUBAREA AREA(ACRES) =    28.70      SUBAREA RUNOFF(CFS) =   33.82
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.262
  TOTAL AREA(ACRES) =     32.00       PEAK FLOW RATE(CFS) =      38.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   3.63
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    604.00 =  1640.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     32.00  TC(MIN.) =     15.71
  PEAK FLOW RATE(CFS)    =     38.05
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 700B

(700A & 700B Combined)

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
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              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

                            RICK ENGINEERING COMPANY
                                5620 Friars Road
                              San Diego, California 92110
                            619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 700A and 700B Combined                                   *
 **************************************************************************

  FILE NAME: MW700AB.DAT
  TIME/DATE OF STUDY: 14:25 08/13/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    800.00
  DOWNSTREAM ELEVATION(FEET) =    740.00
  ELEVATION DIFFERENCE(FEET) =     60.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      2.12
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      2.12

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    752.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    740.00  DOWNSTREAM(FEET) =    296.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.00   CHANNEL SLOPE =  0.3763
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.599
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     13.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.41
  AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   2.09
  Tc(MIN.) =   8.77
  SUBAREA AREA(ACRES) =    11.00       SUBAREA RUNOFF(CFS) =   22.50
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.309
  TOTAL AREA(ACRES) =     11.90         PEAK FLOW RATE(CFS) =      24.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =  11.54
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    752.00 =  1280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    752.00 TO NODE    753.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    296.00  DOWNSTREAM(FEET) =    272.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.0322
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.614
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     52.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.87
  AVERAGE FLOW DEPTH(FEET) =   0.90   TRAVEL TIME(MIN.) =   2.50
  Tc(MIN.) =  11.27
  SUBAREA AREA(ACRES) =    31.90       SUBAREA RUNOFF(CFS) =   55.52
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
  TOTAL AREA(ACRES) =     43.80         PEAK FLOW RATE(CFS) =      76.18
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.05   FLOW VELOCITY(FEET/SEC.) =   5.37
 LONGEST FLOWPATH FROM NODE    750.00 TO NODE    753.00 =  2010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    753.00 TO NODE    753.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.27
 RAINFALL INTENSITY(INCH/HR) =   5.61
 TOTAL STREAM AREA(ACRES) =    43.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.18

+----------------------------------------------------------------------------+
| Flow Information from Node 712                                             |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =  17.18   RAIN INTENSITY(INCH/HOUR) =  4.28
 TOTAL AREA(ACRES) =   192.00   TOTAL RUNOFF(CFS) =    241.82

****************************************************************************
 FLOW PROCESS FROM NODE    712.00 TO NODE    712.00 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.) =  17.18
 RAINFALL INTENSITY(INCH/HR) =   4.28
 TOTAL STREAM AREA(ACRES) =   192.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    241.82

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        76.18     11.27         5.614          43.80
     2       241.82     17.18         4.278         192.00

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

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

```
      1       234.86     11.27        5.614
      2       299.87     17.18        4.278

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    299.87   Tc(MIN.) =   17.18
  TOTAL AREA(ACRES) =    235.80
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    712.00 =  2010.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    235.80  TC(MIN.) =     17.18
  PEAK FLOW RATE(CFS)    =    299.87
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 800

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

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            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                         San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 11/05/08                                              *
* 100-yr Pre-project (on-site)                                            *
* Drainage Basin 800                                                      *
 **************************************************************************

  FILE NAME: MW800100.DAT
  TIME/DATE OF STUDY: 16:25 03/17/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020    0.67    2.00  0.0313  0.167  0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    800.00 TO NODE    810.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    825.00
 DOWNSTREAM ELEVATION(FEET) =    800.00
 ELEVATION DIFFERENCE(FEET) =     25.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
 SUBAREA RUNOFF(CFS) =      0.57
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
 FLOW PROCESS FROM NODE    810.00 TO NODE    820.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    281.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   910.00   CHANNEL SLOPE =  0.5703
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.023
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3300
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     29.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.92
 AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   1.70
 Tc(MIN.) =   7.97
 SUBAREA AREA(ACRES) =    25.10       SUBAREA RUNOFF(CFS) =   58.17
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
 TOTAL AREA(ACRES) =     25.30        PEAK FLOW RATE(CFS) =      58.66

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =  11.34
 LONGEST FLOWPATH FROM NODE    800.00 TO NODE    820.00 =  1010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    820.00 TO NODE    830.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    281.00  DOWNSTREAM(FEET) =    263.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0225
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.666
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2600
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     77.52
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.24
 AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   3.15
 Tc(MIN.) =  11.11
 SUBAREA AREA(ACRES) =    25.40       SUBAREA RUNOFF(CFS) =   37.42
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.295
 TOTAL AREA(ACRES) =     50.70        PEAK FLOW RATE(CFS) =      84.75
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   4.37
  LONGEST FLOWPATH FROM NODE    800.00 TO NODE    830.00 =  1810.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     50.70  TC(MIN.) =     11.11
  PEAK FLOW RATE(CFS)    =     84.75
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 900

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

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                          Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                            San Diego, California 92110
                         619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD  J-15956                                                      *
* 05/12/2009 PRE-PROJECT                                                  *
* 100-YR   BASIN 900                                                      *
 **************************************************************************

  FILE NAME: B900.DAT
  TIME/DATE OF STUDY: 15:20 05/13/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  30.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)  (FT)  (FT)   (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0      20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    905.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    710.00
 DOWNSTREAM ELEVATION(FEET) =    640.00
 ELEVATION DIFFERENCE(FEET) =     70.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
 SUBAREA RUNOFF(CFS) =      0.57
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
 FLOW PROCESS FROM NODE    905.00 TO NODE    910.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   980.00   CHANNEL SLOPE =  0.3724
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.164
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3400
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.69
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   3.49
 Tc(MIN.) =   9.75
 SUBAREA AREA(ACRES) =     6.60       SUBAREA RUNOFF(CFS) =   13.83
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
 TOTAL AREA(ACRES) =      6.80         PEAK FLOW RATE(CFS) =      14.26

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   5.49
 LONGEST FLOWPATH FROM NODE    901.00 TO NODE    910.00 =  1080.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    910.00 TO NODE    915.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    263.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1500.00   CHANNEL SLOPE =  0.0080
 CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.50
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.503
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     27.48
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.09
 AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   6.12
 Tc(MIN.) =  15.87
 SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   26.30
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.381
 TOTAL AREA(ACRES) =     21.40         PEAK FLOW RATE(CFS) =      36.71
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.78   FLOW VELOCITY(FEET/SEC.) =   4.41
  LONGEST FLOWPATH FROM NODE    901.00 TO NODE    915.00 =  2580.00 FEET.
====================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     21.40  TC(MIN.) =     15.87
  PEAK FLOW RATE(CFS)    =     36.71
====================================================================
====================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix C

100-Year Post-Project Modified Rational Method Analyses

Drainage Basin 1000

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                         San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 11/12/08                                              *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 1000                                                     *
 **************************************************************************

  FILE NAME: MW_1K100.DAT
  TIME/DATE OF STUDY: 11:25 01/09/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.020/0.020/0.020   0.50    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
 FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    813.00
 DOWNSTREAM ELEVATION(FEET) =    780.00
 ELEVATION DIFFERENCE(FEET) =     33.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   1001.00 TO NODE   1005.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.4667
 CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.358
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.48
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.83
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   2.61
 Tc(MIN.) =   9.30
 SUBAREA AREA(ACRES) =     2.10       SUBAREA RUNOFF(CFS) =    4.01
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      2.30         PEAK FLOW RATE(CFS) =       4.39

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   4.54
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1005.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1005.00 TO NODE   1005.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.30
 RAINFALL INTENSITY(INCH/HR) =   6.36
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.39

****************************************************************************
 FLOW PROCESS FROM NODE   1003.00 TO NODE   1004.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
```

```
 UPSTREAM ELEVATION(FEET) =     694.00
 DOWNSTREAM ELEVATION(FEET) =     660.00
 ELEVATION DIFFERENCE(FEET) =      34.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =       0.71
 TOTAL AREA(ACRES) =       0.30   TOTAL RUNOFF(CFS) =       0.71

****************************************************************************
 FLOW PROCESS FROM NODE   1004.00 TO NODE   1005.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     660.00  DOWNSTREAM(FEET) =     500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.3556
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.436
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.79
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.08
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   2.44
 Tc(MIN.) =   9.12
 SUBAREA AREA(ACRES) =     3.20       SUBAREA RUNOFF(CFS) =     6.18
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      3.50          PEAK FLOW RATE(CFS) =       6.76

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   3.86
 LONGEST FLOWPATH FROM NODE   1003.00 TO NODE   1005.00 =   550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1005.00 TO NODE   1005.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.12
 RAINFALL INTENSITY(INCH/HR) =   6.44
 TOTAL STREAM AREA(ACRES) =     3.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.76

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         4.39      9.30         6.358          2.30
     2         6.76      9.12         6.436          3.50

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        11.06      9.12        6.436
     2        11.06      9.30        6.358

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     11.06   Tc(MIN.) =    9.30
 TOTAL AREA(ACRES) =      5.80
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1005.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1005.00 TO NODE   1006.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   100.00   CHANNEL SLOPE =  0.2000
 CHANNEL BASE(FEET) =   35.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.179
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.97
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   0.42
 Tc(MIN.) =   9.72
 SUBAREA AREA(ACRES) =     3.80       SUBAREA RUNOFF(CFS) =    7.04
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      9.60         PEAK FLOW RATE(CFS) =      17.80

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   4.42
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1006.00 =   800.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1006.00 TO NODE   1011.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   480.00  DOWNSTREAM(FEET) =   458.00
 FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.51
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     17.80
 PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.95
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1011.00 =  1050.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      9.60  TC(MIN.) =      9.95
 PEAK FLOW RATE(CFS)    =     17.80
============================================================================
```

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

Drainage Basin 2000

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                        San Diego, California 92110
                      619-291-0707   Fax 619-291-4165

 ************************* DESCRIPTION OF STUDY *************************
* MEADOWOOD J-15956 11/12/08                                            *
* 100-yr Post-project (on-site)                                         *
* Drainage Basin 2000                                                   *
 ************************************************************************

  FILE NAME: MW_2K100.DAT
  TIME/DATE OF STUDY: 11:40 01/12/2009
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.020/0.020/0.020   0.50    2.00  0.0313  0.167  0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   2000.00 TO NODE   2001.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    987.50
 DOWNSTREAM ELEVATION(FEET) =    950.00
 ELEVATION DIFFERENCE(FEET) =     37.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   2001.00 TO NODE   2004.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    950.00  DOWNSTREAM(FEET) =    530.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1405.00   CHANNEL SLOPE =  0.2989
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.602
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.84
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.06
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   4.63
 Tc(MIN.) =  11.31
 SUBAREA AREA(ACRES) =    10.90       SUBAREA RUNOFF(CFS) =   18.32
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     11.10        PEAK FLOW RATE(CFS) =      18.65

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   6.22
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2004.00 =  1505.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2004.00 TO NODE   2004.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.31
 RAINFALL INTENSITY(INCH/HR) =   5.60
 TOTAL STREAM AREA(ACRES) =    11.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.65

****************************************************************************
 FLOW PROCESS FROM NODE   2002.00 TO NODE   2003.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
```

```
 UPSTREAM ELEVATION(FEET) =     865.00
 DOWNSTREAM ELEVATION(FEET) =     825.00
 ELEVATION DIFFERENCE(FEET) =      40.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.341
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.137
 SUBAREA RUNOFF(CFS) =       0.49
 TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       0.49

****************************************************************************
 FLOW PROCESS FROM NODE   2003.00 TO NODE   2004.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     825.00  DOWNSTREAM(FEET) =     530.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.2950
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.632
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.42
 AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   4.88
 Tc(MIN.) =  11.22
 SUBAREA AREA(ACRES) =     6.90       SUBAREA RUNOFF(CFS) =   11.66
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      7.10        PEAK FLOW RATE(CFS) =      12.00

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   4.58
 LONGEST FLOWPATH FROM NODE   2002.00 TO NODE   2004.00 =  1090.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2004.00 TO NODE   2004.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.22
 RAINFALL INTENSITY(INCH/HR) =   5.63
 TOTAL STREAM AREA(ACRES) =     7.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.00

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        18.65     11.31        5.602         11.10
     2        12.00     11.22        5.632          7.10

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        30.50     11.22        5.632
     2        30.59     11.31        5.602

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     30.59   Tc(MIN.) =   11.31
 TOTAL AREA(ACRES) =     18.20
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2004.00 =  1505.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2004.00 TO NODE   2009.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    512.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.1000
 CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.456
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     33.99
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.37
 AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   0.47
 Tc(MIN.) =  11.78
 SUBAREA AREA(ACRES) =     4.30       SUBAREA RUNOFF(CFS) =    6.80
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.298
 TOTAL AREA(ACRES) =     22.50         PEAK FLOW RATE(CFS) =      36.60

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =   6.55
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2009.00 =  1685.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2009.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   512.00  DOWNSTREAM(FEET) =   510.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.79
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     36.60
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  11.93
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2010.00 =  1785.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2010.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.93
  RAINFALL INTENSITY(INCH/HR) =   5.41
  TOTAL STREAM AREA(ACRES) =    22.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.60

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2006.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    791.00
  DOWNSTREAM ELEVATION(FEET) =    750.00
  ELEVATION DIFFERENCE(FEET) =     41.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE   2006.00 TO NODE   2007.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    650.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.4762
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.124
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.16
  AVERAGE FLOW DEPTH(FEET) =   0.03   TRAVEL TIME(MIN.) =   1.11
  Tc(MIN.) =   7.79
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    4.92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =      2.60         PEAK FLOW RATE(CFS) =       5.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.05   FLOW VELOCITY(FEET/SEC.) =   3.80
  LONGEST FLOWPATH FROM NODE   2005.00 TO NODE   2007.00 =   310.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2007.00 TO NODE   2008.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =    650.00  DOWNSTREAM(FEET) =    578.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00   CHANNEL SLOPE =  0.1532
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.338
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.05
 AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =   1.55
 Tc(MIN.) =   9.34
 SUBAREA AREA(ACRES) =    13.40       SUBAREA RUNOFF(CFS) =   25.48
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     16.00         PEAK FLOW RATE(CFS) =      30.42

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.24   FLOW VELOCITY(FEET/SEC.) =   6.21
 LONGEST FLOWPATH FROM NODE   2005.00 TO NODE   2008.00 =   780.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2008.00 TO NODE   2011.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    578.00  DOWNSTREAM(FEET) =    512.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   680.00   CHANNEL SLOPE =  0.0971
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.600
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.28
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.73
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.98
 Tc(MIN.) =  11.32
 SUBAREA AREA(ACRES) =     6.20       SUBAREA RUNOFF(CFS) =    9.72
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.294
 TOTAL AREA(ACRES) =     22.20         PEAK FLOW RATE(CFS) =      36.60

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.30   FLOW VELOCITY(FEET/SEC.) =   5.79
 LONGEST FLOWPATH FROM NODE   2005.00 TO NODE   2011.00 =  1460.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2011.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   512.00  DOWNSTREAM(FEET) =   510.00
 FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.63
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
```

```
 PIPE-FLOW(CFS) =     36.60
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  11.43
 LONGEST FLOWPATH FROM NODE   2005.00 TO NODE   2010.00 =  1545.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2010.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.43
 RAINFALL INTENSITY(INCH/HR) =   5.56
 TOTAL STREAM AREA(ACRES) =    22.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.60

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        36.60     11.93        5.414          22.50
     2        36.60     11.43        5.564          22.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        72.21     11.43        5.564
     2        72.21     11.93        5.414

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     72.21   Tc(MIN.) =   11.43
 TOTAL AREA(ACRES) =     44.70
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2010.00 =  1785.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2010.00 TO NODE   2012.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   510.00  DOWNSTREAM(FEET) =   474.00
 FLOW LENGTH(FEET) =   420.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.24
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     72.21
 PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  11.72
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2012.00 =  2205.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2012.00 TO NODE   2012.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.72
  RAINFALL INTENSITY(INCH/HR) =   5.48
  TOTAL STREAM AREA(ACRES) =    44.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.21

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2014.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    529.50
  DOWNSTREAM ELEVATION(FEET) =    519.00
  ELEVATION DIFFERENCE(FEET) =     10.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.671
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
  FLOW PROCESS FROM NODE   2014.00 TO NODE   2012.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  519.00  DOWNSTREAM ELEVATION(FEET) =  474.00
  STREET LENGTH(FEET) =   430.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    7.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =   2.75
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
 SUBAREA AREA(ACRES) =     2.70      SUBAREA RUNOFF(CFS) =    15.62
 TOTAL AREA(ACRES) =       2.90        PEAK FLOW RATE(CFS) =       17.33

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =   9.84
 FLOW VELOCITY(FEET/SEC.) =  7.48   DEPTH*VELOCITY(FT*FT/SEC.) =   2.66
 LONGEST FLOWPATH FROM NODE   2013.00 TO NODE   2012.00 =   530.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2012.00 TO NODE   2012.00 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.) =   2.75
 RAINFALL INTENSITY(INCH/HR) =   9.49
 TOTAL STREAM AREA(ACRES) =     2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.33

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        72.21     11.72         5.475         44.70
     2        17.33      2.75         9.485          2.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        59.01      2.75         9.485
     2        82.21     11.72         5.475

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     82.21   Tc(MIN.) =   11.72
 TOTAL AREA(ACRES) =     47.60
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2012.00 =  2205.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2012.00 TO NODE   2015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   474.00  DOWNSTREAM(FEET) =   471.50
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.23
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     82.21
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  11.75
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2015.00 =  2245.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   2015.00 TO NODE   2015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.75
 RAINFALL INTENSITY(INCH/HR) =   5.47
 TOTAL STREAM AREA(ACRES) =    47.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     82.21

****************************************************************************
 FLOW PROCESS FROM NODE   2016.00 TO NODE   2017.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
 UPSTREAM ELEVATION(FEET) =    485.90
 DOWNSTREAM ELEVATION(FEET) =    482.50
 ELEVATION DIFFERENCE(FEET) =      3.40
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.123
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.338
 SUBAREA RUNOFF(CFS) =      1.14
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.14

****************************************************************************
 FLOW PROCESS FROM NODE   2017.00 TO NODE   2018.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  482.50  DOWNSTREAM ELEVATION(FEET) =  473.00
 STREET LENGTH(FEET) =   100.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 30.00

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

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.80
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.20
   HALFSTREET FLOOD WIDTH(FEET) =    2.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.69
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
 STREET FLOW TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =   5.37
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.056
 *USER SPECIFIED(SUBAREA):
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.610
  SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     3.31
  TOTAL AREA(ACRES) =       0.80        PEAK FLOW RATE(CFS) =        4.42

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   4.41
  FLOW VELOCITY(FEET/SEC.) =  5.76   DEPTH*VELOCITY(FT*FT/SEC.) =   1.42
  LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2018.00 =   185.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2018.00 TO NODE   2015.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   473.00  DOWNSTREAM(FEET) =   471.50
  FLOW LENGTH(FEET) =    55.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  7.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      4.42
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   5.49
  LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2015.00 =   240.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2015.00 TO NODE   2015.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.49
  RAINFALL INTENSITY(INCH/HR) =   8.93
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.42

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        82.21     11.75         5.466         47.60
      2         4.42      5.49         8.932          0.80

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        54.73      5.49         8.932
      2        84.92     11.75         5.466

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     84.92   Tc(MIN.) =   11.75
```

```
 TOTAL AREA(ACRES) =     48.40
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2015.00 =  2245.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2015.00 TO NODE   2019.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   471.50  DOWNSTREAM(FEET) =   457.00
 FLOW LENGTH(FEET) =   235.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.21
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     84.92
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  11.93
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2019.00 =  2480.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2019.00 TO NODE   2019.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.93
 RAINFALL INTENSITY(INCH/HR) =   5.41
 TOTAL STREAM AREA(ACRES) =    48.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     84.92

****************************************************************************
 FLOW PROCESS FROM NODE   2020.00 TO NODE   2021.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    485.00
 DOWNSTREAM ELEVATION(FEET) =    475.00
 ELEVATION DIFFERENCE(FEET) =     10.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.671
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      2.56
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.56

****************************************************************************
 FLOW PROCESS FROM NODE   2021.00 TO NODE   2019.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  475.00  DOWNSTREAM ELEVATION(FEET) =  457.00
 STREET LENGTH(FEET) =   150.00   CURB HEIGHT(INCHES) =  6.0
```

```
 STREET HALFWIDTH(FEET) = 30.00

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

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.41
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.20
   HALFSTREET FLOOD WIDTH(FEET) =    2.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.49
 STREET FLOW TRAVEL TIME(MIN.) =   0.33   Tc(MIN.) =   2.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
 SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    1.71
 TOTAL AREA(ACRES) =      0.50        PEAK FLOW RATE(CFS) =       4.27

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   3.72
 FLOW VELOCITY(FEET/SEC.) =  6.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
 LONGEST FLOWPATH FROM NODE   2020.00 TO NODE   2019.00 =   250.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2019.00 TO NODE   2019.00 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.) =   2.00
 RAINFALL INTENSITY(INCH/HR) =   9.49
 TOTAL STREAM AREA(ACRES) =     0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.27

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        84.92     11.93         5.414         48.40
     2         4.27      2.00         9.485          0.50

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

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

```
      1        52.74      2.00        9.485
      2        87.35     11.93        5.414

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     87.35   Tc(MIN.) =   11.93
  TOTAL AREA(ACRES) =     48.90
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2019.00 =  2480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2022.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   457.00  DOWNSTREAM(FEET) =   445.00
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.54
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     87.35
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  12.13
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2022.50 =  2730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2022.00 TO NODE   2022.00 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.) =  12.13
  RAINFALL INTENSITY(INCH/HR) =   5.36
  TOTAL STREAM AREA(ACRES) =    48.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.35

****************************************************************************
  FLOW PROCESS FROM NODE   2023.00 TO NODE   2024.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    484.90
  DOWNSTREAM ELEVATION(FEET) =    465.30
  ELEVATION DIFFERENCE(FEET) =     19.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.094
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE   2024.00 TO NODE   2022.50 IS CODE =  62
----------------------------------------------------------------------------
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```
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
UPSTREAM ELEVATION(FEET) =  465.30  DOWNSTREAM ELEVATION(FEET) =  445.00
STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 30.00

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

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.81
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.31
  HALFSTREET FLOOD WIDTH(FEET) =    7.34
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   5.49
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.934
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .6300
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.627
SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =   10.13
TOTAL AREA(ACRES) =      2.10        PEAK FLOW RATE(CFS) =      11.77

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =   9.66
FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.84
LONGEST FLOWPATH FROM NODE   2023.00 TO NODE   2022.50 =   490.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2022.50 TO NODE   2022.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   5.49
RAINFALL INTENSITY(INCH/HR) =   8.93
TOTAL STREAM AREA(ACRES) =     2.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.77

** CONFLUENCE DATA **
STREAM      RUNOFF       Tc       INTENSITY       AREA
NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
    1        87.35     12.13         5.355         48.90
    2        11.77      5.49         8.934          2.10

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        64.13      5.49        8.934
     2        94.41     12.13        5.355

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     94.41   Tc(MIN.) =   12.13
 TOTAL AREA(ACRES) =     51.00
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2022.50 =  2730.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2022.50 TO NODE   2029.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   445.00  DOWNSTREAM(FEET) =   433.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  25.20
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     94.41
 PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  12.23
 LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2029.00 =  2880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2029.00 TO NODE   2029.00 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.) =  12.23
 RAINFALL INTENSITY(INCH/HR) =   5.33
 TOTAL STREAM AREA(ACRES) =    51.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.41

****************************************************************************
 FLOW PROCESS FROM NODE   2030.00 TO NODE   2031.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    720.00
 DOWNSTREAM ELEVATION(FEET) =    670.00
 ELEVATION DIFFERENCE(FEET) =     50.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.727
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.57
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.57
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2031.00 TO NODE   2032.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    670.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.2857
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.195
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.56
  AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   7.67
  SUBAREA AREA(ACRES) =     2.60       SUBAREA RUNOFF(CFS) =    5.61
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =      2.80         PEAK FLOW RATE(CFS) =       6.04

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   4.49
  LONGEST FLOWPATH FROM NODE   2030.00 TO NODE   2032.00 =   680.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2032.00 TO NODE   2033.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    440.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   680.00   CHANNEL SLOPE =  0.0735
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.71
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   3.06
  Tc(MIN.) =  10.73
  SUBAREA AREA(ACRES) =     5.70       SUBAREA RUNOFF(CFS) =    9.91
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =      8.50         PEAK FLOW RATE(CFS) =      14.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   4.23
  LONGEST FLOWPATH FROM NODE   2030.00 TO NODE   2033.00 =  1360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2033.00 TO NODE   2029.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   440.00  DOWNSTREAM(FEET) =   433.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.88
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     14.78
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  10.89
  LONGEST FLOWPATH FROM NODE   2030.00 TO NODE   2029.00 =  1490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2029.00 TO NODE   2029.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.89
  RAINFALL INTENSITY(INCH/HR) =   5.74
  TOTAL STREAM AREA(ACRES) =     8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.78

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        94.41     12.23         5.327         51.00
      2        14.78     10.89         5.742          8.50

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       102.37     10.89        5.742
      2       108.12     12.23        5.327

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    108.12   Tc(MIN.) =   12.23
  TOTAL AREA(ACRES) =     59.50
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2029.00 =  2880.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     59.50  TC(MIN.) =     12.23
  PEAK FLOW RATE(CFS)    =    108.12
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 3000

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2003 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

                            RICK ENGINEERING COMPANY
                                5620 Friars Road
                             San Diego, California 92110
                           619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 3000                                                     *
 *************************************************************************

  FILE NAME: MW_3K100.DAT
  TIME/DATE OF STUDY: 10:43 07/13/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY     (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3000.00 TO NODE   3001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    822.50
 DOWNSTREAM ELEVATION(FEET) =    780.00
 ELEVATION DIFFERENCE(FEET) =     42.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   3001.00 TO NODE   3002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    545.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1005.00   CHANNEL SLOPE =  0.2338
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.934
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.15
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.58
 AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   3.66
 Tc(MIN.) =  10.34
 SUBAREA AREA(ACRES) =    10.60       SUBAREA RUNOFF(CFS) =   18.87
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     10.80         PEAK FLOW RATE(CFS) =      19.23

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   6.01
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3002.00 =  1105.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3002.00 TO NODE   3006.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    545.00  DOWNSTREAM(FEET) =    507.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   160.00   CHANNEL SLOPE =  0.2375
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.814
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     21.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
 AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   0.33
 Tc(MIN.) =  10.68
 SUBAREA AREA(ACRES) =     2.60       SUBAREA RUNOFF(CFS) =    4.23
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.296
 TOTAL AREA(ACRES) =     13.40         PEAK FLOW RATE(CFS) =      23.07
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   8.29
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3006.00 =  1265.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3006.00 TO NODE   3007.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   507.00  DOWNSTREAM(FEET) =   484.00
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.07
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  10.97
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3007.00 =  1565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3007.00 TO NODE   3007.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.97
  RAINFALL INTENSITY(INCH/HR) =   5.72
  TOTAL STREAM AREA(ACRES) =    13.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.07

****************************************************************************
  FLOW PROCESS FROM NODE   3008.00 TO NODE   3009.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    898.70
  DOWNSTREAM ELEVATION(FEET) =    830.00
  ELEVATION DIFFERENCE(FEET) =     68.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE   3010.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    830.00  DOWNSTREAM(FEET) =    575.00
```

```
 CHANNEL LENGTH THRU SUBAREA(FEET) =   670.00   CHANNEL SLOPE =  0.3806
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.723
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.28
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.07
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   1.84
 Tc(MIN.) =   8.52
 SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =   13.51
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      6.90         PEAK FLOW RATE(CFS) =      13.92

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.17   FLOW VELOCITY(FEET/SEC.) =   7.88
 LONGEST FLOWPATH FROM NODE   3008.00 TO NODE   3010.00 =   770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3010.00 TO NODE   3011.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    575.00  DOWNSTREAM(FEET) =    487.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.2514
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.268
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.96
 AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   0.98
 Tc(MIN.) =   9.50
 SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    8.65
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     11.50         PEAK FLOW RATE(CFS) =      21.62

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   6.40
 LONGEST FLOWPATH FROM NODE   3008.00 TO NODE   3011.00 =  1120.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3011.00 TO NODE   3007.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   487.00  DOWNSTREAM(FEET) =   484.00
 FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.54
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     21.62
```

```
 PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   9.84
 LONGEST FLOWPATH FROM NODE   3008.00 TO NODE   3007.00 =  1310.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3007.00 TO NODE   3007.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.84
 RAINFALL INTENSITY(INCH/HR) =   6.13
 TOTAL STREAM AREA(ACRES) =    11.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.62

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        23.07     10.97         5.716         13.40
     2        21.62      9.84         6.131         11.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        42.32      9.84         6.131
     2        43.23     10.97         5.716

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     43.23   Tc(MIN.) =   10.97
 TOTAL AREA(ACRES) =     24.90
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3007.00 =  1565.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3007.00 TO NODE   3012.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   484.00  DOWNSTREAM(FEET) =   477.00
 FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.47
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     43.23
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  11.07
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3012.00 =  1685.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3012.00 TO NODE   3012.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
```

```
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.07
 RAINFALL INTENSITY(INCH/HR) =   5.68
 TOTAL STREAM AREA(ACRES) =    24.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.23

****************************************************************************
 FLOW PROCESS FROM NODE   3013.00 TO NODE   3014.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    520.00
 DOWNSTREAM ELEVATION(FEET) =    513.00
 ELEVATION DIFFERENCE(FEET) =      7.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.611
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.16
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
 FLOW PROCESS FROM NODE   3014.00 TO NODE   3012.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  513.00  DOWNSTREAM ELEVATION(FEET) =  477.00
 STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 30.00

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

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.98
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.24
   HALFSTREET FLOOD WIDTH(FEET) =    6.98
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.09
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.49
 STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =   5.49
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.934
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.619
 SUBAREA AREA(ACRES) =     2.10      SUBAREA RUNOFF(CFS) =   11.63
 TOTAL AREA(ACRES) =      2.30        PEAK FLOW RATE(CFS) =      12.72
```

```
 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.04
 FLOW VELOCITY(FEET/SEC.) =  7.04   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01
 LONGEST FLOWPATH FROM NODE   3013.00 TO NODE   3012.00 =   420.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3012.00 TO NODE   3012.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.49
 RAINFALL INTENSITY(INCH/HR) =   8.93
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.72

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        43.23     11.07         5.680         24.90
     2        12.72      5.49         8.934          2.30

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        40.21      5.49         8.934
     2        51.32     11.07         5.680

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     51.32   Tc(MIN.) =   11.07
 TOTAL AREA(ACRES) =     27.20
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3012.00 =  1685.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3012.00 TO NODE   3015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   477.00  DOWNSTREAM(FEET) =   474.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.07
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     51.32
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  11.12
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3015.00 =  1735.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3015.00 TO NODE   3015.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.12
  RAINFALL INTENSITY(INCH/HR) =   5.67
  TOTAL STREAM AREA(ACRES) =    27.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.32

********************************************************************************
  FLOW PROCESS FROM NODE   3016.00 TO NODE   3017.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    495.00
  DOWNSTREAM ELEVATION(FEET) =    490.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.505
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.74

********************************************************************************
  FLOW PROCESS FROM NODE   3017.00 TO NODE   3018.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  490.00  DOWNSTREAM ELEVATION(FEET) =  475.00
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    8.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.18
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =   6.03
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.403
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.610
 SUBAREA AREA(ACRES) =     2.20      SUBAREA RUNOFF(CFS) =    11.28
 TOTAL AREA(ACRES) =       2.50        PEAK FLOW RATE(CFS) =       12.81

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.29
 FLOW VELOCITY(FEET/SEC.) =  4.71   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
 LONGEST FLOWPATH FROM NODE   3016.00 TO NODE   3018.00 =   465.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3018.00 TO NODE   3015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   475.00  DOWNSTREAM(FEET) =   474.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.04
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     12.81
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   6.13
 LONGEST FLOWPATH FROM NODE   3016.00 TO NODE   3015.00 =   515.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3015.00 TO NODE   3015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.13
 RAINFALL INTENSITY(INCH/HR) =   8.32
 TOTAL STREAM AREA(ACRES) =     2.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.81

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        51.32     11.12         5.665         27.20
     2        12.81      6.13         8.321          2.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        47.75      6.13         8.321
     2        60.04     11.12         5.665

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     60.04   Tc(MIN.) =   11.12
 TOTAL AREA(ACRES) =     29.70
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3015.00 =  1735.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    3015.00 TO NODE    3019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    474.00  DOWNSTREAM(FEET) =    473.00
  FLOW LENGTH(FEET) =     40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.28
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =    1
  PIPE-FLOW(CFS) =      60.04
  PIPE TRAVEL TIME(MIN.) =    0.05    Tc(MIN.) =  11.16
  LONGEST FLOWPATH FROM NODE    3000.00 TO NODE    3019.00 =  1775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    3019.00 TO NODE    3019.00 IS CODE =    1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.16
  RAINFALL INTENSITY(INCH/HR) =   5.65
  TOTAL STREAM AREA(ACRES) =    29.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      60.04

****************************************************************************
  FLOW PROCESS FROM NODE    3020.00 TO NODE    3021.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    645.00
  DOWNSTREAM ELEVATION(FEET) =    590.00
  ELEVATION DIFFERENCE(FEET) =     55.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) .=      0.47

****************************************************************************
  FLOW PROCESS FROM NODE    3021.00 TO NODE    3022.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    590.00  DOWNSTREAM(FEET) =    482.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.00   CHANNEL SLOPE =  0.1862
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.024
  *USER SPECIFIED(SUBAREA):
```

```
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.66
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.83
 AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   3.42
 Tc(MIN.) =  10.11
 SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    2.35
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      1.50        PEAK FLOW RATE(CFS) =       2.71

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   3.37
 LONGEST FLOWPATH FROM NODE   3020.00 TO NODE   3022.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3022.00 TO NODE   3019.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   482.00  DOWNSTREAM(FEET) =   473.00
 FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.70
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      2.71
 PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =  10.63
 LONGEST FLOWPATH FROM NODE   3020.00 TO NODE   3019.00 =   920.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3019.00 TO NODE   3019.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.63
 RAINFALL INTENSITY(INCH/HR) =   5.83
 TOTAL STREAM AREA(ACRES) =     1.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.71

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       60.04     11.16         5.650         29.70
     2        2.71     10.63         5.833          1.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       60.87     10.63         5.833
     2       62.67     11.16         5.650
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     62.67   Tc(MIN.) =   11.16
 TOTAL AREA(ACRES) =     31.20
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3019.00 =  1775.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3019.00 TO NODE   3023.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   473.00  DOWNSTREAM(FEET) =   457.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.37
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     62.67
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  11.42
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3023.00 =  2075.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3023.00 TO NODE   3023.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.42
 RAINFALL INTENSITY(INCH/HR) =   5.57
 TOTAL STREAM AREA(ACRES) =    31.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.67

****************************************************************************
 FLOW PROCESS FROM NODE   3024.00 TO NODE   3025.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
 UPSTREAM ELEVATION(FEET) =    478.50
 DOWNSTREAM ELEVATION(FEET) =    475.50
 ELEVATION DIFFERENCE(FEET) =      3.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.543
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      2.31
 TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      2.31

****************************************************************************
 FLOW PROCESS FROM NODE   3025.00 TO NODE   3026.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) =  475.50  DOWNSTREAM ELEVATION(FEET) =  458.00
  STREET LENGTH(FEET) =   370.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.38
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    9.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.39
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   5.86
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.562
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.610
  SUBAREA AREA(ACRES) =    2.70      SUBAREA RUNOFF(CFS) =   14.10
  TOTAL AREA(ACRES) =      3.10        PEAK FLOW RATE(CFS) =      16.19

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.99
  FLOW VELOCITY(FEET/SEC.) =  5.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.83
  LONGEST FLOWPATH FROM NODE   3024.00 TO NODE   3026.00 =   440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3026.00 TO NODE   3023.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   458.00  DOWNSTREAM(FEET) =   457.00
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.20
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.19
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   6.01
  LONGEST FLOWPATH FROM NODE   3024.00 TO NODE   3023.00 =   515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3023.00 TO NODE   3023.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.01
```

```
 RAINFALL INTENSITY(INCH/HR) =   8.42
 TOTAL STREAM AREA(ACRES) =      3.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      16.19

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        62.67     11.42         5.567         31.20
     2        16.19      6.01         8.421          3.10

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        57.62      6.01         8.421
     2        73.37     11.42         5.567

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      73.37   Tc(MIN.) =   11.42
 TOTAL AREA(ACRES) =      34.30
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3023.00 =  2075.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3023.00 TO NODE   3023.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   457.00  DOWNSTREAM(FEET) =   433.00
 FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.67
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      73.37
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  11.60
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3023.10 =  2345.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3023.10 TO NODE   3043.70 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    433.00  DOWNSTREAM(FEET) =    431.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.0118
 CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.165
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     74.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.31
 AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   1.23
 Tc(MIN.) =  12.83
```

```
 SUBAREA AREA(ACRES) =     0.70      SUBAREA RUNOFF(CFS) =     1.27
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.370
 TOTAL AREA(ACRES) =     35.00       PEAK FLOW RATE(CFS) =      73.37

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.57   FLOW VELOCITY(FEET/SEC.) =   2.31
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3043.70 =  2515.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3043.70 TO NODE   3043.70 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   3003.00 TO NODE   3004.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    827.00
 DOWNSTREAM ELEVATION(FEET) =    810.00
 ELEVATION DIFFERENCE(FEET) =     17.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   3004.00 TO NODE   3005.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    810.00  DOWNSTREAM(FEET) =    540.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   928.00   CHANNEL SLOPE =  0.2909
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.379
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      8.82
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.03
 AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   2.56
 Tc(MIN.) =   9.25
 SUBAREA AREA(ACRES) =     8.60      SUBAREA RUNOFF(CFS) =   16.46
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      8.80       PEAK FLOW RATE(CFS) =      16.84

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   7.74
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3005.00 =  1028.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   3005.00 TO NODE   3028.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    540.00  DOWNSTREAM(FEET) =    480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.1200
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.781
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     25.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.46
 AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   1.53
 Tc(MIN.) =  10.77
 SUBAREA AREA(ACRES) =     9.70       SUBAREA RUNOFF(CFS) =   16.82
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     18.50         PEAK FLOW RATE(CFS) =      32.09

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   5.92
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3028.00 =  1528.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3028.00 TO NODE   3033.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   480.00  DOWNSTREAM(FEET) =   474.00
 FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.91
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     32.09
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  10.90
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3033.00 =  1648.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3033.00 TO NODE   3033.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.90
 RAINFALL INTENSITY(INCH/HR) =   5.74
 TOTAL STREAM AREA(ACRES) =    18.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.09

****************************************************************************
 FLOW PROCESS FROM NODE   3032.00 TO NODE   3035.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    495.00
  DOWNSTREAM ELEVATION(FEET) =    491.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.853
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.74

********************************************************************************
  FLOW PROCESS FROM NODE   3035.00 TO NODE   3033.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  491.00  DOWNSTREAM ELEVATION(FEET) =  457.00
  STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    7.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =   5.86
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.562
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.610
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =   10.45
  TOTAL AREA(ACRES) =      2.30        PEAK FLOW RATE(CFS) =      12.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.10
  FLOW VELOCITY(FEET/SEC.) =  6.56   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
  LONGEST FLOWPATH FROM NODE   3032.00 TO NODE   3033.00 =   435.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   3033.00 TO NODE   3033.00 IS CODE =   1
--------------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   5.86
RAINFALL INTENSITY(INCH/HR) =   8.56
TOTAL STREAM AREA(ACRES) =     2.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.01

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc       INTENSITY      AREA
NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1        32.09     10.90        5.738        18.50
    2        12.01      5.86        8.562         2.30

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc       INTENSITY
NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
    1        29.26      5.86        8.562
    2        40.14     10.90        5.738

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     40.14   Tc(MIN.) =   10.90
TOTAL AREA(ACRES) =     20.80
LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3033.00 =  1648.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3033.00 TO NODE   3036.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   457.00  DOWNSTREAM(FEET) =   441.00
FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.91
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     40.14
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  11.12
LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3036.00 =  1898.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3036.00 TO NODE   3036.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  11.12
RAINFALL INTENSITY(INCH/HR) =   5.66
TOTAL STREAM AREA(ACRES) =    20.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.14
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    3037.00 TO NODE    3038.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
  UPSTREAM ELEVATION(FEET) =  474.00
  DOWNSTREAM ELEVATION(FEET) =  460.50
  ELEVATION DIFFERENCE(FEET) =  13.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =  4.011
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =  1.18
  TOTAL AREA(ACRES) =  0.20  TOTAL RUNOFF(CFS) =  1.18

****************************************************************************
  FLOW PROCESS FROM NODE    3038.00 TO NODE    3036.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  460.50  DOWNSTREAM ELEVATION(FEET) =  441.00
  STREET LENGTH(FEET) =  150.00  CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  3.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =  4.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =  5.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.12
  STREET FLOW TRAVEL TIME(MIN.) =  0.45  Tc(MIN.) =  4.46
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.620
  SUBAREA AREA(ACRES) =  0.80  SUBAREA RUNOFF(CFS) =  4.70
  TOTAL AREA(ACRES) =  1.00  PEAK FLOW RATE(CFS) =  5.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23  HALFSTREET FLOOD WIDTH(FEET) =  6.18
  FLOW VELOCITY(FEET/SEC.) =  6.28  DEPTH*VELOCITY(FT*FT/SEC.) =  1.44
```

```
 LONGEST FLOWPATH FROM NODE   3037.00 TO NODE   3036.00 =   250.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3036.00 TO NODE   3036.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   4.46
 RAINFALL INTENSITY(INCH/HR) =   9.49
 TOTAL STREAM AREA(ACRES) =     1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.88

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        40.14     11.12         5.664          20.80
     2         5.88      4.46         9.485           1.00

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        29.85      4.46         9.485
     2        43.65     11.12         5.664

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     43.65   Tc(MIN.) =   11.12
 TOTAL AREA(ACRES) =     21.80
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3036.00 =  1898.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3036.00 TO NODE   3027.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   441.00  DOWNSTREAM(FEET) =   439.00
 FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.51
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     43.65
 PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  11.47
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3027.00 =  2098.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3027.00 TO NODE   3042.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   439.00  DOWNSTREAM(FEET) =   438.00
```

```
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.51
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     43.65
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  11.64
  LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3042.00 =  2198.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.00 TO NODE   3042.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.64
  RAINFALL INTENSITY(INCH/HR) =   5.50
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.65

****************************************************************************
  FLOW PROCESS FROM NODE   3040.00 TO NODE   3041.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    476.50
  DOWNSTREAM ELEVATION(FEET) =    446.50
  ELEVATION DIFFERENCE(FEET) =     30.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.094
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE   3041.00 TO NODE   3042.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  446.50  DOWNSTREAM ELEVATION(FEET) =  433.00
  STREET LENGTH(FEET) =   325.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.13
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    8.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.09
  STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =   5.43
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.997
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.610
  SUBAREA AREA(ACRES) =     1.60      SUBAREA RUNOFF(CFS) =     8.78
  TOTAL AREA(ACRES) =       1.90        PEAK FLOW RATE(CFS) =      10.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.27
  FLOW VELOCITY(FEET/SEC.) =  4.57   DEPTH*VELOCITY(FT*FT/SEC.) =   1.42
  LONGEST FLOWPATH FROM NODE   3040.00 TO NODE   3042.00 =   425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.00 TO NODE   3042.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.43
  RAINFALL INTENSITY(INCH/HR) =   9.00
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.43

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        43.65     11.64        5.498         21.80
      2        10.43      5.43        8.997          1.90

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        37.10      5.43        8.997
      2        50.02     11.64        5.498

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     50.02   Tc(MIN.) =   11.64
  TOTAL AREA(ACRES) =     23.70
  LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3042.00 =  2198.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.00 TO NODE   2025.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   438.00  DOWNSTREAM(FEET) =   436.00
  FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  27.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.63
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     50.02
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  11.99
  LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   2025.00 =  2398.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.50 TO NODE   3042.50 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1008.00 TO NODE   1009.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    488.00
  DOWNSTREAM ELEVATION(FEET) =    483.50
  ELEVATION DIFFERENCE(FEET) =      4.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.167
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    98.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
  FLOW PROCESS FROM NODE   1009.00 TO NODE   1010.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  483.50  DOWNSTREAM ELEVATION(FEET) =  465.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
```

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        6.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =     8.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     3.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     1.11
  STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =    4.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
  SUBAREA AREA(ACRES) =     1.20      SUBAREA RUNOFF(CFS) =    10.24
  TOTAL AREA(ACRES) =       1.40        PEAK FLOW RATE(CFS) =       11.95

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.13
  FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
  LONGEST FLOWPATH FROM NODE   1008.00 TO NODE   1010.00 =  600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   2028.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   465.00  DOWNSTREAM(FEET) =   442.00
  FLOW LENGTH(FEET) =   360.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.07
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.95
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   4.71
  LONGEST FLOWPATH FROM NODE   1008.00 TO NODE   2028.00 =   960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2028.00 TO NODE   2028.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.71
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.95

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2027.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
```

```
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
 UPSTREAM ELEVATION(FEET) =  471.00
 DOWNSTREAM ELEVATION(FEET) =  464.00
 ELEVATION DIFFERENCE(FEET) =  7.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =  1.882
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =  1.71
 TOTAL AREA(ACRES) =  0.20  TOTAL RUNOFF(CFS) =  1.71

****************************************************************************
 FLOW PROCESS FROM NODE  2027.00 TO NODE  2028.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  464.00  DOWNSTREAM ELEVATION(FEET) =  442.00
 STREET LENGTH(FEET) =  260.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 30.00

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

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  4.27
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.22
   HALFSTREET FLOOD WIDTH(FEET) =  5.92
   AVERAGE FLOW VELOCITY(FEET/SEC.) =  4.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.09
 STREET FLOW TRAVEL TIME(MIN.) =  0.89  Tc(MIN.) =  2.77
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =  0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
 SUBAREA AREA(ACRES) =  0.60  SUBAREA RUNOFF(CFS) =  5.12
 TOTAL AREA(ACRES) =  0.80  PEAK FLOW RATE(CFS) =  6.83

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.25  HALFSTREET FLOOD WIDTH(FEET) =  7.38
 FLOW VELOCITY(FEET/SEC.) =  5.42  DEPTH*VELOCITY(FT*FT/SEC.) =  1.37
 LONGEST FLOWPATH FROM NODE  2026.00 TO NODE  2028.00 =  360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  2028.00 TO NODE  2028.00 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.) =   2.77
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.83

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1        11.95      4.71         9.485         1.40
      2         6.83      2.77         9.485         0.80

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        13.85      2.77         9.485
      2        18.78      4.71         9.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     18.78   Tc(MIN.) =    4.71
  TOTAL AREA(ACRES) =      2.20
  LONGEST FLOWPATH FROM NODE   1008.00 TO NODE   2028.00 =   960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2028.00 TO NODE   2025.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   442.00  DOWNSTREAM(FEET) =   436.00
  FLOW LENGTH(FEET) =   125.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.91
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     18.78
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   4.86
  LONGEST FLOWPATH FROM NODE   1008.00 TO NODE   2025.00 =  1085.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.50 TO NODE   3042.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1        18.78      4.86         9.485         2.20
  LONGEST FLOWPATH FROM NODE   1008.00 TO NODE   3042.50 =  1085.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
```

```
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         50.02     11.99        5.395        23.70
  LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3042.50 =  2398.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1        39.05        4.86         9.485
     2        60.70       11.99         5.395

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     60.70   Tc(MIN.) =   11.99
  TOTAL AREA(ACRES) =     25.90

****************************************************************************
  FLOW PROCESS FROM NODE   3042.50 TO NODE   3042.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   3042.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   436.00  DOWNSTREAM(FEET) =   433.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.31
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     60.70
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  12.03
  LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3042.50 =  2448.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3042.50 TO NODE   3043.70 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    433.00  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.0100
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.962
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     61.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.05
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   1.62
  Tc(MIN.) =  13.65
  SUBAREA AREA(ACRES) =     0.70       SUBAREA RUNOFF(CFS) =    1.22
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.412
  TOTAL AREA(ACRES) =     26.60         PEAK FLOW RATE(CFS) =      60.70
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   2.04
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3043.70 =  2648.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3043.70 TO NODE   3043.70 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1        60.70    13.65        4.962       26.60
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3043.70 =  2648.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1        73.37    12.83        5.165       35.00
 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3043.70 =  2515.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
    1      130.42      12.83        5.165
    2      131.19      13.65        4.962

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    131.19   Tc(MIN.) =   13.65
 TOTAL AREA(ACRES) =     61.60

****************************************************************************
 FLOW PROCESS FROM NODE   3043.70 TO NODE   3043.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   429.00  DOWNSTREAM(FEET) =   427.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.00
 ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    131.19
 PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  13.76
 LONGEST FLOWPATH FROM NODE   3003.00 TO NODE   3043.00 =  2748.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     61.60  TC(MIN.) =     13.76
 PEAK FLOW RATE(CFS)    =    131.19
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 4000

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                        San Diego, California 92110
                      619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 4000                                                     *
 *************************************************************************

  FILE NAME: MW_4K100.DAT
  TIME/DATE OF STUDY: 12:14 07/13/2009
-------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   4000.00 TO NODE   4001.00 IS CODE =  21
-------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    462.50
 DOWNSTREAM ELEVATION(FEET) =    437.00
 ELEVATION DIFFERENCE(FEET) =     25.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   4001.00 TO NODE   4002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    437.00  DOWNSTREAM(FEET) =    390.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.0671
 CHANNEL BASE(FEET) =   10.00  "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.630
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.57
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   4.54
 Tc(MIN.) =  11.22
 SUBAREA AREA(ACRES) =     3.00       SUBAREA RUNOFF(CFS) =     5.07
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     3.20         PEAK FLOW RATE(CFS) =       5.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   3.21
 LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.00 =   800.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4002.00 TO NODE   4002.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   390.00  DOWNSTREAM(FEET) =   384.00
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.40
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      5.40
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  11.27
 LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.10 =   840.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4002.10 TO NODE   4003.50 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    383.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    80.00   CHANNEL SLOPE =  0.0125
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      5.40
  FLOW VELOCITY(FEET/SEC.) =   1.05   FLOW DEPTH(FEET) =   0.16
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  12.54
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4003.50 =   920.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4002.10 TO NODE   4002.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.54
  RAINFALL INTENSITY(INCH/HR) =   5.24
  TOTAL STREAM AREA(ACRES) =     3.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.40

****************************************************************************
  FLOW PROCESS FROM NODE   4004.00 TO NODE   4005.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    455.00
  DOWNSTREAM ELEVATION(FEET) =    442.50
  ELEVATION DIFFERENCE(FEET) =     12.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.011
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.76

****************************************************************************
  FLOW PROCESS FROM NODE   4005.00 TO NODE   4003.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  442.50  DOWNSTREAM ELEVATION(FEET) =  383.00
  STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

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

```
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.06
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   11.68
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.57
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.22
 STREET FLOW TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =   6.04
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.397
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.620
 SUBAREA AREA(ACRES) =     6.60      SUBAREA RUNOFF(CFS) =   34.36
 TOTAL AREA(ACRES) =       6.90        PEAK FLOW RATE(CFS) =      35.92

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  15.04
 FLOW VELOCITY(FEET/SEC.) =  7.65   DEPTH*VELOCITY(FT*FT/SEC.) =   3.10
 LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4003.00 =   900.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4003.00 TO NODE   4003.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   385.00  DOWNSTREAM(FEET) =   383.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.77
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     35.92
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   6.18
 LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4003.50 =  1000.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4003.50 TO NODE   4003.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.18
 RAINFALL INTENSITY(INCH/HR) =   8.27
 TOTAL STREAM AREA(ACRES) =     6.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.92

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         5.40     12.54         5.242          3.20
     2        35.92      6.18         8.272          6.90
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        38.58      6.18        8.272
      2        28.17     12.54        5.242

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     38.58   Tc(MIN.) =    6.18
  TOTAL AREA(ACRES) =     10.10
  LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4003.50 =  1000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4003.50 TO NODE   4006.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   382.50  DOWNSTREAM(FEET) =   380.00
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.80
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     38.58
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   6.54
  LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4006.00 =  1210.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4006.00 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.) =   6.54
  RAINFALL INTENSITY(INCH/HR) =   7.98
  TOTAL STREAM AREA(ACRES) =    10.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.58

****************************************************************************
  FLOW PROCESS FROM NODE   4007.00 TO NODE   4008.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    445.50
  DOWNSTREAM ELEVATION(FEET) =    425.00
  ELEVATION DIFFERENCE(FEET) =     20.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
```

```
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   4008.00 TO NODE   4006.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    425.00  DOWNSTREAM(FEET) =    381.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   910.00   CHANNEL SLOPE =  0.0484
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.424
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2800
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.05
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.57
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   9.63
 Tc(MIN.) =  16.31
 SUBAREA AREA(ACRES) =     0.90       SUBAREA RUNOFF(CFS) =    1.11
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.284
 TOTAL AREA(ACRES) =      1.10         PEAK FLOW RATE(CFS) =       1.38

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   1.72
 LONGEST FLOWPATH FROM NODE   4007.00 TO NODE   4006.00 =  1010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4006.00 TO NODE   4006.00 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.) =  16.31
 RAINFALL INTENSITY(INCH/HR) =   4.42
 TOTAL STREAM AREA(ACRES) =     1.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.38

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        38.58      6.54         7.978         10.10
     2         1.38     16.31         4.424          1.10

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        39.14      6.54         7.978
     2        22.77     16.31         4.424

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
 PEAK FLOW RATE(CFS) =     39.14   Tc(MIN.) =    6.54
 TOTAL AREA(ACRES) =     11.20
 LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4006.00 =  1210.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4006.00 TO NODE   4009.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   381.00  DOWNSTREAM(FEET) =   380.00
 FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.49
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     39.14
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   6.57
 LONGEST FLOWPATH FROM NODE   4004.00 TO NODE   4009.00 =  1235.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =     11.20  TC(MIN.) =      6.57
 PEAK FLOW RATE(CFS)   =     39.14
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 7000A

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2003 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

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                             San Diego, California 92110
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 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 07/16/09                                              *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 7000                                                     *
 **************************************************************************

  FILE NAME: MW_7K10A.DAT
  TIME/DATE OF STUDY: 10:37 07/20/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   7000.00 TO NODE   7000.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    758.00
 DOWNSTREAM ELEVATION(FEET) =    748.00
 ELEVATION DIFFERENCE(FEET) =     10.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.431
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.992
 SUBAREA RUNOFF(CFS) =      2.83
 TOTAL AREA(ACRES) =      0.70   TOTAL RUNOFF(CFS) =      2.83

****************************************************************************
 FLOW PROCESS FROM NODE   7000.10 TO NODE   7001.20 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  748.00  DOWNSTREAM ELEVATION(FEET) =  670.00
 STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.15
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.99
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.76
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.64
 STREET FLOW TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =   7.46
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.331
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4500
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.450
 SUBAREA AREA(ACRES) =     1.40      SUBAREA RUNOFF(CFS) =     4.62
 TOTAL AREA(ACRES) =      2.10        PEAK FLOW RATE(CFS) =       6.93

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.15
 FLOW VELOCITY(FEET/SEC.) =  6.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7001.20 =   800.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7001.20 TO NODE   7001.20 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.46
```

```
 RAINFALL INTENSITY(INCH/HR) =   7.33
 TOTAL STREAM AREA(ACRES) =      2.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.93

****************************************************************************
 FLOW PROCESS FROM NODE   7001.00 TO NODE   7001.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    760.00
 DOWNSTREAM ELEVATION(FEET) =    730.00
 ELEVATION DIFFERENCE(FEET) =     30.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   7001.10 TO NODE   7001.20 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    730.00  DOWNSTREAM(FEET) =    670.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.3000
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.056
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.22
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
 AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   1.23
 Tc(MIN.) =   7.91
 SUBAREA AREA(ACRES) =     0.70       SUBAREA RUNOFF(CFS) =    1.48
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      0.90         PEAK FLOW RATE(CFS) =       1.91

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   3.21
 LONGEST FLOWPATH FROM NODE   7001.00 TO NODE   7001.20 =   300.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7001.20 TO NODE   7001.20 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.) =   7.91
```

```
 RAINFALL INTENSITY(INCH/HR) =   7.06
 TOTAL STREAM AREA(ACRES) =      0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.91

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         6.93      7.46         7.331          2.10
     2         1.91      7.91         7.056          0.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         8.72      7.46         7.331
     2         8.57      7.91         7.056

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.72   Tc(MIN.) =     7.46
 TOTAL AREA(ACRES) =       3.00
 LONGEST FLOWPATH FROM NODE    7000.00 TO NODE    7001.20 =    800.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    7001.20 TO NODE    7002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     670.00  DOWNSTREAM(FEET) =     620.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.2941
 CHANNEL BASE(FEET) =     3.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.148
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.76
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.55
 AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   0.30
 Tc(MIN.) =   7.75
 SUBAREA AREA(ACRES) =      1.90        SUBAREA RUNOFF(CFS) =     4.07
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.364
 TOTAL AREA(ACRES) =       4.90          PEAK FLOW RATE(CFS) =       12.76

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =  10.15
 LONGEST FLOWPATH FROM NODE    7000.00 TO NODE    7002.00 =    970.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    7002.00 TO NODE    7015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    610.00  DOWNSTREAM(FEET) =    554.00
```

```
 FLOW LENGTH(FEET) =   320.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.74
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     12.76
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   8.01
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7015.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7015.00 TO NODE   7015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.01
 RAINFALL INTENSITY(INCH/HR) =   7.00
 TOTAL STREAM AREA(ACRES) =     4.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.76

****************************************************************************
 FLOW PROCESS FROM NODE   7004.00 TO NODE   7005.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    680.00
 DOWNSTREAM ELEVATION(FEET) =    660.00
 ELEVATION DIFFERENCE(FEET) =     20.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.178
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.274
 SUBAREA RUNOFF(CFS) =      0.56
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
 FLOW PROCESS FROM NODE   7005.00 TO NODE   7006.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    660.00  DOWNSTREAM(FEET) =    603.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.1900
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.022
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.83
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.31
 Tc(MIN.) =   6.48
```

```
 SUBAREA AREA(ACRES) =     3.10      SUBAREA RUNOFF(CFS) =     7.46
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      3.30       PEAK FLOW RATE(CFS) =       7.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   4.68
 LONGEST FLOWPATH FROM NODE   7004.00 TO NODE   7006.00 =   360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7006.00 TO NODE   7015.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  603.00  DOWNSTREAM ELEVATION(FEET) =  564.00
 STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.01
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.73
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.49
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.81
 STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =   7.18
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.513
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.393
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    6.15
 TOTAL AREA(ACRES) =      4.60       PEAK FLOW RATE(CFS) =      13.59

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.54
 FLOW VELOCITY(FEET/SEC.) =  6.81   DEPTH*VELOCITY(FT*FT/SEC.) =   2.02
 LONGEST FLOWPATH FROM NODE   7004.00 TO NODE   7015.00 =   630.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7015.00 TO NODE   7015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.18
 RAINFALL INTENSITY(INCH/HR) =   7.51
 TOTAL STREAM AREA(ACRES) =     4.60
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.59

****************************************************************************
 FLOW PROCESS FROM NODE   7007.00 TO NODE   7008.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
 UPSTREAM ELEVATION(FEET) =    790.00
 DOWNSTREAM ELEVATION(FEET) =    750.00
 ELEVATION DIFFERENCE(FEET) =     40.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.163
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.288
 SUBAREA RUNOFF(CFS) =      0.50
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
 FLOW PROCESS FROM NODE   7008.00 TO NODE   7015.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    600.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.3409
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.962
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.94
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.83
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.91
 Tc(MIN.) =   8.08
 SUBAREA AREA(ACRES) =     2.30        SUBAREA RUNOFF(CFS) =     4.80
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      2.50          PEAK FLOW RATE(CFS) =       5.22

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   4.94
 LONGEST FLOWPATH FROM NODE   7007.00 TO NODE   7015.00 =   525.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7015.00 TO NODE   7015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.08
 RAINFALL INTENSITY(INCH/HR) =   6.96
 TOTAL STREAM AREA(ACRES) =     2.50
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.22

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        12.76      8.01         6.999          4.90
     2        13.59      7.18         7.513          4.60
     3         5.22      8.08         6.962          2.50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        30.12      7.18         7.513
     2        30.60      8.01         6.999
     3        30.51      8.08         6.962

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     30.60   Tc(MIN.) =    8.01
 TOTAL AREA(ACRES) =     12.00
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7015.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7015.00 TO NODE   7022.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   554.00  DOWNSTREAM(FEET) =   510.00
 FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS  11.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.69
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     30.60
 PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   8.20
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7022.00 =  1570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7022.00 TO NODE   7022.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.20
 RAINFALL INTENSITY(INCH/HR) =   6.89
 TOTAL STREAM AREA(ACRES) =    12.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.60

****************************************************************************
 FLOW PROCESS FROM NODE   7017.00 TO NODE   7018.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    630.00
  DOWNSTREAM ELEVATION(FEET) =    565.00
  ELEVATION DIFFERENCE(FEET) =     65.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
  FLOW PROCESS FROM NODE   7018.00 TO NODE   7022.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   565.00  DOWNSTREAM(FEET) =   515.00
  FLOW LENGTH(FEET) =   400.00   MANNING'S N =  0.016
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.09
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      0.47
  PIPE TRAVEL TIME(MIN.) =   1.09    Tc(MIN.) =   7.78
  LONGEST FLOWPATH FROM NODE   7017.00 TO NODE   7022.00 =   500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7018.00 TO NODE   7022.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.132
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    1.93
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =    2.35
  TC(MIN.) =   7.78

****************************************************************************
  FLOW PROCESS FROM NODE   7022.00 TO NODE   7022.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.78
  RAINFALL INTENSITY(INCH/HR) =   7.13
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.35

****************************************************************************
  FLOW PROCESS FROM NODE   7020.00 TO NODE   7021.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    551.00
  DOWNSTREAM ELEVATION(FEET) =    550.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =      1.07
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.07

********************************************************************************
  FLOW PROCESS FROM NODE   7021.00 TO NODE   7022.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  550.00  DOWNSTREAM ELEVATION(FEET) =  515.00
  STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    4.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.92
  STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =   7.02
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.619
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    3.84
  TOTAL AREA(ACRES) =      1.00        PEAK FLOW RATE(CFS) =       4.80

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   6.29
  FLOW VELOCITY(FEET/SEC.) =  4.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.15
  LONGEST FLOWPATH FROM NODE   7020.00 TO NODE   7022.00 =   365.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   7022.00 TO NODE   7022.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.02
  RAINFALL INTENSITY(INCH/HR) =   7.62
  TOTAL STREAM AREA(ACRES) =     1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.80

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        30.60      8.20         6.895         12.00
      2         2.35      7.78         7.132          1.10
      3         4.80      7.02         7.619          1.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        34.62      7.02         7.619
      2        36.43      7.78         7.132
      3        37.22      8.20         6.895

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     37.22   Tc(MIN.) =    8.20
  TOTAL AREA(ACRES) =     14.10
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7022.00 =  1570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7022.00 TO NODE   7022.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   508.00  DOWNSTREAM(FEET) =   507.00
  FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.09
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     37.22
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   8.67
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7022.50 =  1770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7022.50 TO NODE   7022.50 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   7024.00 TO NODE   7025.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
 UPSTREAM ELEVATION(FEET) =  680.00
 DOWNSTREAM ELEVATION(FEET) =  643.00
 ELEVATION DIFFERENCE(FEET) =  37.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =  6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =  0.71
 TOTAL AREA(ACRES) =  0.30  TOTAL RUNOFF(CFS) =  0.71

****************************************************************************
 FLOW PROCESS FROM NODE  7025.00 TO NODE  7026.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  643.00  DOWNSTREAM(FEET) =  510.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  740.00  CHANNEL SLOPE =  0.1797
 CHANNEL BASE(FEET) =  2.00  "Z" FACTOR =  1.000
 MANNING'S FACTOR = 0.035  MAXIMUM DEPTH(FEET) =  2.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.727
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  4.16
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  6.73
 AVERAGE FLOW DEPTH(FEET) =  0.27  TRAVEL TIME(MIN.) =  1.83
 Tc(MIN.) =  8.52
 SUBAREA AREA(ACRES) =  3.40  SUBAREA RUNOFF(CFS) =  6.86
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =  3.70  PEAK FLOW RATE(CFS) =  7.47

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.39  FLOW VELOCITY(FEET/SEC.) =  8.10
 LONGEST FLOWPATH FROM NODE  7024.00 TO NODE  7026.00 =  840.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  7026.00 TO NODE  7023.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  510.00  DOWNSTREAM(FEET) =  508.00
 FLOW LENGTH(FEET) =  340.00  MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  4.94
 ESTIMATED PIPE DIAMETER(INCH) =  18.00  NUMBER OF PIPES =  1
 PIPE-FLOW(CFS) =  7.47
 PIPE TRAVEL TIME(MIN.) =  1.15  Tc(MIN.) =  9.66
 LONGEST FLOWPATH FROM NODE  7024.00 TO NODE  7023.00 =  1180.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  7023.00 TO NODE  7023.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.66
 RAINFALL INTENSITY(INCH/HR) =    6.20
 TOTAL STREAM AREA(ACRES) =      3.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.47

****************************************************************************
 FLOW PROCESS FROM NODE    7040.00 TO NODE    7041.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
 UPSTREAM ELEVATION(FEET) =     515.00
 DOWNSTREAM ELEVATION(FEET) =     514.00
 ELEVATION DIFFERENCE(FEET) =       1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.908
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
 SUBAREA RUNOFF(CFS) =       1.61
 TOTAL AREA(ACRES) =       0.30   TOTAL RUNOFF(CFS) =       1.61

****************************************************************************
 FLOW PROCESS FROM NODE    7041.00 TO NODE    7023.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  514.00  DOWNSTREAM ELEVATION(FEET) =  508.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.89
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =   10.15
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
 STREET FLOW TRAVEL TIME(MIN.) =  1.90   Tc(MIN.) =   7.81
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.117
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =  0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
```

```
 SUBAREA AREA(ACRES) =     1.90      SUBAREA RUNOFF(CFS) =     8.52
 TOTAL AREA(ACRES) =       2.20        PEAK FLOW RATE(CFS) =       9.86

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  12.54
 FLOW VELOCITY(FEET/SEC.) =  2.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
 LONGEST FLOWPATH FROM NODE   7040.00 TO NODE   7023.00 =   365.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7023.00 TO NODE   7023.00 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.) =   7.81
 RAINFALL INTENSITY(INCH/HR) =   7.12
 TOTAL STREAM AREA(ACRES) =     2.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.86

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1         7.47      9.66        6.201          3.70
     2         9.86      7.81        7.117          2.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        15.89      7.81        7.117
     2        16.06      9.66        6.201

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     16.06   Tc(MIN.) =    9.66
 TOTAL AREA(ACRES) =      5.90
 LONGEST FLOWPATH FROM NODE   7024.00 TO NODE   7023.00 =  1180.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7023.00 TO NODE   7022.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   508.00  DOWNSTREAM(FEET) =   507.00
 FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
 ESTIMATED PIPE DIAMETER(INCH) =  21.00   NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     16.06
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   9.80
 LONGEST FLOWPATH FROM NODE   7024.00 TO NODE   7022.50 =  1250.00 FEET.

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

```
 FLOW PROCESS FROM NODE   7022.50 TO NODE   7022.50 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        16.06      9.80        6.144         5.90
 LONGEST FLOWPATH FROM NODE   7024.00 TO NODE   7022.50 =  1250.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        37.22      8.67        6.651        14.10
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7022.50 =  1770.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF        Tc       INTENSITY
 NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1       51.42        8.67        6.651
     2       50.44        9.80        6.144

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     51.42   Tc(MIN.) =    8.67
 TOTAL AREA(ACRES) =     20.00

****************************************************************************
 FLOW PROCESS FROM NODE   7022.50 TO NODE   7022.50 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   7022.50 TO NODE   7030.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   507.00  DOWNSTREAM(FEET) =   458.00
 FLOW LENGTH(FEET) =   550.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.71
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     51.42
 PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   9.07
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7030.00 =  2320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7030.00 TO NODE   7030.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.07
 RAINFALL INTENSITY(INCH/HR) =   6.46
```

```
  TOTAL STREAM AREA(ACRES) =    20.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.42

****************************************************************************
  FLOW PROCESS FROM NODE   7028.00 TO NODE   7029.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    511.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =      1.07
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.07

****************************************************************************
  FLOW PROCESS FROM NODE   7029.00 TO NODE   7030.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  510.00  DOWNSTREAM ELEVATION(FEET) =  468.00
  STREET LENGTH(FEET) =   490.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    8.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   7.61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.236
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =    2.70      SUBAREA RUNOFF(CFS) =   12.31
  TOTAL AREA(ACRES) =      2.90        PEAK FLOW RATE(CFS) =      13.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  10.51
  FLOW VELOCITY(FEET/SEC.) =  5.55   DEPTH*VELOCITY(FT*FT/SEC.) =   1.75
```

```
 LONGEST FLOWPATH FROM NODE   7028.00 TO NODE   7030.00 =   555.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7030.00 TO NODE   7030.00 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.) =   7.61
 RAINFALL INTENSITY(INCH/HR) =   7.24
 TOTAL STREAM AREA(ACRES) =     2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.22

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)   (INCH/HOUR)     (ACRE)
     1        51.42      9.07        6.459         20.00
     2        13.22      7.61        7.236          2.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
     1        56.34      7.61        7.236
     2        63.22      9.07        6.459

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     63.22   Tc(MIN.) =    9.07
 TOTAL AREA(ACRES) =     22.90
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7030.00 =  2320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7030.00 TO NODE   7043.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   458.00  DOWNSTREAM(FEET) =   453.00
 FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.97
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     63.22
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   9.12
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7043.00 =  2390.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7043.00 TO NODE   7043.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =    6.43
  TOTAL STREAM AREA(ACRES) =     22.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      63.22

****************************************************************************
  FLOW PROCESS FROM NODE    7042.00 TO NODE    7042.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     80.00
  UPSTREAM ELEVATION(FEET) =     520.00
  DOWNSTREAM ELEVATION(FEET) =     508.00
  ELEVATION DIFFERENCE(FEET) =      12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.452
  SUBAREA RUNOFF(CFS) =       3.55
  TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =       3.55

****************************************************************************
  FLOW PROCESS FROM NODE    7042.50 TO NODE    7043.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   460.00  DOWNSTREAM(FEET) =   453.00
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.31
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.55
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =   6.59
  LONGEST FLOWPATH FROM NODE    7042.00 TO NODE    7043.00 =   350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    7043.00 TO NODE    7043.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.59
  RAINFALL INTENSITY(INCH/HR) =   7.93
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.55

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        63.22      9.12         6.435         22.90
      2         3.55      6.59         7.934          1.40
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        54.82      6.59        7.934
      2        66.10      9.12        6.435

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     66.10   Tc(MIN.) =    9.12
  TOTAL AREA(ACRES) =     24.30
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7043.00 =  2390.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7043.00 TO NODE   7043.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   7032.00 TO NODE   7033.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    499.00
  DOWNSTREAM ELEVATION(FEET) =    498.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE   7033.00 TO NODE   7034.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  498.00  DOWNSTREAM ELEVATION(FEET) =  482.00
  STREET LENGTH(FEET) =  350.00  CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    8.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
  STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =   7.54
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.276
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     8.25
  TOTAL AREA(ACRES) =       2.10        PEAK FLOW RATE(CFS) =       9.63

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  10.51
  FLOW VELOCITY(FEET/SEC.) =  4.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
  LONGEST FLOWPATH FROM NODE   7032.00 TO NODE   7034.00 =   415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7034.00 TO NODE   7038.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   472.00  DOWNSTREAM(FEET) =   455.00
  FLOW LENGTH(FEET) =   460.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.63
  PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =   8.25
  LONGEST FLOWPATH FROM NODE   7032.00 TO NODE   7038.00 =   875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7038.00 TO NODE   7038.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.25
  RAINFALL INTENSITY(INCH/HR) =   6.87
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE   7036.00 TO NODE   7037.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
```

```
 UPSTREAM ELEVATION(FEET) =     492.00
 DOWNSTREAM ELEVATION(FEET) =     491.00
 ELEVATION DIFFERENCE(FEET) =       1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.908
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
 SUBAREA RUNOFF(CFS) =       1.07
 TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.07

****************************************************************************
 FLOW PROCESS FROM NODE   7037.00 TO NODE   7038.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  491.00  DOWNSTREAM ELEVATION(FEET) =  465.00
 STREET LENGTH(FEET) =  640.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.10
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =   10.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
 STREET FLOW TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =   8.70
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.635
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
 SUBAREA AREA(ACRES) =     3.80      SUBAREA RUNOFF(CFS) =   15.88
 TOTAL AREA(ACRES) =       4.00        PEAK FLOW RATE(CFS) =      16.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.46
 FLOW VELOCITY(FEET/SEC.) =  4.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.65
 LONGEST FLOWPATH FROM NODE   7036.00 TO NODE   7038.00 =   705.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7038.00 TO NODE   7038.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.70
 RAINFALL INTENSITY(INCH/HR) =   6.64
```

```
 TOTAL STREAM AREA(ACRES) =      4.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      16.72

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         9.63      8.25         6.868          2.10
     2        16.72      8.70         6.635          4.00

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        25.48      8.25         6.868
     2        26.02      8.70         6.635

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      26.02   Tc(MIN.) =     8.70
 TOTAL AREA(ACRES) =       6.10
 LONGEST FLOWPATH FROM NODE   7032.00 TO NODE   7038.00 =   875.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7038.00 TO NODE   7043.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   465.00  DOWNSTREAM(FEET) =   453.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  26.19
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     26.02
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   8.74
 LONGEST FLOWPATH FROM NODE   7032.00 TO NODE   7043.00 =   935.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7043.00 TO NODE   7043.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        26.02      8.74         6.616         6.10
 LONGEST FLOWPATH FROM NODE   7032.00 TO NODE   7043.00 =   935.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        66.10      9.12         6.435        24.30
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7043.00 =  2390.00 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
      1       89.33        8.74         6.616
      2       91.41        9.12         6.435

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      91.41   Tc(MIN.) =     9.12
  TOTAL AREA(ACRES) =      30.40

****************************************************************************
  FLOW PROCESS FROM NODE   7043.00 TO NODE   7043.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   7043.00 TO NODE   7047.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   463.00  DOWNSTREAM(FEET) =   407.00
  FLOW LENGTH(FEET) =   510.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.84
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     91.41
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   9.43
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7047.00 =  2900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7047.00 TO NODE   4047.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.43
  RAINFALL INTENSITY(INCH/HR) =   6.30
  TOTAL STREAM AREA(ACRES) =    30.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     91.41

****************************************************************************
  FLOW PROCESS FROM NODE   7045.00 TO NODE   7046.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    461.00
  DOWNSTREAM ELEVATION(FEET) =    460.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.160
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.291
```

```
 SUBAREA RUNOFF(CFS) =      2.02
 TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      2.02

****************************************************************************
 FLOW PROCESS FROM NODE   7046.00 TO NODE   7047.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  460.00  DOWNSTREAM ELEVATION(FEET) =  417.00
 STREET LENGTH(FEET) =   470.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.88
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    9.19
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.53
 STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =   7.64
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.218
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.619
 SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =   15.66
 TOTAL AREA(ACRES) =      3.90        PEAK FLOW RATE(CFS) =      17.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.63
 FLOW VELOCITY(FEET/SEC.) =  6.06   DEPTH*VELOCITY(FT*FT/SEC.) =   2.04
 LONGEST FLOWPATH FROM NODE   7045.00 TO NODE   7047.00 =   535.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7047.00 TO NODE   7047.00 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.) =   7.64
 RAINFALL INTENSITY(INCH/HR) =   7.22
 TOTAL STREAM AREA(ACRES) =     3.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.43

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

```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         91.41      9.43         6.300          30.40
     2         17.43      7.64         7.218           3.90

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         91.44      7.64         7.218
     2        106.62      9.43         6.300

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     106.62   Tc(MIN.) =     9.43
  TOTAL AREA(ACRES) =      34.30
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7047.00 =  2900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7047.00 TO NODE   7056.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   407.00  DOWNSTREAM(FEET) =   402.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.05
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    106.62
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   9.48
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7056.00 =  2970.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7056.00 TO NODE   7056.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   7049.00 TO NODE   7050.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    474.00
  DOWNSTREAM ELEVATION(FEET) =    452.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.094
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.16
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   7050.00 TO NODE   7051.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   452.00  DOWNSTREAM(FEET) =   425.00
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.016
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      1.16
  PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =   4.62
  LONGEST FLOWPATH FROM NODE   7049.00 TO NODE   7051.00 =   340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7050.00 TO NODE   7051.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4300
  SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    3.33
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =    4.49
  TC(MIN.) =   4.62

****************************************************************************
  FLOW PROCESS FROM NODE   7051.00 TO NODE   7051.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   420.00  DOWNSTREAM(FEET) =   410.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      4.49
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   4.75
  LONGEST FLOWPATH FROM NODE   7049.00 TO NODE   7051.20 =   440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7051.20 TO NODE   7051.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.75
  RAINFALL INTENSITY(INCH/HR) =   9.49
```

```
 TOTAL STREAM AREA(ACRES) =      1.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.49

+---------------------------------------------------------------------------+
| Flow information for Node 6010                                            |
|                                                                           |
|                                                                           |
+---------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    6010.00 TO NODE    6010.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   9.04   RAIN INTENSITY(INCH/HOUR) =  6.47
 TOTAL AREA(ACRES) =      4.00   TOTAL RUNOFF(CFS) =     15.17

****************************************************************************
 FLOW PROCESS FROM NODE    6010.00 TO NODE    7051.20 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   411.00  DOWNSTREAM(FEET) =   410.00
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.93
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.17
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   9.21
 LONGEST FLOWPATH FROM NODE   7045.00 TO NODE   7051.20 =   615.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    7051.20 TO NODE    7051.20 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.21
 RAINFALL INTENSITY(INCH/HR) =   6.40
 TOTAL STREAM AREA(ACRES) =     4.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.17

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1         4.49      4.75         9.485         1.10
     2        15.17      9.21         6.397         4.00

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

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

```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         12.31      4.75        9.485
     2         18.20      9.21        6.397

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.20   Tc(MIN.) =     9.21
  TOTAL AREA(ACRES) =       5.10
  LONGEST FLOWPATH FROM NODE    7045.00 TO NODE    7051.20 =    615.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    7051.20 TO NODE    7055.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    410.00  DOWNSTREAM(FEET) =    405.00
  FLOW LENGTH(FEET) =     70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.25
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =    1
  PIPE-FLOW(CFS) =      18.20
  PIPE TRAVEL TIME(MIN.) =    0.07    Tc(MIN.) =    9.28
  LONGEST FLOWPATH FROM NODE    7045.00 TO NODE    7055.00 =    685.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    7055.00 TO NODE    7055.00 IS CODE =    1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.28
  RAINFALL INTENSITY(INCH/HR) =    6.37
  TOTAL STREAM AREA(ACRES) =      5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      18.20

****************************************************************************
  FLOW PROCESS FROM NODE    7053.00 TO NODE    7054.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6500
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
  UPSTREAM ELEVATION(FEET) =     418.00
  DOWNSTREAM ELEVATION(FEET) =     417.00
  ELEVATION DIFFERENCE(FEET) =       1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.657
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.759
  SUBAREA RUNOFF(CFS) =       1.14
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.14

****************************************************************************
  FLOW PROCESS FROM NODE    7054.00 TO NODE    7055.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  417.00  DOWNSTREAM ELEVATION(FEET) =  415.00
  STREET LENGTH(FEET) =    90.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.73
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    7.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.57
  STREET FLOW TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =   6.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.159
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.650
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    3.18
  TOTAL AREA(ACRES) =      0.80        PEAK FLOW RATE(CFS) =       4.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.68
  FLOW VELOCITY(FEET/SEC.) =  2.53   DEPTH*VELOCITY(FT*FT/SEC.) =   0.70
  LONGEST FLOWPATH FROM NODE   7053.00 TO NODE   7055.00 =   155.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7055.00 TO NODE   7055.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.31
  RAINFALL INTENSITY(INCH/HR) =   8.16
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.24

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       18.20      9.28         6.365          5.10
      2        4.24      6.31         8.159          0.80

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

```
 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        18.44      6.31        8.159
     2        21.51      9.28        6.365

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     21.51   Tc(MIN.) =    9.28
 TOTAL AREA(ACRES) =      5.90
 LONGEST FLOWPATH FROM NODE   7045.00 TO NODE   7055.00 =   685.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7055.00 TO NODE   7056.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   405.00  DOWNSTREAM(FEET) =   402.00
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.11
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     21.51
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   9.32
 LONGEST FLOWPATH FROM NODE   7045.00 TO NODE   7056.00 =   725.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7056.00 TO NODE   7056.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        21.51      9.32        6.348         5.90
 LONGEST FLOWPATH FROM NODE   7045.00 TO NODE   7056.00 =   725.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       106.62      9.48        6.280        34.30
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7056.00 =  2970.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc       INTENSITY
 NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1      126.35       9.32        6.348
     2      127.89       9.48        6.280

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    127.89   Tc(MIN.) =    9.48
 TOTAL AREA(ACRES) =     40.20

****************************************************************************
 FLOW PROCESS FROM NODE   7056.00 TO NODE   7056.00 IS CODE =  12
----------------------------------------------------------------------------
```

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

********************************************************************************
  FLOW PROCESS FROM NODE   7056.00 TO NODE   7060.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   402.00  DOWNSTREAM(FEET) =   346.00
  FLOW LENGTH(FEET) =   535.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.28
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    127.89
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   9.77
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7060.00 =  3505.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   7060.00 TO NODE   7060.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.77
  RAINFALL INTENSITY(INCH/HR) =   6.16
  TOTAL STREAM AREA(ACRES) =    40.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    127.89

********************************************************************************
  FLOW PROCESS FROM NODE   7058.00 TO NODE   7059.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    417.00
  DOWNSTREAM ELEVATION(FEET) =    411.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.656
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.20
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.20

********************************************************************************
  FLOW PROCESS FROM NODE   7059.00 TO NODE   7060.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  411.00  DOWNSTREAM ELEVATION(FEET) =  356.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.45
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.23
   HALFSTREET FLOOD WIDTH(FEET) =    6.14
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.80
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.09
 STREET FLOW TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =   6.39
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.095
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.851
 SUBAREA AREA(ACRES) =     0.90      SUBAREA RUNOFF(CFS) =     6.56
 TOTAL AREA(ACRES) =       1.10        PEAK FLOW RATE(CFS) =       7.58

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   7.87
 FLOW VELOCITY(FEET/SEC.) =  5.37   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
 LONGEST FLOWPATH FROM NODE   7058.00 TO NODE   7060.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7060.00 TO NODE   7060.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.39
 RAINFALL INTENSITY(INCH/HR) =   8.10
 TOTAL STREAM AREA(ACRES) =     1.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.58

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       127.89      9.77         6.157         40.20
     2         7.58      6.39         8.095          1.10

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        91.24      6.39         8.095
     2       133.65      9.77         6.157
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    133.65   Tc(MIN.) =    9.77
  TOTAL AREA(ACRES) =     41.30
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7060.00 =  3505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7060.00 TO NODE   7064.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   346.00  DOWNSTREAM(FEET) =   326.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.94
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    133.65
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   9.85
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7064.00 =  3665.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7060.00 TO NODE   7064.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.85
  RAINFALL INTENSITY(INCH/HR) =   6.12
  TOTAL STREAM AREA(ACRES) =    41.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    133.65

****************************************************************************
  FLOW PROCESS FROM NODE   7061.00 TO NODE   7062.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    383.00
  DOWNSTREAM ELEVATION(FEET) =    340.00
  ELEVATION DIFFERENCE(FEET) =     43.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.094
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
  FLOW PROCESS FROM NODE   7062.00 TO NODE   7063.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   340.00  DOWNSTREAM(FEET) =   333.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.16
  PIPE TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =   5.45
  LONGEST FLOWPATH FROM NODE   7061.00 TO NODE   7063.00 =   480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7062.00 TO NODE   7063.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.971
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6100
  SUBAREA AREA(ACRES) =     0.60   SUBAREA RUNOFF(CFS) =     3.28
  TOTAL AREA(ACRES) =       0.80   TOTAL RUNOFF(CFS) =     4.38
  TC(MIN.) =   5.45

****************************************************************************
  FLOW PROCESS FROM NODE   7063.00 TO NODE   7064.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   328.00  DOWNSTREAM(FEET) =   326.00
  FLOW LENGTH(FEET) =   115.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.69
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.38
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   5.74
  LONGEST FLOWPATH FROM NODE   7061.00 TO NODE   7064.00 =   595.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7064.00 TO NODE   7064.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.74
  RAINFALL INTENSITY(INCH/HR) =   8.68
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.38

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
```

```
     1      133.65      9.85         6.123          41.30
     2        4.38      5.74         8.680           0.80

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         98.67      5.74        8.680
     2        136.74      9.85        6.123

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    136.74   Tc(MIN.) =    9.85
  TOTAL AREA(ACRES) =     42.10
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7064.00 =  3665.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7064.00 TO NODE   7068.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   326.00  DOWNSTREAM(FEET) =   298.00
  FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.72
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    136.74
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   9.95
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7068.00 =  3865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7068.00 TO NODE   7068.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.95
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =    42.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    136.74

****************************************************************************
  FLOW PROCESS FROM NODE   7066.00 TO NODE   7067.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .5100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    370.00
  DOWNSTREAM ELEVATION(FEET) =    357.00
  ELEVATION DIFFERENCE(FEET) =     13.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.930
```

```
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.97
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.97

****************************************************************************
 FLOW PROCESS FROM NODE   7067.00 TO NODE   7067.50 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  357.00  DOWNSTREAM ELEVATION(FEET) =  299.00
 STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.70
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.21
   HALFSTREET FLOOD WIDTH(FEET) =    5.48
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.78
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   1.03
 STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =   6.60
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.926
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6900
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.660
 SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    5.47
 TOTAL AREA(ACRES) =      1.20        PEAK FLOW RATE(CFS) =       6.28

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   7.11
 FLOW VELOCITY(FEET/SEC.) =  5.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.31
 LONGEST FLOWPATH FROM NODE   7066.00 TO NODE   7067.50 =   580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7067.50 TO NODE   7068.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   299.00  DOWNSTREAM(FEET) =   298.00
 FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      6.28
```

```
  PIPE TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =   7.57
  LONGEST FLOWPATH FROM NODE   7066.00 TO NODE   7068.00 =   820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7068.00 TO NODE   7068.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.57
  RAINFALL INTENSITY(INCH/HR) =   7.26
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.28

+--------------------------------------------------------------------------+
| Flow Information for Node 7068                                           |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   7068.00 TO NODE   7068.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.37   RAIN INTENSITY(INCH/HOUR) =  6.80
  TOTAL AREA(ACRES) =   114.30   TOTAL RUNOFF(CFS) =    311.62

****************************************************************************
  FLOW PROCESS FROM NODE   7068.00 TO NODE   7068.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.37
  RAINFALL INTENSITY(INCH/HR) =   6.80
  TOTAL STREAM AREA(ACRES) =   114.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    311.62

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1       136.74      9.95         6.084         42.10
      2         6.28      7.57         7.261          1.20
      3       311.62      8.37         6.803        114.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       402.57      7.57         7.261
```

```
      2       439.78      8.37        6.803
      3       420.67      9.95        6.084

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    439.78   Tc(MIN.) =    8.37
  TOTAL AREA(ACRES) =    157.60
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7068.00 =  3865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7068.00 TO NODE   7079.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   298.00  DOWNSTREAM(FEET) =   294.00
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.84
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    439.78
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   8.43
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7079.00 =  3970.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7079.00 TO NODE   7079.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   5102.00 TO NODE   5103.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    393.00
  DOWNSTREAM ELEVATION(FEET) =    385.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.800
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.56
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.56

****************************************************************************
  FLOW PROCESS FROM NODE   5103.00 TO NODE   5105.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  385.00  DOWNSTREAM ELEVATION(FEET) =  308.00
  STREET LENGTH(FEET) =  1030.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    9.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
  STREET FLOW TRAVEL TIME(MIN.) =   3.51   Tc(MIN.) =   5.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.121
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
  SUBAREA AREA(ACRES) =     1.70      SUBAREA RUNOFF(CFS) =   13.96
  TOTAL AREA(ACRES) =      2.00        PEAK FLOW RATE(CFS) =      16.42

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.83
  FLOW VELOCITY(FEET/SEC.) =  5.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.89
  LONGEST FLOWPATH FROM NODE   5102.00 TO NODE   5105.00 =  1130.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5105.00 TO NODE   7072.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   308.00  DOWNSTREAM(FEET) =   296.00
  FLOW LENGTH(FEET) =  1700.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.52
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.42
  PIPE TRAVEL TIME(MIN.) =   4.35    Tc(MIN.) =   9.66
  LONGEST FLOWPATH FROM NODE   5102.00 TO NODE   7072.00 =  2830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7072.00 TO NODE   7072.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.66
  RAINFALL INTENSITY(INCH/HR) =   6.20
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    16.42

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

```
 FLOW PROCESS FROM NODE   7070.00 TO NODE   7071.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .8000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    311.60
 DOWNSTREAM ELEVATION(FEET) =    311.00
 ELEVATION DIFFERENCE(FEET) =      0.60
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.183
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.52
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.52

****************************************************************************
 FLOW PROCESS FROM NODE   7071.00 TO NODE   7072.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  311.00  DOWNSTREAM ELEVATION(FEET) =  310.00
 STREET LENGTH(FEET) =  1380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.55
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.51
   HALFSTREET FLOOD WIDTH(FEET) =   18.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
 STREET FLOW TRAVEL TIME(MIN.) =  28.53   Tc(MIN.) =  32.71
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.824
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .8000
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.800
 SUBAREA AREA(ACRES) =    3.80      SUBAREA RUNOFF(CFS) =    8.58
 TOTAL AREA(ACRES) =      4.00        PEAK FLOW RATE(CFS) =       9.04

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.68
 FLOW VELOCITY(FEET/SEC.) =  0.91   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1380.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   28.8 CFS,
```

```
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   7072.00
  LONGEST FLOWPATH FROM NODE   7070.00 TO NODE   7072.00 =  1440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7072.00 TO NODE   7072.00 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.) =  32.71
  RAINFALL INTENSITY(INCH/HR) =   2.82
  TOTAL STREAM AREA(ACRES) =     4.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.04

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        16.42      9.66         6.203          2.00
      2         9.04     32.71         2.824          4.00

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        19.09      9.66         6.203
      2        16.51     32.71         2.824

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     19.09   Tc(MIN.) =    9.66
  TOTAL AREA(ACRES) =      6.00
  LONGEST FLOWPATH FROM NODE   5102.00 TO NODE   7072.00 =  2830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7072.00 TO NODE   7079.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   296.00  DOWNSTREAM(FEET) =   294.00
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.90
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     19.09
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  10.34
  LONGEST FLOWPATH FROM NODE   5102.00 TO NODE   7079.00 =  3110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7079.00 TO NODE   7079.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1         19.09     10.34        5.938         6.00
 LONGEST FLOWPATH FROM NODE   5102.00 TO NODE   7079.00 =  3110.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        439.78      8.43        6.771       157.60
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7079.00 =  3970.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF        Tc       INTENSITY
 NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
    1       455.36        8.43         6.771
    2       404.78       10.34         5.938

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    455.36   Tc(MIN.) =    8.43
 TOTAL AREA(ACRES) =    163.60

****************************************************************************
 FLOW PROCESS FROM NODE   7079.00 TO NODE   7079.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   7079.00 TO NODE   7098.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    294.00  DOWNSTREAM(FEET) =    290.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.0057
 CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.016   MAXIMUM DEPTH(FEET) =  15.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.903
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    463.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.84
 AVERAGE FLOW DEPTH(FEET) =   0.78   TRAVEL TIME(MIN.) =   2.00
 Tc(MIN.) =  10.43
 SUBAREA AREA(ACRES) =     6.10       SUBAREA RUNOFF(CFS) =   16.20
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.444
 TOTAL AREA(ACRES) =    169.70         PEAK FLOW RATE(CFS) =     455.36

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   5.80
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7098.00 =  4670.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7098.00 TO NODE   7098.00 IS CODE =  10
----------------------------------------------------------------------------
```

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

********************************************************************************
 FLOW PROCESS FROM NODE  7074.10 TO NODE   7074.20 IS CODE =  21
--------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
 UPSTREAM ELEVATION(FEET) =  855.00
 DOWNSTREAM ELEVATION(FEET) =  800.00
 ELEVATION DIFFERENCE(FEET) =  55.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =  6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
 SUBAREA RUNOFF(CFS) =  0.86
 TOTAL AREA(ACRES) =  0.30  TOTAL RUNOFF(CFS) =  0.86

********************************************************************************
 FLOW PROCESS FROM NODE  7074.20 TO NODE  7074.40 IS CODE =  51
--------------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  800.00  DOWNSTREAM(FEET) =  415.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1240.00  CHANNEL SLOPE =  0.3105
 CHANNEL BASE(FEET) =  3.00  "Z" FACTOR =  3.000
 MANNING'S FACTOR = 0.035  MAXIMUM DEPTH(FEET) =  5.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.847
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3200
 S.C.S. CURVE NUMBER (AMC II) =  0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  15.61
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.23
 AVERAGE FLOW DEPTH(FEET) =  0.37  TRAVEL TIME(MIN.) =  2.02
 Tc(MIN.) =  8.29
 SUBAREA AREA(ACRES) =  13.30  SUBAREA RUNOFF(CFS) =  29.14
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.321
 TOTAL AREA(ACRES) =  13.60  PEAK FLOW RATE(CFS) =  29.86

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.52  FLOW VELOCITY(FEET/SEC.) =  12.48
 LONGEST FLOWPATH FROM NODE  7074.10 TO NODE  7074.40 =  1340.00 FEET.

********************************************************************************
 FLOW PROCESS FROM NODE  7074.00 TO NODE  7076.00 IS CODE =  31
--------------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  415.00  DOWNSTREAM(FEET) =  338.00
 FLOW LENGTH(FEET) =  540.00  MANNING'S N =  0.016
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.72
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.86
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   8.74
  LONGEST FLOWPATH FROM NODE   7074.10 TO NODE   7076.00 =  1880.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7076.00 TO NODE   7076.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.74
  RAINFALL INTENSITY(INCH/HR) =   6.61
  TOTAL STREAM AREA(ACRES) =    13.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.86

****************************************************************************
  FLOW PROCESS FROM NODE   7075.10 TO NODE   7075.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    850.00
  DOWNSTREAM ELEVATION(FEET) =    780.00
  ELEVATION DIFFERENCE(FEET) =     70.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.945
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.483
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59

****************************************************************************
  FLOW PROCESS FROM NODE   7075.20 TO NODE   7076.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    338.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1150.00   CHANNEL SLOPE =  0.3843
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.750
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     13.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.58
  AVERAGE FLOW DEPTH(FEET) =   0.17  TRAVEL TIME(MIN.) =   2.53
  Tc(MIN.) =   8.47
  SUBAREA AREA(ACRES) =    11.00       SUBAREA RUNOFF(CFS) =   25.99
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =     11.20        PEAK FLOW RATE(CFS) =      26.46
```

```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.25   FLOW VELOCITY(FEET/SEC.) =   9.75
 LONGEST FLOWPATH FROM NODE   7075.10 TO NODE   7076.00 =  1240.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7076.00 TO NODE   7076.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.47
 RAINFALL INTENSITY(INCH/HR) =   6.75
 TOTAL STREAM AREA(ACRES) =    11.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.46

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        29.86      8.74         6.614         13.60
     2        26.46      8.47         6.750         11.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        55.39      8.47         6.750
     2        55.79      8.74         6.614

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     55.79   Tc(MIN.) =    8.74
 TOTAL AREA(ACRES) =     24.80
 LONGEST FLOWPATH FROM NODE   7074.10 TO NODE   7076.00 =  1880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7076.00 TO NODE   7098.00 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) =   280.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  27.33
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     55.79
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   8.91
 LONGEST FLOWPATH FROM NODE   7074.10 TO NODE   7098.00 =  2160.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7098.00 TO NODE   7098.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        55.79      8.91        6.532        24.80
 LONGEST FLOWPATH FROM NODE   7074.10 TO NODE   7098.00 =  2160.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       455.36     10.43        5.903       169.70
 LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7098.00 =  4670.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)      (MIN.)   (INCH/HOUR)
     1      444.97       8.91        6.532
     2      505.77      10.43        5.903

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    505.77   Tc(MIN.) =   10.43
 TOTAL AREA(ACRES) =    194.50

****************************************************************************
 FLOW PROCESS FROM NODE   7098.00 TO NODE   7098.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =    194.50  TC(MIN.) =     10.43
 PEAK FLOW RATE(CFS)    =    505.77
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Flow Information For Drainage
Basin 7000A
(Node 6026)
(Node 5086)
(Node 5090.5)

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                            San Diego, California 92110
                          619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 07/16/09                                              *
* 100-yr Post-project (on-site)                                           *
*                                                                         *
 *************************************************************************

  FILE NAME: MW_5K100.DAT
  TIME/DATE OF STUDY: 10:17 07/20/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   36.0     31.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   5000.00 TO NODE   5000.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    762.10
 DOWNSTREAM ELEVATION(FEET) =    762.00
 ELEVATION DIFFERENCE(FEET) =      0.10
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.207
 WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 0.5%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      4.27
 TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      4.27

****************************************************************************
 FLOW PROCESS FROM NODE   5000.10 TO NODE   5000.20 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   762.00  DOWNSTREAM(FEET) =   700.00
 FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.58
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      4.27
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.39
 LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5000.20 =   250.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5000.10 TO NODE   5000.20 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.6333
 SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    1.14
 TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =    5.41
 TC(MIN.) =   3.39

****************************************************************************
 FLOW PROCESS FROM NODE   5000.20 TO NODE   5000.30 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    700.00  DOWNSTREAM(FEET) =    600.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   220.00   CHANNEL SLOPE =  0.4545
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      8.82
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.61
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   0.55
 Tc(MIN.) =   3.94
 SUBAREA AREA(ACRES) =     2.40       SUBAREA RUNOFF(CFS) =    6.83
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.391
 TOTAL AREA(ACRES) =      3.30         PEAK FLOW RATE(CFS) =      12.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   7.21
 LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5000.30 =   470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5000.30 TO NODE   5003.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    600.00  DOWNSTREAM(FEET) =    522.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.2889
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   7.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     16.50
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.19
 AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   0.63
 Tc(MIN.) =   4.57
 SUBAREA AREA(ACRES) =     3.00       SUBAREA RUNOFF(CFS) =    8.54
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.348
 TOTAL AREA(ACRES) =      6.30         PEAK FLOW RATE(CFS) =      20.77

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   7.71
 LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5003.00 =   740.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5003.00 TO NODE   5003.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   5001.00 TO NODE   5001.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    764.10
 DOWNSTREAM ELEVATION(FEET) =    764.00
 ELEVATION DIFFERENCE(FEET) =      0.10
```

```
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.207
 WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 0.5%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      8.54
 TOTAL AREA(ACRES) =      1.00   TOTAL RUNOFF(CFS) =      8.54

****************************************************************************
 FLOW PROCESS FROM NODE   5001.10 TO NODE   5001.20 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   764.00  DOWNSTREAM(FEET) =   695.00
 FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.54
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      8.54
 PIPE TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =   3.33
 LONGEST FLOWPATH FROM NODE   5001.00 TO NODE   5001.20 =   230.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5001.10 TO NODE   5001.20 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7286
 SUBAREA AREA(ACRES) =     0.40   SUBAREA RUNOFF(CFS) =     1.14
 TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =     9.67
 TC(MIN.) =   3.33

****************************************************************************
 FLOW PROCESS FROM NODE   5001.20 TO NODE   5002.30 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    695.00  DOWNSTREAM(FEET) =    580.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.4423
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.99
 AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   0.62
 Tc(MIN.) =   3.95
```

```
  SUBAREA AREA(ACRES) =     0.70       SUBAREA RUNOFF(CFS) =     1.99
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.586
  TOTAL AREA(ACRES) =      2.10        PEAK FLOW RATE(CFS) =      11.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.14   FLOW VELOCITY(FEET/SEC.) =   7.19
  LONGEST FLOWPATH FROM NODE   5001.00 TO NODE   5002.30 =   490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5002.30 TO NODE   5002.30 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.) =   3.95
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.67

****************************************************************************
  FLOW PROCESS FROM NODE   5002.00 TO NODE   5002.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    764.10
  DOWNSTREAM ELEVATION(FEET) =    761.00
  ELEVATION DIFFERENCE(FEET) =      3.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.386
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.54
  TOTAL AREA(ACRES) =      1.00   TOTAL RUNOFF(CFS) =      8.54

****************************************************************************
  FLOW PROCESS FROM NODE   5002.10 TO NODE   5002.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   764.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.06
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.54
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   1.52
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5002.20 =   240.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5002.10 TO NODE   5002.20 IS CODE =  81
----------------------------------------------------------------------------
```

```
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3000
S.C.S. CURVE NUMBER (AMC II) =  0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.6750
SUBAREA AREA(ACRES) =  0.60  SUBAREA RUNOFF(CFS) =  1.71
TOTAL AREA(ACRES) =  1.60  TOTAL RUNOFF(CFS) =  10.24
TC(MIN.) =  1.52

****************************************************************************
FLOW PROCESS FROM NODE  5002.20 TO NODE  5002.30 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  695.00  DOWNSTREAM(FEET) =  580.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  280.00  CHANNEL SLOPE =  0.4107
CHANNEL BASE(FEET) =  5.00  "Z" FACTOR =  5.000
MANNING'S FACTOR = 0.035  MAXIMUM DEPTH(FEET) =  10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3000
S.C.S. CURVE NUMBER (AMC II) =  0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  12.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  8.82
AVERAGE FLOW DEPTH(FEET) =  0.22  TRAVEL TIME(MIN.) =  0.53
Tc(MIN.) =  2.05
SUBAREA AREA(ACRES) =  1.30  SUBAREA RUNOFF(CFS) =  3.70
AREA-AVERAGE RUNOFF COEFFICIENT =  0.507
TOTAL AREA(ACRES) =  2.90  PEAK FLOW RATE(CFS) =  13.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.24  FLOW VELOCITY(FEET/SEC.) =  9.31
LONGEST FLOWPATH FROM NODE  5002.00 TO NODE  5002.30 =  520.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  5002.30 TO NODE  5002.30 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.) =  2.05
RAINFALL INTENSITY(INCH/HR) =  9.49
TOTAL STREAM AREA(ACRES) =  2.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =  13.94

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       11.67     3.95       9.485         2.10
    2       13.94     2.05       9.485         2.90
```

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)    (MIN.)   .(INCH/HOUR)
    1       19.99     2.05        9.485
    2       25.61     3.95        9.485

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     25.61   Tc(MIN.) =    3.95
 TOTAL AREA(ACRES) =      5.00
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5002.30 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5002.30 TO NODE   5003.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    580.00  DOWNSTREAM(FEET) =    522.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2417
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     28.74
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.50
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   0.47
 Tc(MIN.) =   4.42
 SUBAREA AREA(ACRES) =     2.20       SUBAREA RUNOFF(CFS) =    6.26
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.467
 TOTAL AREA(ACRES) =      7.20         PEAK FLOW RATE(CFS) =      31.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   8.72
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5003.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5003.00 TO NODE   5003.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1       31.87     4.42        9.485         7.20
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5003.00 =   760.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
```

```
    1       20.77      4.57        9.485        6.30
  LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5003.00 =   740.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
      1       51.97        4.42        9.485
      2       52.64        4.57        9.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    52.64   Tc(MIN.) =    4.57
  TOTAL AREA(ACRES) =     13.50

****************************************************************************
  FLOW PROCESS FROM NODE   5003.00 TO NODE   5003.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   5003.00 TO NODE   5006.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   512.00  DOWNSTREAM(FEET) =   487.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.95
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     52.64
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   4.88
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5006.00 =  1140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5006.00 TO NODE   5006.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.88
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =    13.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.64

****************************************************************************
  FLOW PROCESS FROM NODE   5004.00 TO NODE   5005.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    520.00
```

```
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.981
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
  FLOW PROCESS FROM NODE   5005.00 TO NODE   5006.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  520.00  DOWNSTREAM ELEVATION(FEET) =  497.00
  STREET LENGTH(FEET) =   245.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    7.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
  STREET FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =   2.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.657
  SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =   10.76
  TOTAL AREA(ACRES) =      2.00        PEAK FLOW RATE(CFS) =      12.46

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.06
  FLOW VELOCITY(FEET/SEC.) =  5.68   DEPTH*VELOCITY(FT*FT/SEC.) =   1.74
  LONGEST FLOWPATH FROM NODE   5004.00 TO NODE   5006.00 =   345.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5006.00 TO NODE   5006.00 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.) =   2.81
  RAINFALL INTENSITY(INCH/HR) =   9.49
```

```
 TOTAL STREAM AREA(ACRES) =      2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      12.46

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        52.64      4.88         9.485          13.50
     2        12.46      2.81         9.485           2.00

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        42.71      2.81         9.485
     2        65.11      4.88         9.485

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      65.11   Tc(MIN.) =     4.88
 TOTAL AREA(ACRES) =      15.50
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5006.00 =  1140.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5006.00 TO NODE   5019.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   487.00  DOWNSTREAM(FEET) =   480.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.03
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      65.11
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   4.97
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5019.00 =  1250.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5019.00 TO NODE   5019.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   5008.00 TO NODE   5009.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    548.00
 DOWNSTREAM ELEVATION(FEET) =    510.00
 ELEVATION DIFFERENCE(FEET) =     38.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
```

```
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   5009.00 TO NODE   5010.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  510.00  DOWNSTREAM ELEVATION(FEET) =  505.00
 STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.50
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.21
   HALFSTREET FLOOD WIDTH(FEET) =    5.39
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.99
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
 STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =   8.61
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.681
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7800
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.620
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     2.08
 TOTAL AREA(ACRES) =      0.60        PEAK FLOW RATE(CFS) =       2.49

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =   6.85
 FLOW VELOCITY(FEET/SEC.) =  2.24   DEPTH*VELOCITY(FT*FT/SEC.) =   0.54
 LONGEST FLOWPATH FROM NODE   5008.00 TO NODE   5010.00 =   330.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5010.00 TO NODE   5015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   495.00  DOWNSTREAM(FEET) =   487.00
 FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.23
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      2.49
```

```
 PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   8.94
 LONGEST FLOWPATH FROM NODE   5008.00 TO NODE   5015.00 =   495.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5015.00 TO NODE   5015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.94
 RAINFALL INTENSITY(INCH/HR) =   6.52
 TOTAL STREAM AREA(ACRES) =     0.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.49

****************************************************************************
 FLOW PROCESS FROM NODE   5012.00 TO NODE   5013.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    760.00
 DOWNSTREAM ELEVATION(FEET) =    710.00
 ELEVATION DIFFERENCE(FEET) =     50.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   5013.00 TO NODE   5014.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    710.00  DOWNSTREAM(FEET) =    492.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   740.00   CHANNEL SLOPE =  0.2946
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.162
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.01
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   3.07
 Tc(MIN.) =   9.76
 SUBAREA AREA(ACRES) =     5.80      SUBAREA RUNOFF(CFS) =   10.72
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =      6.00        PEAK FLOW RATE(CFS) =      11.09

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   5.27
```

```
 LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5014.00 =   840.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5014.00 TO NODE   5015.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   489.00  DOWNSTREAM(FEET) =   487.00
 FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     11.09
 PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  10.13
 LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5015.00 =  1000.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5015.00 TO NODE   5015.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.13
 RAINFALL INTENSITY(INCH/HR) =   6.02
 TOTAL STREAM AREA(ACRES) =     6.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.09

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc      INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1         2.49      8.94        6.519          0.60
     2        11.09     10.13        6.016          6.00

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
     1        12.28      8.94        6.519
     2        13.39     10.13        6.016

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     13.39   Tc(MIN.) =   10.13
 TOTAL AREA(ACRES) =      6.60
 LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5015.00 =  1000.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5015.00 TO NODE   5018.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   487.00  DOWNSTREAM(FEET) =   483.00
```

```
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.09
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     13.39
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  10.27
  LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5018.00 =  1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5018.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.27
  RAINFALL INTENSITY(INCH/HR) =   5.96
  TOTAL STREAM AREA(ACRES) =     6.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.39

****************************************************************************
  FLOW PROCESS FROM NODE   5017.00 TO NODE   5018.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    497.00
  DOWNSTREAM ELEVATION(FEET) =    493.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.883
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.12
  TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      5.12

****************************************************************************
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5018.00 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.) =   1.88
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.12

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        13.39     10.27         5.963          6.60
      2         5.12      1.88         9.485          0.60
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       13.54     1.88       9.485
      2       16.61    10.27       5.963

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     16.61   Tc(MIN.) =   10.27
  TOTAL AREA(ACRES) =      7.20
  LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5018.00 =  1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   483.00  DOWNSTREAM(FEET) =   480.00
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.61
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  10.40
  LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5019.00 =  1190.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5019.00 TO NODE   5019.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       16.61    10.40       5.916        7.20
  LONGEST FLOWPATH FROM NODE   5012.00 TO NODE   5019.00 =  1190.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       65.11     4.97       9.485       15.50
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5019.00 =  1250.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      73.05      4.97       9.485
      2      57.21     10.40       5.916

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     73.05   Tc(MIN.) =    4.97
  TOTAL AREA(ACRES) =     22.70
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   5019.00 TO NODE   5019.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   5019.00 TO NODE   5024.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   480.00  DOWNSTREAM(FEET) =   475.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.86
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     73.05
 PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   5.06
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5024.00 =  1350.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5024.00 TO NODE   5024.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.06
 RAINFALL INTENSITY(INCH/HR) =   9.42
 TOTAL STREAM AREA(ACRES) =    22.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     73.05

****************************************************************************
 FLOW PROCESS FROM NODE   5021.00 TO NODE   5022.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    760.00
 DOWNSTREAM ELEVATION(FEET) =    710.00
 ELEVATION DIFFERENCE(FEET) =     50.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
 FLOW PROCESS FROM NODE   5022.00 TO NODE   5023.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =    710.00  DOWNSTREAM(FEET) =    482.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   850.00   CHANNEL SLOPE =  0.2682
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.647
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.11
 AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   1.99
 Tc(MIN.) =   8.68
 SUBAREA AREA(ACRES) =    14.00       SUBAREA RUNOFF(CFS) =   27.92
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =     14.20          PEAK FLOW RATE(CFS) =      28.32

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   9.20
 LONGEST FLOWPATH FROM NODE   5021.00 TO NODE   5023.00 =   950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5023.00 TO NODE   5024.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   477.00  DOWNSTREAM(FEET) =   475.00
 FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.52
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     28.32
 PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   9.06
 LONGEST FLOWPATH FROM NODE   5021.00 TO NODE   5024.00 =  1145.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5024.00 TO NODE   5024.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.06
 RAINFALL INTENSITY(INCH/HR) =   6.47
 TOTAL STREAM AREA(ACRES) =    14.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.32

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        73.05      5.06        9.418         22.70
     2        28.32      9.06        6.465         14.20

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

```
  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        88.85      5.06        9.418
      2        78.46      9.06        6.465

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      88.85   Tc(MIN.) =     5.06
  TOTAL AREA(ACRES) =      36.90
  LONGEST FLOWPATH FROM NODE    5002.00 TO NODE    5024.00 =  1350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    5024.00 TO NODE    5028.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    475.00  DOWNSTREAM(FEET) =    468.00
  FLOW LENGTH(FEET) =    120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.78
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =    1
  PIPE-FLOW(CFS) =      88.85
  PIPE TRAVEL TIME(MIN.) =    0.09    Tc(MIN.) =    5.15
  LONGEST FLOWPATH FROM NODE    5002.00 TO NODE    5028.00 =  1470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    5028.00 TO NODE    5028.00 IS CODE =    1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.15
  RAINFALL INTENSITY(INCH/HR) =    9.31
  TOTAL STREAM AREA(ACRES) =     36.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      88.85

****************************************************************************
  FLOW PROCESS FROM NODE    5026.00 TO NODE    5027.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
  UPSTREAM ELEVATION(FEET) =     495.00
  DOWNSTREAM ELEVATION(FEET) =     494.00
  ELEVATION DIFFERENCE(FEET) =       1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =       1.07
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.07

****************************************************************************
  FLOW PROCESS FROM NODE    5027.00 TO NODE    5028.00 IS CODE =  62
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  494.00  DOWNSTREAM ELEVATION(FEET) =  478.00
  STREET LENGTH(FEET) =   260.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    7.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.03
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =   6.99
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.638
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =    8.66
  TOTAL AREA(ACRES) =       2.00        PEAK FLOW RATE(CFS) =       9.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.87
  FLOW VELOCITY(FEET/SEC.) =  4.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
  LONGEST FLOWPATH FROM NODE   5026.00 TO NODE   5028.00 =   325.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5028.00 TO NODE   5028.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.99
  RAINFALL INTENSITY(INCH/HR) =   7.64
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.62

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1       88.85      5.15         9.309         36.90
      2        9.62      6.99         7.638          2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        95.93      5.15        9.309
     2        82.53      6.99        7.638

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     95.93   Tc(MIN.) =    5.15
 TOTAL AREA(ACRES) =     38.90
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5028.00 =  1470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5028.00 TO NODE   5037.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   468.00  DOWNSTREAM(FEET) =   464.00
 FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.43
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     95.93
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   5.20
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5037.00 =  1540.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5037.00 TO NODE   5037.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   5030.00 TO NODE   5031.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
 UPSTREAM ELEVATION(FEET) =    680.00
 DOWNSTREAM ELEVATION(FEET) =    650.00
 ELEVATION DIFFERENCE(FEET) =     30.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.341
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.137
 SUBAREA RUNOFF(CFS) =      0.49
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.49

****************************************************************************
 FLOW PROCESS FROM NODE   5031.00 TO NODE   5032.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    650.00  DOWNSTREAM(FEET) =    475.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.3571
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.176
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.99
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.36
  Tc(MIN.) =   7.71
  SUBAREA AREA(ACRES) =     3.80       SUBAREA RUNOFF(CFS) =    8.18
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =      4.00         PEAK FLOW RATE(CFS) =       8.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.19   FLOW VELOCITY(FEET/SEC.) =   7.48
  LONGEST FLOWPATH FROM NODE   5030.00 TO NODE   5032.00 =   580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5032.00 TO NODE   5036.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   470.00  DOWNSTREAM(FEET) =   465.00
  FLOW LENGTH(FEET) =   700.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.68
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.61
  PIPE TRAVEL TIME(MIN.) =   2.06    Tc(MIN.) =   9.76
  LONGEST FLOWPATH FROM NODE   5030.00 TO NODE   5036.00 =  1280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5036.00 TO NODE   5036.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.76
  RAINFALL INTENSITY(INCH/HR) =   6.16
  TOTAL STREAM AREA(ACRES) =     4.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.61

****************************************************************************
  FLOW PROCESS FROM NODE   5034.00 TO NODE   5035.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
```

```
 UPSTREAM ELEVATION(FEET) =    485.00
 DOWNSTREAM ELEVATION(FEET) =    484.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
 SUBAREA RUNOFF(CFS) =      1.61
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
 FLOW PROCESS FROM NODE   5035.00 TO NODE   5036.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  484.00  DOWNSTREAM ELEVATION(FEET) =  473.00
 STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.50
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.38
   HALFSTREET FLOOD WIDTH(FEET) =   13.99
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
 STREET FLOW TRAVEL TIME(MIN.) =   4.15   Tc(MIN.) =  10.05
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.045
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
 SUBAREA AREA(ACRES) =    5.10      SUBAREA RUNOFF(CFS) =   19.42
 TOTAL AREA(ACRES) =      5.40        PEAK FLOW RATE(CFS) =      20.56

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  17.56
 FLOW VELOCITY(FEET/SEC.) =  3.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
 LONGEST FLOWPATH FROM NODE   5034.00 TO NODE   5036.00 =   765.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5036.00 TO NODE   5036.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.05
 RAINFALL INTENSITY(INCH/HR) =   6.04
```

```
 TOTAL STREAM AREA(ACRES) =      5.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      20.56

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         8.61      9.76         6.161          4.00
     2        20.56     10.05         6.045          5.40

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        28.58      9.76         6.161
     2        29.01     10.05         6.045

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      29.01   Tc(MIN.) =   10.05
 TOTAL AREA(ACRES) =       9.40
 LONGEST FLOWPATH FROM NODE   5030.00 TO NODE   5036.00 =  1280.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5036.00 TO NODE   5037.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   465.00  DOWNSTREAM(FEET) =   464.00
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.33
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     29.01
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  10.20
 LONGEST FLOWPATH FROM NODE   5030.00 TO NODE   5037.00 =  1360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5037.00 TO NODE   5037.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        29.01     10.20         5.990         9.40
 LONGEST FLOWPATH FROM NODE   5030.00 TO NODE   5037.00 =  1360.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        95.93      5.20         9.249        38.90
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5037.00 =  1540.00 FEET.

 ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
      1      110.73        5.20         9.249
      2       91.14       10.20         5.990

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     110.73   Tc(MIN.) =     5.20
  TOTAL AREA(ACRES) =      48.30

****************************************************************************
  FLOW PROCESS FROM NODE    5037.00 TO NODE    5037.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    5037.00 TO NODE    5041.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   464.00  DOWNSTREAM(FEET) =   444.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.92
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    110.73
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.45
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5041.00 =  1890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    5041.00 TO NODE    5041.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.45
  RAINFALL INTENSITY(INCH/HR) =   8.97
  TOTAL STREAM AREA(ACRES) =    48.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    110.73

****************************************************************************
  FLOW PROCESS FROM NODE    5039.00 TO NODE    5040.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    476.00
  DOWNSTREAM ELEVATION(FEET) =    475.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.034
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.402
  SUBAREA RUNOFF(CFS) =      1.04
```

```
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
 FLOW PROCESS FROM NODE   5040.00 TO NODE   5041.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  475.00  DOWNSTREAM ELEVATION(FEET) =  454.00
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.10
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.97
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
 STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =   7.66
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.201
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.620
 SUBAREA AREA(ACRES) =     2.70      SUBAREA RUNOFF(CFS) =   12.05
 TOTAL AREA(ACRES) =      2.90        PEAK FLOW RATE(CFS) =      12.95

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.45
 FLOW VELOCITY(FEET/SEC.) =  4.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
 LONGEST FLOWPATH FROM NODE   5039.00 TO NODE   5041.00 =   455.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5041.00 TO NODE   5041.00 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.) =   7.66
 RAINFALL INTENSITY(INCH/HR) =   7.20
 TOTAL STREAM AREA(ACRES) =     2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.95

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
```

```
      1       110.73      5.45          8.968          48.30
      2        12.95      7.66          7.201           2.90

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       119.94      5.45         8.968
      2       101.85      7.66         7.201

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    119.94   Tc(MIN.) =    5.45
  TOTAL AREA(ACRES) =     51.20
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5041.00 =  1890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5041.00 TO NODE   5055.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   444.00  DOWNSTREAM(FEET) =   442.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.08
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    119.94
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   5.52
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5055.00 =  1960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5055.00 TO NODE   5055.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   5043.00 TO NODE   5044.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    470.00
  ELEVATION DIFFERENCE(FEET) =     60.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

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

```
 FLOW PROCESS FROM NODE   5044.00 TO NODE   5045.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   470.00  DOWNSTREAM(FEET) =   460.00
 FLOW LENGTH(FEET) =  1220.00   MANNING'S N =  0.016
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.34
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      0.47
 PIPE TRAVEL TIME(MIN.) =   8.68   Tc(MIN.) =  15.37
 LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5045.00 =  1320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5044.00 TO NODE   5045.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.598
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3186
 SUBAREA AREA(ACRES) =     2.70   SUBAREA RUNOFF(CFS) =     3.97
 TOTAL AREA(ACRES) =       2.90   TOTAL RUNOFF(CFS) =     4.25
 TC(MIN.) =  15.37

****************************************************************************
 FLOW PROCESS FROM NODE   5045.00 TO NODE   5050.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   450.00  DOWNSTREAM(FEET) =   442.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.93
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      4.25
 PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  15.62
 LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5050.00 =  1470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5050.00 TO NODE   5050.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.62
 RAINFALL INTENSITY(INCH/HR) =   4.55
 TOTAL STREAM AREA(ACRES) =     2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.25
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   5047.00 TO NODE   5048.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    466.00
  DOWNSTREAM ELEVATION(FEET) =    465.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE   5048.00 TO NODE   5049.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  465.00  DOWNSTREAM ELEVATION(FEET) =  456.00
  STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   12.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.96
  STREET FLOW TRAVEL TIME(MIN.) =   3.25   Tc(MIN.) =   9.15
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.421
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =     3.50      SUBAREA RUNOFF(CFS) =   14.16
  TOTAL AREA(ACRES) =      3.80        PEAK FLOW RATE(CFS) =      15.37

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  15.44
  FLOW VELOCITY(FEET/SEC.) =  3.11   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
  LONGEST FLOWPATH FROM NODE   5047.00 TO NODE   5049.00 =   595.00 FEET.

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

```
 FLOW PROCESS FROM NODE   5049.00 TO NODE   5050.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   450.00  DOWNSTREAM(FEET) =   442.00
 FLOW LENGTH(FEET) =   670.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.76
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.37
 PIPE TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =  10.59
 LONGEST FLOWPATH FROM NODE   5047.00 TO NODE   5050.00 =  1265.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5050.00 TO NODE   5050.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.59
 RAINFALL INTENSITY(INCH/HR) =   5.84
 TOTAL STREAM AREA(ACRES) =     3.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.37

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         4.25     15.62         4.550          2.90
     2        15.37     10.59         5.844          3.80

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        18.25     10.59         5.844
     2        16.22     15.62         4.550

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     18.25   Tc(MIN.) =   10.59
 TOTAL AREA(ACRES) =      6.70
 LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5050.00 =  1470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5050.00 TO NODE   5054.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   442.00  DOWNSTREAM(FEET) =   441.00
 FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.79
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     18.25
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  10.63
  LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5054.00 =  1495.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5054.00 TO NODE   5054.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.63
  RAINFALL INTENSITY(INCH/HR) =   5.83
  TOTAL STREAM AREA(ACRES) =     6.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.25

****************************************************************************
  FLOW PROCESS FROM NODE   5052.00 TO NODE   5053.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    457.00
  DOWNSTREAM ELEVATION(FEET) =    456.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =      1.07
  TOTAL AREA(ACRES) =      0.20  TOTAL RUNOFF(CFS) =      1.07

****************************************************************************
  FLOW PROCESS FROM NODE   5053.00 TO NODE   5054.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  456.00  DOWNSTREAM ELEVATION(FEET) =  448.00
  STREET LENGTH(FEET) =   670.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   13.39
```

```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     2.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.89
  STREET FLOW TRAVEL TIME(MIN.) =   4.67   Tc(MIN.) =  10.58
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.848
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =     4.20      SUBAREA RUNOFF(CFS) =   15.47
  TOTAL AREA(ACRES) =       4.40        PEAK FLOW RATE(CFS) =      16.21

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  16.90
  FLOW VELOCITY(FEET/SEC.) =  2.76   DEPTH*VELOCITY(FT*FT/SEC.) =   1.22
  LONGEST FLOWPATH FROM NODE   5052.00 TO NODE   5054.00 =   735.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5054.00 TO NODE   5054.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.58
  RAINFALL INTENSITY(INCH/HR) =   5.85
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.21

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        18.25    10.63         5.833          6.70
      2        16.21    10.58         5.848          4.40

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        34.42    10.58        5.848
      2        34.42    10.63        5.833

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     34.42   Tc(MIN.) =   10.63
  TOTAL AREA(ACRES) =     11.10
  LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5054.00 =  1495.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5054.00 TO NODE   5055.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   441.00  DOWNSTREAM(FEET) =   440.00
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.36
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     34.42
  PIPE TRAVEL-TIME(MIN.) =   0.16    Tc(MIN.) =  10.79
  LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5055.00 =  1585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5055.00 TO NODE   5055.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        34.42     10.79        5.777        11.10
  LONGEST FLOWPATH FROM NODE   5043.00 TO NODE   5055.00 =  1585.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       119.94      5.52        8.900        51.20
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5055.00 =  1960.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1       137.55       5.52        8.900
     2       112.27      10.79        5.777

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    137.55   Tc(MIN.) =    5.52
  TOTAL AREA(ACRES) =     62.30

****************************************************************************
  FLOW PROCESS FROM NODE   5055.00 TO NODE   5055.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   5055.00 TO NODE   5059.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   440.00  DOWNSTREAM(FEET) =   420.00
  FLOW LENGTH(FEET) =   330.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.88
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    137.55
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   5.74
  LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5059.00 =  2290.00 FEET.

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

```
 FLOW PROCESS FROM NODE   5059.00 TO NODE   5059.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.74
 RAINFALL INTENSITY(INCH/HR) =   8.68
 TOTAL STREAM AREA(ACRES) =    62.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    137.55

****************************************************************************
 FLOW PROCESS FROM NODE   5057.00 TO NODE   5058.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    451.00
 DOWNSTREAM ELEVATION(FEET) =    450.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.160
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.291
 SUBAREA RUNOFF(CFS) =      1.01
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
 FLOW PROCESS FROM NODE   5058.00 TO NODE   5059.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  450.00  DOWNSTREAM ELEVATION(FEET) =  430.00
 STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.34
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.42
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.09
 STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =   7.62
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.227
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6400
```

```
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.638
 SUBAREA AREA(ACRES) =     2.30      SUBAREA RUNOFF(CFS) =    10.64
 TOTAL AREA(ACRES) =       2.50        PEAK FLOW RATE(CFS) =       11.52

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  10.78
 FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
 LONGEST FLOWPATH FROM NODE  5057.00 TO NODE   5059.00 =   415.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5059.00 TO NODE   5059.00 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.) =   7.62
 RAINFALL INTENSITY(INCH/HR) =   7.23
 TOTAL STREAM AREA(ACRES) =     2.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.52

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       137.55      5.74         8.677         62.30
     2        11.52      7.62         7.227          2.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       146.23      5.74         8.677
     2       126.07      7.62         7.227

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    146.23   Tc(MIN.) =    5.74
 TOTAL AREA(ACRES) =     64.80
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5059.00 =  2290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5059.00 TO NODE   5063.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   420.00  DOWNSTREAM(FEET) =   387.00
 FLOW LENGTH(FEET) =   570.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.53
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    146.23
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   6.13
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5063.00 =  2860.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    5063.00 TO NODE    5063.00 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.) =    6.13
  RAINFALL INTENSITY(INCH/HR) =    8.32
  TOTAL STREAM AREA(ACRES) =     64.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     146.23

****************************************************************************
  FLOW PROCESS FROM NODE    5061.00 TO NODE    5062.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
  UPSTREAM ELEVATION(FEET) =     426.00
  DOWNSTREAM ELEVATION(FEET) =     425.00
  ELEVATION DIFFERENCE(FEET) =       1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =       1.07
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.07

****************************************************************************
  FLOW PROCESS FROM NODE    5062.00 TO NODE    5063.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  425.00  DOWNSTREAM ELEVATION(FEET) =  397.00
  STREET LENGTH(FEET) =   490.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    9.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.23
  STREET FLOW TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =   7.85
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.090
```

```
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .6300
S.C.S. CURVE NUMBER (AMC II) =  0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
SUBAREA AREA(ACRES) =     3.10     SUBAREA RUNOFF(CFS) =   13.85
TOTAL AREA(ACRES) =      3.30      PEAK FLOW RATE(CFS) =      14.74

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.93
FLOW VELOCITY(FEET/SEC.) =  4.88   DEPTH*VELOCITY(FT*FT/SEC.) =   1.68
LONGEST FLOWPATH FROM NODE   5061.00 TO NODE   5063.00 =   555.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   5063.00 TO NODE   5063.00 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.) =   7.85
RAINFALL INTENSITY(INCH/HR) =   7.09
TOTAL STREAM AREA(ACRES) =     3.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.74

** CONFLUENCE DATA **
STREAM      RUNOFF       Tc       INTENSITY       AREA
NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
    1       146.23      6.13         8.320          64.80
    2        14.74      7.85         7.090           3.30

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF       Tc       INTENSITY
NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
    1       157.73      6.13         8.320
    2       139.35      7.85         7.090

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    157.73   Tc(MIN.) =    6.13
TOTAL AREA(ACRES) =     68.10
LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5063.00 =  2860.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   5063.00 TO NODE   5090.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   387.00  DOWNSTREAM(FEET) =   319.50
FLOW LENGTH(FEET) =   860.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  28.34
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    157.73
```

```
 PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   6.63
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5090.50 =  3720.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5090.50 TO NODE   5090.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   5065.00 TO NODE   5066.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    500.00
 DOWNSTREAM ELEVATION(FEET) =    499.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.908
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
 SUBAREA RUNOFF(CFS) =      1.07
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.07

****************************************************************************
 FLOW PROCESS FROM NODE   5066.00 TO NODE   5067.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  499.00  DOWNSTREAM ELEVATION(FEET) =  491.00
 STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.73
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   11.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.74
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.92
 STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =   8.46
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.755
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6300
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
```

```
 SUBAREA AREA(ACRES) =     3.10      SUBAREA RUNOFF(CFS) =    13.19
 TOTAL AREA(ACRES) =       3.30        PEAK FLOW RATE(CFS) =       14.04

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  14.60
 FLOW VELOCITY(FEET/SEC.) =  3.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.26
 LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5067.00 =   485.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5067.00 TO NODE   5068.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   481.00  DOWNSTREAM(FEET) =   440.00
 FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.42
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     14.04
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   8.59
 LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5068.00 =   665.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5068.00 TO NODE   5077.50 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.00  DOWNSTREAM(FEET) =    400.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0769
 CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.093
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     17.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.47
 AVERAGE FLOW DEPTH(FEET) =   0.48   TRAVEL TIME(MIN.) =   1.34
 Tc(MIN.) =   9.93
 SUBAREA AREA(ACRES) =     4.20       SUBAREA RUNOFF(CFS) =    7.68
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.445
 TOTAL AREA(ACRES) =       7.50         PEAK FLOW RATE(CFS) =      20.35

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   6.74
 LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5077.50 =  1185.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5077.50 TO NODE   5077.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =    9.93
  RAINFALL INTENSITY(INCH/HR) =    6.09
  TOTAL STREAM AREA(ACRES) =      7.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      20.35

****************************************************************************
  FLOW PROCESS FROM NODE    5070.00 TO NODE    5071.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6400
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
  UPSTREAM ELEVATION(FEET) =     425.00
  DOWNSTREAM ELEVATION(FEET) =     424.00
  ELEVATION DIFFERENCE(FEET) =       1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.783
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.636
  SUBAREA RUNOFF(CFS) =       1.11
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.11

****************************************************************************
  FLOW PROCESS FROM NODE    5071.00 TO NODE    5072.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  424.00  DOWNSTREAM ELEVATION(FEET) =  423.00
  STREET LENGTH(FEET) =   140.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   11.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =   7.15
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.533
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6400
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.640
  SUBAREA AREA(ACRES) =     1.60      SUBAREA RUNOFF(CFS) =     7.71
  TOTAL AREA(ACRES) =       1.80        PEAK FLOW RATE(CFS) =       8.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
 DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  14.60
 FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
 LONGEST FLOWPATH FROM NODE   5070.00 TO NODE   5072.00 =   205.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5072.00 TO NODE   5077.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   413.00  DOWNSTREAM(FEET) =   392.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.22
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      8.68
 PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   7.24
 LONGEST FLOWPATH FROM NODE   5070.00 TO NODE   5077.50 =   315.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5077.50 TO NODE   5077.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.24
 RAINFALL INTENSITY(INCH/HR) =   7.47
 TOTAL STREAM AREA(ACRES) =     1.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.68

****************************************************************************
 FLOW PROCESS FROM NODE   5075.00 TO NODE   5076.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    415.00
 DOWNSTREAM ELEVATION(FEET) =    398.00
 ELEVATION DIFFERENCE(FEET) =     17.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.904
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.51
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.51

****************************************************************************
 FLOW PROCESS FROM NODE   5076.00 TO NODE   5077.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   398.00  DOWNSTREAM(FEET) =   394.00
 FLOW LENGTH(FEET) =  460.00   MANNING'S N =  0.016
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.44
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      0.51
 PIPE TRAVEL TIME(MIN.) =   3.14    Tc(MIN.) =   8.05
 LONGEST FLOWPATH FROM NODE   5075.00 TO NODE   5077.00 =   510.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5076.00 TO NODE   5077.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.978
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3020
 SUBAREA AREA(ACRES) =     0.80   SUBAREA RUNOFF(CFS) =     1.73
 TOTAL AREA(ACRES) =       1.00   TOTAL RUNOFF(CFS) =     2.11
 TC(MIN.) =   8.05

****************************************************************************
 FLOW PROCESS FROM NODE   5077.00 TO NODE   5077.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   385.00  DOWNSTREAM(FEET) =   384.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.74
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      2.11
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   8.19
 LONGEST FLOWPATH FROM NODE   5075.00 TO NODE   5077.50 =   560.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5077.50 TO NODE   5077.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.19
 RAINFALL INTENSITY(INCH/HR) =   6.90
 TOTAL STREAM AREA(ACRES) =     1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.11

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
    1        20.35      9.93         6.093          7.50
```

```
      2        8.68      7.24         7.469          1.80
      3        2.11      8.19         6.898          1.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  3 STREAMS.

   ** PEAK FLOW RATE TABLE **
   STREAM      RUNOFF       Tc       INTENSITY
   NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
       1        25.38      7.24         7.469
       2        26.91      8.19         6.898
       3        29.29      9.93         6.093

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     29.29   Tc(MIN.) =     9.93
   TOTAL AREA(ACRES) =     10.30
   LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5077.50 =  1185.00 FEET.

****************************************************************************
   FLOW PROCESS FROM NODE   5077.50 TO NODE   5073.00 IS CODE =  31
----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
   ELEVATION DATA: UPSTREAM(FEET) =   384.00  DOWNSTREAM(FEET) =   381.00
   FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  13.11
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     29.29
   PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  10.06
   LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5073.00 =  1285.00 FEET.

****************************************************************************
   FLOW PROCESS FROM NODE   5073.00 TO NODE   5073.00 IS CODE =   1
----------------------------------------------------------------------------
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  10.06
   RAINFALL INTENSITY(INCH/HR) =   6.04
   TOTAL STREAM AREA(ACRES) =    10.30
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.29

****************************************************************************
   FLOW PROCESS FROM NODE   5072.30 TO NODE   5072.60 IS CODE =  21
----------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
   *USER SPECIFIED(SUBAREA):
   USER-SPECIFIED RUNOFF COEFFICIENT = .3000
   S.C.S. CURVE NUMBER (AMC II) =   0
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
   UPSTREAM ELEVATION(FEET) =    458.00
   DOWNSTREAM ELEVATION(FEET) =    440.00
   ELEVATION DIFFERENCE(FEET) =     18.00
```

```
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.684
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.865
 SUBAREA RUNOFF(CFS) =       0.47
 TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       0.47

****************************************************************************
 FLOW PROCESS FROM NODE   5072.60 TO NODE   5073.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.00  DOWNSTREAM(FEET) =    400.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.1143
 CHANNEL BASE(FEET) =     5.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.721
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.79
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.16
 AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   1.85
 Tc(MIN.) =   8.53
 SUBAREA AREA(ACRES) =      1.30       SUBAREA RUNOFF(CFS) =    2.62
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
 TOTAL AREA(ACRES) =       1.50         PEAK FLOW RATE(CFS) =       3.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   3.87
 LONGEST FLOWPATH FROM NODE   5072.30 TO NODE   5073.00 =   450.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5073.00 TO NODE   5073.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.53
 RAINFALL INTENSITY(INCH/HR) =   6.72
 TOTAL STREAM AREA(ACRES) =     1.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.02

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       29.29     10.06         6.043          10.30
     2        3.02      8.53         6.721           1.50

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

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

```
      1        29.36      8.53        6.721
      2        32.01     10.06        6.043

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     32.01   Tc(MIN.) =   10.06
  TOTAL AREA(ACRES) =     11.80
  LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5073.00 =  1285.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5073.00 TO NODE   5082.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   381.00  DOWNSTREAM(FEET) =   330.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  32.86
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     32.01
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.14
  LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5082.00 =  1445.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5082.00 TO NODE   5082.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.14
  RAINFALL INTENSITY(INCH/HR) =   6.01
  TOTAL STREAM AREA(ACRES) =    11.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.01

****************************************************************************
  FLOW PROCESS FROM NODE   5079.00 TO NODE   5080.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    397.00
  DOWNSTREAM ELEVATION(FEET) =    350.00
  ELEVATION DIFFERENCE(FEET) =     47.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.564
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.38

****************************************************************************
  FLOW PROCESS FROM NODE   5080.00 TO NODE   5082.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   350.00  DOWNSTREAM(FEET) =   343.00
  FLOW LENGTH(FEET) =   780.00   MANNING'S N =  0.016
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.27
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      0.38
  PIPE TRAVEL TIME(MIN.) =   5.73    Tc(MIN.) =  12.83
  LONGEST FLOWPATH FROM NODE   5079.00 TO NODE   5082.00 =   880.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5080.00 TO NODE   5082.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.165
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2773
  SUBAREA AREA(ACRES) =     2.00   SUBAREA RUNOFF(CFS) =    2.89
  TOTAL AREA(ACRES) =       2.20   TOTAL RUNOFF(CFS) =    3.15
  TC(MIN.) =  12.83

****************************************************************************
  FLOW PROCESS FROM NODE   5082.00 TO NODE   5082.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.83
  RAINFALL INTENSITY(INCH/HR) =   5.17
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.15

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        32.01     10.14         6.012         11.80
      2         3.15     12.83         5.165          2.20

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        34.50     10.14         6.012
      2        30.65     12.83         5.165

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     34.50   Tc(MIN.) =   10.14
```

```
  TOTAL AREA(ACRES) =     14.00
  LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   5082.00 =  1445.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5082.00 TO NODE   6026.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   333.00  DOWNSTREAM(FEET) =   330.00
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.62
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     34.50
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.20
  LONGEST FLOWPATH FROM NODE   5065.00 TO NODE   6026.00 =  1505.00 FEET.

+--------------------------------------------------------------------------+
| Information for Node 6026                                                |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   5084.00 TO NODE   5085.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    327.00
  DOWNSTREAM ELEVATION(FEET) =    326.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.19
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.19

****************************************************************************
  FLOW PROCESS FROM NODE   5085.00 TO NODE   5086.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  326.00  DOWNSTREAM ELEVATION(FEET) =  323.50
  STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.60
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   11.75
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.25
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.76
 STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =   5.63
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.785
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     8.79
 TOTAL AREA(ACRES) =      1.60        PEAK FLOW RATE(CFS) =      10.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  14.29
 FLOW VELOCITY(FEET/SEC.) =  2.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.99
 LONGEST FLOWPATH FROM NODE   5084.00 TO NODE   5086.00 =   265.00 FEET.

+----------------------------------------------------------------------------+
| Flow Information for Node 5086                                             |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   5088.00 TO NODE   5089.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    328.00
 DOWNSTREAM ELEVATION(FEET) =    327.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      4.38
 TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      4.38

****************************************************************************
 FLOW PROCESS FROM NODE   5089.00 TO NODE   5090.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  327.00  DOWNSTREAM ELEVATION(FEET) =  323.00
 STREET LENGTH(FEET) =   360.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 36.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  31.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   14.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
  STREET FLOW TRAVEL TIME(MIN.) =   2.49   Tc(MIN.) =   6.64
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.899
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =   12.16
  TOTAL AREA(ACRES) =      2.60        PEAK FLOW RATE(CFS) =      15.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  16.96
  FLOW VELOCITY(FEET/SEC.) =  2.67   DEPTH*VELOCITY(FT*FT/SEC.) =   1.19
  LONGEST FLOWPATH FROM NODE   5088.00 TO NODE   5090.00 =   425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5090.00 TO NODE   5090.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   320.00  DOWNSTREAM(FEET) =   319.50
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.47
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     15.81
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.75
  LONGEST FLOWPATH FROM NODE   5088.00 TO NODE   5090.50 =   475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5090.50 TO NODE   5090.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1       15.81     6.75        7.814         2.60
  LONGEST FLOWPATH FROM NODE   5088.00 TO NODE   5090.50 =   475.00 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       157.73      6.63        7.905        68.10
 LONGEST FLOWPATH FROM NODE   5002.00 TO NODE   5090.50 =  3720.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF        Tc       INTENSITY
 NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1      173.26        6.63        7.905
     2      171.73        6.75        7.814

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    173.26   Tc(MIN.) =    6.63
 TOTAL AREA(ACRES) =     70.70

****************************************************************************
 FLOW PROCESS FROM NODE   5090.50 TO NODE   5090.50 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

+--------------------------------------------------------------------------+
| Flow Information for Node 5090.5                                         |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     70.70  TC(MIN.) =      6.63
 PEAK FLOW RATE(CFS)    =    173.26
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Flow Information For Drainage
Basin 7000A
(Node 6010)
(Node 7068)

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2003 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

                            RICK ENGINEERING COMPANY
                                5620 Friars Road
                              San Diego, California 92110
                           619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 07/16/09                                              *
* 100-yr Post-project (on-site)                                           *
*                                                                         *
 *************************************************************************

  FILE NAME: MW_6K100.DAT
  TIME/DATE OF STUDY: 10:36 07/20/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ======  =====  =======
  1   12.0       7.0    0.020/0.020/0.020   0.50    1.50  0.0100  0.125  0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   6000.00 TO NODE   6001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    480.00
  DOWNSTREAM ELEVATION(FEET) =    455.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.845
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.53
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.53

****************************************************************************
  FLOW PROCESS FROM NODE   6001.00 TO NODE   6002.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   455.00  DOWNSTREAM(FEET) =   449.00
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.016
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.06
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      0.53
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =   5.54
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6002.00 =   220.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6001.00 TO NODE   6002.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.874
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2933
  SUBAREA AREA(ACRES) =     0.40   SUBAREA RUNOFF(CFS) =     1.06
  TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =    1.56
  TC(MIN.) =   5.54

****************************************************************************
  FLOW PROCESS FROM NODE   6002.00 TO NODE   6006.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   439.00  DOWNSTREAM(FEET) =   415.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      1.56
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   5.62
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6006.00 =   285.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   6006.00 TO NODE   6006.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.62
 RAINFALL INTENSITY(INCH/HR) =   8.80
 TOTAL STREAM AREA(ACRES) =     0.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.56

****************************************************************************
 FLOW PROCESS FROM NODE   6004.00 TO NODE   6005.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    40.00
 UPSTREAM ELEVATION(FEET) =    447.00
 DOWNSTREAM ELEVATION(FEET) =    427.00
 ELEVATION DIFFERENCE(FEET) =     20.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.280
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.55
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.55

****************************************************************************
 FLOW PROCESS FROM NODE   6005.00 TO NODE   6006.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   427.00  DOWNSTREAM(FEET) =   425.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.016
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.35
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      0.55
 PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   4.78
 LONGEST FLOWPATH FROM NODE   6004.00 TO NODE   6006.00 =   140.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6005.00 TO NODE   6006.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2950
  SUBAREA AREA(ACRES) =     0.20   SUBAREA RUNOFF(CFS) =     0.57
  TOTAL AREA(ACRES) =       0.40   TOTAL RUNOFF(CFS) =     1.12
  TC(MIN.) =   4.78

****************************************************************************
  FLOW PROCESS FROM NODE   6006.00 TO NODE   6006.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.78
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =      0.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.12

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1         1.56      5.62         8.799          0.60
      2         1.12      4.78         9.485          0.40

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1         2.45      4.78         9.485
      2         2.60      5.62         8.799

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.60   Tc(MIN.) =     5.62
  TOTAL AREA(ACRES) =       1.00
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6006.00 =   285.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6006.00 TO NODE   6011.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   415.00  DOWNSTREAM(FEET) =   413.00
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.60
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   6.18
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6011.00 =   455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6011.00 TO NODE   6011.00 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.) =    6.18
  RAINFALL INTENSITY(INCH/HR) =    8.27
  TOTAL STREAM AREA(ACRES) =      1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.60

****************************************************************************
  FLOW PROCESS FROM NODE    6012.00 TO NODE    6013.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     65.00
  UPSTREAM ELEVATION(FEET) =     429.00
  DOWNSTREAM ELEVATION(FEET) =     428.00
  ELEVATION DIFFERENCE(FEET) =       1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.908
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.517
  SUBAREA RUNOFF(CFS) =       1.07
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.07

****************************************************************************
  FLOW PROCESS FROM NODE    6013.00 TO NODE    6014.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  428.00  DOWNSTREAM ELEVATION(FEET) =  424.00
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =   10.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =   7.88
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.076
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =    0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
```

```
 SUBAREA AREA(ACRES) =     1.90     SUBAREA RUNOFF(CFS) =     8.47
 TOTAL AREA(ACRES) =      2.10      PEAK FLOW RATE(CFS) =      9.36

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  12.00
 FLOW VELOCITY(FEET/SEC.) =  2.71   DEPTH*VELOCITY(FT*FT/SEC.) =   0.98
 LONGEST FLOWPATH FROM NODE   6012.00 TO NODE   6014.00 =   335.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6014.00 TO NODE   6011.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   413.50  DOWNSTREAM(FEET) =   413.00
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.96
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      9.36
 PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   7.94
 LONGEST FLOWPATH FROM NODE   6012.00 TO NODE   6011.00 =   365.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6011.00 TO NODE   6011.00 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.) =   7.94
 RAINFALL INTENSITY(INCH/HR) =   7.04
 TOTAL STREAM AREA(ACRES) =     2.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.36

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1         2.60      6.18         8.274         1.00
     2         9.36      7.94         7.039         2.10

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         9.89      6.18         8.274
     2        11.57      7.94         7.039

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     11.57   Tc(MIN.) =    7.94
 TOTAL AREA(ACRES) =      3.10
 LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6011.00 =   455.00 FEET.

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

```
 FLOW PROCESS FROM NODE   6011.00 TO NODE   6010.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   413.00  DOWNSTREAM(FEET) =   411.00
 FLOW LENGTH(FEET) =   365.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.53
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     11.57
 PIPE TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =   9.04
 LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6010.00 =   820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6010.00 TO NODE   6010.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.04
 RAINFALL INTENSITY(INCH/HR) =   6.47
 TOTAL STREAM AREA(ACRES) =     3.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.57

****************************************************************************
 FLOW PROCESS FROM NODE   6008.00 TO NODE   6009.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    429.00
 DOWNSTREAM ELEVATION(FEET) =    428.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.160
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.291
 SUBAREA RUNOFF(CFS) =      1.01
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
 FLOW PROCESS FROM NODE   6009.00 TO NODE   6010.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  428.00  DOWNSTREAM ELEVATION(FEET) =  421.00
 STREET LENGTH(FEET) =   155.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.67
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.22
   HALFSTREET FLOOD WIDTH(FEET) =    5.96
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.02
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
 STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =   7.01
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.625
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.618
 SUBAREA AREA(ACRES) =     0.70      SUBAREA RUNOFF(CFS) =     3.31
 TOTAL AREA(ACRES) =       0.90        PEAK FLOW RATE(CFS) =       4.24

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   7.43
 FLOW VELOCITY(FEET/SEC.) =  3.32   DEPTH*VELOCITY(FT*FT/SEC.) =   0.84
 LONGEST FLOWPATH FROM NODE   6008.00 TO NODE   6010.00 =   220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6010.00 TO NODE   6010.00 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.) =   7.01
 RAINFALL INTENSITY(INCH/HR) =   7.62
 TOTAL STREAM AREA(ACRES) =     0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.24

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       11.57      9.04         6.474          3.10
     2        4.24      7.01         7.625          0.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       14.07      7.01         7.625
     2       15.17      9.04         6.474

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     15.17   Tc(MIN.) =     9.04
 TOTAL AREA(ACRES) =      4.00
 LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6010.00 =   820.00 FEET.
```

```
+----------------------------------------------------------------------+
| Flow Information for Node 6010                                       |
|                                                                      |
|                                                                      |
+----------------------------------------------------------------------+

**********************************************************************
 FLOW PROCESS FROM NODE   6014.10 TO NODE   6014.20 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    422.00
 DOWNSTREAM ELEVATION(FEET) =    397.00
 ELEVATION DIFFERENCE(FEET) =     25.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.00
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.00

**********************************************************************
 FLOW PROCESS FROM NODE   6014.20 TO NODE   6015.00 IS CODE =  31
----------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   397.00  DOWNSTREAM(FEET) =   390.00
 FLOW LENGTH(FEET) =   690.00   MANNING'S N =  0.016
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.12
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      1.00
 PIPE TRAVEL TIME(MIN.) =   3.68    Tc(MIN.) =   8.11
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6015.00 =   740.00 FEET.

**********************************************************************
 FLOW PROCESS FROM NODE   6014.20 TO NODE   6015.00 IS CODE =  81
----------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.942
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.2978
 SUBAREA AREA(ACRES) =     2.00   SUBAREA RUNOFF(CFS) =     4.03
 TOTAL AREA(ACRES) =      2.30   TOTAL RUNOFF(CFS) =    4.76
 TC(MIN.) =   8.11

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

```
 FLOW PROCESS FROM NODE   6015.00 TO NODE   6019.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   390.00  DOWNSTREAM(FEET) =   345.00
 FLOW LENGTH(FEET) =   115.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.84
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      4.76
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   8.20
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6019.00 =   855.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6019.00 TO NODE   6019.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.20
 RAINFALL INTENSITY(INCH/HR) =   6.89
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.76

****************************************************************************
 FLOW PROCESS FROM NODE   6017.00 TO NODE   6018.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    382.00
 DOWNSTREAM ELEVATION(FEET) =    357.00
 ELEVATION DIFFERENCE(FEET) =     25.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.895
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.16
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
 FLOW PROCESS FROM NODE   6018.00 TO NODE   6019.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   357.00  DOWNSTREAM(FEET) =   350.00
 FLOW LENGTH(FEET) =   675.00   MANNING'S N =  0.016
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.29
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      1.16
 PIPE TRAVEL TIME(MIN.) =   3.42    Tc(MIN.) =   6.32
 LONGEST FLOWPATH FROM NODE   6017.00 TO NODE   6019.00 =   725.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6018.00 TO NODE   6019.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.158
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2900
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3178
 SUBAREA AREA(ACRES) =     2.10   SUBAREA RUNOFF(CFS) =    4.97
 TOTAL AREA(ACRES) =       2.30   TOTAL RUNOFF(CFS) =    5.96
 TC(MIN.) =   6.32

****************************************************************************
 FLOW PROCESS FROM NODE   6019.00 TO NODE   6019.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.32
 RAINFALL INTENSITY(INCH/HR) =   8.16
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.96

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         4.76      8.20         6.891          2.30
     2         5.96      6.32         8.158          2.30

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         9.62      6.32         8.158
     2         9.79      8.20         6.891

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      9.79   Tc(MIN.) =    8.20
 TOTAL AREA(ACRES) =      4.60
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6019.00 =   855.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6019.00 TO NODE   6030.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   340.00  DOWNSTREAM(FEET) =   309.00
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.79
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   8.45
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6030.00 =  1105.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6030.00 TO NODE   6030.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.45
  RAINFALL INTENSITY(INCH/HR) =   6.76
  TOTAL STREAM AREA(ACRES) =     4.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.79

****************************************************************************
  FLOW PROCESS FROM NODE   6021.00 TO NODE   6022.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    355.00
  DOWNSTREAM ELEVATION(FEET) =    320.50
  ELEVATION DIFFERENCE(FEET) =     34.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.593
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.824
  SUBAREA RUNOFF(CFS) =      0.79
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.79

****************************************************************************
  FLOW PROCESS FROM NODE   6022.00 TO NODE   6030.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  320.50  DOWNSTREAM ELEVATION(FEET) =  319.00
  STREET LENGTH(FEET) =   150.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.54
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.65
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =   7.10
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.562
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7800
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.620
 SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     3.54
 TOTAL AREA(ACRES) =       0.90        PEAK FLOW RATE(CFS) =       4.22

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.22
 FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.58
 LONGEST FLOWPATH FROM NODE   6021.00 TO NODE   6030.00 =   220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6030.00 TO NODE   6030.00 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.) =   7.10
 RAINFALL INTENSITY(INCH/HR) =   7.56
 TOTAL STREAM AREA(ACRES) =     0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.22

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         9.79      8.45         6.762          4.60
     2         4.22      7.10         7.562          0.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        12.98      7.10         7.562
     2        13.57      8.45         6.762

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     13.57   Tc(MIN.) =    8.45
 TOTAL AREA(ACRES) =      5.50
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6030.00 =  1105.00 FEET.

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

```
 FLOW PROCESS FROM NODE   6030.00 TO NODE   6030.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

+--------------------------------------------------------------------------+
| Flow Information for node 5086                                           |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   5086.00 TO NODE   5086.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   5.63   RAIN INTENSITY(INCH/HOUR) =  8.79
 TOTAL AREA(ACRES) =     1.60   TOTAL RUNOFF(CFS) =     10.82

****************************************************************************
 FLOW PROCESS FROM NODE   5086.00 TO NODE   6026.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   323.50  DOWNSTREAM(FEET) =   319.00
 FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.53
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     10.82
 PIPE TRAVEL TIME(MIN.) =   1.28    Tc(MIN.) =   6.91
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6026.00 =  1605.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6026.00 TO NODE   6026.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.91
 RAINFALL INTENSITY(INCH/HR) =   7.70
 TOTAL STREAM AREA(ACRES) =     1.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.82

+--------------------------------------------------------------------------+
| Flow Information for node 6026                                           |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   6026.00 TO NODE   6026.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
```

```
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.20   RAIN INTENSITY(INCH/HOUR) =  5.99
  TOTAL AREA(ACRES) =    14.00   TOTAL RUNOFF(CFS) =     34.50

****************************************************************************
  FLOW PROCESS FROM NODE   6026.00 TO NODE   6026.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.20
  RAINFALL INTENSITY(INCH/HR) =   5.99
  TOTAL STREAM AREA(ACRES) =    14.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.50

****************************************************************************
  FLOW PROCESS FROM NODE   6024.00 TO NODE   6025.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    322.50
  DOWNSTREAM ELEVATION(FEET) =    321.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE   6025.00 TO NODE   6026.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  321.50  DOWNSTREAM ELEVATION(FEET) =  319.00
  STREET LENGTH(FEET) =   190.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
```

```
    HALFSTREET FLOOD WIDTH(FEET) =   11.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =   5.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.894
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.689
  SUBAREA AREA(ACRES) =     1.70      SUBAREA RUNOFF(CFS) =   10.28
  TOTAL AREA(ACRES) =       1.90        PEAK FLOW RATE(CFS) =      11.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.85   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   6024.00 TO NODE   6026.00 =   255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6026.00 TO NODE   6026.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.52
  RAINFALL INTENSITY(INCH/HR) =   8.89
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.65

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        10.82      6.91         7.702          1.60
      2        34.50     10.20         5.989         14.00
      3        11.65      5.52         8.894          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        38.99      5.52         8.894
      2        44.27      6.91         7.702
      3        50.76     10.20         5.989

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     50.76   Tc(MIN.) =   10.20
  TOTAL AREA(ACRES) =     17.50
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6026.00 =  1605.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6026.00 TO NODE   6030.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   311.00  DOWNSTREAM(FEET) =   309.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.69
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     50.76
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  10.45
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6030.00 =  1765.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6030.00 TO NODE   6030.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1        50.76     10.45        5.896        17.50
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6030.00 =  1765.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1        13.57      8.45        6.762         5.50
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6030.00 =  1105.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
      1       54.61        8.45        6.762
      2       62.59       10.45        5.896

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     62.59   Tc(MIN.) =   10.45
  TOTAL AREA(ACRES) =     23.00

****************************************************************************
  FLOW PROCESS FROM NODE   6030.00 TO NODE   6030.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==========================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   6030.00 TO NODE   6034.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   309.00  DOWNSTREAM(FEET) =   307.50
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.55
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     62.59
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  10.67
```

```
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6034.00 =  1905.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6034.00 TO NODE   6034.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.67
 RAINFALL INTENSITY(INCH/HR) =   5.82
 TOTAL STREAM AREA(ACRES) =    23.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.59

****************************************************************************
 FLOW PROCESS FROM NODE   6032.00 TO NODE   6033.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    40.00
 UPSTREAM ELEVATION(FEET) =    348.00
 DOWNSTREAM ELEVATION(FEET) =    328.00
 ELEVATION DIFFERENCE(FEET) =     20.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.228
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.57
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
 FLOW PROCESS FROM NODE   6033.00 TO NODE   6034.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  319.00  DOWNSTREAM ELEVATION(FEET) =  317.50
 STREET LENGTH(FEET) =   120.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.28
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    7.49
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.77
```

```
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =   5.36
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.069
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.636
 SUBAREA AREA(ACRES) =     0.50      SUBAREA RUNOFF(CFS) =     3.49
 TOTAL AREA(ACRES) =       0.70        PEAK FLOW RATE(CFS) =       4.04

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.57
 FLOW VELOCITY(FEET/SEC.) =  2.01   DEPTH*VELOCITY(FT*FT/SEC.) =   0.60
 LONGEST FLOWPATH FROM NODE   6032.00 TO NODE   6034.00 =   160.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6034.00 TO NODE   6034.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.36
 RAINFALL INTENSITY(INCH/HR) =   9.07
 TOTAL STREAM AREA(ACRES) =     0.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     4.04

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       62.59     10.67         5.817          23.00
     2        4.04      5.36         9.069           0.70

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       35.48      5.36         9.069
     2       65.18     10.67         5.817

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     65.18   Tc(MIN.) =   10.67
 TOTAL AREA(ACRES) =     23.70
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6034.00 =  1905.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6034.00 TO NODE   6034.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   307.50  DOWNSTREAM(FEET) =   305.50
 FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.4 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.90
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     65.18
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  10.94
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6034.50 =  2080.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6034.50 TO NODE   6034.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.94
  RAINFALL INTENSITY(INCH/HR) =   5.72
  TOTAL STREAM AREA(ACRES) =    23.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     65.18

****************************************************************************
  FLOW PROCESS FROM NODE   6036.00 TO NODE   6037.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    319.00
  DOWNSTREAM ELEVATION(FEET) =    318.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE   6037.00 TO NODE   6034.50 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  318.00  DOWNSTREAM ELEVATION(FEET) =  313.50
  STREET LENGTH(FEET) =   100.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.48
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =     8.31
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     3.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.96
  STREET FLOW TRAVEL TIME(MIN.) =   0.47   Tc(MIN.) =   4.62
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     1.10      SUBAREA RUNOFF(CFS) =     8.03
  TOTAL AREA(ACRES) =      1.30       PEAK FLOW RATE(CFS) =       9.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.50
  FLOW VELOCITY(FEET/SEC.) =  4.00   DEPTH*VELOCITY(FT*FT/SEC.) =   1.26
  LONGEST FLOWPATH FROM NODE   6036.00 TO NODE   6034.50 =   165.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6034.50 TO NODE   6034.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.62
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.49

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        65.18     10.94         5.725         23.70
      2         9.49      4.62         9.485          1.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        48.83      4.62         9.485
      2        70.91     10.94         5.725

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     70.91   Tc(MIN.) =   10.94
  TOTAL AREA(ACRES) =     25.00
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6034.50 =  2080.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6034.50 TO NODE   6066.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.50  DOWNSTREAM(FEET) =   303.50
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.35
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     70.91
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  11.20
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6066.00 =  2255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6066.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.20
  RAINFALL INTENSITY(INCH/HR) =   5.64
  TOTAL STREAM AREA(ACRES) =    25.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.91

****************************************************************************
  FLOW PROCESS FROM NODE   6038.00 TO NODE   6039.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    316.00
  DOWNSTREAM ELEVATION(FEET) =    315.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.406
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.020
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
  FLOW PROCESS FROM NODE   6039.00 TO NODE   6066.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  315.00  DOWNSTREAM ELEVATION(FEET) =  313.50
  STREET LENGTH(FEET) =   260.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   11.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =   8.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.850
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.755
  SUBAREA AREA(ACRES) =     1.10      SUBAREA RUNOFF(CFS) =     5.80
  TOTAL AREA(ACRES) =       1.30        PEAK FLOW RATE(CFS) =       6.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  1.78   DEPTH*VELOCITY(FT*FT/SEC.) =   0.67
  LONGEST FLOWPATH FROM NODE   6038.00 TO NODE   6066.00 =   325.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6066.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.28
  RAINFALL INTENSITY(INCH/HR) =   6.85
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.72

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        70.91     11.20         5.640         25.00
      2         6.72      8.28         6.850          1.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        65.09      8.28         6.850
      2        76.44     11.20         5.640

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     76.44   Tc(MIN.) =   11.20
  TOTAL AREA(ACRES) =     26.30
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6066.00 =  2255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6066.00 IS CODE =  10
----------------------------------------------------------------------------
```

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

********************************************************************************
 FLOW PROCESS FROM NODE   6040.00 TO NODE   6041.00 IS CODE =  21
--------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    348.00
 DOWNSTREAM ELEVATION(FEET) =    323.00
 ELEVATION DIFFERENCE(FEET) =     25.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.022
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.458
 SUBAREA RUNOFF(CFS) =      0.47
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.47

********************************************************************************
 FLOW PROCESS FROM NODE   6041.00 TO NODE   6044.00 IS CODE =  62
--------------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) =  322.50  DOWNSTREAM ELEVATION(FEET) =  321.00
 STREET LENGTH(FEET) =   160.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.27
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.98
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
 STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   6.72
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.839
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.577
 SUBAREA AREA(ACRES) =     0.70      SUBAREA RUNOFF(CFS) =     3.68
 TOTAL AREA(ACRES) =      0.90        PEAK FLOW RATE(CFS) =       4.07

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.22
```

```
 FLOW VELOCITY(FEET/SEC.) =  1.80   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
 LONGEST FLOWPATH FROM NODE   6040.00 TO NODE   6044.00 =   210.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6044.00 TO NODE   6044.00 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.) =   6.72
 RAINFALL INTENSITY(INCH/HR) =   7.84
 TOTAL STREAM AREA(ACRES) =     0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.07

****************************************************************************
 FLOW PROCESS FROM NODE   6042.00 TO NODE   6043.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    325.00
 DOWNSTREAM ELEVATION(FEET) =    324.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.406
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.020
 SUBAREA RUNOFF(CFS) =      1.81
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
 FLOW PROCESS FROM NODE   6043.00 TO NODE   6044.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  324.00  DOWNSTREAM ELEVATION(FEET) =  321.00
 STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.61
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.80
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.59
```

```
 STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =   7.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.638
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.670
 SUBAREA AREA(ACRES) =     0.70      SUBAREA RUNOFF(CFS) =     3.58
 TOTAL AREA(ACRES) =       1.00        PEAK FLOW RATE(CFS) =       5.12

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.17
 FLOW VELOCITY(FEET/SEC.) =  2.28   DEPTH*VELOCITY(FT*FT/SEC.) =   0.70
 LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6044.00 =   265.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6044.00 TO NODE   6044.00 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.) =   7.00
 RAINFALL INTENSITY(INCH/HR) =   7.64
 TOTAL STREAM AREA(ACRES) =     1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.12

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         4.07      6.72         7.839          0.90
     2         5.12      7.00         7.638          1.00

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         8.98      6.72         7.839
     2         9.08      7.00         7.638

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      9.08   Tc(MIN.) =    7.00
 TOTAL AREA(ACRES) =      1.90
 LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6044.00 =   265.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6044.00 TO NODE   6058.20 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   313.00  DOWNSTREAM(FEET) =   310.00
 FLOW LENGTH(FEET) =   320.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.21
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.08
  PIPE TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =   7.85
  LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6058.20 =   585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6058.20 TO NODE   6058.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.85
  RAINFALL INTENSITY(INCH/HR) =   7.09
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.08

****************************************************************************
  FLOW PROCESS FROM NODE   6047.00 TO NODE   6048.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    322.50
  DOWNSTREAM ELEVATION(FEET) =    321.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.406
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.020
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
  FLOW PROCESS FROM NODE   6048.00 TO NODE   6058.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  321.50  DOWNSTREAM ELEVATION(FEET) =  318.00
  STREET LENGTH(FEET) =   360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   11.37
```

```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.65
  STREET FLOW TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =   8.48
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.748
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.759
  SUBAREA AREA(ACRES) =     1.60      SUBAREA RUNOFF(CFS) =     8.31
  TOTAL AREA(ACRES) =       1.80        PEAK FLOW RATE(CFS) =       9.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.37   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6058.00 =   425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6058.20 TO NODE   6058.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.48
  RAINFALL INTENSITY(INCH/HR) =   6.75
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.22

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1         9.08      7.85         7.088          1.90
      2         9.22      8.48         6.748          1.80

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        17.62      7.85         7.088
      2        17.86      8.48         6.748

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     17.86   Tc(MIN.) =    8.48
  TOTAL AREA(ACRES) =      3.70
  LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6058.20 =   585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6058.20 TO NODE   6058.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   310.00  DOWNSTREAM(FEET) =   308.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.92
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     17.86
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   8.64
  LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6058.00 =   685.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6058.00 TO NODE   6058.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   6049.00 TO NODE   6050.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    35.00
  UPSTREAM ELEVATION(FEET) =    322.50
  DOWNSTREAM ELEVATION(FEET) =    321.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.227
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.81
  TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      3.81

****************************************************************************
  FLOW PROCESS FROM NODE   6050.00 TO NODE   6050.00 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.) =   3.23
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.81

+--------------------------------------------------------------------------+
| Flow Information for node 5090.5                                         |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   5090.50 TO NODE   5090.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   6.63   RAIN INTENSITY(INCH/HOUR) =  7.91
  TOTAL AREA(ACRES) =    70.70   TOTAL RUNOFF(CFS) =    173.26
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   6090.50 TO NODE   6050.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   312.00  DOWNSTREAM(FEET) =   311.50
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  41.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.35
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    173.26
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   6.69
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6050.00 =   475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6050.00 TO NODE   6050.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.69
  RAINFALL INTENSITY(INCH/HR) =   7.86
  TOTAL STREAM AREA(ACRES) =    70.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    173.26

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1         3.81      3.23         9.485          0.60
      2       173.26      6.69         7.859         70.70

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        87.36      3.23         9.485
      2       176.42      6.69         7.859

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    176.42   Tc(MIN.) =    6.69
  TOTAL AREA(ACRES) =     71.30
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6050.00 =   475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6050.00 TO NODE   6053.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   311.50  DOWNSTREAM(FEET) =   310.80
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.60
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    176.42
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   6.84
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6053.00 =   575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6053.00 TO NODE   6053.00 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.) =   6.84
  RAINFALL INTENSITY(INCH/HR) =   7.75
  TOTAL STREAM AREA(ACRES) =    71.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    176.42

****************************************************************************
  FLOW PROCESS FROM NODE   6052.00 TO NODE   6053.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    321.80
  DOWNSTREAM ELEVATION(FEET) =    320.80
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.38
  TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      4.38

****************************************************************************
  FLOW PROCESS FROM NODE   6053.00 TO NODE   6053.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.15
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.38

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1       176.42      6.84         7.752         71.30
      2         4.38      4.15         9.485          0.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       148.57      4.15        9.485
      2       180.00      6.84        7.752

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     180.00   Tc(MIN.) =     6.84
  TOTAL AREA(ACRES) =      71.90
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6053.00 =   575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6053.00 TO NODE   5057.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   310.80  DOWNSTREAM(FEET) =   309.20
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.97
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    180.00
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   7.05
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   5057.00 =   745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6057.00 TO NODE   6057.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.05
  RAINFALL INTENSITY(INCH/HR) =   7.60
  TOTAL STREAM AREA(ACRES) =    71.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.00

****************************************************************************
  FLOW PROCESS FROM NODE   6056.00 TO NODE   6057.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    320.20
  DOWNSTREAM ELEVATION(FEET) =    319.20
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.65
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      3.65
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   6057.00 TO NODE   6057.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   4.15
 RAINFALL INTENSITY(INCH/HR) =   9.49
 TOTAL STREAM AREA(ACRES) =     0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.65

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       180.00      7.05         7.596         71.90
     2         3.65      4.15         9.485          0.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       147.81      4.15         9.485
     2       182.93      7.05         7.596

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    182.93   Tc(MIN.) =    7.05
 TOTAL AREA(ACRES) =     72.40
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6057.00 =   745.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6057.00 TO NODE   6058.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   309.20  DOWNSTREAM(FEET) =   308.00
 FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  57.0 INCH PIPE IS  41.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.19
 ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    182.93
 PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   7.22
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6058.00 =   875.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6058.00 TO NODE   6058.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

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

```
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1      182.93     7.22        7.485        72.40
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6058.00 =   875.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       17.86     8.64        6.663         3.70
 LONGEST FLOWPATH FROM NODE   6042.00 TO NODE   6058.00 =   685.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1     197.84       7.22        7.485
     2     180.72       8.64        6.663

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    197.84   Tc(MIN.) =    7.22
 TOTAL AREA(ACRES) =     76.10

****************************************************************************
 FLOW PROCESS FROM NODE   6058.00 TO NODE   6058.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   6058.00 TO NODE   6065.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   308.00  DOWNSTREAM(FEET) =   305.20
 FLOW LENGTH(FEET) =   265.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.13
 ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    197.84
 PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   7.53
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6065.00 =  1140.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.53
 RAINFALL INTENSITY(INCH/HR) =   7.28
 TOTAL STREAM AREA(ACRES) =    76.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    197.84

****************************************************************************
 FLOW PROCESS FROM NODE   6059.00 TO NODE   6060.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    319.20
  DOWNSTREAM ELEVATION(FEET) =    318.20
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.19
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.19

**************************************************************************
  FLOW PROCESS FROM NODE   6060.00 TO NODE   6065.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  318.20  DOWNSTREAM ELEVATION(FEET) =  315.20
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   12.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   2.48   Tc(MIN.) =   6.62
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.912
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =   10.36
  TOTAL AREA(ACRES) =      2.00        PEAK FLOW RATE(CFS) =      12.18

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.62   DEPTH*VELOCITY(FT*FT/SEC.) =   1.08
  LONGEST FLOWPATH FROM NODE   6059.00 TO NODE   6065.00 =   385.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 IS CODE =   1
--------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.62
  RAINFALL INTENSITY(INCH/HR) =   7.91
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.18

  ** CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       197.84      7.53        7.283        76.10
      2        12.18      6.62        7.912         2.00

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1       186.18      6.62        7.912
      2       209.06      7.53        7.283

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    209.06   Tc(MIN.) =    7.53
  TOTAL AREA(ACRES) =     78.10
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6065.00 =  1140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   6061.00 TO NODE   6062.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    319.20
  DOWNSTREAM ELEVATION(FEET) =    318.20
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.148
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE   6062.00 TO NODE   6065.00 IS CODE =  62
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
UPSTREAM ELEVATION(FEET) =  318.20  DOWNSTREAM ELEVATION(FEET) =  315.20
STREET LENGTH(FEET) =   245.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 12.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.35
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =   10.82
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.13
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =   6.07
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.370
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =     1.20      SUBAREA RUNOFF(CFS) =     7.73
TOTAL AREA(ACRES) =       1.40        PEAK FLOW RATE(CFS) =       9.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.00
FLOW VELOCITY(FEET/SEC.) =  2.51   DEPTH*VELOCITY(FT*FT/SEC.) =   0.92
LONGEST FLOWPATH FROM NODE   6061.00 TO NODE   6065.00 =   310.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 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.) =   6.07
RAINFALL INTENSITY(INCH/HR) =   8.37
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.02

****************************************************************************
FLOW PROCESS FROM NODE   6063.00 TO NODE   6064.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .6700
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
```

```
 UPSTREAM ELEVATION(FEET) =     318.00
 DOWNSTREAM ELEVATION(FEET) =     317.00
 ELEVATION DIFFERENCE(FEET) =       1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.406
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.020
 SUBAREA RUNOFF(CFS) =       3.02
 TOTAL AREA(ACRES) =       0.50   TOTAL RUNOFF(CFS) =       3.02

****************************************************************************
 FLOW PROCESS FROM NODE    6064.00 TO NODE    6065.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   317.00  DOWNSTREAM(FEET) =   305.20
 FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.12
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.02
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   5.67
 LONGEST FLOWPATH FROM NODE    6063.00 TO NODE    6065.00 =   225.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    6065.00 TO NODE    6065.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.67
 RAINFALL INTENSITY(INCH/HR) =   8.75
 TOTAL STREAM AREA(ACRES) =      0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.02

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         9.02      6.07         8.370          1.40
     2         3.02      5.67         8.747          0.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        11.45      5.67         8.747
     2        11.91      6.07         8.370

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.91   Tc(MIN.) =    6.07
 TOTAL AREA(ACRES) =       1.90
 LONGEST FLOWPATH FROM NODE    6061.00 TO NODE    6065.00 =   310.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        11.91      6.07        8.370         1.90
 LONGEST FLOWPATH FROM NODE   6061.00 TO NODE   6065.00 =   310.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1       209.06      7.53        7.283        78.10
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6065.00 =  1140.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc       INTENSITY
 NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1       180.41       6.07        8.370
    2       219.43       7.53        7.283

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    219.43  Tc(MIN.) =    7.53
 TOTAL AREA(ACRES) =     80.00

****************************************************************************
 FLOW PROCESS FROM NODE   6065.00 TO NODE   6065.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   6065.00 TO NODE   6066.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   305.20  DOWNSTREAM(FEET) =   303.50
 FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  57.0 INCH PIPE IS  46.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.29
 ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    219.43
 PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   7.72
 LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6066.00 =  1300.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6066.00 TO NODE   6066.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

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

```
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        219.43      7.72        7.169        80.00
  LONGEST FLOWPATH FROM NODE   6047.00 TO NODE   6066.00 =  1300.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         76.44    11.20        5.640        26.30
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6066.00 =  2255.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1       272.12       7.72        7.169
     2       249.06      11.20        5.640

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    272.12   Tc(MIN.) =    7.72
  TOTAL AREA(ACRES) =    106.30

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6066.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6085.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   303.60  DOWNSTREAM(FEET) =   301.50
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  48.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.94
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    272.12
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   7.90
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6085.00 =  2425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6085.00 TO NODE   6085.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.90
  RAINFALL INTENSITY(INCH/HR) =   7.06
  TOTAL STREAM AREA(ACRES) =   106.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    272.12

****************************************************************************
  FLOW PROCESS FROM NODE   6087.00 TO NODE   6088.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    313.20
  DOWNSTREAM ELEVATION(FEET) =    312.50
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.672
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE   6088.00 TO NODE   6089.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  312.50  DOWNSTREAM ELEVATION(FEET) =  309.00
  STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =   10.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =   6.34
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.135
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    7.52
  TOTAL AREA(ACRES) =      1.40        PEAK FLOW RATE(CFS) =      8.77

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.66   DEPTH*VELOCITY(FT*FT/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE   6087.00 TO NODE   6089.00 =   295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6089.00 TO NODE   6085.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   303.00  DOWNSTREAM(FEET) =   301.50
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.77
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =   6.90
  LONGEST FLOWPATH FROM NODE   6087.00 TO NODE   6085.00 =   485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6085.00 TO NODE   6085.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.90
  RAINFALL INTENSITY(INCH/HR) =   7.71
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.77

****************************************************************************
  FLOW PROCESS FROM NODE   6066.00 TO NODE   6085.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    312.20
  DOWNSTREAM ELEVATION(FEET) =    311.50
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.672
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.30
  TOTAL AREA(ACRES) =      1.00   TOTAL RUNOFF(CFS) =      7.30

****************************************************************************
  FLOW PROCESS FROM NODE   6085.00 TO NODE   6085.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.67
  RAINFALL INTENSITY(INCH/HR) =   9.49
  TOTAL STREAM AREA(ACRES) =     1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.30

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
```

```
     1      272.12      7.90         7.064         106.30
     2        8.77      6.90         7.708           1.40
     3        7.30      4.67         9.485           1.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        174.27      4.67        9.485
     2        252.42      6.90        7.708
     3        285.60      7.90        7.064

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    285.60   Tc(MIN.) =    7.90
  TOTAL AREA(ACRES) =    108.70
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6085.00 =  2425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6085.00 TO NODE   6083.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   301.50  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  50.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.37
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    285.60
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   8.05
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6083.00 =  2565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6083.00 TO NODE   6083.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.05
  RAINFALL INTENSITY(INCH/HR) =   6.98
  TOTAL STREAM AREA(ACRES) =   108.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    285.60

****************************************************************************
  FLOW PROCESS FROM NODE   6082.00 TO NODE   6083.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    314.00
  DOWNSTREAM ELEVATION(FEET) =    313.00
```

```
 ELEVATION DIFFERENCE(FEET) =       1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =     4.148
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =       3.65
 TOTAL AREA(ACRES) =       0.50   TOTAL RUNOFF(CFS) =       3.65

****************************************************************************
 FLOW PROCESS FROM NODE   6083.00 TO NODE   6083.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   4.15
 RAINFALL INTENSITY(INCH/HR) =   9.49
 TOTAL STREAM AREA(ACRES) =      0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.65

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       285.60      8.05         6.978         108.70
     2         3.65      4.15         9.485           0.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       213.76      4.15         9.485
     2       288.29      8.05         6.978

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    288.29   Tc(MIN.) =    8.05
 TOTAL AREA(ACRES) =    109.20
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6083.00 =  2565.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6083.00 TO NODE   6080.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   300.00  DOWNSTREAM(FEET) =   299.00
 FLOW LENGTH(FEET) =   125.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  69.0 INCH PIPE IS  51.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.01
 ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    288.29
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   8.20
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6080.00 =  2690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6080.00 TO NODE   6080.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.20
  RAINFALL INTENSITY(INCH/HR) =    6.90
  TOTAL STREAM AREA(ACRES) =   109.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     288.29

****************************************************************************
  FLOW PROCESS FROM NODE    6068.00 TO NODE    6069.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     60.00
  UPSTREAM ELEVATION(FEET) =     360.00
  DOWNSTREAM ELEVATION(FEET) =     320.00
  ELEVATION DIFFERENCE(FEET) =      40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     5.501
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.918
  SUBAREA RUNOFF(CFS) =       0.45
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       0.45

****************************************************************************
  FLOW PROCESS FROM NODE    6069.00 TO NODE    6070.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    320.00  DOWNSTREAM(FEET) =    318.00
  FLOW LENGTH(FEET) =    250.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS    2.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =    2.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =    1
  PIPE-FLOW(CFS) =       0.45
  PIPE TRAVEL TIME(MIN.) =    1.58    Tc(MIN.) =    7.08
  LONGEST FLOWPATH FROM NODE    6068.00 TO NODE    6070.00 =    310.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    6069.00 TO NODE    6070.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.578
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =    0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2800
  SUBAREA AREA(ACRES) =     0.60   SUBAREA RUNOFF(CFS) =     1.32
  TOTAL AREA(ACRES) =       0.80   TOTAL RUNOFF(CFS) =     1.70
  TC(MIN.) =    7.08
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    6070.00 TO NODE    6071.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  317.50  DOWNSTREAM ELEVATION(FEET) =  315.80
  STREET LENGTH(FEET) =   150.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   11.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =   8.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.851
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.600
  SUBAREA AREA(ACRES) =     1.50      SUBAREA RUNOFF(CFS) =     7.91
  TOTAL AREA(ACRES) =      2.30        PEAK FLOW RATE(CFS) =       9.45

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.51   DEPTH*VELOCITY(FT*FT/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE   6068.00 TO NODE   6071.00 =   460.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    6071.00 TO NODE    6080.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   307.00  DOWNSTREAM(FEET) =   305.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.73
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.45
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   8.72
  LONGEST FLOWPATH FROM NODE   6068.00 TO NODE   6080.00 =   640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    6080.00 TO NODE    6080.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.72
  RAINFALL INTENSITY(INCH/HR) =   6.62
  TOTAL STREAM AREA(ACRES) =     2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.45

  ** CONFLUENCE DATA **
  STREAM      RUNOFF      .Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       288.29      8.20        6.896        109.20
      2         9.45      8.72        6.623          2.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1       297.16      8.20        6.896
      2       286.34      8.72        6.623

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    297.16   Tc(MIN.) =    8.20
  TOTAL AREA(ACRES) =    111.50
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6080.00 =  2690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6080.00 TO NODE   6079.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   299.00  DOWNSTREAM(FEET) =   298.00
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.49
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    297.16
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   8.25
  LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6079.00 =  2750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6079.00 TO NODE   6079.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.25
  RAINFALL INTENSITY(INCH/HR) =   6.87
  TOTAL STREAM AREA(ACRES) =   111.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    297.16
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   6077.00 TO NODE   6078.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    317.70
 DOWNSTREAM ELEVATION(FEET) =    316.70
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.406
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.020
 SUBAREA RUNOFF(CFS) =      3.02
 TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      3.02

****************************************************************************
 FLOW PROCESS FROM NODE   6078.00 TO NODE   6079.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  316.70  DOWNSTREAM ELEVATION(FEET) =  313.80
 STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.41
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.39
   HALFSTREET FLOOD WIDTH(FEET) =   12.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.33
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
 STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =   7.69
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.184
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.752
 SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =   12.72
 TOTAL AREA(ACRES) =      2.80        PEAK FLOW RATE(CFS) =      15.13

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  12.00
 FLOW VELOCITY(FEET/SEC.) =  2.83   DEPTH*VELOCITY(FT*FT/SEC.) =   1.25
 LONGEST FLOWPATH FROM NODE   6077.00 TO NODE   6079.00 =   385.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   6079.00 TO NODE   6079.00 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.) =    7.69
 RAINFALL INTENSITY(INCH/HR) =    7.18
 TOTAL STREAM AREA(ACRES) =      2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      15.13

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       297.16      8.25         6.867         111.50
     2        15.13      7.69         7.184           2.80

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       299.16      7.69         7.184
     2       311.62      8.25         6.867

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    311.62   Tc(MIN.) =    8.25
 TOTAL AREA(ACRES) =    114.30
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   6079.00 =  2750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6079.00 TO NODE   7068.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   298.00  DOWNSTREAM(FEET) =   296.00
 FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  63.0 INCH PIPE IS  46.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.23
 ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    311.62
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   8.37
 LONGEST FLOWPATH FROM NODE   6014.10 TO NODE   7068.00 =  2880.00 FEET.

+--------------------------------------------------------------------------+
| Flow Information for Node 7068                                           |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =    114.30  TC(MIN.) =      8.37
```

```
  PEAK FLOW RATE(CFS)    =     311.62
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 7000B

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                        San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 7000B                                                    *
 **************************************************************************

  FILE NAME: MW_7BK00.DAT
  TIME/DATE OF STUDY: 14:49 07/16/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   7079.00 TO NODE   7080.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    300.60
 DOWNSTREAM ELEVATION(FEET) =    300.00
 ELEVATION DIFFERENCE(FEET) =      0.60
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.789
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.71
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
 FLOW PROCESS FROM NODE   7080.00 TO NODE   7081.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  300.00  DOWNSTREAM ELEVATION(FEET) =  282.00
 STREET LENGTH(FEET) =  1530.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     12.60
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.41
   HALFSTREET FLOOD WIDTH(FEET) =   15.33
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.58
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.06
 STREET FLOW TRAVEL TIME(MIN.) =   9.87   Tc(MIN.) =  12.66
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.211
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.678
 SUBAREA AREA(ACRES) =    5.60      SUBAREA RUNOFF(CFS) =   19.55
 TOTAL AREA(ACRES) =      5.80        PEAK FLOW RATE(CFS) =      20.49

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  2.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1530.0 FT WITH ELEVATION-DROP =  18.0 FT, IS   31.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   7081.00
 LONGEST FLOWPATH FROM NODE   7079.00 TO NODE   7081.00 =  1590.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7081.00 TO NODE   7099.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   282.00  DOWNSTREAM(FEET) =   280.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.14
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     20.49
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  12.78
  LONGEST FLOWPATH FROM NODE   7079.00 TO NODE   7099.00 =  1670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7099.00 TO NODE   7099.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.78
  RAINFALL INTENSITY(INCH/HR) =   5.18
  TOTAL STREAM AREA(ACRES) =     5.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.49

****************************************************************************
  FLOW PROCESS FROM NODE   7093.00 TO NODE   7094.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    860.00
  DOWNSTREAM ELEVATION(FEET) =    800.00
  ELEVATION DIFFERENCE(FEET) =     60.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.945
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.483
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59

****************************************************************************
  FLOW PROCESS FROM NODE   7094.00 TO NODE   7095.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    318.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.4017
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.095
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.02
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   3.98
```

```
  Tc(MIN.) =   9.93
  SUBAREA AREA(ACRES) =     3.90       SUBAREA RUNOFF(CFS) =     8.08
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
  TOTAL AREA(ACRES) =      4.10        PEAK FLOW RATE(CFS) =       8.51

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   6.05
  LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7095.00 =  1290.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7095.00 TO NODE   7095.60 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   318.00  DOWNSTREAM(FEET) =   290.00
  FLOW LENGTH(FEET) =  1000.00   MANNING'S N =  0.016
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.10
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.51
  PIPE TRAVEL TIME(MIN.) =   2.06    Tc(MIN.) =  11.98
  LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7095.60 =  2290.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7095.00 TO NODE   7099.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.398
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3401
  SUBAREA AREA(ACRES) =   23.80   SUBAREA RUNOFF(CFS) =   43.68
  TOTAL AREA(ACRES) =     27.90   TOTAL RUNOFF(CFS) =   51.21
  TC(MIN.) =  11.98

****************************************************************************
  FLOW PROCESS FROM NODE   7095.60 TO NODE   7099.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    290.00  DOWNSTREAM(FEET) =    277.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   110.00   CHANNEL SLOPE =  0.1182
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.21
  FLOW VELOCITY(FEET/SEC.) =   7.29   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  12.23
  LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7099.00 =  2400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7099.00 TO NODE   7099.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.23
  RAINFALL INTENSITY(INCH/HR) =   5.33
  TOTAL STREAM AREA(ACRES) =    27.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.21

****************************************************************************
  FLOW PROCESS FROM NODE   7104.00 TO NODE   7106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    326.00
  DOWNSTREAM ELEVATION(FEET) =    320.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.347
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.084
  SUBAREA RUNOFF(CFS) =      0.82
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.82

****************************************************************************
  FLOW PROCESS FROM NODE   7106.00 TO NODE   7099.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    320.00  DOWNSTREAM(FEET) =    280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   1.000
  MANNING'S FACTOR = 0.016   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.739
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.05
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   1.51
  Tc(MIN.) =   6.85
  SUBAREA AREA(ACRES) =    10.90       SUBAREA RUNOFF(CFS) =   37.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.450
  TOTAL AREA(ACRES) =     11.10         PEAK FLOW RATE(CFS) =      38.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =  13.35
  LONGEST FLOWPATH FROM NODE   7104.00 TO NODE   7099.00 =  1080.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7099.00 TO NODE   7099.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.85
 RAINFALL INTENSITY(INCH/HR) =    7.74
 TOTAL STREAM AREA(ACRES) =    11.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.65

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        20.49     12.78         5.179          5.80
     2        51.21     12.23         5.326         27.90
     3        38.65      6.85         7.739         11.10

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        78.34      6.85         7.739
     2        97.43     12.23         5.326
     3        96.16     12.78         5.179

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     97.43   Tc(MIN.) =   12.23
 TOTAL AREA(ACRES) =     44.80
 LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7099.00 =  2400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7099.00 TO NODE   7100.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   275.00  DOWNSTREAM(FEET) =   265.00
 FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.37
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     97.43
 PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  12.56
 LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7100.00 =  2740.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7100.00 TO NODE   7100.00 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.) =  12.56
 RAINFALL INTENSITY(INCH/HR) =   5.24
 TOTAL STREAM AREA(ACRES) =    44.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     97.43

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

```
 FLOW PROCESS FROM NODE   7082.00 TO NODE   7100.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6000
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
 UPSTREAM ELEVATION(FEET) =    281.00
 DOWNSTREAM ELEVATION(FEET) =    280.50
 ELEVATION DIFFERENCE(FEET) =      0.50
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.364
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.118
 SUBAREA RUNOFF(CFS) =      2.44
 TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      2.44

****************************************************************************
 FLOW PROCESS FROM NODE   7100.00 TO NODE   7100.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.36
 RAINFALL INTENSITY(INCH/HR) =   8.12
 TOTAL STREAM AREA(ACRES) =     0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.44

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        97.43     12.56         5.236        44.80
     2         2.44      6.36         8.118         0.50

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        65.28      6.36        8.118
     2        99.00     12.56        5.236

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     99.00   Tc(MIN.) =   12.56
 TOTAL AREA(ACRES) =     45.30
 LONGEST FLOWPATH FROM NODE   7093.00 TO NODE   7100.00 =  2740.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     45.30  TC(MIN.) =     12.56
 PEAK FLOW RATE(CFS)    =     99.00
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Drainage Basin 8000A & 8000B

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

                        RICK ENGINEERING COMPANY
                            5620 Friars Road
                        San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 8000A (Undetained)                                       *
 **************************************************************************

  FILE NAME: MW81K100.DAT
  TIME/DATE OF STUDY: 08:00 07/14/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   8100.00 TO NODE   8101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    865.00
 DOWNSTREAM ELEVATION(FEET) =    810.00
 ELEVATION DIFFERENCE(FEET) =     55.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
 SUBAREA RUNOFF(CFS) =     0.86
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
 FLOW PROCESS FROM NODE   8101.00 TO NODE   8102.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    810.00  DOWNSTREAM(FEET) =    280.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   955.00   CHANNEL SLOPE =  0.5550
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.953
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3300
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     15.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.72
 AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   1.82
 Tc(MIN.) =   8.09
 SUBAREA AREA(ACRES) =    13.00       SUBAREA RUNOFF(CFS) =   29.83
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
 TOTAL AREA(ACRES) =     13.30         PEAK FLOW RATE(CFS) =      30.56

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =  10.60
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8102.00 =  1055.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8102.00 TO NODE   8116.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   273.50  DOWNSTREAM(FEET) =   272.50
 FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.14
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     30.56
 PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   8.34
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8116.00 =  1175.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8116.00 TO NODE   8116.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.34
  RAINFALL INTENSITY(INCH/HR) =    6.82
  TOTAL STREAM AREA(ACRES) =     13.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      30.56

****************************************************************************
  FLOW PROCESS FROM NODE    8114.00 TO NODE    8115.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =    0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     60.00
  UPSTREAM ELEVATION(FEET) =     280.60
  DOWNSTREAM ELEVATION(FEET) =     280.00
  ELEVATION DIFFERENCE(FEET) =       0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.789
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       1.71
  TOTAL AREA(ACRES) =       0.20   TOTAL RUNOFF(CFS) =       1.71

****************************************************************************
  FLOW PROCESS FROM NODE    8115.00 TO NODE    8116.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  280.00  DOWNSTREAM ELEVATION(FEET) =  275.50
  STREET LENGTH(FEET) =   445.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   14.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
  STREET FLOW TRAVEL TIME(MIN.) =   3.16   Tc(MIN.) =   5.95
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.481
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =    0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
  SUBAREA AREA(ACRES) =     2.40      SUBAREA RUNOFF(CFS) =   18.32
  TOTAL AREA(ACRES) =       2.60        PEAK FLOW RATE(CFS) =      19.85
```

```
 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  2.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.33
 LONGEST FLOWPATH FROM NODE   8114.00 TO NODE   8116.00 =   505.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8116.00 TO NODE   8116.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.95
 RAINFALL INTENSITY(INCH/HR) =   8.48
 TOTAL STREAM AREA(ACRES) =     2.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.85

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        30.56      8.34         6.820         13.30
     2        19.85      5.95         8.481          2.60

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        41.64      5.95         8.481
     2        46.52      8.34         6.820

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     46.52   Tc(MIN.) =    8.34
 TOTAL AREA(ACRES) =     15.90
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8116.00 =  1175.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8116.00 TO NODE   8121.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   272.50  DOWNSTREAM(FEET) =   270.00
 FLOW LENGTH(FEET) =   385.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.18
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     46.52
 PIPE TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =   9.12
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8121.00 =  1560.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8121.00 TO NODE   8121.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =    6.44
  TOTAL STREAM AREA(ACRES) =    15.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.52

****************************************************************************
  FLOW PROCESS FROM NODE    8118.00 TO NODE    8119.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    284.10
  DOWNSTREAM ELEVATION(FEET) =    283.80
  ELEVATION DIFFERENCE(FEET) =      0.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.018
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
  FLOW PROCESS FROM NODE    8119.00 TO NODE    8120.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  283.80  DOWNSTREAM ELEVATION(FEET) =  280.30
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   11.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   2.49   Tc(MIN.) =   5.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.915
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
 SUBAREA AREA(ACRES) =     1.20      SUBAREA RUNOFF(CFS) =     9.63
 TOTAL AREA(ACRES) =      1.40        PEAK FLOW RATE(CFS) =      11.23

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  14.88
 FLOW VELOCITY(FEET/SEC.) =  2.44   DEPTH*VELOCITY(FT*FT/SEC.) =   0.98
 LONGEST FLOWPATH FROM NODE   8118.00 TO NODE   8120.00 =   370.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8120.00 TO NODE   8121.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   270.70  DOWNSTREAM(FEET) =   270.00
 FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.85
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     11.23
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   5.67
 LONGEST FLOWPATH FROM NODE   8118.00 TO NODE   8121.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8121.00 TO NODE   8121.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.67
 RAINFALL INTENSITY(INCH/HR) =   8.74
 TOTAL STREAM AREA(ACRES) =     1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.23

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
    1        46.52      9.12         6.436         15.90
    2        11.23      5.67         8.741          1.40

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
    1        45.48      5.67         8.741
    2        54.79      9.12         6.436

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     54.79   Tc(MIN.) =    9.12
 TOTAL AREA(ACRES) =     17.30
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8121.00 =  1560.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   8121.00 TO NODE   8126.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   270.00  DOWNSTREAM(FEET) =   264.50
 FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.90
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     54.79
 PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   9.47
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8126.00 =  1830.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8126.00 TO NODE   8126.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.47
 RAINFALL INTENSITY(INCH/HR) =   6.28
 TOTAL STREAM AREA(ACRES) =    17.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     54.79

****************************************************************************
 FLOW PROCESS FROM NODE   8123.00 TO NODE   8124.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7800
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    286.20
 DOWNSTREAM ELEVATION(FEET) =    285.50
 ELEVATION DIFFERENCE(FEET) =      0.70
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.531
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.48
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.48

****************************************************************************
 FLOW PROCESS FROM NODE   8124.00 TO NODE   8125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  285.50  DOWNSTREAM ELEVATION(FEET) =  276.00
 STREET LENGTH(FEET) =   355.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.53
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.58
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.76
 STREET FLOW TRAVEL TIME(MIN.) =   2.15   Tc(MIN.) =   6.68
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.869
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.772
 SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =     6.06
 TOTAL AREA(ACRES) =.      1.20        PEAK FLOW RATE(CFS) =       7.29

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.46
 FLOW VELOCITY(FEET/SEC.) =  3.09   DEPTH*VELOCITY(FT*FT/SEC.) =   0.97
 LONGEST FLOWPATH FROM NODE   8123.00 TO NODE   8125.00 =   420.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8125.00 TO NODE   8126.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  266.00  DOWNSTREAM(FEET) =   264.50
 FLOW LENGTH(FEET) =    80.00  MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.85
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      7.29
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   6.85
 LONGEST FLOWPATH FROM NODE   8123.00 TO NODE   8126.00 =   500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8126.00 TO NODE   8126.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.85
 RAINFALL INTENSITY(INCH/HR) =   7.74
 TOTAL STREAM AREA(ACRES) =     1.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.29

 ** CONFLUENCE DATA **
```

```
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         54.79      9.47         6.282         17.30
     2          7.29      6.85         7.742          1.20

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         51.74      6.85         7.742
     2         60.70      9.47         6.282

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     60.70   Tc(MIN.) =     9.47
  TOTAL AREA(ACRES) =     18.50
  LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8126.00 =  1830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8126.00 TO NODE   8147.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   264.50  DOWNSTREAM(FEET) =   264.00
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.40
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     60.70
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   9.51
  LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8147.00 =  1860.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8147.00 TO NODE   8147.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   8128.00 TO NODE   8129.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    282.10
  DOWNSTREAM ELEVATION(FEET) =    281.50
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.789
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   8129.00 TO NODE   8130.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  281.50  DOWNSTREAM ELEVATION(FEET) =  279.50
 STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.63
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =   10.92
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.59
 STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =   4.91
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.796
 SUBAREA AREA(ACRES) =     0.80     SUBAREA RUNOFF(CFS) =     5.84
 TOTAL AREA(ACRES) =      1.00       PEAK FLOW RATE(CFS) =       7.55

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.30
 FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.75
 LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8130.00 =   290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8130.00 TO NODE   8134.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   268.00  DOWNSTREAM(FEET) =   266.50
 FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.86
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      7.55
 PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =   5.90
 LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8134.00 =   580.00 FEET.

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

```
 FLOW PROCESS FROM NODE    8134.00 TO NODE    8134.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    5.90
 RAINFALL INTENSITY(INCH/HR) =    8.52
 TOTAL STREAM AREA(ACRES) =     1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.55

****************************************************************************
 FLOW PROCESS FROM NODE    8132.00 TO NODE    8133.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    279.60
 DOWNSTREAM ELEVATION(FEET) =    279.00
 ELEVATION DIFFERENCE(FEET) =      0.60
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.601
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.46
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
 FLOW PROCESS FROM NODE    8133.00 TO NODE    8134.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  279.00  DOWNSTREAM ELEVATION(FEET) =  276.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.66
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =   10.66
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.90
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.61
 STREET FLOW TRAVEL TIME(MIN.) =   2.63   Tc(MIN.) =   7.23
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.479
 *USER SPECIFIED(SUBAREA):
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     1.10     SUBAREA RUNOFF(CFS) =     6.34
  TOTAL AREA(ACRES) =      1.30      PEAK FLOW RATE(CFS) =       7.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  12.90
  FLOW VELOCITY(FEET/SEC.) =  2.14   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
  LONGEST FLOWPATH FROM NODE   8132.00 TO NODE   8134.00 =   360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8134.00 TO NODE   8134.00 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.) =   7.23
  RAINFALL INTENSITY(INCH/HR) =   7.48
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.49

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1         7.55      5.90         8.525          1.00
      2         7.49      7.23         7.479          1.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        13.66      5.90         8.525
      2        14.11      7.23         7.479

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     14.11   Tc(MIN.) =   7.23
  TOTAL AREA(ACRES) =      2.30
  LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8134.00 =   580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8134.00 TO NODE   8143.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   266.50  DOWNSTREAM(FEET) =   265.00
  FLOW LENGTH(FEET) =   235.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.09
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     14.11
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =   7.87
```

```
 LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8143.00 =   815.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8143.00 TO NODE   8143.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.87
 RAINFALL INTENSITY(INCH/HR) =   7.08
 TOTAL STREAM AREA(ACRES) =     2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.11

****************************************************************************
 FLOW PROCESS FROM NODE   8136.00 TO NODE   8137.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    279.60
 DOWNSTREAM ELEVATION(FEET) =   278.50
 ELEVATION DIFFERENCE(FEET) =     1.10
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.759
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      2.19
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.19

****************************************************************************
 FLOW PROCESS FROM NODE   8137.00 TO NODE   8138.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  278.50  DOWNSTREAM ELEVATION(FEET) =  276.00
 STREET LENGTH(FEET) =    65.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.38
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.82
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.14
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
```

```
 STREET FLOW TRAVEL TIME(MIN.) =   0.34   Tc(MIN.) =   4.10
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     4.38
 TOTAL AREA(ACRES) =       0.90        PEAK FLOW RATE(CFS) =       6.57

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.29
 FLOW VELOCITY(FEET/SEC.) =  3.46   DEPTH*VELOCITY(FT*FT/SEC.) =   1.01
 LONGEST FLOWPATH FROM NODE   8136.00 TO NODE   8138.00 =   125.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8138.00 TO NODE   8143.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   271.00  DOWNSTREAM(FEET) =   264.50
 FLOW LENGTH(FEET) =   400.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.25
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      6.57
 PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =   5.02
 LONGEST FLOWPATH FROM NODE   8136.00 TO NODE   8143.00 =   525.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8143.00 TO NODE   8143.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.02
 RAINFALL INTENSITY(INCH/HR) =   9.46
 TOTAL STREAM AREA(ACRES) =     0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.57

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       14.11      7.87         7.080          2.30
     2        6.57      5.02         9.456          0.90

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       17.14      5.02         9.456
```

```
      2       19.03      7.87        7.080

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     19.03   Tc(MIN.) =    7.87
  TOTAL AREA(ACRES) =      3.20
  LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8143.00 =   815.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8143.00 TO NODE   8147.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   265.00  DOWNSTREAM(FEET) =   264.50
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.88
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     19.03
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   8.04
  LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8147.00 =   885.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8147.00 TO NODE   8147.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.04
  RAINFALL INTENSITY(INCH/HR) =   6.98
  TOTAL STREAM AREA(ACRES) =     3.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.03

****************************************************************************
  FLOW PROCESS FROM NODE.  8145.00 TO NODE   8146.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    276.10
  DOWNSTREAM ELEVATION(FEET) =    275.50
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.601
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE   8146.00 TO NODE   8147.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
```

```
 UPSTREAM ELEVATION(FEET) =  275.50  DOWNSTREAM ELEVATION(FEET) =  273.30
 STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.69
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.38
   HALFSTREET FLOOD WIDTH(FEET) =   13.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
 STREET FLOW TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =   6.36
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.122
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =     2.30      SUBAREA RUNOFF(CFS) =   14.38
 TOTAL AREA(ACRES) =      2.50        PEAK FLOW RATE(CFS) =      15.63

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  17.37
 FLOW VELOCITY(FEET/SEC.) =  2.52   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
 LONGEST FLOWPATH FROM NODE   8145.00 TO NODE   8147.00 =   290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8147.00 TO NODE   8147.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.36
 RAINFALL INTENSITY(INCH/HR) =   8.12
 TOTAL STREAM AREA(ACRES) =     2.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.63

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        19.03      8.04         6.983          3.20
     2        15.63      6.36         8.122          2.50

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

 ** PEAK FLOW RATE TABLE **
```

```
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
    1        32.00      6.36        8.122
    2        32.47      8.04        6.983

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     32.47   Tc(MIN.) =    8.04
 TOTAL AREA(ACRES) =      5.70
 LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8147.00 =   885.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8147.00 TO NODE   8147.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
    1        32.47      8.04        6.983         5.70
 LONGEST FLOWPATH FROM NODE   8128.00 TO NODE   8147.00 =   885.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY      AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
    1        60.70      9.51        6.265        18.50
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8147.00 =  1860.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc       INTENSITY
 NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1       83.78       8.04        6.983
    2       89.84       9.51        6.265

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     89.84   Tc(MIN.) =    9.51
 TOTAL AREA(ACRES) =     24.20

****************************************************************************
 FLOW PROCESS FROM NODE   8147.00 TO NODE   8147.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   8147.00 TO NODE   8149.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   264.00  DOWNSTREAM(FEET) =   263.20
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
 ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     89.84
 PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   9.79
```

```
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8149.00 =  2010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8149.00 TO NODE   8149.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.79
 RAINFALL INTENSITY(INCH/HR) =   6.15
 TOTAL STREAM AREA(ACRES) =    24.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     89.84

****************************************************************************
 FLOW PROCESS FROM NODE   8148.20 TO NODE   8148.40 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
 UPSTREAM ELEVATION(FEET) =    278.00
 DOWNSTREAM ELEVATION(FEET) =    277.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =   11.366
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.585
 SUBAREA RUNOFF(CFS) =      0.28
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
 FLOW PROCESS FROM NODE   8148.40 TO NODE   8148.60 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    277.00  DOWNSTREAM(FEET) =    273.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   430.00   CHANNEL SLOPE =  0.0093
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.988
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      0.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.92
 AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   7.79
 Tc(MIN.) =  19.16
 SUBAREA AREA(ACRES) =     0.20       SUBAREA RUNOFF(CFS) =    0.20
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.250
 TOTAL AREA(ACRES) =      0.40         PEAK FLOW RATE(CFS) =       0.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   0.91
 LONGEST FLOWPATH FROM NODE   8148.20 TO NODE   8148.60 =   500.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   8148.60 TO NODE   8149.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   270.00  DOWNSTREAM(FEET) =   263.20
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.85
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      0.40
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  19.28
 LONGEST FLOWPATH FROM NODE   8148.20 TO NODE   8149.00 =   550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8149.00 TO NODE   8149.00 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.) =  19.28
 RAINFALL INTENSITY(INCH/HR) =   3.97
 TOTAL STREAM AREA(ACRES) =     0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.40

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        89.84      9.79        6.149          24.20
     2         0.40     19.28        3.972           0.40

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        90.04      9.79        6.149
     2        58.43     19.28        3.972

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     90.04   Tc(MIN.) =    9.79
 TOTAL AREA(ACRES) =     24.60
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8149.00 =  2010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8149.00 TO NODE   8152.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   263.20  DOWNSTREAM(FEET) =   262.50
 FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.99
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     90.04
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =  10.17
  LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8152.00 =  2190.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8152.00 TO NODE   8152.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.17
  RAINFALL INTENSITY(INCH/HR) =   6.00
  TOTAL STREAM AREA(ACRES) =    24.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     90.04

****************************************************************************
  FLOW PROCESS FROM NODE   8150.00 TO NODE   8151.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .9000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    279.20
  DOWNSTREAM ELEVATION(FEET) =    278.50
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.902
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.56
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.56

****************************************************************************
  FLOW PROCESS FROM NODE   8151.00 TO NODE   8152.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  278.50  DOWNSTREAM ELEVATION(FEET) =  269.00
  STREET LENGTH(FEET) =   455.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.33
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   11.63
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
 STREET FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =   5.52
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.897
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.701
 SUBAREA AREA(ACRES) =     1.90      SUBAREA RUNOFF(CFS) =   11.33
 TOTAL AREA(ACRES) =      2.20        PEAK FLOW RATE(CFS) =      13.73

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  14.17
 FLOW VELOCITY(FEET/SEC.) =  3.28   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
 LONGEST FLOWPATH FROM NODE   8150.00 TO NODE   8152.00 =  525.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8152.00 TO NODE   8152.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.52
 RAINFALL INTENSITY(INCH/HR) =   8.90
 TOTAL STREAM AREA(ACRES) =     2.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.73

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       90.04    10.17        6.002        24.60
     2       13.73     5.52        8.897         2.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       74.47     5.52       8.897
     2       99.30    10.17       6.002

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     99.30   Tc(MIN.) =   10.17
 TOTAL AREA(ACRES) =     26.80
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8152.00 =  2190.00 FEET.

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

```
 FLOW PROCESS FROM NODE   8152.00 TO NODE   8153.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   262.50  DOWNSTREAM(FEET) =   262.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.69
 ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     99.30
 PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  10.24
 LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8153.00 =  2240.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     26.80  TC(MIN.) =     10.24
 PEAK FLOW RATE(CFS)    =     99.30
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2003 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                              Analysis prepared by:

                            RICK ENGINEERING COMPANY
                                5620 Friars Road
                             San Diego, California 92110
                           619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD J-15956 July 2009                                             *
* 100-yr Post-project (on-site)                                           *
* Drainage Basin 8000B (Undetained)                                       *
 *************************************************************************

  FILE NAME: MW82K100.DAT
  TIME/DATE OF STUDY: 11:48 07/14/2009
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================== ======  ===== ======= ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

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

**************************************************************************
  FLOW PROCESS FROM NODE   8200.00 TO NODE   8201.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    760.00
  DOWNSTREAM ELEVATION(FEET) =    690.00
  ELEVATION DIFFERENCE(FEET) =     70.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE   8201.00 TO NODE   8202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    690.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.6129
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.419
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.57
  AVERAGE FLOW DEPTH(FEET) =   0.04   TRAVEL TIME(MIN.) =   2.89
  Tc(MIN.) =   9.16
  SUBAREA AREA(ACRES) =     0.60       SUBAREA RUNOFF(CFS) =    1.31
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.343
  TOTAL AREA(ACRES) =      0.90         PEAK FLOW RATE(CFS) =       1.98

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.05   FLOW VELOCITY(FEET/SEC.) =   3.89
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8202.00 =   720.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8202.00 TO NODE   8203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   310.00  DOWNSTREAM(FEET) =   277.00
  FLOW LENGTH(FEET) =   900.00   MANNING'S N =  0.016
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.02
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      1.98
  PIPE TRAVEL TIME(MIN.) =   2.49    Tc(MIN.) =  11.65
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8203.00 =  1620.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8202.00 TO NODE   8203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.496
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3300
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3309
SUBAREA AREA(ACRES) =    11.80   SUBAREA RUNOFF(CFS) =   21.40
TOTAL AREA(ACRES) =      12.70   TOTAL RUNOFF(CFS) =   23.10
TC(MIN.) =  11.65

****************************************************************************
FLOW PROCESS FROM NODE   8203.00 TO NODE   8203.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE   8216.00 TO NODE   8217.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
UPSTREAM ELEVATION(FEET) =    286.20
DOWNSTREAM ELEVATION(FEET) =    285.50
ELEVATION DIFFERENCE(FEET) =      0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.672
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.46
TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
FLOW PROCESS FROM NODE   8217.00 TO NODE   8218.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) =  285.50  DOWNSTREAM ELEVATION(FEET) =  284.00
STREET LENGTH(FEET) =   180.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.00
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.29
  HALFSTREET FLOOD WIDTH(FEET) =    9.19
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.61
```

```
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
 STREET FLOW TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =   6.53
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.982
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =     0.50      SUBAREA RUNOFF(CFS) =     3.07
 TOTAL AREA(ACRES) =       0.70        PEAK FLOW RATE(CFS) =       4.30

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  10.71
 FLOW VELOCITY(FEET/SEC.) =  1.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8218.00 =   245.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8218.00 TO NODE   8223.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  283.00  DOWNSTREAM ELEVATION(FEET) =  280.50
 STREET LENGTH(FEET) =   180.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.78
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =   10.87
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.73
 STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   7.85
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.091
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4600
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.596
 SUBAREA AREA(ACRES) =     0.90      SUBAREA RUNOFF(CFS) =     2.94
 TOTAL AREA(ACRES) =       1.60        PEAK FLOW RATE(CFS) =       6.76

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.58
 FLOW VELOCITY(FEET/SEC.) =  2.37   DEPTH*VELOCITY(FT*FT/SEC.) =   0.80
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8223.00 =   425.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8223.00 TO NODE   8224.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
ELEVATION DATA: UPSTREAM(FEET) =   270.50  DOWNSTREAM(FEET) =   268.50
FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.28
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      6.76
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   7.89
LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8224.00 =   455.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   8224.00 TO NODE   8224.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   7.89
RAINFALL INTENSITY(INCH/HR) =   7.07
TOTAL STREAM AREA(ACRES) =     1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.76

****************************************************************************
FLOW PROCESS FROM NODE   8220.00 TO NODE   8221.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
UPSTREAM ELEVATION(FEET) =    281.50
DOWNSTREAM ELEVATION(FEET) =    280.50
ELEVATION DIFFERENCE(FEET) =      1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.674
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.46
TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
FLOW PROCESS FROM NODE   8221.00 TO NODE   8222.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
UPSTREAM ELEVATION(FEET) =  280.00  DOWNSTREAM ELEVATION(FEET) =  276.50
STREET LENGTH(FEET) =   110.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.56
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    7.41
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.80
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
 STREET FLOW TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =   5.33
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.104
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     4.21
 TOTAL AREA(ACRES) =       0.80        PEAK FLOW RATE(CFS) =      5.61

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.04
 FLOW VELOCITY(FEET/SEC.) =  3.11   DEPTH*VELOCITY(FT*FT/SEC.) =   0.89
 LONGEST FLOWPATH FROM NODE   8220.00 TO NODE   8222.00 =   185.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8222.00 TO NODE   8224.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   270.50  DOWNSTREAM(FEET) =   268.50
 FLOW LENGTH(FEET) =   225.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      5.61
 PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =   6.00
 LONGEST FLOWPATH FROM NODE   8220.00 TO NODE   8224.00 =   410.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8224.00 TO NODE   8224.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.00
 RAINFALL INTENSITY(INCH/HR) =   8.43
 TOTAL STREAM AREA(ACRES) =     0.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.61

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1        6.76      7.89         7.068          1.60
     2        5.61      6.00         8.430          0.80

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1        10.75      6.00       8.430
     2        11.46      7.89       7.068

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     11.46   Tc(MIN.) =    7.89
  TOTAL AREA(ACRES) =      2.40
  LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8224.00 =   455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8224.00 TO NODE   8228.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   268.50  DOWNSTREAM(FEET) =   266.50
  FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.46
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.46
  PIPE TRAVEL TIME(MIN.) =   1.04    Tc(MIN.) =   8.93
  LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8228.00 =   795.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8228.00 TO NODE   8228.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.93
  RAINFALL INTENSITY(INCH/HR) =   6.53
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.46

****************************************************************************
  FLOW PROCESS FROM NODE   8226.00 TO NODE   8227.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    282.70
  DOWNSTREAM ELEVATION(FEET) =    282.00
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.672
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.46
TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
FLOW PROCESS FROM NODE   8227.00 TO NODE   8228.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) =  282.00  DOWNSTREAM ELEVATION(FEET) =  279.00
STREET LENGTH(FEET) =   275.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.03
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =   10.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.00
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =   6.96
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.662
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =     1.20      SUBAREA RUNOFF(CFS) =     7.08
TOTAL AREA(ACRES) =      1.40        PEAK FLOW RATE(CFS) =       8.26

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.20
FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   0.83
LONGEST FLOWPATH FROM NODE   8226.00 TO NODE   8228.00 =   340.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   8228.00 TO NODE   8228.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.96
RAINFALL INTENSITY(INCH/HR) =   7.66
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.26
```

```
 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        11.46      8.93         6.526          2.40
     2         8.26      6.96         7.662          1.40

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        18.02      6.96         7.662
     2        18.50      8.93         6.526

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     18.50   Tc(MIN.) =    8.93
 TOTAL AREA(ACRES) =      3.80
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8228.00 =   795.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8228.00 TO NODE   8233.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   266.50  DOWNSTREAM(FEET) =   266.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  5.91
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     18.50
 PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   9.21
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8233.00 =   895.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8233.00 TO NODE   8233.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.21
 RAINFALL INTENSITY(INCH/HR) =   6.40
 TOTAL STREAM AREA(ACRES) =     3.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.50

****************************************************************************
 FLOW PROCESS FROM NODE   8235.00 TO NODE   8236.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
 UPSTREAM ELEVATION(FEET) =    285.70
```

```
 DOWNSTREAM ELEVATION(FEET) =    285.00
 ELEVATION DIFFERENCE(FEET) =      0.70
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.672
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.46
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
 FLOW PROCESS FROM NODE   8236.00 TO NODE   8233.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  285.00  DOWNSTREAM ELEVATION(FEET) =  279.50
 STREET LENGTH(FEET) =   675.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.85
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.44
   HALFSTREET FLOOD WIDTH(FEET) =   16.60
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
 STREET FLOW TRAVEL TIME(MIN.) =   4.98   Tc(MIN.) =   9.65
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.206
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
 SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =   21.98
 TOTAL AREA(ACRES) =      4.80        PEAK FLOW RATE(CFS) =      22.94

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.60
 FLOW VELOCITY(FEET/SEC.) =  2.75   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  675.0 FT WITH ELEVATION-DROP =   5.5 FT, IS   33.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   8233.00
 LONGEST FLOWPATH FROM NODE   8235.00 TO NODE   8233.00 =  740.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8233.00 TO NODE   8233.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
```

```
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.65
 RAINFALL INTENSITY(INCH/HR) =    6.21
 TOTAL STREAM AREA(ACRES) =      4.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      22.94

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        18.50      9.21        6.397          3.80
     2        22.94      9.65        6.206          4.80

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        40.38      9.21        6.397
     2        40.88      9.65        6.206

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      40.88   Tc(MIN.) =     9.65
 TOTAL AREA(ACRES) =       8.60
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8233.00 =   895.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8233.00 TO NODE   8237.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   266.00  DOWNSTREAM(FEET) =   265.00
 FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.42
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     40.88
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   9.83
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8237.00 =   995.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8237.00 TO NODE   8237.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.83
 RAINFALL INTENSITY(INCH/HR) =   6.13
 TOTAL STREAM AREA(ACRES) =     8.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.88

****************************************************************************
 FLOW PROCESS FROM NODE   8230.00 TO NODE   8231.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    282.70
  DOWNSTREAM ELEVATION(FEET) =    282.00
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.256
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.65
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.65

****************************************************************************
  FLOW PROCESS FROM NODE   8231.00 TO NODE   8232.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  282.00  DOWNSTREAM ELEVATION(FEET) =  278.50
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.54
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =   10.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =   5.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.121
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.785
  SUBAREA AREA(ACRES) =     1.10      SUBAREA RUNOFF(CFS) =     7.73
  TOTAL AREA(ACRES) =      1.30        PEAK FLOW RATE(CFS) =       9.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.35
  FLOW VELOCITY(FEET/SEC.) =  2.49   DEPTH*VELOCITY(FT*FT/SEC.) =   0.93
  LONGEST FLOWPATH FROM NODE   8230.00 TO NODE   8232.00 =   335.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8232.00 TO NODE   8237.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   265.50  DOWNSTREAM(FEET) =   265.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.42
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      9.31
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   5.44
 LONGEST FLOWPATH FROM NODE   8230.00 TO NODE   8237.00 =   385.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8237.00 TO NODE   8237.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.44
 RAINFALL INTENSITY(INCH/HR) =   8.98
 TOTAL STREAM AREA(ACRES) =     1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.31

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       40.88     9.83        6.134         8.60
     2        9.31     5.44        8.980         1.30

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       37.24     5.44        8.980
     2       47.24     9.83        6.134

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     47.24   Tc(MIN.) =    9.83
 TOTAL AREA(ACRES) =      9.90
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8237.00 =   995.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8237.00 TO NODE   8242.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   265.00  DOWNSTREAM(FEET) =   264.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.18
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     47.24
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  10.03
```

```
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8242.00 =  1105.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8242.00 TO NODE   8242.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   8204.10 TO NODE   8204.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =  0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    284.00
 DOWNSTREAM ELEVATION(FEET) =    283.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.352
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.71
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
 FLOW PROCESS FROM NODE   8204.20 TO NODE   8204.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  283.00  DOWNSTREAM ELEVATION(FEET) =  280.00
 STREET LENGTH(FEET) =    23.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.27
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.22
   HALFSTREET FLOOD WIDTH(FEET) =    5.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.07
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.12
 STREET FLOW TRAVEL TIME(MIN.) =   0.08   Tc(MIN.) =   2.43
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .9000
 S.C.S. CURVE NUMBER (AMC II) =  0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.900
  SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     5.12
  TOTAL AREA(ACRES) =       0.80        PEAK FLOW RATE(CFS) =       6.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   7.26
  FLOW VELOCITY(FEET/SEC.) =  5.57   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
  LONGEST FLOWPATH FROM NODE   8204.10 TO NODE   8204.00 =    83.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8204.00 TO NODE   8204.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1          6.83      2.43        9.485         0.80
  LONGEST FLOWPATH FROM NODE   8204.10 TO NODE   8204.00 =    83.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         23.10     11.65        5.496        12.70
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8204.00 =  1620.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1        11.64       2.43        9.485
     2        27.06      11.65        5.496

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     27.06   Tc(MIN.) =   11.65
  TOTAL AREA(ACRES) =     13.50

****************************************************************************
  FLOW PROCESS FROM NODE   8204.00 TO NODE   8204.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   8204.00 TO NODE   8242.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   271.00  DOWNSTREAM(FEET) =   264.00
  FLOW LENGTH(FEET) =   700.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.40
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     27.06
  PIPE TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =  13.04
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8242.00 =  2320.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   8242.00 TO NODE   8242.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        27.06     13.04        5.111        13.50
 LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8242.00 =  2320.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        47.24     10.03        6.055         9.90
 LONGEST FLOWPATH FROM NODE   8216.00 TO NODE   8242.00 =  1105.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF        Tc       INTENSITY
 NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
    1       68.05       10.03        6.055
    2       66.94       13.04        5.111

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     68.05   Tc(MIN.) =   10.03
 TOTAL AREA(ACRES) =     23.40

****************************************************************************
 FLOW PROCESS FROM NODE   8242.00 TO NODE   8242.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   8242.00 TO NODE   8247.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   265.00  DOWNSTREAM(FEET) =   264.00
 FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.33
 ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     68.05
 PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  10.62
 LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8247.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8247.00 TO NODE   8247.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =  10.62
  RAINFALL INTENSITY(INCH/HR) =   5.84
  TOTAL STREAM AREA(ACRES) =    23.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     68.05

****************************************************************************
  FLOW PROCESS FROM NODE   8244.00 TO NODE   8245.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =.   284.70
  DOWNSTREAM ELEVATION(FEET) =    284.00
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.256
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.65
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.65

****************************************************************************
  FLOW PROCESS FROM NODE   8245.00 TO NODE   8247.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  284.00  DOWNSTREAM ELEVATION(FEET) =  280.50
  STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   14.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
  STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =   5.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.614
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.777
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =   16.58
  TOTAL AREA(ACRES) =      2.70        PEAK FLOW RATE(CFS) =      18.08
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  2.66   DEPTH*VELOCITY(FT*FT/SEC.) =   1.25
  LONGEST FLOWPATH FROM NODE   8244.00 TO NODE   8247.00 =   415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8247.00 TO NODE   8247.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.81
  RAINFALL INTENSITY(INCH/HR) =   8.61
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.08

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1        68.05     10.62         5.835         23.40
      2        18.08      5.81         8.614          2.70

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

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        55.29      5.81         8.614
      2        80.30     10.62         5.835

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     80.30   Tc(MIN.) =   10.62
  TOTAL AREA(ACRES) =     26.10
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8247.00 =  2580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8247.00 TO NODE   8248.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   262.50  DOWNSTREAM(FEET) =   262.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.37
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     80.30
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  10.82
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8248.00 =  2680.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     26.10  TC(MIN.) =     10.82
  PEAK FLOW RATE(CFS)    =     80.30
============================================================================
```

END OF RATIONAL METHOD ANALYSIS

Drainage Basin 9000

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

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2003 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:

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                        San Diego, California 92110
                      619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* MEADOWOOD   J-15956   05/13/2009                                        *
* 100-yr Post-Project                                                     *
* Drainage Basin 9000                                                     *
 *************************************************************************

  FILE NAME: B9000.DAT
  TIME/DATE OF STUDY: 09:39 05/15/2009
-------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1  30.0     20.0     0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

**************************************************************************
  FLOW PROCESS FROM NODE   9001.00 TO NODE   9005.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  0
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    710.00
 DOWNSTREAM ELEVATION(FEET) =    640.00
 ELEVATION DIFFERENCE(FEET) =     70.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.200
 SUBAREA RUNOFF(CFS) =      0.57
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
 FLOW PROCESS FROM NODE   9005.00 TO NODE   9010.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   980.00   CHANNEL SLOPE =  0.3724
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.164
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3400
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.69
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   3.49
 Tc(MIN.) =   9.75
 SUBAREA AREA(ACRES) =     6.60       SUBAREA RUNOFF(CFS) =   13.83
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
 TOTAL AREA(ACRES) =      6.80         PEAK FLOW RATE(CFS) =      14.26

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   5.49
 LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9010.00 =  1080.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   9010.00 TO NODE   9015.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    268.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   650.00   CHANNEL SLOPE =  0.0108
 CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.321
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4900
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     22.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.34
 AVERAGE FLOW DEPTH(FEET) =   1.32   TRAVEL TIME(MIN.) =   2.50
 Tc(MIN.) =  12.25
 SUBAREA AREA(ACRES) =     6.60       SUBAREA RUNOFF(CFS) =   17.21
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.414
 TOTAL AREA(ACRES) =     13.40         PEAK FLOW RATE(CFS) =      29.52
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.50   FLOW VELOCITY(FEET/SEC.) =   4.64
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9015.00 =  1730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9015.00 TO NODE   9027.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   268.00  DOWNSTREAM(FEET) =   267.90
  FLOW LENGTH(FEET) =    12.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.14
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.52
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  12.28
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9027.00 =  1742.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9027.00 TO NODE   9027.00 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.) =  12.28
  RAINFALL INTENSITY(INCH/HR) =   5.31
  TOTAL STREAM AREA(ACRES) =    13.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.52

****************************************************************************
  FLOW PROCESS FROM NODE   9021.00 TO NODE   9025.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6800
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    278.10
  DOWNSTREAM ELEVATION(FEET) =    277.30
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.320
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.112
  SUBAREA RUNOFF(CFS) =      1.24
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.24

****************************************************************************
  FLOW PROCESS FROM NODE   9025.00 TO NODE   9027.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  277.30  DOWNSTREAM ELEVATION(FEET) =  275.00
  STREET LENGTH(FEET) =   216.00   CURB HEIGHT(INCHES) =  6.0
```

```
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  16.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.00
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.36
   HALFSTREET FLOOD WIDTH(FEET) =   11.50
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.08
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
 STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =   7.05
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.599
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.748
 SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    3.51
 TOTAL AREA(ACRES) =      0.80        PEAK FLOW RATE(CFS) =       4.54

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.65
 FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   0.92
 LONGEST FLOWPATH FROM NODE   9021.00 TO NODE   9027.00 =   276.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   9027.00 TO NODE   9027.00 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.) =   7.05
 RAINFALL INTENSITY(INCH/HR) =   7.60
 TOTAL STREAM AREA(ACRES) =     0.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.54

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       29.52     12.28         5.314         13.40
     2        4.54      7.05         7.599          0.80

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

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       21.50      7.05        7.599
```

```
      2       32.70     12.28        5.314

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     32.70   Tc(MIN.) =   12.28
  TOTAL AREA(ACRES) =     14.20
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9027.00 =  1742.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9027.00 TO NODE   9037.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   267.90  DOWNSTREAM(FEET) =   267.00
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.08
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     32.70
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  12.44
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9037.00 =  1832.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9037.00 TO NODE   9037.00 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.) =  12.44
  RAINFALL INTENSITY(INCH/HR) =   5.27
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.70

****************************************************************************
  FLOW PROCESS FROM NODE   9031.00 TO NODE   9035.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .5900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    278.70
  DOWNSTREAM ELEVATION(FEET) =    277.50
  ELEVATION DIFFERENCE(FEET) =      1.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.418
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.075
  SUBAREA RUNOFF(CFS) =      0.95
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.95

****************************************************************************
  FLOW PROCESS FROM NODE   9035.00 TO NODE   9037.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
```

```
 UPSTREAM ELEVATION(FEET) =  277.50  DOWNSTREAM ELEVATION(FEET) =  275.00
 STREET LENGTH(FEET) =   246.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 44.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  22.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.87
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   11.39
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
 STREET FLOW TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =   8.44
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.768
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.686
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    3.84
 TOTAL AREA(ACRES) =      1.00        PEAK FLOW RATE(CFS) =       4.64

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.87
 FLOW VELOCITY(FEET/SEC.) =  2.27   DEPTH*VELOCITY(FT*FT/SEC.) =   0.92
 LONGEST FLOWPATH FROM NODE   9031.00 TO NODE   9037.00 =   316.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   9037.00 TO NODE   9037.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.44
 RAINFALL INTENSITY(INCH/HR) =   6.77
 TOTAL STREAM AREA(ACRES) =     1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.64

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        32.70     12.44         5.268         14.20
     2         4.64      8.44         6.768          1.00

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

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

```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         30.10      8.44        6.768
     2         36.31     12.44        5.268

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     36.31   Tc(MIN.) =   12.44
  TOTAL AREA(ACRES) =     15.20
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9037.00 =  1832.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9037.00 TO NODE   9077.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   267.00  DOWNSTREAM(FEET) =   262.74
  FLOW LENGTH(FEET) =   788.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.27
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     36.31
  PIPE TRAVEL TIME(MIN.) =   1.81    Tc(MIN.) =  14.25
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9077.00 =  2620.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9077.00 TO NODE   9077.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.25
  RAINFALL INTENSITY(INCH/HR) =   4.83
  TOTAL STREAM AREA(ACRES) =    15.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.31

****************************************************************************
  FLOW PROCESS FROM NODE   9041.00 TO NODE   9047.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    284.10
  DOWNSTREAM ELEVATION(FEET) =    277.00
  ELEVATION DIFFERENCE(FEET) =      7.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.683
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.485
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.28
  TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE   9047.00 TO NODE   9077.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   271.50  DOWNSTREAM(FEET) =   262.74
  FLOW LENGTH(FEET) =   867.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.68
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      2.28
  PIPE TRAVEL TIME(MIN.) =   3.09    Tc(MIN.) =   7.77
  LONGEST FLOWPATH FROM NODE   9041.00 TO NODE   9077.00 =   967.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   9051.00 TO NODE   9077.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.136
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6429
  SUBAREA AREA(ACRES) =     1.00   SUBAREA RUNOFF(CFS) =    4.71
  TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =    6.42
  TC(MIN.) =   7.77

****************************************************************************
  FLOW PROCESS FROM NODE   9077.00 TO NODE   9077.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.77
  RAINFALL INTENSITY(INCH/HR) =   7.14
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.42

****************************************************************************
  FLOW PROCESS FROM NODE   9061.00 TO NODE   9065.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6800
  S.C.S. CURVE NUMBER (AMC II) =  0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    275.60
  DOWNSTREAM ELEVATION(FEET) =    275.30
  ELEVATION DIFFERENCE(FEET) =      0.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.338
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.140
  SUBAREA RUNOFF(CFS) =      1.11
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.11

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

```
 FLOW PROCESS FROM NODE   9065.00 TO NODE   9077.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    275.30  DOWNSTREAM(FEET) =    272.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   645.00   CHANNEL SLOPE =  0.0051
 CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   4.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.257
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .6400
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.75
 AVERAGE FLOW DEPTH(FEET) =   0.61   TRAVEL TIME(MIN.) =   6.15
 Tc(MIN.) =  12.48
 SUBAREA AREA(ACRES) =     1.50       SUBAREA RUNOFF(CFS) =    5.05
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.645
 TOTAL AREA(ACRES) =      1.70         PEAK FLOW RATE(CFS) =       5.76

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   1.95
 LONGEST FLOWPATH FROM NODE   9061.00 TO NODE   9077.00 =   695.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   9077.00 TO NODE   9077.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.48
 RAINFALL INTENSITY(INCH/HR) =   5.26
 TOTAL STREAM AREA(ACRES) =     1.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.76

 ** CONFLUENCE DATA **
 STREAM      RUNOFF       Tc       INTENSITY       AREA
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1       36.31     14.25         4.827         15.20
     2        6.42      7.77         7.136          1.40
     3        5.76     12.48         5.257          1.70

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF       Tc       INTENSITY
 NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1       34.57      7.77         7.136
     2       43.84     12.48         5.257
     3       45.95     14.25         4.827

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     45.95   Tc(MIN.) =   14.25
```

```
  TOTAL AREA(ACRES) =      18.30
  LONGEST FLOWPATH FROM NODE   9001.00 TO NODE   9077.00 =  2620.50 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =      18.30  TC(MIN.) =      14.25
  PEAK FLOW RATE(CFS)    =      45.95
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix D

Detention Backup Information

Rating curve information was obtained from continuous simulation hydrologic modeling for the August 19, 2009 report titled Hydromodification Management Study for Meadowood Vesting Tentative Map

Drainage Basin 2000 Detention Basin (DB2)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	0.21	0.36	0.53
Flow (cfs)	0	3.65	5.95	36.41
Assumed Elevation (feet)	100	101.95	103	104.01

Drainage Basin 3000 Detention Basin (DB3)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	2.05	2.62	3.29
Flow (cfs)	0	4.18	10.06	33.13
Assumed Elevation (feet)	100	102.4	103	103.69

Drainage Basin 4000 Detention Basin (DB4)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	0.72	0.94	1.05
Flow (cfs)	0	0.67	2.76	5.51
Assumed Elevation (feet)	100	102.4	103	103.32

Drainage Basin 7000A Detention Basin (DB7A)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	9.24	11.95	14.77
Flow (cfs)	0	13.08	31.51	96.4
Assumed Elevation (feet)	100	103.17	104	104.87

Drainage Basin 7000B Detention Basin (DB7B)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	2.54	3.30	3.69
Flow (cfs)	0	2.64	11.50	21.90
Assumed Elevation (feet)	100	103.17	104	104.41

Drainage Basin 8000A Detention Basin (DB8A)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	0.65	0.86	1.11
Flow (cfs)	0	1.54	3.90	13.18
Assumed Elevation (feet)	100	102.37	103	103.72

Drainage Basin 8000B Detention Basin (DB8B)

		Crest of Riser Notch	Top of Riser	10-year flow
Volume (acre-feet)	0	1.27	1.63	1.97
Flow (cfs)	0	1.05	3.2	9.4
Assumed Elevation (feet)	100	102.34	103	103.54

Meadowood 3/25/2009

J-15956

Weighted Runoff Calculations

Basin 2000A

Node	Area (AC)	RC	AreaxRC
200-2001	0.20	0.30	0.06
2001-2004	10.90	0.30	3.27
2002-2003	0.20	0.30	0.06
2003-2004	6.90	0.30	2.07
2004-2009	4.30	0.29	1.25
2005-2006	0.30	0.30	0.09
2006-2007	2.30	0.30	0.69
2007-2008	13.40	0.30	4.02
2008-2011	6.20	0.28	1.74
2013-2014	0.20	0.90	0.18
2014-2012	2.70	0.61	1.65
2016-2017	0.20	0.61	0.12
2017-2018	0.60	0.61	0.37
2020-2021	0.30	0.90	0.27
2021-2019	0.20	0.90	0.18
2023-2024	0.30	0.61	0.18
2024-2022.5	1.80	0.63	1.13
	51.00		17.33

Weighted Runoff Coefficient 0.34

J:\15956\Hydro\Hydraulics\Hydrology\Detention\Weigthed Runoff Coefficient\Basin2000A_Weigthed Runoff Coefficient.xls

Meadowood

3/25/2009

J-15956

Weighted Runoff Calculations

Basin 2000B

Node	Area (AC)	RC	AreaxRC
2030-2031	0.20	0.30	0.06
2031-2032	2.60	0.30	0.78
2032-2033	5.70	0.30	1.71
	8.50		2.55
Weighted Runoff Coefficient			0.30

Meadowood
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Weighted Runoff Calculations

Basin 3000

Node	Area (AC)	RC	AreaxRC
3000-3001	0.20	0.30	0.06
3001-3002	10.60	0.30	3.18
3002-3006	2.60	0.28	0.73
3008-3009	0.20	0.30	0.06
3009-3010	6.70	0.30	2.01
3010-3011	4.60	0.30	1.38
3013-3014	0.20	0.61	0.12
3014-3012	2.10	0.62	1.30
3016-3017	0.30	0.61	0.18
3017-3018	2.20	0.61	1.34
3020-3021	0.20	0.30	0.06
3021-3022	1.30	0.30	0.39
3024-3025	0.40	0.61	0.24
3025-3026	2.70	0.61	1.65
3003-3004	0.20	0.30	0.06
3004-3005	8.60	0.30	2.58
3005-3028	9.70	0.30	2.91
3032-3035	0.30	0.61	0.18
3035-3033	2.00	0.61	1.22
3037-3038	0.20	0.62	0.12
3038-3036	0.80	0.62	0.50
3040-3041	0.30	0.61	0.18
3041-3042	2.30	0.61	1.40
1008-1009	0.20	0.90	0.18
1009-1010	1.20	0.90	1.08
2026-2027	0.20	0.90	0.18
2027-2028	0.60	0.90	0.54
3043.5-3043.7	0.70	0.61	0.43
	61.60		24.27
Weighted Runoff Coefficient			0.39

Meadowood 7/29/2009
J-15956
Weighted Runoff Calculations

Basin 4000

Node 4002.1

Node	Area (AC)	RC	AreaxRC
4000-4001	0.20	0.30	0.06
4001-4002	3.00	0.30	0.90
Weighted Runoff Coefficient			0.30

Node 4003.0

Node	Area (AC)	RC	AreaxRC
4004-4005	0.30	0.62	0.19
4005-4003	6.60	0.62	4.09
Weighted Runoff Coefficient			0.62

Meadowood
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Weighted Runoff Calculations

Basin 7000A

Node	Area (AC)	RC	AreaxRC
5000	0.5	0.9	0.45
5000.1	0.4	0.3	0.12
5000.2	2.4	0.3	0.72
5000.3	3	0.3	0.90
5001	1	0.9	0.90
5001.1	0.4	0.3	0.12
5001.2	0.7	0.3	0.21
5002	1	0.9	0.90
5002.1	0.6	0.3	0.18
5002.2	1.3	0.3	0.39
5002.3	2.2	0.3	0.66
5004	0.2	0.9	0.18
5005	1.8	0.63	1.13
5008	0.2	0.3	0.06
5009	0.4	0.78	0.31
5012	0.2	0.3	0.06
5013	5.8	0.3	1.74
5017	0.6	0.9	0.54
5021	0.2	0.3	0.06
5022	14	0.3	4.20
5026	0.2	0.63	0.13
5027	1.8	0.63	1.13
5030	0.2	0.3	0.06
5031	3.8	0.3	1.14
5034	0.3	0.63	0.19
5035	5.1	0.63	3.21
5039	0.2	0.62	0.12
5040	2.7	0.62	1.67
5043	0.2	0.3	0.06
5044	2.7	0.32	0.86
5047	0.3	0.63	0.19
5048	3.5	0.63	2.21
5052	0.2	0.63	0.13
5053	4.2	0.63	2.65
5057	0.2	0.61	0.12
5058	2.3	0.64	1.47
5061	0.2	0.63	0.13
5062	3.1	0.63	1.95
5065	0.2	0.63	0.13
5066	3.1	0.63	1.95
5068	5.7	0.3	1.71
5070	0.2	0.64	0.13
5071	1.6	0.64	1.02
5075	0.2	0.27	0.05
5076	0.8	0.31	0.25
5079	0.2	0.25	0.05
5080	2	0.28	0.56
5084	0.3	0.77	0.23
5085	1.3	0.77	1.00
5088	0.6	0.77	0.46
5089	2	0.77	1.54
6000	0.2	0.28	0.06
6001	0.4	0.3	0.12
6004	0.2	0.29	0.06
6005	0.2	0.3	0.06
6012	0.2	0.63	0.13
6013	1.9	0.63	1.20
6008	0.2	0.61	0.12
6009	0.7	0.62	0.43
6014	0.3	0.35	0.11
6014.2	2	0.29	0.58
6017	0.2	0.61	0.12
6018	2.1	0.29	0.61
6021	0.3	0.3	0.09
6022	0.6	0.78	0.47
6024	0.2	0.77	0.15
6025	1.7	0.68	1.16
6032	0.2	0.3	0.06
6033	0.5	0.77	0.39
6036	0.2	0.77	0.15
6037	1.1	0.77	0.85
6038	0.2	0.67	0.13
6039	1.1	0.77	0.85

Meadowood
J-15956
Weighted Runoff Calculations

6040	0.2	0.25	0.05
6041	0.7	0.67	0.47
6042	0.3	0.67	0.20
6043	0.7	0.67	0.47
6047	0.2	0.67	0.13
6048	1.6	0.77	1.23
6049	0.6	0.67	0.40
6052	0.6	0.77	0.46
6056	0.5	0.77	0.39
6059	0.3	0.77	0.23
6060	1.7	0.77	1.31
6061	0.2	0.77	0.15
6062	1.2	0.77	0.92
6063	0.5	0.67	0.34
6087	0.2	0.77	0.15
6088	1.2	0.77	0.92
6066	1	0.77	0.77
6082	0.5	0.77	0.39
6068	0.2	0.25	0.05
6069	0.6	0.29	0.17
6070	1.5	0.77	1.16
6077	0.5	0.67	0.34
6078	2.3	0.77	1.77
7000	0.7	0.45	0.32
700.1	1.4	0.45	0.63
7001	0.2	0.3	0.06
7001.1	0.7	0.3	0.21
7001.2	1.9	0.3	0.57
7004	0.2	0.3	0.06
7005	3.1	0.3	0.93
7006	1.3	0.63	0.82
7007	0.2	0.3	0.06
7008	2.3	0.3	0.69
7017	0.2	0.3	0.06
7018	0.9	0.3	0.27
7020	0.2	0.63	0.13
7021	0.8	0.63	0.50
7024	0.3	0.3	0.09
7025	3.4	0.3	1.02
7040	0.3	0.63	0.19
7041	1.9	0.63	1.20
7028	0.2	0.63	0.13
7029	2.7	0.63	1.70
7042	1.4	0.3	0.42
7032	0.3	0.63	0.19
7033	1.8	0.63	1.13
7036	0.2	0.63	0.13
7037	3.8	0.63	2.39
7045	0.4	0.61	0.24
7046	3.5	0.62	2.17
7049	0.2	0.61	0.12
7050	0.9	0.39	0.35
7053	0.2	0.65	0.13
7054	0.6	0.65	0.39
7058	0.2	0.63	0.13
7059	0.9	0.9	0.81
7061	0.2	0.61	0.12
7062	0.6	0.61	0.37
7066	0.2	0.51	0.10
7067	1	0.69	0.69
5102	0.3	0.9	0.27
5103	1.7	0.9	1.53
7070	0.2	0.8	0.16
7071	3.8	0.8	3.04
7079	6.1	0.45	2.75
7074.1	0.3	0.35	0.11
7074.2	13.3	0.32	4.26
7075.1	0.2	0.35	0.07
7075.2	11	0.35	3.85
	194.50		96.24

Weighted Runoff Coefficient 0.49

Meadowood
J-15956
Weighted Runoff Calculations

Basin 7000B

Weighted Runoff Coefficient Tributary to DB 7B

Node	Area (AC)	RC	AreaxRC
7079-7080	0.20	0.90	0.18
7080-7081	5.60	0.67	3.75
7093-7094	0.20	0.35	0.07
7094-7095	3.90	0.34	1.33
7095-7099	23.80	0.34	8.09
7104-7106	0.20	0.45	0.09
7106-7099	10.90	0.45	4.91
	44.80		18.42

Weighted Runoff Coefficient 0.41

Weighted Runoff Coefficient Downstream of DB 7B

7082-7081	0.50	0.25	0.13

Weighted Runoff Coefficient 0.25

Meadowood
J-15956
Weighted Runoff Calculations

Basin 8000A

Node	Area (AC)	RC	AreaxRC
8100-8101	0.3	0.35	0.11
8101-8102	13	0.33	4.29
8114-8115	0.2	0.9	0.18
8115-8116	2.4	0.9	2.16
8118-8119	0.2	0.9	0.18
8119-8120	1.2	0.9	1.08
8123-8124	0.2	0.78	0.16
8124-8125	1	0.77	0.77
8128-8129	0.20	0.90	0.18
8129-8130	0.80	0.77	0.62
8132-8133	0.20	0.77	0.15
8133-8134	1.10	0.77	0.85
8136-8137	0.30	0.77	0.23
8137-8138	0.60	0.77	0.46
8145-8146	0.20	0.77	0.15
8146-8147	2.30	0.77	1.77
8148.2-8148.4	0.20	0.25	0.05
8148.4-8148.6	0.20	0.25	0.05
	24.60		13.44

Weighted Runoff Coefficient 0.55

Node 8152

Node	Area (AC)	RC	AreaxRC
8150-8151	0.3	0.9	0.27
8146-8147	1.9	0.67	1.27
	2.2		1.543

Weighted Runoff Coefficient 0.701

Meadowood 3/25/2009

J-15956

Weighted Runoff Calculations

Basin 8000B

Node	Area (AC)	RC	AreaxRC
8200-8201	0.3	0.35	0.11
8201-8202	0.6	0.34	0.20
8202-8203	11.8	0.33	3.89
8216-8217	0.2	0.77	0.15
8217-8218	0.5	0.77	0.39
8218-8223	0.9	0.46	0.41
8220-8221	0.2	0.77	0.15
8221-8222	0.6	0.77	0.46
8226-8227	0.20	0.77	0.15
8227-8228	1.20	0.77	0.92
8235-8236	0.20	0.77	0.15
8236-8237	4.60	0.77	3.54
8230-8231	0.20	0.87	0.17
8231-8232	1.10	0.77	0.85
9010-9011	0.20	0.90	0.18
9011-8204	0.60	0.90	0.54
8244-8245	0.20	0.87	0.17
8245-8246	2.50	0.77	1.93
	26.10		14.39

Weighted Runoff Coefficient 0.55

Appendix E

100-Year Detention Analyses

Drainage Basin 2000

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN   1998              *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12JAN09  TIME  16:10:10   *
*                                       *
*****************************************
```


```
************************************
*                                  *
*    U.S. ARMY CORPS OF ENGINEERS  *
*    HYDROLOGIC ENGINEERING CENTER *
*          609 SECOND STREET       *
*       DAVIS, CALIFORNIA 95616    *
*           (916) 756-1104         *
*                                  *
************************************
```


```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX  XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***

          *DIAGRAM
    1     ID   MEADOWOOD J-15956  01/12/09 FILE: MW2000D.HC1
    2     ID   DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
    3     ID   R/0=.34, PRECIP=3.6IN, TC 12.23MIN
    4     IT       2 01JAN90    1200     200
    5     IO       0       2

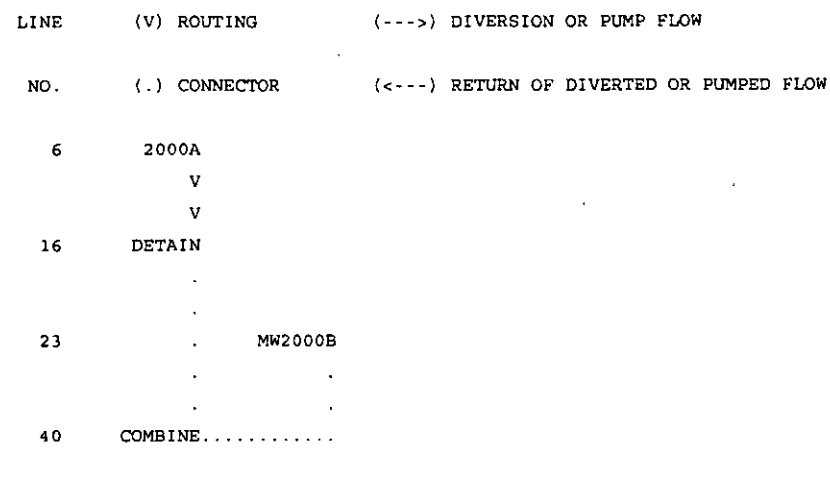
    6     KK   2000A
    7     KM   DRIANAGE BASIN 2000A
    8     KO       0       0       0       0      21
    9     BA  0.0797
   10     IN      12 01JAN90    1154
   11     QI       0     3.7     3.8       4     4.1     4.3     4.5     4.7     4.9     5.2
   12     QI     5.4     5.9     6.2     6.9     7.3     8.4     9.1    11.1    12.6    18.5
   13     QI    25.2   94.41    14.9     9.9     7.8     6.5     5.7     5.1     4.6     4.2
   14     QI     3.9       0       0       0       0       0       0       0       0       0
   15     QI       0       0

   16     KK  DETAIN
   17     KM   100-YEAR DETENTION
   18     KO       0       0       0       0      21
   19     RS       1    STOR      -1
   20     SV       0    0.21    0.36    0.53    0.85
   21     SQ       0    3.65    5.95   36.41    70.6
   22     SE     100  101.95     103  104.01     105

   23     KK MW2000B
   24     KM   RUN DATE   1/12/2009
   25     KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   26     KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   27     KM   6HR RAINFALL IS  3.6  INCHES
   28     KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.3
   29     KM   RATIONAL METHOD TIME OF CONCENTRATION IS  11  MIN.
   30     KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   31     KM   IT 2 01JAN90 1200 200
   32     KO       0       0       0       0      21
   33     BA  0.0133
   34     IN      11 01JAN90    1153
   35     QI       0     0.5     0.6     0.6     0.6     0.6     0.6     0.7     0.7     0.7
   36     QI     0.8     0.8     0.8     0.9       1     1.1     1.1     1.3     1.4     1.7
   37     QI       2     2.9     3.8   14.78     2.3     1.5     1.2       1     0.9     0.8
   38     QI     0.7     0.7     0.6     0.6       0       0       0       0       0       0
   39     QI       0       0       0       0       0

   40     KK COMBINE
   41     KO       0       0       0       0      21
   42     HC       2
   43     ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************                                    ***************************************
*                                      *                                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *   U.S. ARMY CORPS OF ENGINEERS
*              JUN   1998              *                                    *   HYDROLOGIC ENGINEERING CENTER
*             VERSION 4.1              *                                    *         609 SECOND STREET
*                                      *                                    *      DAVIS, CALIFORNIA 95616
* RUN DATE   12JAN09  TIME  16:10:10   *                                    *          (916) 756-1104
*                                      *                                    *
****************************************                                    ***************************************
```

```
                      MEADOWOOD J-15956  01/12/09 FILE: MW2000D.HC1
                      DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
                      R/0=.34, PRECIP=3.6IN, TC 12.23MIN

  5 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          0  PRINT CONTROL
                    IPLOT          2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT        HYDROGRAPH TIME DATA
                     NMIN          2  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1JAN90  STARTING DATE
                    ITIME       1200  STARTING TIME
                       NQ        200  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     1JAN90  ENDING DATE
                   NDTIME       1838  ENDING TIME
                    ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL     .03 HOURS
                     TOTAL TIME BASE    6.63 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT
```

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

           **************
           *            *
  6 KK     *    2000A   *
           *            *
           **************

                      DRIANAGE BASIN 2000A

  8 KO        OUTPUT CONTROL VARIABLES
                    IPRNT          0  PRINT CONTROL
                    IPLOT          2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
```

	IPNCH	0	PUNCH COMPUTED HYDROGRAPH
	IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
	ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
	ISAV2	200	LAST ORDINATE PUNCHED OR SAVED
	TIMINT	.033	TIME INTERVAL IN HOURS

10 IN TIME DATA FOR INPUT TIME SERIES

JXMIN	12	TIME INTERVAL IN MINUTES
JXDATE	1JAN90	STARTING DATE
JXTIME	1154	STARTING TIME

SUBBASIN RUNOFF DATA

9 BA SUBBASIN CHARACTERISTICS

TAREA	.08	SUBBASIN AREA

***

HYDROGRAPH AT STATION 2000A

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 JAN 1200	1	2.	1 JAN 1340	51	5.	1 JAN 1520	101	11.	1 JAN 1700	151	6.
1 JAN 1202	2	2.	1 JAN 1342	52	5.	1 JAN 1522	102	12.	1 JAN 1702	152	6.
1 JAN 1204	3	3.	1 JAN 1344	53	5.	1 JAN 1524	103	12.	1 JAN 1704	153	6.
1 JAN 1206	4	4.	1 JAN 1346	54	5.	1 JAN 1526	104	12.	1 JAN 1706	154	6.
1 JAN 1208	5	4.	1 JAN 1348	55	5.	1 JAN 1528	105	12.	1 JAN 1708	155	6.
1 JAN 1210	6	4.	1 JAN 1350	56	5.	1 JAN 1530	106	13.	1 JAN 1710	156	6.
1 JAN 1212	7	4.	1 JAN 1352	57	5.	1 JAN 1532	107	14.	1 JAN 1712	157	5.
1 JAN 1214	8	4.	1 JAN 1354	58	5.	1 JAN 1534	108	15.	1 JAN 1714	158	5.
1 JAN 1216	9	4.	1 JAN 1356	59	5.	1 JAN 1536	109	16.	1 JAN 1716	159	5.
1 JAN 1218	10	4.	1 JAN 1358	60	6.	1 JAN 1538	110	17.	1 JAN 1718	160	5.
1 JAN 1220	11	4.	1 JAN 1400	61	6.	1 JAN 1540	111	18.	1 JAN 1720	161	5.
1 JAN 1222	12	4.	1 JAN 1402	62	6.	1 JAN 1542	112	19.	1 JAN 1722	162	5.
1 JAN 1224	13	4.	1 JAN 1404	63	6.	1 JAN 1544	113	20.	1 JAN 1724	163	5.
1 JAN 1226	14	4.	1 JAN 1406	64	6.	1 JAN 1546	114	21.	1 JAN 1726	164	5.
1 JAN 1228	15	4.	1 JAN 1408	65	6.	1 JAN 1548	115	22.	1 JAN 1728	165	5.
1 JAN 1230	16	4.	1 JAN 1410	66	6.	1 JAN 1550	116	23.	1 JAN 1730	166	5.
1 JAN 1232	17	4.	1 JAN 1412	67	6.	1 JAN 1552	117	24.	1 JAN 1732	167	5.
1 JAN 1234	18	4.	1 JAN 1414	68	6.	1 JAN 1554	118	25.	1 JAN 1734	168	4.
1 JAN 1236	19	4.	1 JAN 1416	69	6.	1 JAN 1556	119	37.	1 JAN 1736	169	4.
1 JAN 1238	20	4.	1 JAN 1418	70	6.	1 JAN 1558	120	48.	1 JAN 1738	170	4.
1 JAN 1240	21	4.	1 JAN 1420	71	6.	1 JAN 1600	121	60.	1 JAN 1740	171	4.
1 JAN 1242	22	4.	1 JAN 1422	72	6.	1 JAN 1602	122	71.	1 JAN 1742	172	4.
1 JAN 1244	23	4.	1 JAN 1424	73	7.	1 JAN 1604	123	83.	1 JAN 1744	173	4.
1 JAN 1246	24	4.	1 JAN 1426	74	7.	1 JAN 1606	124	94.	1 JAN 1746	174	4.
1 JAN 1248	25	4.	1 JAN 1428	75	7.	1 JAN 1608	125	81.	1 JAN 1748	175	4.
1 JAN 1250	26	4.	1 JAN 1430	76	7.	1 JAN 1610	126	68.	1 JAN 1750	176	4.
1 JAN 1252	27	4.	1 JAN 1432	77	7.	1 JAN 1612	127	55.	1 JAN 1752	177	4.
1 JAN 1254	28	4.	1 JAN 1434	78	7.	1 JAN 1614	128	41.	1 JAN 1754	178	4.
1 JAN 1256	29	4.	1 JAN 1436	79	7.	1 JAN 1616	129	28.	1 JAN 1756	179	3.
1 JAN 1258	30	4.	1 JAN 1438	80	7.	1 JAN 1618	130	15.	1 JAN 1758	180	3.
1 JAN 1300	31	4.	1 JAN 1440	81	7.	1 JAN 1620	131	14.	1 JAN 1800	181	2.
1 JAN 1302	32	4.	1 JAN 1442	82	7.	1 JAN 1622	132	13.	1 JAN 1802	182	1.
1 JAN 1304	33	4.	1 JAN 1444	83	7.	1 JAN 1624	133	12.	1 JAN 1804	183	1.

1 JAN	1306	34	5.	*	1 JAN	1446	84	8.	*	1 JAN	1626	134	12.	*	1 JAN	1806	184	0.
1 JAN	1308	35	5.	*	1 JAN	1448	85	8.	*	1 JAN	1628	135	11.	*	1 JAN	1808	185	0.
1 JAN	1310	36	5.	*	1 JAN	1450	86	8.	*	1 JAN	1630	136	10.	*	1 JAN	1810	186	0.
1 JAN	1312	37	5.	*	1 JAN	1452	87	8.	*	1 JAN	1632	137	10.	*	1 JAN	1812	187	0.
1 JAN	1314	38	5.	*	1 JAN	1454	88	8.	*	1 JAN	1634	138	9.	*	1 JAN	1814	188	0.
1 JAN	1316	39	5.	*	1 JAN	1456	89	9.	*	1 JAN	1636	139	9.	*	1 JAN	1816	189	0.
1 JAN	1318	40	5.	*	1 JAN	1458	90	9.	*	1 JAN	1638	140	9.	*	1 JAN	1818	190	0.
1 JAN	1320	41	5.	*	1 JAN	1500	91	9.	*	1 JAN	1640	141	8.	*	1 JAN	1820	191	0.
1 JAN	1322	42	5.	*	1 JAN	1502	92	9.	*	1 JAN	1642	142	8.	*	1 JAN	1822	192	0.
1 JAN	1324	43	5.	*	1 JAN	1504	93	9.	*	1 JAN	1644	143	8.	*	1 JAN	1824	193	0.
1 JAN	1326	44	5.	*	1 JAN	1506	94	9.	*	1 JAN	1646	144	7.	*	1 JAN	1826	194	0.
1 JAN	1328	45	5.	*	1 JAN	1508	95	9.	*	1 JAN	1648	145	7.	*	1 JAN	1828	195	0.
1 JAN	1330	46	5.	*	1 JAN	1510	96	10.	*	1 JAN	1650	146	7.	*	1 JAN	1830	196	0.
1 JAN	1332	47	5.	*	1 JAN	1512	97	10.	*	1 JAN	1652	147	7.	*	1 JAN	1832	197	0.
1 JAN	1334	48	5.	*	1 JAN	1514	98	10.	*	1 JAN	1654	148	7.	*	1 JAN	1834	198	0.
1 JAN	1336	49	5.	*	1 JAN	1516	99	11.	*	1 JAN	1656	149	6.	*	1 JAN	1836	199	0.
1 JAN	1338	50	5.	*	1 JAN	1518	100	11.	*	1 JAN	1658	150	6.	*	1 JAN	1838	200	0.
				*					*					*				

****

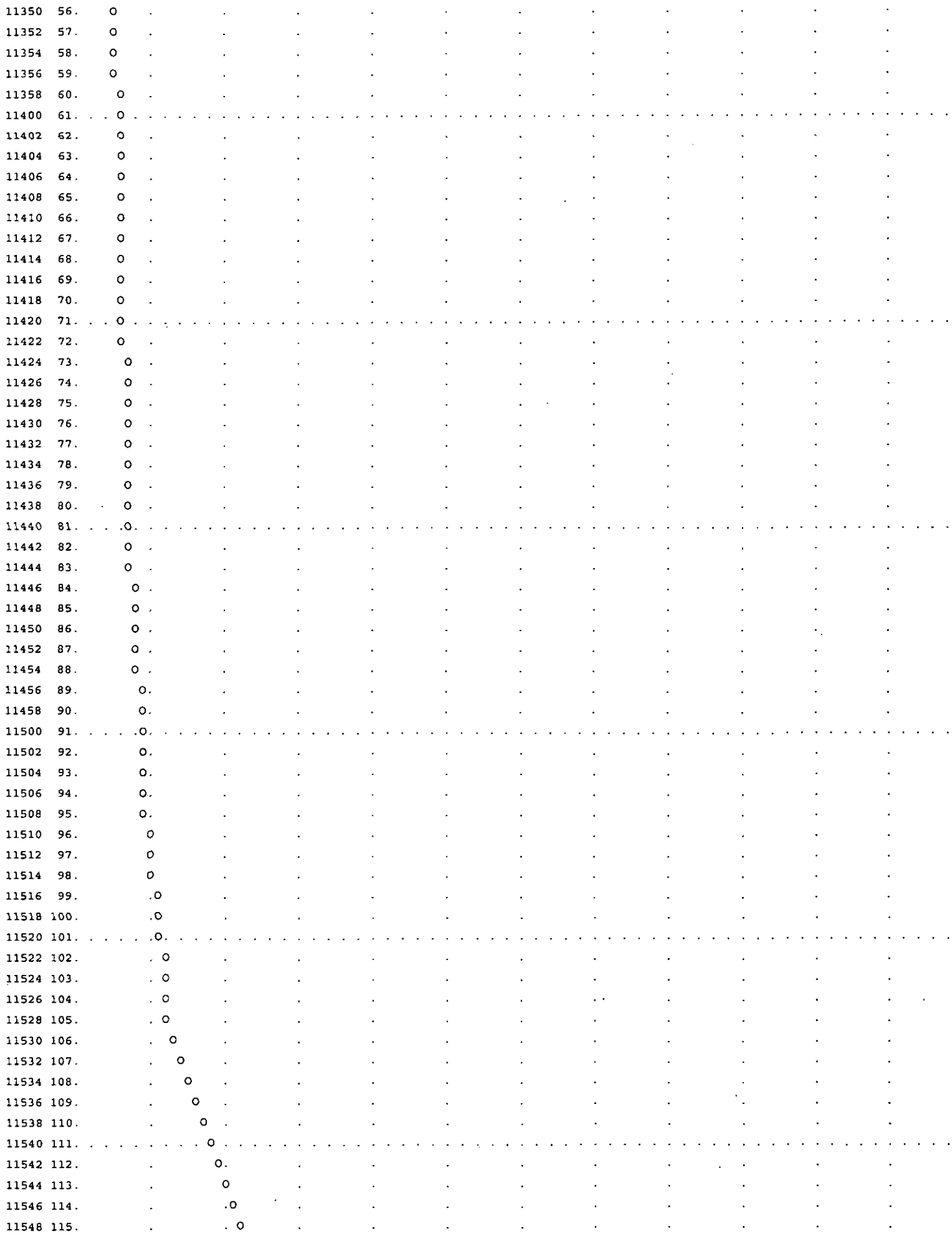
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	6.63-HR
94.	4.10	(CFS)	10.	9.	9.	9.
		(INCHES)	1.213	1.215	1.215	1.215
		(AC-FT)	5.	5.	5.	5.

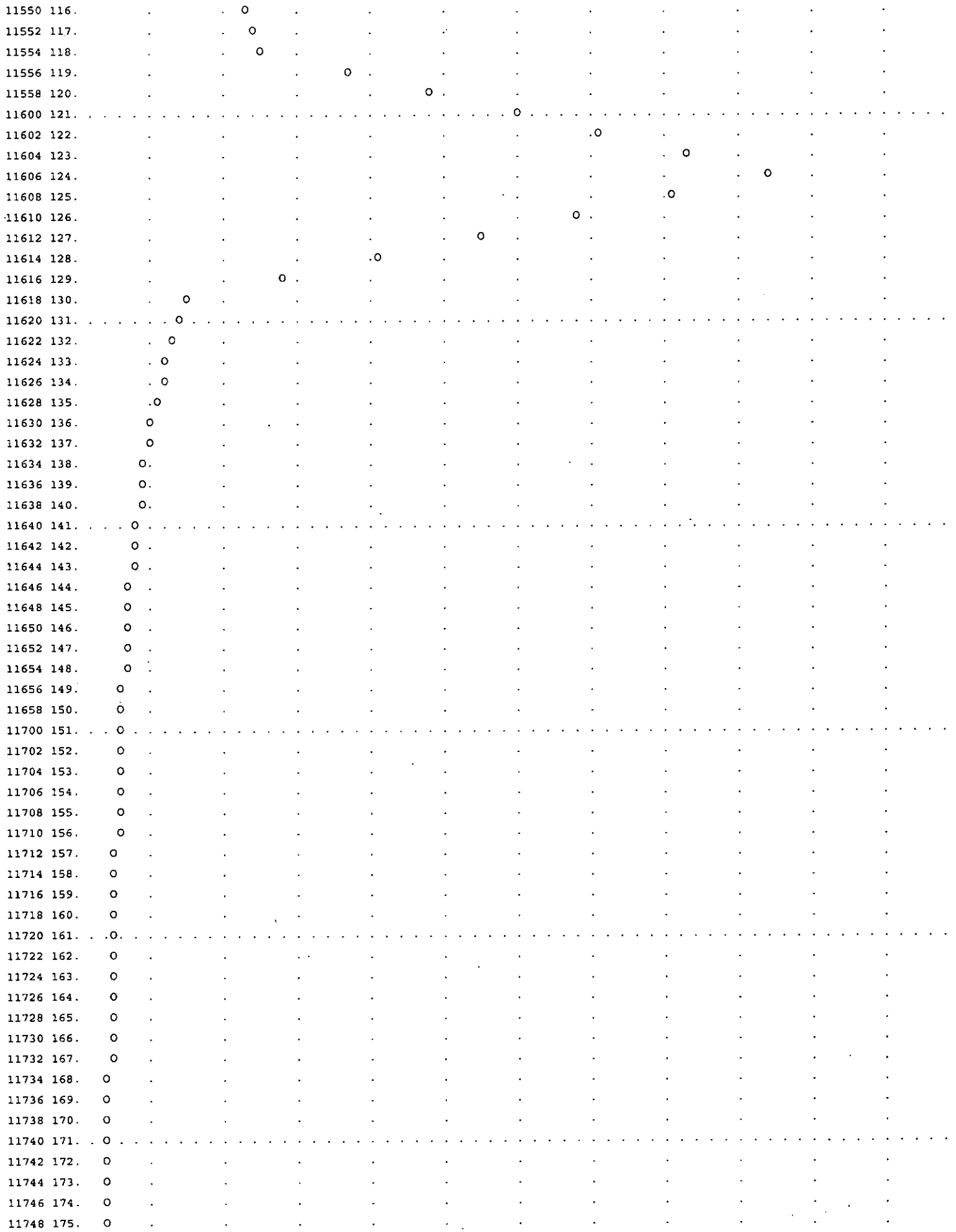
CUMULATIVE AREA = .08 SQ MI

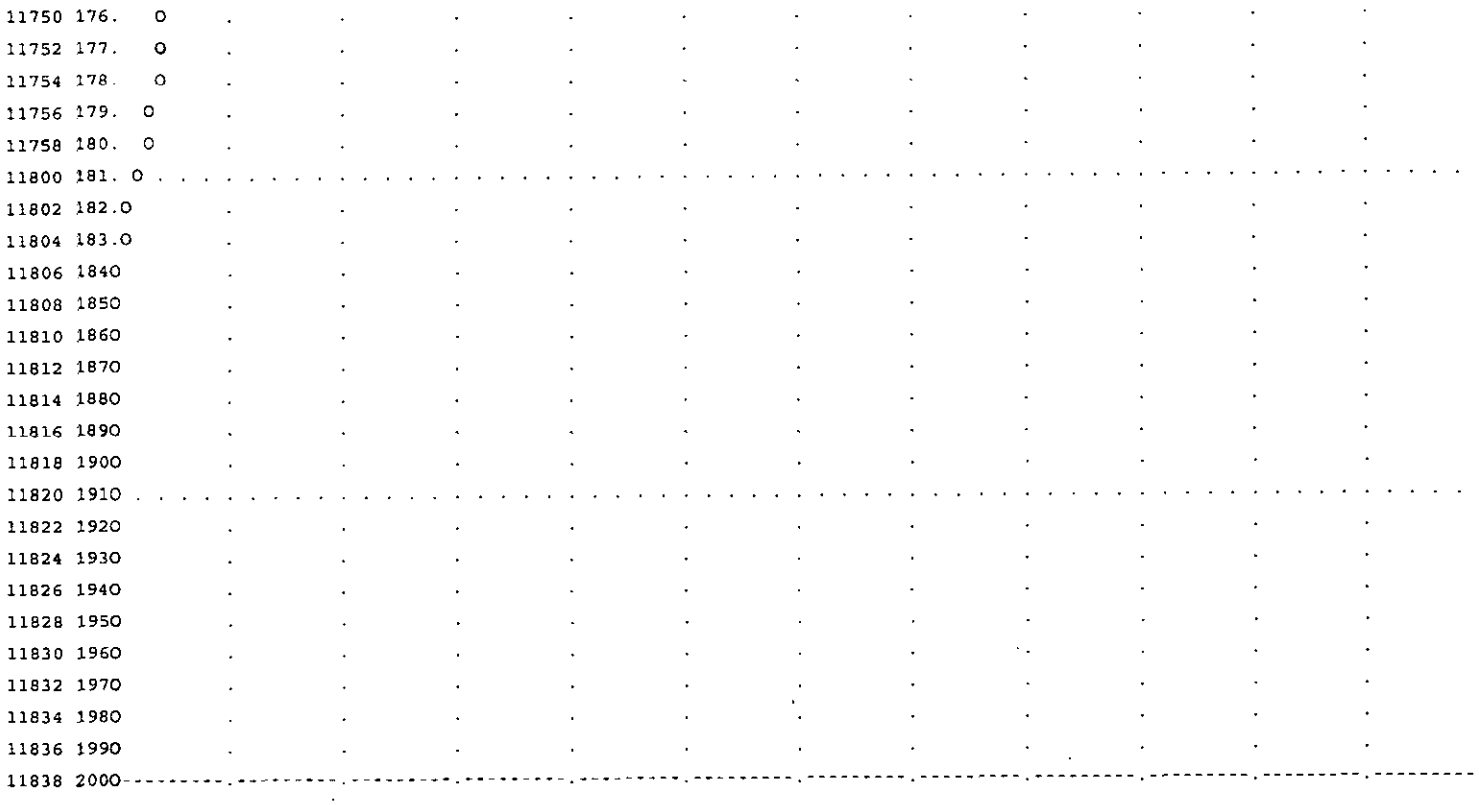
STATION 2000A

(O) OUTFLOW

DAHRMN	PER	0. 10. 20. 30. 40. 50. 60. 70. 80. 90. 100.	0.	0
11200	1.	-O----------		
11202	2.	O		
11204	3.	O		
11206	4.	O		
11208	5.	O		
11210	6.	O		
11212	7.	O		
11214	8.	O		
11216	9.	O		
11218	10.	O		
11220	11.	O		
11222	12.	O		
11224	13.	O		
11226	14.	O		
11228	15.	O		
11230	16.	O		
11232	17.	O		
11234	18.	O		
11236	19.	O		
11238	20.	O		
11240	21.	O		
11242	22.	O		
11244	23.	O		
11246	24.	O		
11248	25.	O		
11250	26.	O		
11252	27.	O		
11254	28.	O		
11256	29.	O		
11258	30.	O		
11300	31.	O		
11302	32.	O		
11304	33.	O		
11306	34.	O		
11308	35.	O		
11310	36.	O		
11312	37.	O		
11314	38.	O		
11316	39.	O		
11318	40.	O		
11320	41.	O		
11322	42.	O		
11324	43.	O		
11326	44.	O		
11328	45.	O		
11330	46.	O		
11332	47.	O		
11334	48.	O		
11336	49.	O		
11338	50.	O		
11340	51.	O		
11342	52.	O		
11344	53.	O		
11346	54.	O		
11348	55.	O		




11550 116.
11552 117.
11554 118.
11556 119.
11558 120.
11600 121.
11602 122.
11604 123.
11606 124.
11608 125.
11610 126.
11612 127.
11614 128.
11616 129.
11618 130.
11620 131.
11622 132.
11624 133.
11626 134.
11628 135.
11630 136.
11632 137.
11634 138.
11636 139.
11638 140.
11640 141.
11642 142.
11644 143.
11646 144.
11648 145.
11650 146.
11652 147.
11654 148.
11656 149.
11658 150.
11700 151.
11702 152.
11704 153.
11706 154.
11708 155.
11710 156.
11712 157.
11714 158.
11716 159.
11718 160.
11720 161.
11722 162.
11724 163.
11726 164.
11728 165.
11730 166.
11732 167.
11734 168.
11736 169.
11738 170.
11740 171.
11742 172.
11744 173.
11746 174.
11748 175.


11750 176. O
11752 177. O
11754 178. O
11756 179. O
11758 180. O
11800 181. O
11802 182.O
11804 183.O
11806 184O
11808 185O
11810 186O
11812 187O
11814 188O
11816 189O
11818 190O
11820 191O
11822 192O
11824 193O
11826 194O
11828 195O
11830 196O
11832 197O
11834 198O
11836 199O
11838 200O

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              **************
              *            *
 16 KK        *   DETAIN   *
              *            *
              **************
```

100-YEAR DETENTION

```
 18 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          0  PRINT CONTROL
                      IPLOT          2  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        200  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

 19 RS          STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC      -1.00  INITIAL CONDITION
                          X        .00  WORKING R AND D COEFFICIENT

 20 SV            STORAGE          .0         .2         .4         .5         .9

 21 SQ          DISCHARGE          0.         4.         6.        36.        71.

 22 SE          ELEVATION      100.00     101.95     103.00     104.01     105.00
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***

WARNING --- ROUTED OUTFLOW (71.) IS GREATER THAN MAXIMUM OUTFLOW (71.) IN STORAGE-OUTFLOW TABLE

****

HYDROGRAPH AT STATION DETAIN

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	JAN	1200	1	2.	.1	101.0	*	1	JAN	1414	68	5.	.3	102.5	*	1	JAN	1628	135	16.	.4	103.3
1	JAN	1202	2	2.	.1	101.0	*	1	JAN	1416	69	5.	.3	102.6	*	1	JAN	1630	136	14.	.4	103.3
1	JAN	1204	3	2.	.1	101.0	*	1	JAN	1418	70	5.	.3	102.6	*	1	JAN	1632	137	12.	.4	103.2
1	JAN	1206	4	2.	.1	101.1	*	1	JAN	1420	71	5.	.3	102.6	*	1	JAN	1634	138	11.	.4	103.2
1	JAN	1208	5	2.	.1	101.1	*	1	JAN	1422	72	5.	.3	102.6	*	1	JAN	1636	139	10.	.4	103.1
1	JAN	1210	6	2.	.1	101.1	*	1	JAN	1424	73	5.	.3	102.7	*	1	JAN	1638	140	10.	.4	103.1
1	JAN	1212	7	2.	.1	101.2	*	1	JAN	1426	74	5.	.3	102.7	*	1	JAN	1640	141	9.	.4	103.1
1	JAN	1214	8	2.	.1	101.2	*	1	JAN	1428	75	5.	.3	102.7	*	1	JAN	1642	142	9.	.4	103.1
1	JAN	1216	9	2.	.1	101.3	*	1	JAN	1430	76	5.	.3	102.7	*	1	JAN	1644	143	8.	.4	103.1

1	JAN	1218	10	2.	.1	101.3	*	1	JAN	1432	77	5.	.3	102.8	*	1	JAN	1646	144	8.	.4	103.1
1	JAN	1220	11	2.	.1	101.3	*	1	JAN	1434	78	6.	.3	102.8	*	1	JAN	1648	145	8.	.4	103.1
1	JAN	1222	12	3.	.1	101.4	*	1	JAN	1436	79	6.	.3	102.8	*	1	JAN	1650	146	7.	.4	103.0
1	JAN	1224	13	3.	.2	101.4	*	1	JAN	1438	80	6.	.3	102.9	*	1	JAN	1652	147	7.	.4	103.0
1	JAN	1226	14	3.	.2	101.4	*	1	JAN	1440	81	6.	.3	102.9	*	1	JAN	1654	148	7.	.4	103.0
1	JAN	1228	15	3.	.2	101.5	*	1	JAN	1442	82	6.	.3	102.9	*	1	JAN	1656	149	7.	.4	103.0
1	JAN	1230	16	3.	.2	101.5	*	1	JAN	1444	83	6.	.4	103.0	*	1	JAN	1658	150	7.	.4	103.0
1	JAN	1232	17	3.	.2	101.5	*	1	JAN	1446	84	6.	.4	103.0	*	1	JAN	1700	151	6.	.4	103.0
1	JAN	1234	18	3.	.2	101.6	*	1	JAN	1448	85	6.	.4	103.0	*	1	JAN	1702	152	6.	.4	103.0
1	JAN	1236	19	3.	.2	101.6	*	1	JAN	1450	86	7.	.4	103.0	*	1	JAN	1704	153	6.	.4	103.0
1	JAN	1238	20	3.	.2	101.6	*	1	JAN	1452	87	7.	.4	103.0	*	1	JAN	1706	154	6.	.4	103.0
1	JAN	1240	21	3.	.2	101.6	*	1	JAN	1454	88	8.	.4	103.1	*	1	JAN	1708	155	6.	.4	103.0
1	JAN	1242	22	3.	.2	101.7	*	1	JAN	1456	89	8.	.4	103.1	*	1	JAN	1710	156	6.	.4	103.0
1	JAN	1244	23	3.	.2	101.7	*	1	JAN	1458	90	8.	.4	103.1	*	1	JAN	1712	157	6.	.4	103.0
1	JAN	1246	24	3.	.2	101.7	*	1	JAN	1500	91	8.	.4	103.1	*	1	JAN	1714	158	6.	.4	103.0
1	JAN	1248	25	3.	.2	101.7	*	1	JAN	1502	92	9.	.4	103.1	*	1	JAN	1716	159	6.	.4	103.0
1	JAN	1250	26	3.	.2	101.8	*	1	JAN	1504	93	9.	.4	103.1	*	1	JAN	1718	160	6.	.4	102.9
1	JAN	1252	27	3.	.2	101.8	*	1	JAN	1506	94	9.	.4	103.1	*	1	JAN	1720	161	6.	.3	102.9
1	JAN	1254	28	3.	.2	101.8	*	1	JAN	1508	95	9.	.4	103.1	*	1	JAN	1722	162	6.	.3	102.9
1	JAN	1256	29	3.	.2	101.8	*	1	JAN	1510	96	9.	.4	103.1	*	1	JAN	1724	163	6.	.3	102.9
1	JAN	1258	30	3.	.2	101.9	*	1	JAN	1512	97	10.	.4	103.1	*	1	JAN	1726	164	6.	.3	102.9
1	JAN	1300	31	4.	.2	101.9	*	1	JAN	1514	98	10.	.4	103.1	*	1	JAN	1728	165	6.	.3	102.9
1	JAN	1302	32	4.	.2	101.9	*	1	JAN	1516	99	10.	.4	103.1	*	1	JAN	1730	166	6.	.3	102.8
1	JAN	1304	33	4.	.2	101.9	*	1	JAN	1518	100	10.	.4	103.1	*	1	JAN	1732	167	6.	.3	102.8
1	JAN	1306	34	4.	.2	101.9	*	1	JAN	1520	101	11.	.4	103.2	*	1	JAN	1734	168	6.	.3	102.8
1	JAN	1308	35	4.	.2	102.0	*	1	JAN	1522	102	11.	.4	103.2	*	1	JAN	1736	169	5.	.3	102.8
1	JAN	1310	36	4.	.2	102.0	*	1	JAN	1524	103	11.	.4	103.2	*	1	JAN	1738	170	5.	.3	102.8
1	JAN	1312	37	4.	.2	102.0	*	1	JAN	1526	104	12.	.4	103.2	*	1	JAN	1740	171	5.	.3	102.7
1	JAN	1314	38	4.	.2	102.0	*	1	JAN	1528	105	12.	.4	103.2	*	1	JAN	1742	172	5.	.3	102.7
1	JAN	1316	39	4.	.2	102.0	*	1	JAN	1530	106	12.	.4	103.2	*	1	JAN	1744	173	5.	.3	102.7
1	JAN	1318	40	4.	.2	102.0	*	1	JAN	1532	107	12.	.4	103.2	*	1	JAN	1746	174	5.	.3	102.7
1	JAN	1320	41	4.	.2	102.1	*	1	JAN	1534	108	13.	.4	103.2	*	1	JAN	1748	175	5.	.3	102.7
1	JAN	1322	42	4.	.2	102.1	*	1	JAN	1536	109	14.	.4	103.3	*	1	JAN	1750	176	5.	.3	102.6
1	JAN	1324	43	4.	.2	102.1	*	1	JAN	1538	110	15.	.4	103.3	*	1	JAN	1752	177	5.	.3	102.6
1	JAN	1326	44	4.	.2	102.1	*	1	JAN	1540	111	16.	.4	103.3	*	1	JAN	1754	178	5.	.3	102.6
1	JAN	1328	45	4.	.2	102.1	*	1	JAN	1542	112	17.	.4	103.4	*	1	JAN	1756	179	5.	.3	102.6
1	JAN	1330	46	4.	.2	102.1	*	1	JAN	1544	113	18.	.4	103.4	*	1	JAN	1758	180	5.	.3	102.5
1	JAN	1332	47	4.	.2	102.2	*	1	JAN	1546	114	19.	.4	103.4	*	1	JAN	1800	181	5.	.3	102.5
1	JAN	1334	48	4.	.2	102.2	*	1	JAN	1548	115	20.	.4	103.5	*	1	JAN	1802	182	5.	.3	102.4
1	JAN	1336	49	4.	.2	102.2	*	1	JAN	1550	116	21.	.4	103.5	*	1	JAN	1804	183	5.	.3	102.3
1	JAN	1338	50	4.	.2	102.2	*	1	JAN	1552	117	22.	.4	103.5	*	1	JAN	1806	184	4.	.3	102.3
1	JAN	1340	51	4.	.2	102.2	*	1	JAN	1554	118	23.	.5	103.6	*	1	JAN	1808	185	4.	.2	102.2
1	JAN	1342	52	4.	.3	102.2	*	1	JAN	1556	119	26.	.5	103.7	*	1	JAN	1810	186	4.	.2	102.1
1	JAN	1344	53	4.	.3	102.3	*	1	JAN	1558	120	33.	.5	103.9	*	1	JAN	1812	187	4.	.2	102.0
1	JAN	1346	54	4.	.3	102.3	*	1	JAN	1600	121	39.	.6	104.1	*	1	JAN	1814	188	4.	.2	102.0
1	JAN	1348	55	4.	.3	102.3	*	1	JAN	1602	122	46.	.6	104.3	*	1	JAN	1816	189	3.	.2	101.9
1	JAN	1350	56	4.	.3	102.3	*	1	JAN	1604	123	54.	.7	104.5	*	1	JAN	1818	190	3.	.2	101.8
1	JAN	1352	57	4.	.3	102.3	*	1	JAN	1606	124	63.	.8	104.8	*	1	JAN	1820	191	3.	.2	101.7
1	JAN	1354	58	5.	.3	102.3	*	1	JAN	1608	125	69.	.8	105.0	*	1	JAN	1822	192	3.	.2	101.6
1	JAN	1356	59	5.	.3	102.4	*	1	JAN	1610	126	71.	.9	105.0	*	1	JAN	1824	193	3.	.2	101.5
1	JAN	1358	60	5.	.3	102.4	*	1	JAN	1612	127	68.	.8	104.9	*	1	JAN	1826	194	3.	.2	101.5
1	JAN	1400	61	5.	.3	102.4	*	1	JAN	1614	128	63.	.8	104.8	*	1	JAN	1828	195	3.	.2	101.4
1	JAN	1402	62	5.	.3	102.4	*	1	JAN	1616	129	56.	.7	104.6	*	1	JAN	1830	196	2.	.1	101.3
1	JAN	1404	63	5.	.3	102.4	*	1	JAN	1618	130	47.	.6	104.3	*	1	JAN	1832	197	2.	.1	101.3
1	JAN	1406	64	5.	.3	102.5	*	1	JAN	1620	131	39.	.6	104.1	*	1	JAN	1834	198	2.	.1	101.2
1	JAN	1408	65	5.	.3	102.5	*	1	JAN	1622	132	30.	.5	103.8	*	1	JAN	1836	199	2.	.1	101.2
1	JAN	1410	66	5.	.3	102.5	*	1	JAN	1624	133	23.	.5	103.6	*	1	JAN	1838	200	2.	.1	101.1
1	JAN	1412	67	5.	.3	102.5	*	1	JAN	1626	134	19.	.4	103.4	*							
							*								*							

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	6.63-HR
71.	4.17	(CFS)	10.	9.	9.	9.
		(INCHES)	1.184	1.212	1.212	1.212
		(AC-FT)	5.	5.	5.	5.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	6.63-HR
1.	4.17	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	6.63-HR
105.00	4.17	102.75	102.60	102.60	102.60

CUMULATIVE AREA = .08 SQ MI

STATION DETAIN

(I) INFLOW, (O) OUTFLOW

		0.	20.	40.	60.	80.	100.	0.	0.	0.	0.	0.	0.	0
									(S) STORAGE					
		.0	.0	.0	.0	.0	.0	.0	.2	.4	.6	.8	1.0	
DAHRMN	PER													
11200	1.I								S					
11202	2.I								S					
11204	3.OI								S					
11206	4.OI								S					
11208	5.OI								S					
11210	6.OI								S					
11212	7.OI								S					
11214	8.OI								S					
11216	9.OI								S					
11218	10.OI								S					
11220	11.OI								S					
11222	12.OI								S					
11224	13.OI								S					
11226	14.OI								S					
11228	15.OI								S					
11230	16.OI								S					
11232	17.OI								S					
11234	18.OI								S					
11236	19.OI								S					
11238	20. I								S					
11240	21. I								S					
11242	22. I								S					
11244	23. I								S					
11246	24. I								S					
11248	25. I								S					
11250	26. I								S					
11252	27. I								S					
11254	28. I								S					
11256	29. I								S					
11258	30. I								S					
11300	31. I								S					
11302	32. I								S					
11304	33. I								S					
11306	34. I								S					
11308	35. I								S					
11310	36. I								S					
11312	37. I								S					
11314	38. I								S					
11316	39. I								S					
11318	40. I								S					
11320	41. I								S					
11322	42. I								S					
11324	43. I								S					
11326	44. I								S					
11328	45. I								S					
11330	46. I								S					
11332	47. I								S					
11334	48. OI								S					
11336	49. OI								S					
11338	50. OI								S					
11340	51. OI								S					
11342	52. OI								S					
11344	53. OI								S					

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11346  54. OI                                                S
11348  55. OI                                                S
11350  56. OI                                                S
11352  57. OI                                                S
11354  58. OI                                                S
11356  59. OI                                                S
11358  60. OI                                                 S
11400  61. OI                                                 S
11402  62. OI                                                 S
11404  63. OI                                                 S
11406  64. OI                                                 S
11408  65. OI                                                 S
11410  66. OI                                                 S
11412  67. OI                                                  S
11414  68. OI                                                  S
11416  69.  I                                                  S
11418  70.  I                                                  S
11420  71.  I                                                  S
11422  72.  I                                                  S
11424  73.  I                                                   S
11426  74.  I                                                   S
11428  75.  I                                                   S
11430  76.  I                                                   S
11432  77.  I                                                   S
11434  78.  OI                                                  S
11436  79.  OI                                                  S
11438  80.  OI                                                  S
11440  81.  OI                                                  S
11442  82.  OI                                                  S
11444  83.  OI                                                   S
11446  84.  OI                                                   S
11448  85.  OI                                                   S
11450  86.  OI                                                   S
11452  87.   I                                                   S
11454  88.   I                                                    S
11456  89.   I                                                    S
11458  90.   I                                                    S
11500  91.   I                                                    S
11502  92.   I                                                    S
11504  93.   I                                                    S
11506  94.   OI                                                   S
11508  95.    I                                                   S
11510  96.    I                                                   S
11512  97.    I                                                   S
11514  98.    I                                                   S
11516  99.    I                                                   S
11518 100.    OI                                                  S
11520 101.    OI                                                  S
11522 102.     I                                                  S
11524 103.     I                                                  S
11526 104.     I                                                   S
11528 105.     I                                                   S
11530 106.     I                                                   S
11532 107.     OI                                                  S
11534 108.      I                                                  S
11536 109.      OI                                                 S
11538 110.      OI                                                 S
11540 111.      OI                                                 S
11542 112.       OI                                                 S
11544 113.        OI                                                S
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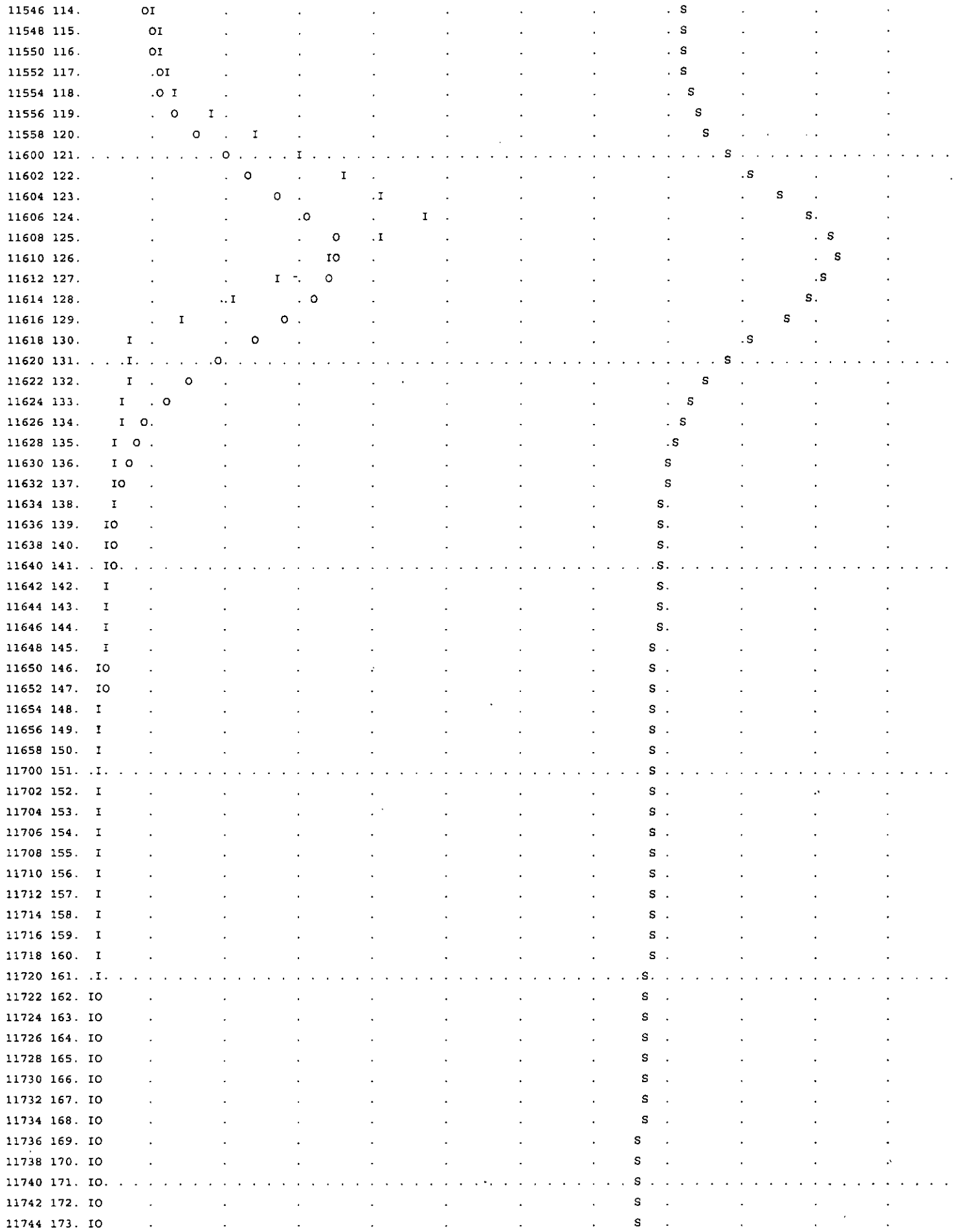

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11746 174. IO       .         .         .         .         .         .         .    S    .         .         .         .
11748 175. IO       .         .         .         .         .         .         .    S    .         .         .         .
11750 176. IO       .         .         .         .         .         .         .   S     .         .         .         .
11752 177. IO       .         .         .         .         .         .         .   S     .         .         .         .
11754 178. IO       .         .         .         .         .         .         .   S     .         .         .         .
11756 179. I        .         .         .         .         .         .         .   S     .         .         .         .
11758 180.IO        .         .         .         .         .         .         .   S     .         .         .         .
11800 181.IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . .
11802 182.IO        .         .         .         .         .         .         .  S      .         .         .         .
11804 183I O        .         .         .         .         .         .         . S       .         .         .         .
11806 184I O        .         .         .         .         .         .         . S       .         .         .         .
11808 185I O        .         .         .         .         .         .         .S        .         .         .         .
11810 186I O        .         .         .         .         .         .         .S        .         .         .         .
11812 187I O        .         .         .         .         .         .        .S         .         .         .         .
11814 188I O        .         .         .         .         .         .        .S         .         .         .         .
11816 189I O        .         .         .         .         .         .         S         .         .         .         .
11818 190I O        .         .         .         .         .         .         S         .         .         .         .
11820 191I O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
11822 192I O        .         .         .         .         .         .       S.          .         .         .         .
11824 193IO         .         .         .         .         .         .      S .          .         .         .         .
11826 194IO         .         .         .         .         .         .      S .          .         .         .         .
11828 195IO         .         .         .         .         .         .      S .          .         .         .         .
11830 196IO         .         .         .         .         .         .     S  .          .         .         .         .
11832 197IO         .         .         .         .         .         .     S  .          .         .         .         .
11834 198IO         .         .         .         .         .         .     S  .          .         .         .         .
11836 199IO         .         .         .         .         .         .    S   .          .         .         .         .
11838 200IO--------.---------.---------.---------.---------.---------.-----S---.---------.---------.---------.---------.---------
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          *            *
23 KK     *   MW2000B  *
          *            *
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RUN DATE 1/12/2009
RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
6HR RAINFALL IS 3.6 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.3
RATIONAL METHOD TIME OF CONCENTRATION IS 11 MIN.
FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
IT 2 01JAN90 1200 200

32 KO OUTPUT CONTROL VARIABLES

IPRNT	0	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	*0*	*PUNCH COMPUTED HYDROGRAPH*
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	200	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.033	TIME INTERVAL IN HOURS

34 IN TIME DATA FOR INPUT TIME SERIES

JXMIN	11	TIME INTERVAL IN MINUTES
JXDATE	1JAN90	STARTING DATE
JXTIME	1153	STARTING TIME

SUBBASIN RUNOFF DATA

33 BA SUBBASIN CHARACTERISTICS

TAREA	.01	SUBBASIN AREA

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HYDROGRAPH AT STATION MW2000B

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DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 JAN 1200	1	0.	*	1 JAN 1340	51	1.	*	1 JAN 1520	101	2.	*	1 JAN 1700	151	1.
1 JAN 1202	2	0.	*	1 JAN 1342	52	1.	*	1 JAN 1522	102	2.	*	1 JAN 1702	152	1.
1 JAN 1204	3	1.	*	1 JAN 1344	53	1.	*	1 JAN 1524	103	2.	*	1 JAN 1704	153	1.
1 JAN 1206	4	1.	*	1 JAN 1346	54	1.	*	1 JAN 1526	104	2.	*	1 JAN 1706	154	1.
1 JAN 1208	5	1.	*	1 JAN 1348	55	1.	*	1 JAN 1528	105	2.	*	1 JAN 1708	155	1.
1 JAN 1210	6	1.	*	1 JAN 1350	56	1.	*	1 JAN 1530	106	2.	*	1 JAN 1710	156	1.
1 JAN 1212	7	1.	*	1 JAN 1352	57	1.	*	1 JAN 1532	107	2.	*	1 JAN 1712	157	1.
1 JAN 1214	8	1.	*	1 JAN 1354	58	1.	*	1 JAN 1534	108	2.	*	1 JAN 1714	158	1.

1 JAN	1216	9	1.	*	1 JAN	1356	59	1.	*	1 JAN	1536	109	2.	*	1 JAN	1716	159	1.
1 JAN	1218	10	1.	*	1 JAN	1358	60	1.	*	1 JAN	1538	110	2.	*	1 JAN	1718	160	1.
1 JAN	1220	11	1.	*	1 JAN	1400	61	1.	*	1 JAN	1540	111	3.	*	1 JAN	1720	161	1.
1 JAN	1222	12	1.	*	1 JAN	1402	62	1.	*	1 JAN	1542	112	3.	*	1 JAN	1722	162	1.
1 JAN	1224	13	1.	*	1 JAN	1404	63	1.	*	1 JAN	1544	113	3.	*	1 JAN	1724	163	1.
1 JAN	1226	14	1.	*	1 JAN	1406	64	1.	*	1 JAN	1546	114	3.	*	1 JAN	1726	164	1.
1 JAN	1228	15	1.	*	1 JAN	1408	65	1.	*	1 JAN	1548	115	3.	*	1 JAN	1728	165	1.
1 JAN	1230	16	1.	*	1 JAN	1410	66	1.	*	1 JAN	1550	116	3.	*	1 JAN	1730	166	1.
1 JAN	1232	17	1.	*	1 JAN	1412	67	1.	*	1 JAN	1552	117	4.	*	1 JAN	1732	167	1.
1 JAN	1234	18	1.	*	1 JAN	1414	68	1.	*	1 JAN	1554	118	4.	*	1 JAN	1734	168	1.
1 JAN	1236	19	1.	*	1 JAN	1416	69	1.	*	1 JAN	1556	119	5.	*	1 JAN	1736	169	1.
1 JAN	1238	20	1.	*	1 JAN	1418	70	1.	*	1 JAN	1558	120	7.	*	1 JAN	1738	170	1.
1 JAN	1240	21	1.	*	1 JAN	1420	71	1.	*	1 JAN	1600	121	9.	*	1 JAN	1740	171	1.
1 JAN	1242	22	1.	*	1 JAN	1422	72	1.	*	1 JAN	1602	122	11.	*	1 JAN	1742	172	1.
1 JAN	1244	23	1.	*	1 JAN	1424	73	1.	*	1 JAN	1604	123	13.	*	1 JAN	1744	173	1.
1 JAN	1246	24	1.	*	1 JAN	1426	74	1.	*	1 JAN	1606	124	15.	*	1 JAN	1746	174	1.
1 JAN	1248	25	1.	*	1 JAN	1428	75	1.	*	1 JAN	1608	125	13.	*	1 JAN	1748	175	1.
1 JAN	1250	26	1.	*	1 JAN	1430	76	1.	*	1 JAN	1610	126	10.	*	1 JAN	1750	176	1.
1 JAN	1252	27	1.	*	1 JAN	1432	77	1.	*	1 JAN	1612	127	8.	*	1 JAN	1752	177	1.
1 JAN	1254	28	1.	*	1 JAN	1434	78	1.	*	1 JAN	1614	128	6.	*	1 JAN	1754	178	1.
1 JAN	1256	29	1.	*	1 JAN	1436	79	1.	*	1 JAN	1616	129	3.	*	1 JAN	1756	179	1.
1 JAN	1258	30	1.	*	1 JAN	1438	80	1.	*	1 JAN	1618	130	2.	*	1 JAN	1758	180	0.
1 JAN	1300	31	1.	*	1 JAN	1440	81	1.	*	1 JAN	1620	131	2.	*	1 JAN	1800	181	0.
1 JAN	1302	32	1.	*	1 JAN	1442	82	1.	*	1 JAN	1622	132	2.	*	1 JAN	1802	182	0.
1 JAN	1304	33	1.	*	1 JAN	1444	83	1.	*	1 JAN	1624	133	2.	*	1 JAN	1804	183	0.
1 JAN	1306	34	1.	*	1 JAN	1446	84	1.	*	1 JAN	1626	134	2.	*	1 JAN	1806	184	0.
1 JAN	1308	35	1.	*	1 JAN	1448	85	1.	*	1 JAN	1628	135	2.	*	1 JAN	1808	185	0.
1 JAN	1310	36	1.	*	1 JAN	1450	86	1.	*	1 JAN	1630	136	1.	*	1 JAN	1810	186	0.
1 JAN	1312	37	1.	*	1 JAN	1452	87	1.	*	1 JAN	1632	137	1.	*	1 JAN	1812	187	0.
1 JAN	1314	38	1.	*	1 JAN	1454	88	1.	*	1 JAN	1634	138	1.	*	1 JAN	1814	188	0.
1 JAN	1316	39	1.	*	1 JAN	1456	89	1.	*	1 JAN	1636	139	1.	*	1 JAN	1816	189	0.
1 JAN	1318	40	1.	*	1 JAN	1458	90	1.	*	1 JAN	1638	140	1.	*	1 JAN	1818	190	0.
1 JAN	1320	41	1.	*	1 JAN	1500	91	1.	*	1 JAN	1640	141	1.	*	1 JAN	1820	191	0.
1 JAN	1322	42	1.	*	1 JAN	1502	92	1.	*	1 JAN	1642	142	1.	*	1 JAN	1822	192	0.
1 JAN	1324	43	1.	*	1 JAN	1504	93	1.	*	1 JAN	1644	143	1.	*	1 JAN	1824	193	0.
1 JAN	1326	44	1.	*	1 JAN	1506	94	1.	*	1 JAN	1646	144	1.	*	1 JAN	1826	194	0.
1 JAN	1328	45	1.	*	1 JAN	1508	95	1.	*	1 JAN	1648	145	1.	*	1 JAN	1828	195	0.
1 JAN	1330	46	1.	*	1 JAN	1510	96	1.	*	1 JAN	1650	146	1.	*	1 JAN	1830	196	0.
1 JAN	1332	47	1.	*	1 JAN	1512	97	1.	*	1 JAN	1652	147	1.	*	1 JAN	1832	197	0.
1 JAN	1334	48	1.	*	1 JAN	1514	98	1.	*	1 JAN	1654	148	1.	*	1 JAN	1834	198	0.
1 JAN	1336	49	1.	*	1 JAN	1516	99	2.	*	1 JAN	1656	149	1.	*	1 JAN	1836	199	0.
1 JAN	1338	50	1.	*	1 JAN	1518	100	2.	*	1 JAN	1658	150	1.	*	1 JAN	1838	200	0.
				*					*					*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	6.63-HR
15.	4.10	(CFS)	2.	1.	1.	1.
		(INCHES)	1.071	1.074	1.074	1.074
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .01 SQ MI

STATION MW2000B

(O) OUTFLOW

DAHRMN	PER	0. 2. 4. 6. 8. 10. 12. 14. 16. 0. 0. 0. 0
11200	1.	-O-
11202	2.	O
11204	3.	O
11206	4.	O
11208	5.	O
11210	6.	O
11212	7.	O
11214	8.	O
11216	9.	O
11218	10.	O
11220	11.	.O.
11222	12.	O
11224	13.	O
11226	14.	O
11228	15.	O
11230	16.	O
11232	17.	O
11234	18.	O
11236	19.	O
11238	20.	O
11240	21.	.O.
11242	22.	O
11244	23.	O
11246	24.	O
11248	25.	O
11250	26.	O
11252	27.	O
11254	28.	O
11256	29.	O
11258	30.	O
11300	31.	.O.
11302	32.	O
11304	33.	O
11306	34.	O
11308	35.	O
11310	36.	O
11312	37.	O
11314	38.	O
11316	39.	O
11318	40.	O
11320	41.	.O.
11322	42.	O
11324	43.	O
11326	44.	O
11328	45.	O
11330	46.	O
11332	47.	O
11334	48.	O
11336	49.	O
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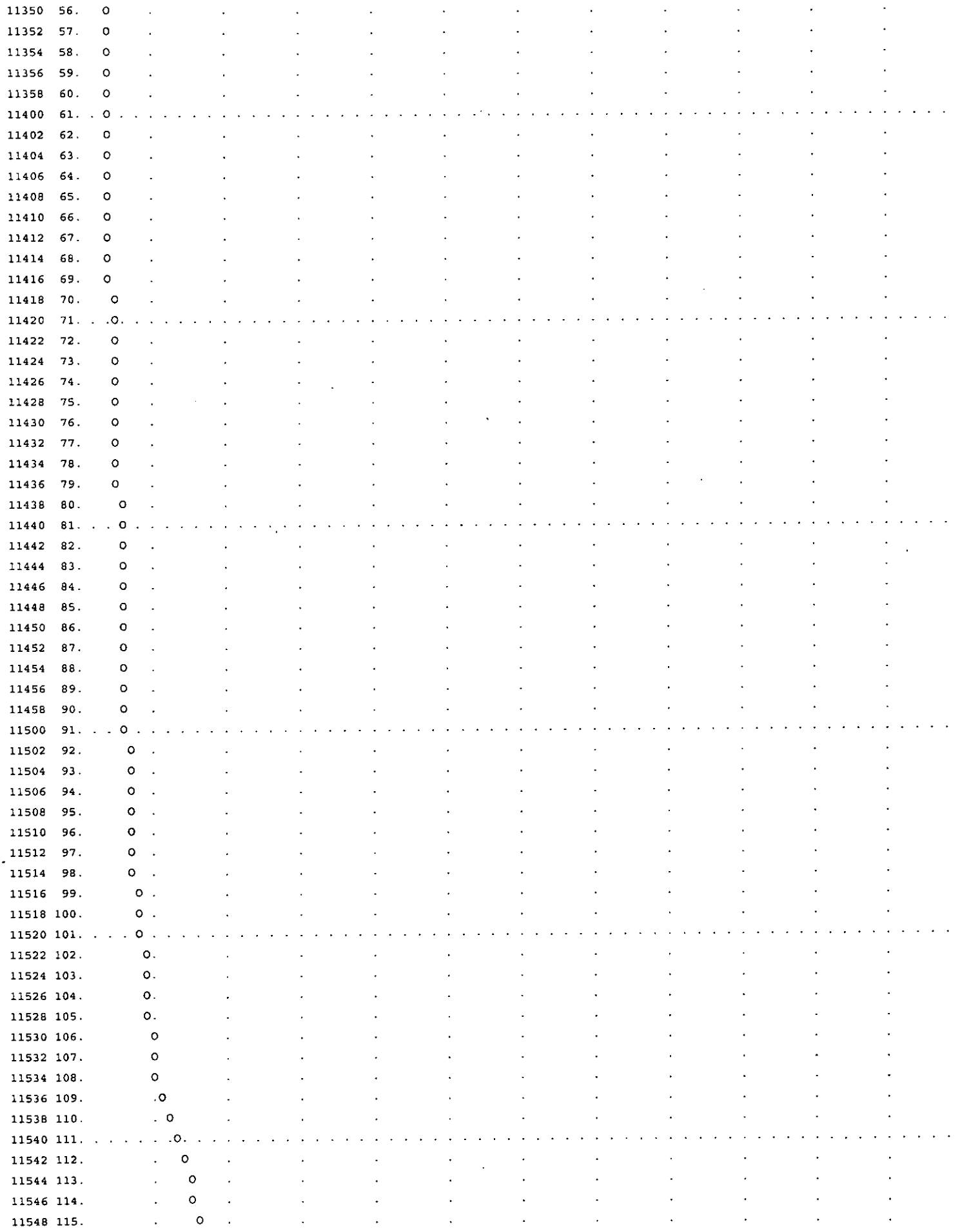
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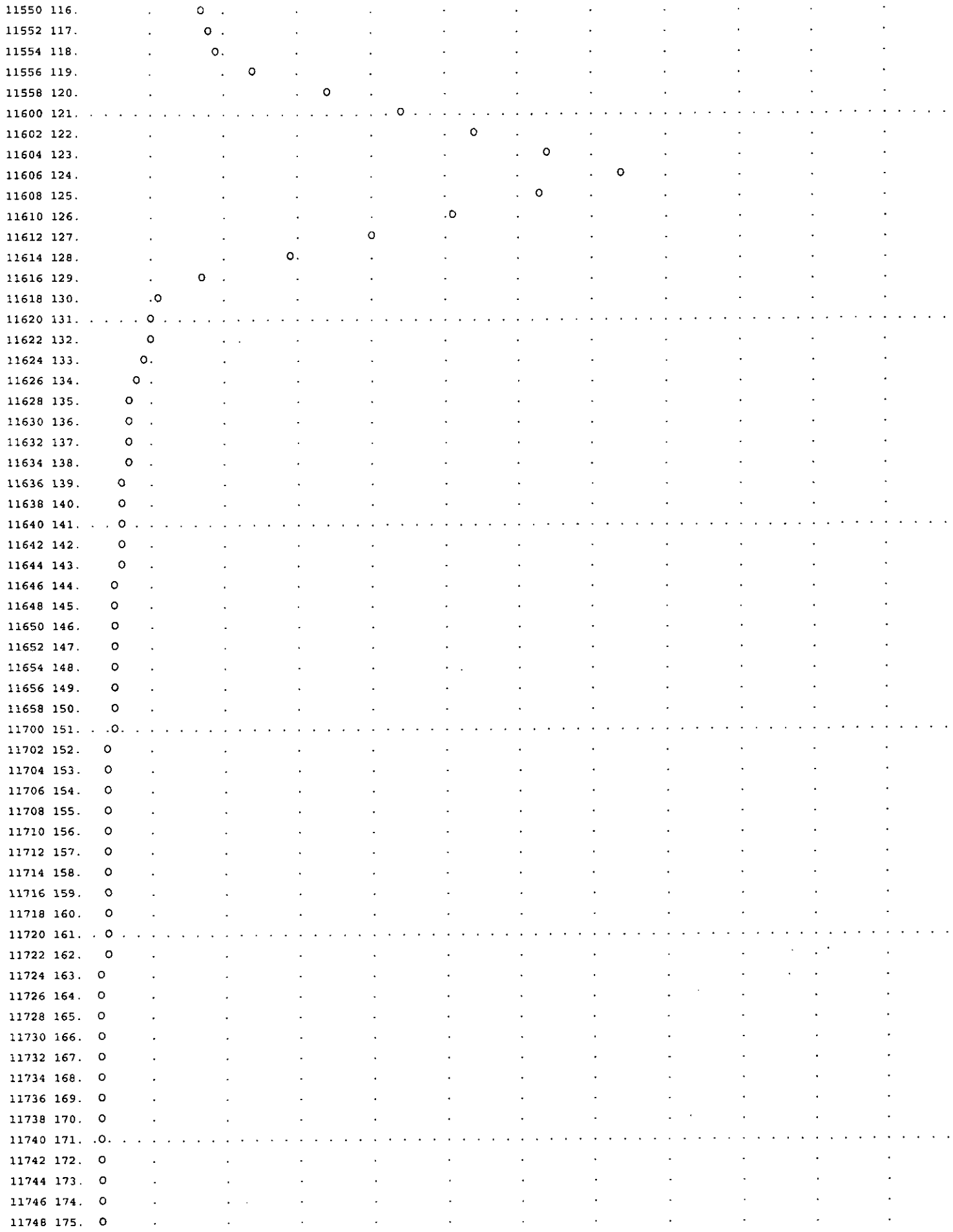
11548 115.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11634 138.
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11638 140.
11640 141.
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11644 143.
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11650 146.
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11656 149.
11658 150.
11700 151.
11702 152.
11704 153.
11706 154.
11708 155.
11710 156.
11712 157.
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11718 160.
11720 161.
11722 162.
11724 163.
11726 164.
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11730 166.
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11738 170.
11740 171.
11742 172.
11744 173.
11746 174.
11748 175.

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11750 176.  O
11752 177.  O
11754 178.  O
11756 179.  O
11758 180. O
11800 181. O
11802 182.O
11804 183.O
11806 184O
11808 185O
11810 186O
11812 187O
11814 188O
11816 189O
11818 190O
11820 191O
11822 192O
11824 193O
11826 194O
11828 195O
11830 196O
11832 197O
11834 198O
11836 199O
11838 200O----------
```

*** **

```
          **************
          *            *
40 KK     *   COMBINE  *
          *            *
          **************
```

41 KO *OUTPUT CONTROL VARIABLES*

IPRNT	0	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	200	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.033	TIME INTERVAL IN HOURS

42 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

****

HYDROGRAPH AT STATION COMBINE

SUM OF 2 HYDROGRAPHS

****

DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 JAN 1200	1	2.	*	1 JAN 1340	51	5.	*	1 JAN 1520	101	12.	*	1 JAN 1700	151	7.
1 JAN 1202	2	2.	*	1 JAN 1342	52	5.	*	1 JAN 1522	102	13.	*	1 JAN 1702	152	7.
1 JAN 1204	3	2.	*	1 JAN 1344	53	5.	*	1 JAN 1524	103	13.	*	1 JAN 1704	153	7.
1 JAN 1206	4	2.	*	1 JAN 1346	54	5.	*	1 JAN 1526	104	13.	*	1 JAN 1706	154	7.
1 JAN 1208	5	3.	*	1 JAN 1348	55	5.	*	1 JAN 1528	105	14.	*	1 JAN 1708	155	7.
1 JAN 1210	6	3.	*	1 JAN 1350	56	5.	*	1 JAN 1530	106	14.	*	1 JAN 1710	156	7.
1 JAN 1212	7	3.	*	1 JAN 1352	57	5.	*	1 JAN 1532	107	14.	*	1 JAN 1712	157	7.
1 JAN 1214	8	3.	*	1 JAN 1354	58	5.	*	1 JAN 1534	108	15.	*	1 JAN 1714	158	7.
1 JAN 1216	9	3.	*	1 JAN 1356	59	5.	*	1 JAN 1536	109	16.	*	1 JAN 1716	159	7.
1 JAN 1218	10	3.	*	1 JAN 1358	60	5.	*	1 JAN 1538	110	17.	*	1 JAN 1718	160	7.
1 JAN 1220	11	3.	*	1 JAN 1400	61	5.	*	1 JAN 1540	111	18.	*	1 JAN 1720	161	7.
1 JAN 1222	12	3.	*	1 JAN 1402	62	5.	*	1 JAN 1542	112	19.	*	1 JAN 1722	162	6.
1 JAN 1224	13	3.	*	1 JAN 1404	63	6.	*	1 JAN 1544	113	20.	*	1 JAN 1724	163	6.
1 JAN 1226	14	3.	*	1 JAN 1406	64	6.	*	1 JAN 1546	114	22.	*	1 JAN 1726	164	6.
1 JAN 1228	15	3.	*	1 JAN 1408	65	6.	*	1 JAN 1548	115	23.	*	1 JAN 1728	165	6.
1 JAN 1230	16	3.	*	1 JAN 1410	66	6.	*	1 JAN 1550	116	24.	*	1 JAN 1730	166	6.
1 JAN 1232	17	3.	*	1 JAN 1412	67	6.	*	1 JAN 1552	117	25.	*	1 JAN 1732	167	6.
1 JAN 1234	18	4.	*	1 JAN 1414	68	6.	*	1 JAN 1554	118	27.	*	1 JAN 1734	168	6.
1 JAN 1236	19	4.	*	1 JAN 1416	69	6.	*	1 JAN 1556	119	31.	*	1 JAN 1736	169	6.
1 JAN 1238	20	4.	*	1 JAN 1418	70	6.	*	1 JAN 1558	120	39.	*	1 JAN 1738	170	6.
1 JAN 1240	21	4.	*	1 JAN 1420	71	6.	*	1 JAN 1600	121	48.	*	1 JAN 1740	171	6.
1 JAN 1242	22	4.	*	1 JAN 1422	72	6.	*	1 JAN 1602	122	57.	*	1 JAN 1742	172	6.

1 JAN	1244	23	4.	*	1 JAN	1424	73	6.	*	1 JAN	1604	123	67.	*	1 JAN	1744	173	6.
1 JAN	1246	24	4.	*	1 JAN	1426	74	6.	*	1 JAN	1606	124	78.	*	1 JAN	1746	174	6.
1 JAN	1248	25	4.	*	1 JAN	1428	75	6.	*	1 JAN	1608	125	82.	*	1 JAN	1748	175	6.
1 JAN	1250	26	4.	*	1 JAN	1430	76	6.	*	1 JAN	1610	126	81.	*	1 JAN	1750	176	6.
1 JAN	1252	27	4.	*	1 JAN	1432	77	7.	*	1 JAN	1612	127	76.	*	1 JAN	1752	177	6.
1 JAN	1254	28	4.	*	1 JAN	1434	78	7.	*	1 JAN	1614	128	69.	*	1 JAN	1754	178	6.
1 JAN	1256	29	4.	*	1 JAN	1436	79	7.	*	1 JAN	1616	129	59.	*	1 JAN	1756	179	6.
1 JAN	1258	30	4.	*	1 JAN	1438	80	7.	*	1 JAN	1618	130	49.	*	1 JAN	1758	180	5.
1 JAN	1300	31	4.	*	1 JAN	1440	81	7.	*	1 JAN	1620	131	41.	*	1 JAN	1800	181	5.
1 JAN	1302	32	4.	*	1 JAN	1442	82	7.	*	1 JAN	1622	132	32.	*	1 JAN	1802	182	5.
1 JAN	1304	33	4.	*	1 JAN	1444	83	7.	*	1 JAN	1624	133	25.	*	1 JAN	1804	183	5.
1 JAN	1306	34	4.	*	1 JAN	1446	84	7.	*	1 JAN	1626	134	20.	*	1 JAN	1806	184	4.
1 JAN	1308	35	4.	*	1 JAN	1448	85	7.	*	1 JAN	1628	135	17.	*	1 JAN	1808	185	4.
1 JAN	1310	36	4.	*	1 JAN	1450	86	8.	*	1 JAN	1630	136	15.	*	1 JAN	1810	186	4.
1 JAN	1312	37	4.	*	1 JAN	1452	87	9.	*	1 JAN	1632	137	13.	*	1 JAN	1812	187	4.
1 JAN	1314	38	4.	*	1 JAN	1454	88	9.	*	1 JAN	1634	138	12.	*	1 JAN	1814	188	4.
1 JAN	1316	39	5.	*	1 JAN	1456	89	9.	*	1 JAN	1636	139	11.	*	1 JAN	1816	189	3.
1 JAN	1318	40	5.	*	1 JAN	1458	90	10.	*	1 JAN	1638	140	11.	*	1 JAN	1818	190	3.
1 JAN	1320	41	5.	*	1 JAN	1500	91	10.	*	1 JAN	1640	141	10.	*	1 JAN	1820	191	3.
1 JAN	1322	42	5.	*	1 JAN	1502	92	10.	*	1 JAN	1642	142	10.	*	1 JAN	1822	192	3.
1 JAN	1324	43	5.	*	1 JAN	1504	93	10.	*	1 JAN	1644	143	9.	*	1 JAN	1824	193	3.
1 JAN	1326	44	5.	*	1 JAN	1506	94	10.	*	1 JAN	1646	144	9.	*	1 JAN	1826	194	3.
1 JAN	1328	45	5.	*	1 JAN	1508	95	10.	*	1 JAN	1648	145	9.	*	1 JAN	1828	195	3.
1 JAN	1330	46	5.	*	1 JAN	1510	96	11.	*	1 JAN	1650	146	8.	*	1 JAN	1830	196	2.
1 JAN	1332	47	5.	*	1 JAN	1512	97	11.	*	1 JAN	1652	147	8.	*	1 JAN	1832	197	2.
1 JAN	1334	48	5.	*	1 JAN	1514	98	11.	*	1 JAN	1654	148	8.	*	1 JAN	1834	198	2.
1 JAN	1336	49	5.	*	1 JAN	1516	99	12.	*	1 JAN	1656	149	8.	*	1 JAN	1836	199	2.
1 JAN	1338	50	5.	*	1 JAN	1518	100	12.	*	1 JAN	1658	150	7.	*	1 JAN	1838	200	2.
				*					*					*				

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	6.63-HR
82.	4.13	(CFS)	12.	11.	11.	11.
		(INCHES)	1.164	1.192	1.192	1.192
		(AC-FT)	6.	6.	6.	6.

CUMULATIVE AREA = .09 SQ MI

STATION COMBINE

(O) OUTFLOW

DAHRMN	PER	0.	10.	20.	30.	40.	50.	60.	70.	80.	90.	0.	0.	0
11200	1.	O												
11202	2.	O												
11204	3.	O												
11206	4.	O												
11208	5.	O												
11210	6.	O												
11212	7.	O												
11214	8.	O												
11216	9.	O												
11218	10.	O												
11220	11.	O												
11222	12.	O												
11224	13.	O												
11226	14.	O												
11228	15.	O												
11230	16.	O												
11232	17.	O												
11234	18.	O												
11236	19.	O												
11238	20.	O												
11240	21.	O												
11242	22.	O												
11244	23.	O												
11246	24.	O												
11248	25.	O												
11250	26.	O												
11252	27.	O												
11254	28.	O												
11256	29.	O												
11258	30.	O												
11300	31.	O												
11302	32.	O												
11304	33.	O												
11306	34.	O												
11308	35.	O												
11310	36.	O												
11312	37.	O												
11314	38.	O												
11316	39.	O												
11318	40.	O												
11320	41.	O												
11322	42.	O												
11324	43.	O												
11326	44.	O												
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11330	46.	O												
11332	47.	O												
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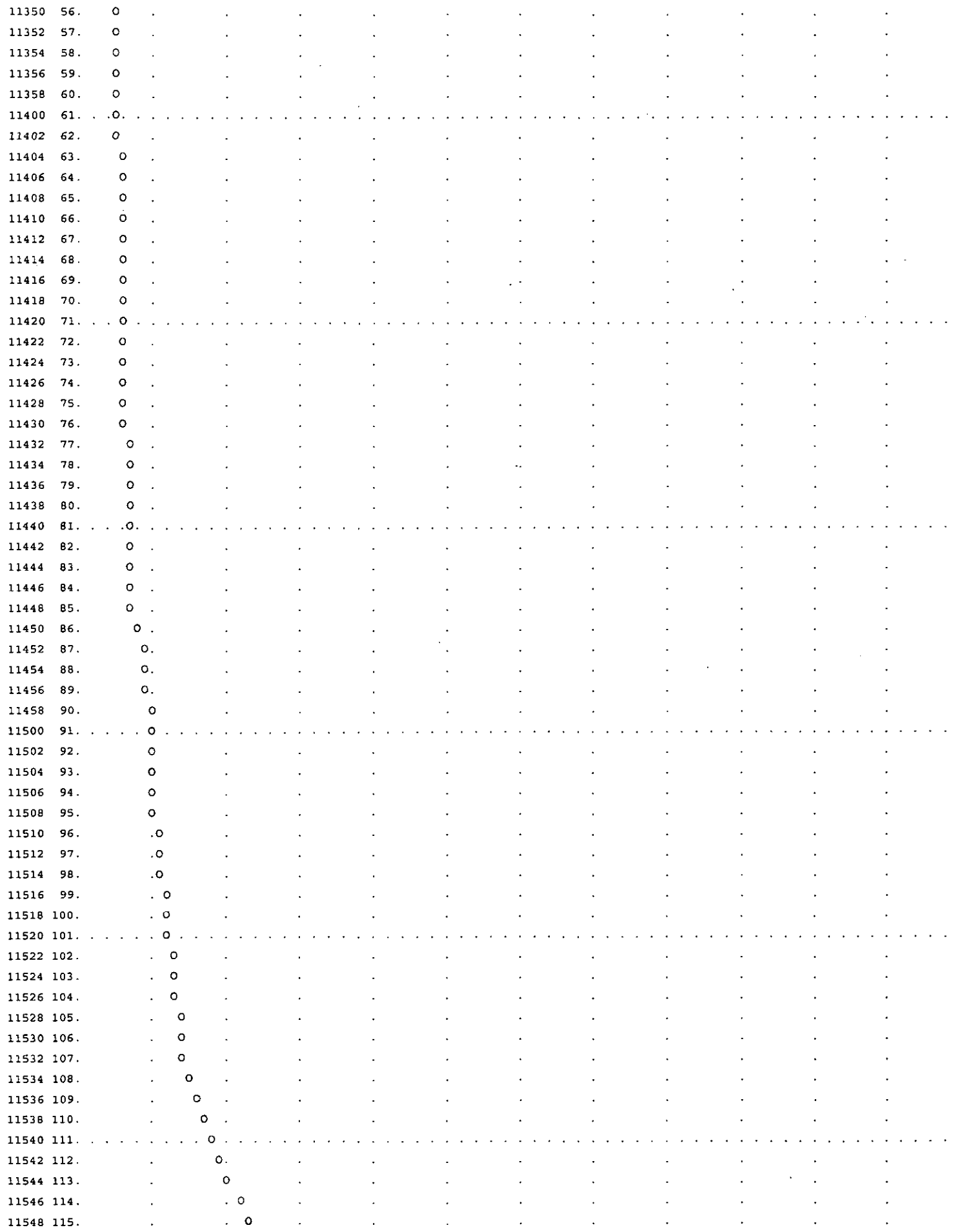
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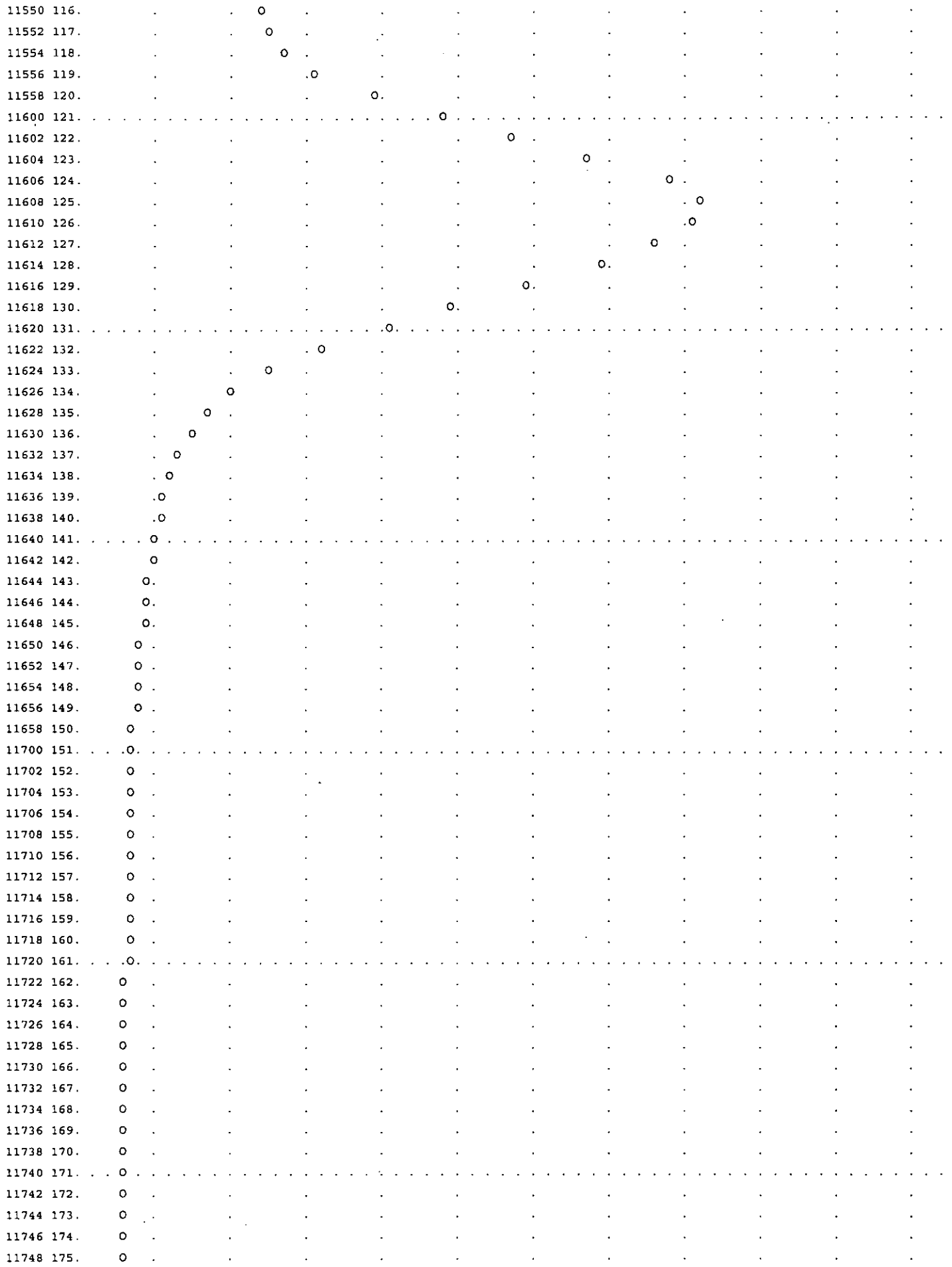

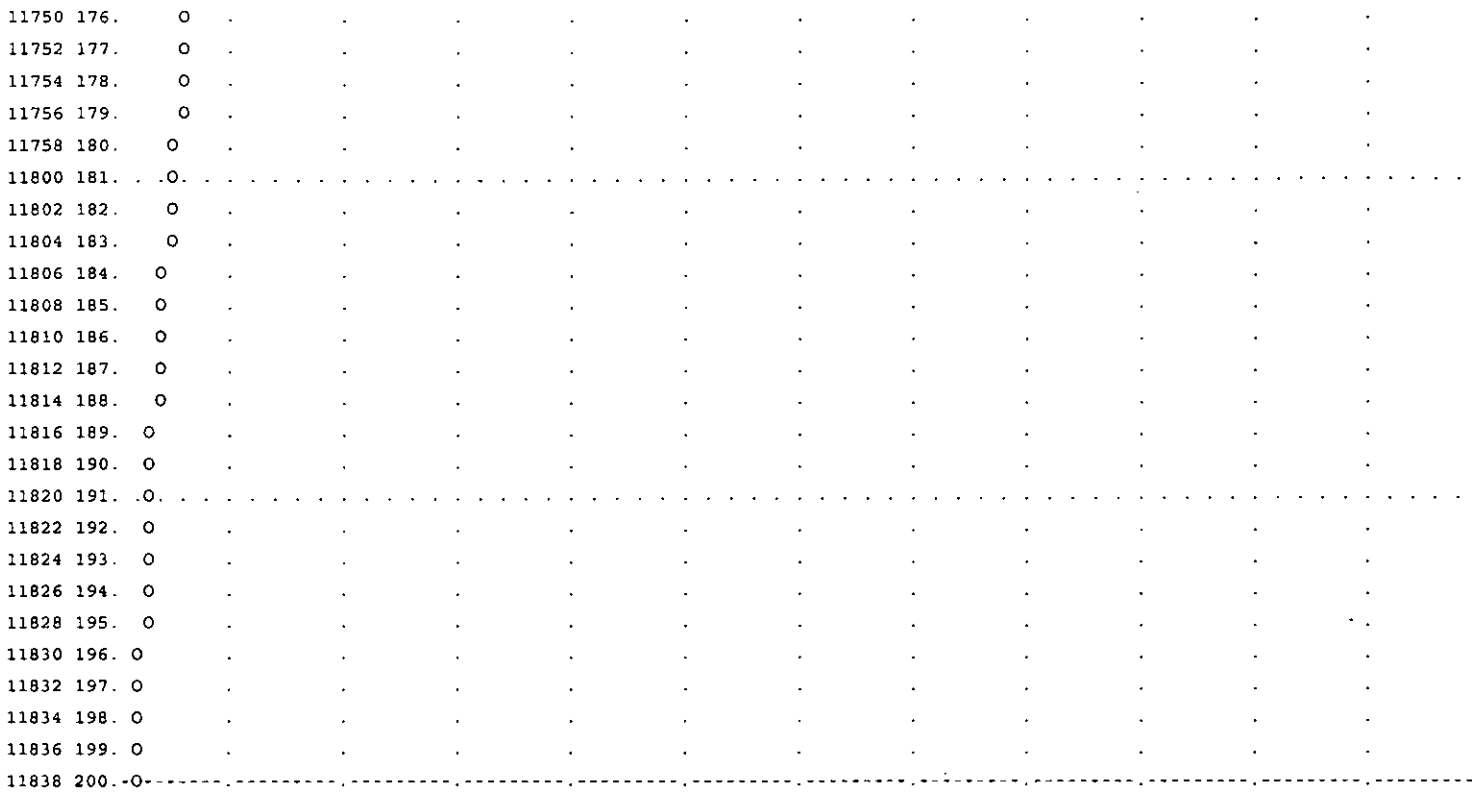
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11818 190.
11820 191.
11822 192.
11824 193.
11826 194.
11828 195.
11830 196.
11832 197.
11834 198.
11836 199.
11838 200.

RUNOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND

TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	2000A	94.	4.10	10.	9.	9.	.08		
ROUTED TO	DETAIN	71.	4.17	10.	9.	9.	.08	105.00	4.17
HYDROGRAPH AT	MW2000B	15.	4.10	2.	1.	1.	.01		
2 COMBINED AT	COMBINE	82.	4.13	12.	11.	11.	.09		

*** NORMAL END OF HEC-1 ***

Drainage Basin 3000

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                JUN   1998             *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   29JUL09  TIME  14:12:36   *
*                                       *
*****************************************
```

```
************************************
*                                  *
*    U.S. ARMY CORPS OF ENGINEERS  *
*    HYDROLOGIC ENGINEERING CENTER *
*          609 SECOND STREET       *
*       DAVIS, CALIFORNIA 95616    *
*           (916) 756-1104         *
*                                  *
************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX  XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
      LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***

                *DIAGRAM
          1     ID   MEADOWOOD J-15956  07/16/09 FILE: MW3000D.HC1
          2     ID   DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
          3     ID   R/O=.39, PRECIP=3.6IN, TC 12.35MIN
          4     IT       1 01JAN90    1200     700
          5     IO       0       2

          6     KK    3000
          7     KM   DRIANAGE BASIN 3000
          8     KM   RUN DATE   7/16/2009
          9     KM   RATIONAL METHOD HYDROGRAPH PROGRAM
         10     KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
         11     KM   6HR RAINFALL IS  3.6  INCHES
         12     KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.39
         13     KM   RATIONAL METHOD TIME OF CONCENTRATION IS  14  MIN.
         14     KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
         15     KM   IT 2 01JAN90 1200 200
         16     BA  0.0963
         17     IN      14 01JAN90    1155
         18     QI       0     5.2     5.4     5.6     5.9     6.1     6.6     6.8     7.4     7.8
         19     QI     8.6     9.1    10.5    11.4    13.9    15.8    23.2    18.8  131.19    18.6
         20     QI    12.5     9.8     8.2     7.1     6.3     5.8     5.3       0       0       0
         21     QI       0       0       0       0       0       0       0       0

         22     KK  DETAIN
         23     KM   100-YEAR DETENTION
         24     KO       0       0       0       0      21
         25     RS       1    STOR      -1
         26     SV       0    2.05    2.62    3.29   3.933
         27     SQ       0    4.18   10.06   33.13    79.1
         28     SE     100   102.4     103  103.69     104
         29     ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW

NO. (.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW

6 3000
V
V
22 DETAIN

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*               JUN   1998             *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   29JUL09  TIME  14:12:36  *
*                                      *
****************************************
```


```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 756-1104           *
*                                    *
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MEADOWOOD J-15956 07/16/09 FILE: MW3000D.HC1
DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
R/0=.39, PRECIP=3.6IN, TC 12.35MIN

5 IO OUTPUT CONTROL VARIABLES

IPRNT	0	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	1	MINUTES IN COMPUTATION INTERVAL
IDATE	1JAN90	STARTING DATE
ITIME	1200	STARTING TIME
NQ	700	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1JAN90	ENDING DATE
NDTIME	2339	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .02 HOURS
TOTAL TIME BASE 11.65 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

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**************
*            *
*      3000  *
*            *
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6 KK

DRIANAGE BASIN 3000
RUN DATE 7/16/2009
RATIONAL METHOD HYDROGRAPH PROGRAM

6HR RAINFALL IS 3.6 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.39

RATIONAL METHOD TIME OF CONCENTRATION IS 14 MIN.
FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
IT 2 01JAN90 1200 200

17 IN TIME DATA FOR INPUT TIME SERIES
JXMIN 14 TIME INTERVAL IN MINUTES
JXDATE 1JAN90 STARTING DATE
JXTIME 1155 STARTING TIME

SUBBASIN RUNOFF DATA

16 BA SUBBASIN CHARACTERISTICS
TAREA .10 SUBBASIN AREA

***

HYDROGRAPH AT STATION 3000

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 JAN 1200	1	2.	1 JAN 1455	176	11.	1 JAN 1750	351	6.	1 JAN 2045	526	0.
1 JAN 1201	2	2.	1 JAN 1456	177	11.	1 JAN 1751	352	6.	1 JAN 2046	527	0.
1 JAN 1202	3	3.	1 JAN 1457	178	11.	1 JAN 1752	353	6.	1 JAN 2047	528	0.
1 JAN 1203	4	3.	1 JAN 1458	179	12.	1 JAN 1753	354	6.	1 JAN 2048	529	0.
1 JAN 1204	5	3.	1 JAN 1459	180	12.	1 JAN 1754	355	5.	1 JAN 2049	530	0.
1 JAN 1205	6	4.	1 JAN 1500	181	12.	1 JAN 1755	356	5.	1 JAN 2050	531	0.
1 JAN 1206	7	4.	1 JAN 1501	182	12.	1 JAN 1756	357	5.	1 JAN 2051	532	0.
1 JAN 1207	8	4.	1 JAN 1502	183	12.	1 JAN 1757	358	5.	1 JAN 2052	533	0.
1 JAN 1208	9	5.	1 JAN 1503	184	12.	1 JAN 1758	359	5.	1 JAN 2053	534	0.
1 JAN 1209	10	5.	1 JAN 1504	185	13.	1 JAN 1759	360	5.	1 JAN 2054	535	0.
1 JAN 1210	11	5.	1 JAN 1505	186	13.	1 JAN 1800	361	5.	1 JAN 2055	536	0.
1 JAN 1211	12	5.	1 JAN 1506	187	13.	1 JAN 1801	362	5.	1 JAN 2056	537	0.
1 JAN 1212	13	5.	1 JAN 1507	188	13.	1 JAN 1802	363	4.	1 JAN 2057	538	0.
1 JAN 1213	14	5.	1 JAN 1508	189	13.	1 JAN 1803	364	4.	1 JAN 2058	539	0.
1 JAN 1214	15	5.	1 JAN 1509	190	14.	1 JAN 1804	365	3.	1 JAN 2059	540	0.
1 JAN 1215	16	5.	1 JAN 1510	191	14.	1 JAN 1805	366	3.	1 JAN 2100	541	0.
1 JAN 1216	17	5.	1 JAN 1511	192	14.	1 JAN 1806	367	3.	1 JAN 2101	542	0.
1 JAN 1217	18	5.	1 JAN 1512	193	14.	1 JAN 1807	368	2.	1 JAN 2102	543	0.
1 JAN 1218	19	5.	1 JAN 1513	194	14.	1 JAN 1808	369	2.	1 JAN 2103	544	0.
1 JAN 1219	20	5.	1 JAN 1514	195	14.	1 JAN 1809	370	2.	1 JAN 2104	545	0.
1 JAN 1220	21	5.	1 JAN 1515	196	14.	1 JAN 1810	371	1.	1 JAN 2105	546	0.
1 JAN 1221	22	5.	1 JAN 1516	197	15.	1 JAN 1811	372	1.	1 JAN 2106	547	0.
1 JAN 1222	23	5.	1 JAN 1517	198	15.	1 JAN 1812	373	0.	1 JAN 2107	548	0.
1 JAN 1223	24	5.	1 JAN 1518	199	15.	1 JAN 1813	374	0.	1 JAN 2108	549	0.
1 JAN 1224	25	5.	1 JAN 1519	200	15.	1 JAN 1814	375	0.	1 JAN 2109	550	0.
1 JAN 1225	26	5.	1 JAN 1520	201	15.	1 JAN 1815	376	0.	1 JAN 2110	551	0.
1 JAN 1226	27	5.	1 JAN 1521	202	15.	1 JAN 1816	377	0.	1 JAN 2111	552	0.
1 JAN 1227	28	5.	1 JAN 1522	203	15.	1 JAN 1817	378	0.	1 JAN 2112	553	0.
1 JAN 1228	29	5.	1 JAN 1523	204	16.	1 JAN 1818	379	0.	1 JAN 2113	554	0.
1 JAN 1229	30	5.	1 JAN 1524	205	16.	1 JAN 1819	380	0.	1 JAN 2114	555	0.
1 JAN 1230	31	6.	1 JAN 1525	206	16.	1 JAN 1820	381	0.	1 JAN 2115	556	0.
1 JAN 1231	32	6.	1 JAN 1526	207	16.	1 JAN 1821	382	0.	1 JAN 2116	557	0.
1 JAN 1232	33	6.	1 JAN 1527	208	17.	1 JAN 1822	383	0.	1 JAN 2117	558	0.
1 JAN 1233	34	6.	1 JAN 1528	209	17.	1 JAN 1823	384	0.	1 JAN 2118	559	0.
1 JAN 1234	35	6.	1 JAN 1529	210	18.	1 JAN 1824	385	0.	1 JAN 2119	560	0.
1 JAN 1235	36	6.	1 JAN 1530	211	18.	1 JAN 1825	386	0.	1 JAN 2120	561	0.

1 JAN	1236	37	6.	*	1 JAN	1531	212	19.	*	1 JAN	1826	387	0.	*	1 JAN	2121	562	0.
1 JAN	1237	38	6.	*	1 JAN	1532	213	20.	*	1 JAN	1827	388	0.	*	1 JAN	2122	563	0.
1 JAN	1238	39	6.	*	1 JAN	1533	214	20.	*	1 JAN	1828	389	0.	*	1 JAN	2123	564	0.
1 JAN	1239	40	6.	*	1 JAN	1534	215	21.	*	1 JAN	1829	390	0.	*	1 JAN	2124	565	0.
1 JAN	1240	41	6.	*	1 JAN	1535	216	21.	*	1 JAN	1830	391	0.	*	1 JAN	2125	566	0.
1 JAN	1241	42	6.	*	1 JAN	1536	217	22.	*	1 JAN	1831	392	0.	*	1 JAN	2126	567	0.
1 JAN	1242	43	6.	*	1 JAN	1537	218	22.	*	1 JAN	1832	393	0.	*	1 JAN	2127	568	0.
1 JAN	1243	44	6.	*	1 JAN	1538	219	23.	*	1 JAN	1833	394	0.	*	1 JAN	2128	569	0.
1 JAN	1244	45	6.	*	1 JAN	1539	220	23.	*	1 JAN	1834	395	0.	*	1 JAN	2129	570	0.
1 JAN	1245	46	6.	*	1 JAN	1540	221	23.	*	1 JAN	1835	396	0.	*	1 JAN	2130	571	0.
1 JAN	1246	47	6.	*	1 JAN	1541	222	23.	*	1 JAN	1836	397	0.	*	1 JAN	2131	572	0.
1 JAN	1247	48	6.	*	1 JAN	1542	223	22.	*	1 JAN	1837	398	0.	*	1 JAN	2132	573	0.
1 JAN	1248	49	6.	*	1 JAN	1543	224	22.	*	1 JAN	1838	399	0.	*	1 JAN	2133	574	0.
1 JAN	1249	50	6.	*	1 JAN	1544	225	22.	*	1 JAN	1839	400	0.	*	1 JAN	2134	575	0.
1 JAN	1250	51	6.	*	1 JAN	1545	226	21.	*	1 JAN	1840	401	0.	*	1 JAN	2135	576	0.
1 JAN	1251	52	6.	*	1 JAN	1546	227	21.	*	1 JAN	1841	402	0.	*	1 JAN	2136	577	0.
1 JAN	1252	53	6.	*	1 JAN	1547	228	21.	*	1 JAN	1842	403	0.	*	1 JAN	2137	578	0.
1 JAN	1253	54	6.	*	1 JAN	1548	229	20.	*	1 JAN	1843	404	0.	*	1 JAN	2138	579	0.
1 JAN	1254	55	6.	*	1 JAN	1549	230	20.	*	1 JAN	1844	405	0.	*	1 JAN	2139	580	0.
1 JAN	1255	56	6.	*	1 JAN	1550	231	20.	*	1 JAN	1845	406	0.	*	1 JAN	2140	581	0.
1 JAN	1256	57	6.	*	1 JAN	1551	232	19.	*	1 JAN	1846	407	0.	*	1 JAN	2141	582	0.
1 JAN	1257	58	6.	*	1 JAN	1552	233	19.	*	1 JAN	1847	408	0.	*	1 JAN	2142	583	0.
1 JAN	1258	59	6.	*	1 JAN	1553	234	19.	*	1 JAN	1848	409	0.	*	1 JAN	2143	584	0.
1 JAN	1259	60	6.	*	1 JAN	1554	235	27.	*	1 JAN	1849	410	0.	*	1 JAN	2144	585	0.
1 JAN	1300	61	6.	*	1 JAN	1555	236	35.	*	1 JAN	1850	411	0.	*	1 JAN	2145	586	0.
1 JAN	1301	62	6.	*	1 JAN	1556	237	43.	*	1 JAN	1851	412	0.	*	1 JAN	2146	587	0.
1 JAN	1302	63	6.	*	1 JAN	1557	238	51.	*	1 JAN	1852	413	0.	*	1 JAN	2147	588	0.
1 JAN	1303	64	6.	*	1 JAN	1558	239	59.	*	1 JAN	1853	414	0.	*	1 JAN	2148	589	0.
1 JAN	1304	65	6.	*	1 JAN	1559	240	67.	*	1 JAN	1854	415	0.	*	1 JAN	2149	590	0.
1 JAN	1305	66	6.	*	1 JAN	1600	241	75.	*	1 JAN	1855	416	0.	*	1 JAN	2150	591	0.
1 JAN	1306	67	6.	*	1 JAN	1601	242	83.	*	1 JAN	1856	417	0.	*	1 JAN	2151	592	0.
1 JAN	1307	68	6.	*	1 JAN	1602	243	91.	*	1 JAN	1857	418	0.	*	1 JAN	2152	593	0.
1 JAN	1308	69	6.	*	1 JAN	1603	244	99.	*	1 JAN	1858	419	0.	*	1 JAN	2153	594	0.
1 JAN	1309	70	6.	*	1 JAN	1604	245	107.	*	1 JAN	1859	420	0.	*	1 JAN	2154	595	0.
1 JAN	1310	71	6.	*	1 JAN	1605	246	115.	*	1 JAN	1900	421	0.	*	1 JAN	2155	596	0.
1 JAN	1311	72	6.	*	1 JAN	1606	247	123.	*	1 JAN	1901	422	0.	*	1 JAN	2156	597	0.
1 JAN	1312	73	6.	*	1 JAN	1607	248	131.	*	1 JAN	1902	423	0.	*	1 JAN	2157	598	0.
1 JAN	1313	74	6.	*	1 JAN	1608	249	123.	*	1 JAN	1903	424	0.	*	1 JAN	2158	599	0.
1 JAN	1314	75	6.	*	1 JAN	1609	250	115.	*	1 JAN	1904	425	0.	*	1 JAN	2159	600	0.
1 JAN	1315	76	6.	*	1 JAN	1610	251	107.	*	1 JAN	1905	426	0.	*	1 JAN	2200	601	0.
1 JAN	1316	77	6.	*	1 JAN	1611	252	99.	*	1 JAN	1906	427	0.	*	1 JAN	2201	602	0.
1 JAN	1317	78	7.	*	1 JAN	1612	253	91.	*	1 JAN	1907	428	0.	*	1 JAN	2202	603	0.
1 JAN	1318	79	7.	*	1 JAN	1613	254	83.	*	1 JAN	1908	429	0.	*	1 JAN	2203	604	0.
1 JAN	1319	80	7.	*	1 JAN	1614	255	75.	*	1 JAN	1909	430	0.	*	1 JAN	2204	605	0.
1 JAN	1320	81	7.	*	1 JAN	1615	256	67.	*	1 JAN	1910	431	0.	*	1 JAN	2205	606	0.
1 JAN	1321	82	7.	*	1 JAN	1616	257	59.	*	1 JAN	1911	432	0.	*	1 JAN	2206	607	0.
1 JAN	1322	83	7.	*	1 JAN	1617	258	51.	*	1 JAN	1912	433	0.	*	1 JAN	2207	608	0.
1 JAN	1323	84	7.	*	1 JAN	1618	259	43.	*	1 JAN	1913	434	0.	*	1 JAN	2208	609	0.
1 JAN	1324	85	7.	*	1 JAN	1619	260	35.	*	1 JAN	1914	435	0.	*	1 JAN	2209	610	0.
1 JAN	1325	86	7.	*	1 JAN	1620	261	27.	*	1 JAN	1915	436	0.	*	1 JAN	2210	611	0.
1 JAN	1326	87	7.	*	1 JAN	1621	262	19.	*	1 JAN	1916	437	0.	*	1 JAN	2211	612	0.
1 JAN	1327	88	7.	*	1 JAN	1622	263	18.	*	1 JAN	1917	438	0.	*	1 JAN	2212	613	0.
1 JAN	1328	89	7.	*	1 JAN	1623	264	18.	*	1 JAN	1918	439	0.	*	1 JAN	2213	614	0.
1 JAN	1329	90	7.	*	1 JAN	1624	265	17.	*	1 JAN	1919	440	0.	*	1 JAN	2214	615	0.
1 JAN	1330	91	7.	*	1 JAN	1625	266	17.	*	1 JAN	1920	441	0.	*	1 JAN	2215	616	0.
1 JAN	1331	92	7.	*	1 JAN	1626	267	16.	*	1 JAN	1921	442	0.	*	1 JAN	2216	617	0.
1 JAN	1332	93	7.	*	1 JAN	1627	268	16.	*	1 JAN	1922	443	0.	*	1 JAN	2217	618	0.
1 JAN	1333	94	7.	*	1 JAN	1628	269	16.	*	1 JAN	1923	444	0.	*	1 JAN	2218	619	0.
1 JAN	1334	95	7.	*	1 JAN	1629	270	15.	*	1 JAN	1924	445	0.	*	1 JAN	2219	620	0.
1 JAN	1335	96	7.	*	1 JAN	1630	271	15.	*	1 JAN	1925	446	0.	*	1 JAN	2220	621	0.

1 JAN 1336	97	7.	*	1 JAN 1631	272	14.	*	1 JAN 1926	447	0.	*	1 JAN 2221	622	0.
1 JAN 1337	98	7.	*	1 JAN 1632	273	14.	*	1 JAN 1927	448	0.	*	1 JAN 2222	623	0.
1 JAN 1338	99	7.	*	1 JAN 1633	274	13.	*	1 JAN 1928	449	0.	*	1 JAN 2223	624	0.
1 JAN 1339	100	7.	*	1 JAN 1634	275	13.	*	1 JAN 1929	450	0.	*	1 JAN 2224	625	0.
1 JAN 1340	101	7.	*	1 JAN 1635	276	13.	*	1 JAN 1930	451	0.	*	1 JAN 2225	626	0.
1 JAN 1341	102	7.	*	1 JAN 1636	277	12.	*	1 JAN 1931	452	0.	*	1 JAN 2226	627	0.
1 JAN 1342	103	7.	*	1 JAN 1637	278	12.	*	1 JAN 1932	453	0.	*	1 JAN 2227	628	0.
1 JAN 1343	104	7.	*	1 JAN 1638	279	12.	*	1 JAN 1933	454	0.	*	1 JAN 2228	629	0.
1 JAN 1344	105	7.	*	1 JAN 1639	280	12.	*	1 JAN 1934	455	0.	*	1 JAN 2229	630	0.
1 JAN 1345	106	7.	*	1 JAN 1640	281	12.	*	1 JAN 1935	456	0.	*	1 JAN 2230	631	0.
1 JAN 1346	107	7.	*	1 JAN 1641	282	11.	*	1 JAN 1936	457	0.	*	1 JAN 2231	632	0.
1 JAN 1347	108	7.	*	1 JAN 1642	283	11.	*	1 JAN 1937	458	0.	*	1 JAN 2232	633	0.
1 JAN 1348	109	7.	*	1 JAN 1643	284	11.	*	1 JAN 1938	459	0.	*	1 JAN 2233	634	0.
1 JAN 1349	110	7.	*	1 JAN 1644	285	11.	*	1 JAN 1939	460	0.	*	1 JAN 2234	635	0.
1 JAN 1350	111	7.	*	1 JAN 1645	286	11.	*	1 JAN 1940	461	0.	*	1 JAN 2235	636	0.
1 JAN 1351	112	8.	*	1 JAN 1646	287	10.	*	1 JAN 1941	462	0.	*	1 JAN 2236	637	0.
1 JAN 1352	113	8.	*	1 JAN 1647	288	10.	*	1 JAN 1942	463	0.	*	1 JAN 2237	638	0.
1 JAN 1353	114	8.	*	1 JAN 1648	289	10.	*	1 JAN 1943	464	0.	*	1 JAN 2238	639	0.
1 JAN 1354	115	8.	*	1 JAN 1649	290	10.	*	1 JAN 1944	465	0.	*	1 JAN 2239	640	0.
1 JAN 1355	116	8.	*	1 JAN 1650	291	10.	*	1 JAN 1945	466	0.	*	1 JAN 2240	641	0.
1 JAN 1356	117	8.	*	1 JAN 1651	292	10.	*	1 JAN 1946	467	0.	*	1 JAN 2241	642	0.
1 JAN 1357	118	8.	*	1 JAN 1652	293	9.	*	1 JAN 1947	468	0.	*	1 JAN 2242	643	0.
1 JAN 1358	119	8.	*	1 JAN 1653	294	9.	*	1 JAN 1948	469	0.	*	1 JAN 2243	644	0.
1 JAN 1359	120	8.	*	1 JAN 1654	295	9.	*	1 JAN 1949	470	0.	*	1 JAN 2244	645	0.
1 JAN 1400	121	8.	*	1 JAN 1655	296	9.	*	1 JAN 1950	471	0.	*	1 JAN 2245	646	0.
1 JAN 1401	122	8.	*	1 JAN 1656	297	9.	*	1 JAN 1951	472	0.	*	1 JAN 2246	647	0.
1 JAN 1402	123	8.	*	1 JAN 1657	298	9.	*	1 JAN 1952	473	0.	*	1 JAN 2247	648	0.
1 JAN 1403	124	8.	*	1 JAN 1658	299	9.	*	1 JAN 1953	474	0.	*	1 JAN 2248	649	0.
1 JAN 1404	125	8.	*	1 JAN 1659	300	9.	*	1 JAN 1954	475	0.	*	1 JAN 2249	650	0.
1 JAN 1405	126	8.	*	1 JAN 1700	301	9.	*	1 JAN 1955	476	0.	*	1 JAN 2250	651	0.
1 JAN 1406	127	8.	*	1 JAN 1701	302	8.	*	1 JAN 1956	477	0.	*	1 JAN 2251	652	0.
1 JAN 1407	128	8.	*	1 JAN 1702	303	8.	*	1 JAN 1957	478	0.	*	1 JAN 2252	653	0.
1 JAN 1408	129	8.	*	1 JAN 1703	304	8.	*	1 JAN 1958	479	0.	*	1 JAN 2253	654	0.
1 JAN 1409	130	8.	*	1 JAN 1704	305	8.	*	1 JAN 1959	480	0.	*	1 JAN 2254	655	0.
1 JAN 1410	131	8.	*	1 JAN 1705	306	8.	*	1 JAN 2000	481	0.	*	1 JAN 2255	656	0.
1 JAN 1411	132	8.	*	1 JAN 1706	307	8.	*	1 JAN 2001	482	0.	*	1 JAN 2256	657	0.
1 JAN 1412	133	8.	*	1 JAN 1707	308	8.	*	1 JAN 2002	483	0.	*	1 JAN 2257	658	0.
1 JAN 1413	134	8.	*	1 JAN 1708	309	8.	*	1 JAN 2003	484	0.	*	1 JAN 2258	659	0.
1 JAN 1414	135	9.	*	1 JAN 1709	310	8.	*	1 JAN 2004	485	0.	*	1 JAN 2259	660	0.
1 JAN 1415	136	9.	*	1 JAN 1710	311	8.	*	1 JAN 2005	486	0.	*	1 JAN 2300	661	0.
1 JAN 1416	137	9.	*	1 JAN 1711	312	8.	*	1 JAN 2006	487	0.	*	1 JAN 2301	662	0.
1 JAN 1417	138	9.	*	1 JAN 1712	313	7.	*	1 JAN 2007	488	0.	*	1 JAN 2302	663	0.
1 JAN 1418	139	9.	*	1 JAN 1713	314	7.	*	1 JAN 2008	489	0.	*	1 JAN 2303	664	0.
1 JAN 1419	140	9.	*	1 JAN 1714	315	7.	*	1 JAN 2009	490	0.	*	1 JAN 2304	665	0.
1 JAN 1420	141	9.	*	1 JAN 1715	316	7.	*	1 JAN 2010	491	0.	*	1 JAN 2305	666	0.
1 JAN 1421	142	9.	*	1 JAN 1716	317	7.	*	1 JAN 2011	492	0.	*	1 JAN 2306	667	0.
1 JAN 1422	143	9.	*	1 JAN 1717	318	7.	*	1 JAN 2012	493	0.	*	1 JAN 2307	668	0.
1 JAN 1423	144	9.	*	1 JAN 1718	319	7.	*	1 JAN 2013	494	0.	*	1 JAN 2308	669	0.
1 JAN 1424	145	9.	*	1 JAN 1719	320	7.	*	1 JAN 2014	495	0.	*	1 JAN 2309	670	0.
1 JAN 1425	146	9.	*	1 JAN 1720	321	7.	*	1 JAN 2015	496	0.	*	1 JAN 2310	671	0.
1 JAN 1426	147	9.	*	1 JAN 1721	322	7.	*	1 JAN 2016	497	0.	*	1 JAN 2311	672	0.
1 JAN 1427	148	9.	*	1 JAN 1722	323	7.	*	1 JAN 2017	498	0.	*	1 JAN 2312	673	0.
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1 JAN	1454	175	11.	*	1 JAN	1749	350	6.	*	1 JAN	2044	525	0.	*	1 JAN	2339	700	0.
				*					*					*				

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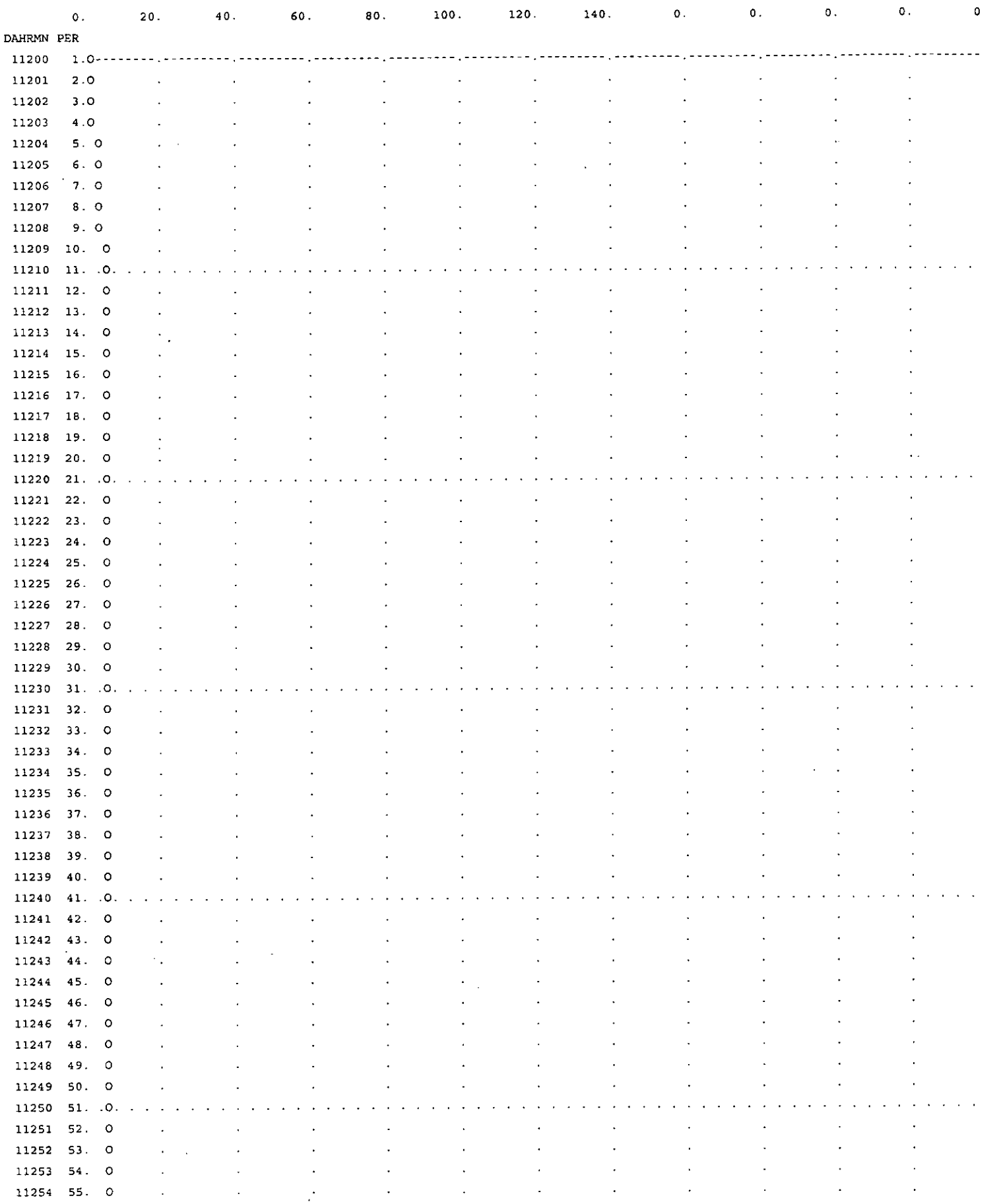
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	11.65-HR
131.	4.12	(CFS)	14.	7.	7.	7.
		(INCHES)	1.392	1.399	1.399	1.399
		(AC-FT)	7.	7.	7.	7.

CUMULATIVE AREA = .10 SQ MI

STATION 3000



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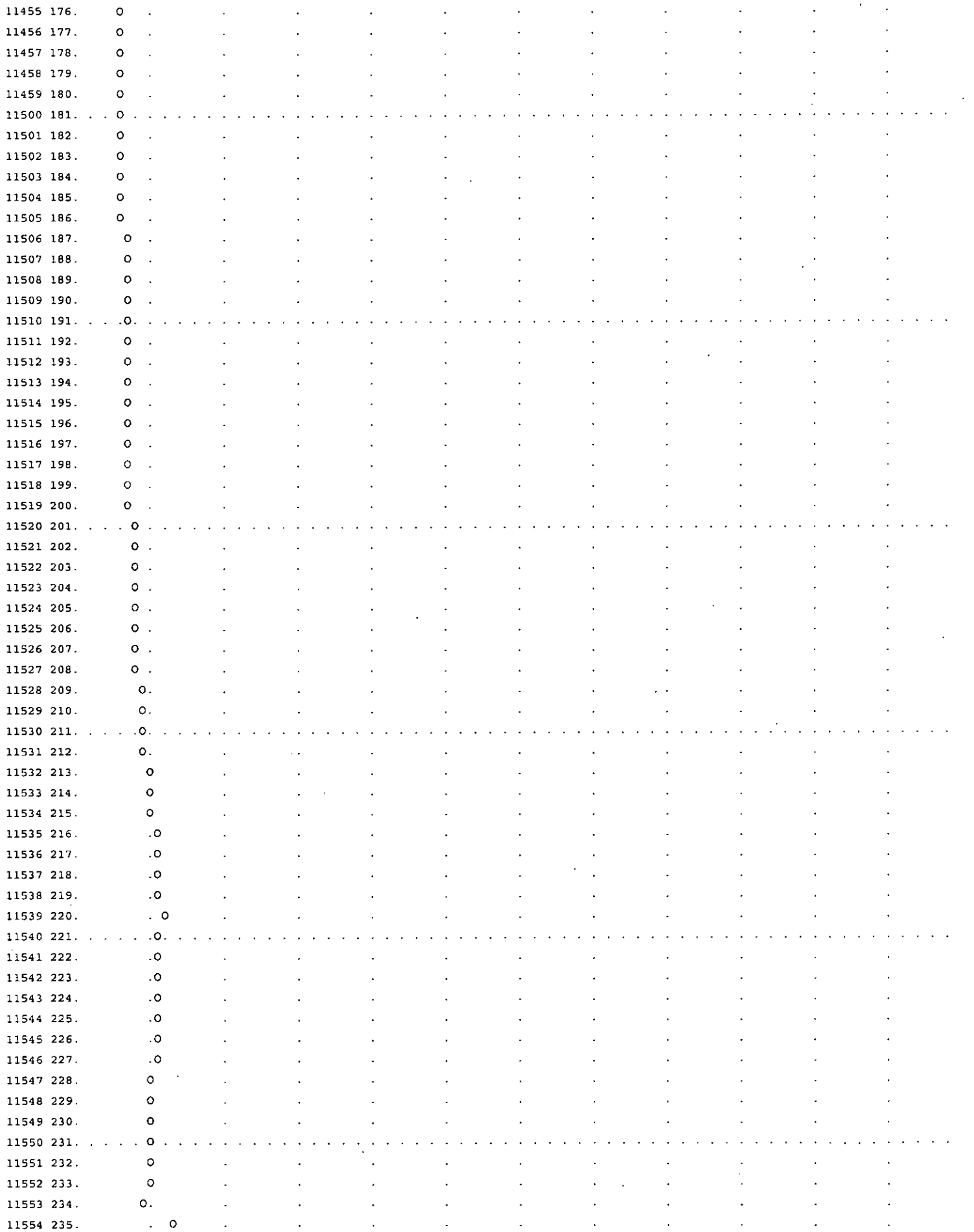
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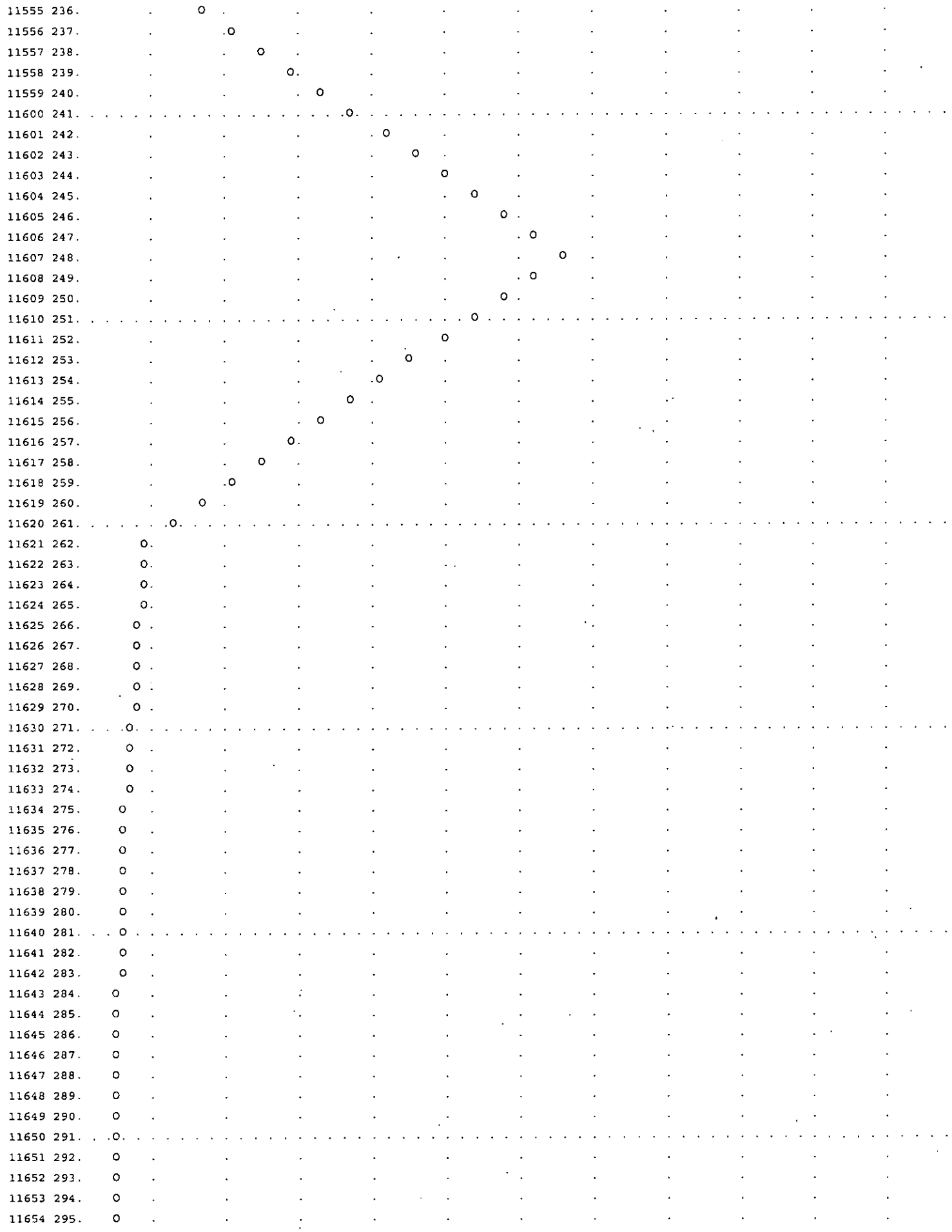
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          *            *
22 KK     *    DETAIN  *
          *            *
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100-YEAR DETENTION

24 KO OUTPUT CONTROL VARIABLES

IPRNT	0	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	700	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.017	TIME INTERVAL IN HOURS

HYDROGRAPH ROUTING DATA

25 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	-1.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

26 SV	STORAGE	.0	2.0	2.6	3.3	3.9
27 SQ	DISCHARGE	0.	4.	10.	33.	79.
28 SE	ELEVATION	100.00	102.40	103.00	103.69	104.00

***

HYDROGRAPH AT STATION DETAIN

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	JAN	1200	1	2.	.9	101.1	1	JAN	1554	235	14.	2.7	103.1	1	JAN	1948	469	4.	1.8	102.1
1	JAN	1201	2	2.	.9	101.1	1	JAN	1555	236	15.	2.8	103.1	1	JAN	1949	470	4.	1.8	102.1
1	JAN	1202	3	2.	.9	101.1	1	JAN	1556	237	16.	2.8	103.2	1	JAN	1950	471	4.	1.7	102.0
1	JAN	1203	4	2.	.9	101.1	1	JAN	1557	238	17.	2.8	103.2	1	JAN	1951	472	4.	1.7	102.0
1	JAN	1204	5	2.	.9	101.1	1	JAN	1558	239	19.	2.9	103.3	1	JAN	1952	473	4.	1.7	102.0
1	JAN	1205	6	2.	.9	101.1	1	JAN	1559	240	21.	2.9	103.3	1	JAN	1953	474	4.	1.7	102.0
1	JAN	1206	7	2.	.9	101.1	1	JAN	1600	241	23.	3.0	103.4	1	JAN	1954	475	4.	1.7	102.0
1	JAN	1207	8	2.	.9	101.1	1	JAN	1601	242	26.	3.1	103.5	1	JAN	1955	476	4.	1.7	102.0
1	JAN	1208	9	2.	.9	101.1	1	JAN	1602	243	29.	3.2	103.6	1	JAN	1956	477	4.	1.7	102.0
1	JAN	1209	10	2.	.9	101.1	1	JAN	1603	244	32.	3.3	103.7	1	JAN	1957	478	3.	1.7	102.0
1	JAN	1210	11	2.	.9	101.1	1	JAN	1604	245	37.	3.3	103.7	1	JAN	1958	479	3.	1.7	102.0

1 JAN 1211	12	2.	.9	101.1 *	1 JAN 1605	246	44.	3.4	103.8 *	1 JAN 1959	480	3.	1.7	102.0
1 JAN 1212	13	2.	.9	101.1 *	1 JAN 1606	247	51.	3.5	103.8 *	1 JAN 2000	481	3.	1.7	102.0
1 JAN 1213	14	2.	.9	101.1 *	1 JAN 1607	248	58.	3.6	103.9 *	1 JAN 2001	482	3.	1.7	102.0
1 JAN 1214	15	2.	1.0	101.1 *	1 JAN 1608	249	65.	3.7	103.9 *	1 JAN 2002	483	3.	1.7	102.0
1 JAN 1215	16	2.	1.0	101.1 *	1 JAN 1609	250	70.	3.8	103.9 *	1 JAN 2003	484	3.	1.7	102.0
1 JAN 1216	17	2.	1.0	101.1 *	1 JAN 1610	251	74.	3.9	104.0 *	1 JAN 2004	485	3.	1.7	102.0
1 JAN 1217	18	2.	1.0	101.1 *	1 JAN 1611	252	77.	3.9	104.0 *	1 JAN 2005	486	3.	1.7	102.0
1 JAN 1218	19	2.	1.0	101.1 *	1 JAN 1612	253	78.	3.9	104.0 *	1 JAN 2006	487	3.	1.7	102.0
1 JAN 1219	20	2.	1.0	101.1 *	1 JAN 1613	254	79.	3.9	104.0 *	1 JAN 2007	488	3.	1.7	101.9
1 JAN 1220	21	2.	1.0	101.1 *	1 JAN 1614	255	79.	3.9	104.0 *	1 JAN 2008	489	3.	1.7	101.9
1 JAN 1221	22	2.	1.0	101.2 *	1 JAN 1615	256	78.	3.9	104.0 *	1 JAN 2009	490	3.	1.7	101.9
1 JAN 1222	23	2.	1.0	101.2 *	1 JAN 1616	257	77.	3.9	104.0 *	1 JAN 2010	491	3.	1.7	101.9
1 JAN 1223	24	2.	1.0	101.2 *	1 JAN 1617	258	75.	3.9	104.0 *	1 JAN 2011	492	3.	1.6	101.9
1 JAN 1224	25	2.	1.0	101.2 *	1 JAN 1618	259	72.	3.8	104.0 *	1 JAN 2012	493	3.	1.6	101.9
1 JAN 1225	26	2.	1.0	101.2 *	1 JAN 1619	260	69.	3.8	103.9 *	1 JAN 2013	494	3.	1.6	101.9
1 JAN 1226	27	2.	1.0	101.2 *	1 JAN 1620	261	65.	3.7	103.9 *	1 JAN 2014	495	3.	1.6	101.9
1 JAN 1227	28	2.	1.0	101.2 *	1 JAN 1621	262	61.	3.7	103.9 *	1 JAN 2015	496	3.	1.6	101.9
1 JAN 1228	29	2.	1.0	101.2 *	1 JAN 1622	263	57.	3.6	103.9 *	1 JAN 2016	497	3.	1.6	101.9
1 JAN 1229	30	2.	1.0	101.2 *	1 JAN 1623	264	54.	3.6	103.8 *	1 JAN 2017	498	3.	1.6	101.9
1 JAN 1230	31	2.	1.0	101.2 *	1 JAN 1624	265	50.	3.5	103.8 *	1 JAN 2018	499	3.	1.6	101.9
1 JAN 1231	32	2.	1.0	101.2 *	1 JAN 1625	266	47.	3.5	103.8 *	1 JAN 2019	500	3.	1.6	101.9
1 JAN 1232	33	2.	1.0	101.2 *	1 JAN 1626	267	44.	3.4	103.8 *	1 JAN 2020	501	3.	1.6	101.9
1 JAN 1233	34	2.	1.0	101.2 *	1 JAN 1627	268	42.	3.4	103.7 *	1 JAN 2021	502	3.	1.6	101.9
1 JAN 1234	35	2.	1.0	101.2 *	1 JAN 1628	269	39.	3.4	103.7 *	1 JAN 2022	503	3.	1.6	101.9
1 JAN 1235	36	2.	1.1	101.2 *	1 JAN 1629	270	37.	3.3	103.7 *	1 JAN 2023	504	3.	1.6	101.9
1 JAN 1236	37	2.	1.1	101.2 *	1 JAN 1630	271	35.	3.3	103.7 *	1 JAN 2024	505	3.	1.6	101.9
1 JAN 1237	38	2.	1.1	101.2 *	1 JAN 1631	272	33.	3.3	103.7 *	1 JAN 2025	506	3.	1.6	101.9
1 JAN 1238	39	2.	1.1	101.2 *	1 JAN 1632	273	32.	3.3	103.7 *	1 JAN 2026	507	3.	1.6	101.8
1 JAN 1239	40	2.	1.1	101.3 *	1 JAN 1633	274	31.	3.2	103.6 *	1 JAN 2027	508	3.	1.6	101.8
1 JAN 1240	41	2.	1.1	101.3 *	1 JAN 1634	275	30.	3.2	103.6 *	1 JAN 2028	509	3.	1.6	101.8
1 JAN 1241	42	2.	1.1	101.3 *	1 JAN 1635	276	30.	3.2	103.6 *	1 JAN 2029	510	3.	1.6	101.8
1 JAN 1242	43	2.	1.1	101.3 *	1 JAN 1636	277	29.	3.2	103.6 *	1 JAN 2030	511	3.	1.6	101.8
1 JAN 1243	44	2.	1.1	101.3 *	1 JAN 1637	278	28.	3.1	103.5 *	1 JAN 2031	512	3.	1.6	101.8
1 JAN 1244	45	2.	1.1	101.3 *	1 JAN 1638	279	27.	3.1	103.5 *	1 JAN 2032	513	3.	1.6	101.8
1 JAN 1245	46	2.	1.1	101.3 *	1 JAN 1639	280	27.	3.1	103.5 *	1 JAN 2033	514	3.	1.5	101.8
1 JAN 1246	47	2.	1.1	101.3 *	1 JAN 1640	281	26.	3.1	103.5 *	1 JAN 2034	515	3.	1.5	101.8
1 JAN 1247	48	2.	1.1	101.3 *	1 JAN 1641	282	25.	3.1	103.5 *	1 JAN 2035	516	3.	1.5	101.8
1 JAN 1248	49	2.	1.1	101.3 *	1 JAN 1642	283	25.	3.0	103.4 *	1 JAN 2036	517	3.	1.5	101.8
1 JAN 1249	50	2.	1.1	101.3 *	1 JAN 1643	284	24.	3.0	103.4 *	1 JAN 2037	518	3.	1.5	101.8
1 JAN 1250	51	2.	1.1	101.3 *	1 JAN 1644	285	23.	3.0	103.4 *	1 JAN 2038	519	3.	1.5	101.8
1 JAN 1251	52	2.	1.1	101.3 *	1 JAN 1645	286	23.	3.0	103.4 *	1 JAN 2039	520	3.	1.5	101.8
1 JAN 1252	53	2.	1.1	101.3 *	1 JAN 1646	287	22.	3.0	103.4 *	1 JAN 2040	521	3.	1.5	101.8
1 JAN 1253	54	2.	1.1	101.3 *	1 JAN 1647	288	22.	3.0	103.3 *	1 JAN 2041	522	3.	1.5	101.8
1 JAN 1254	55	2.	1.1	101.3 *	1 JAN 1648	289	21.	2.9	103.3 *	1 JAN 2042	523	3.	1.5	101.8
1 JAN 1255	56	2.	1.1	101.3 *	1 JAN 1649	290	21.	2.9	103.3 *	1 JAN 2043	524	3.	1.5	101.8
1 JAN 1256	57	2.	1.2	101.4 *	1 JAN 1650	291	20.	2.9	103.3 *	1 JAN 2044	525	3.	1.5	101.8
1 JAN 1257	58	2.	1.2	101.4 *	1 JAN 1651	292	20.	2.9	103.3 *	1 JAN 2045	526	3.	1.5	101.8
1 JAN 1258	59	2.	1.2	101.4 *	1 JAN 1652	293	19.	2.9	103.3 *	1 JAN 2046	527	3.	1.5	101.7
1 JAN 1259	60	2.	1.2	101.4 *	1 JAN 1653	294	19.	2.9	103.3 *	1 JAN 2047	528	3.	1.5	101.7
1 JAN 1300	61	2.	1.2	101.4 *	1 JAN 1654	295	18.	2.9	103.2 *	1 JAN 2048	529	3.	1.5	101.7
1 JAN 1301	62	2.	1.2	101.4 *	1 JAN 1655	296	18.	2.8	103.2 *	1 JAN 2049	530	3.	1.5	101.7
1 JAN 1302	63	2.	1.2	101.4 *	1 JAN 1656	297	17.	2.8	103.2 *	1 JAN 2050	531	3.	1.5	101.7
1 JAN 1303	64	2.	1.2	101.4 *	1 JAN 1657	298	17.	2.8	103.2 *	1 JAN 2051	532	3.	1.5	101.7
1 JAN 1304	65	2.	1.2	101.4 *	1 JAN 1658	299	17.	2.8	103.2 *	1 JAN 2052	533	3.	1.5	101.7
1 JAN 1305	66	2.	1.2	101.4 *	1 JAN 1659	300	16.	2.8	103.2 *	1 JAN 2053	534	3.	1.5	101.7
1 JAN 1306	67	2.	1.2	101.4 *	1 JAN 1700	301	16.	2.8	103.2 *	1 JAN 2054	535	3.	1.5	101.7
1 JAN 1307	68	2.	1.2	101.4 *	1 JAN 1701	302	16.	2.8	103.2 *	1 JAN 2055	536	3.	1.5	101.7
1 JAN 1308	69	2.	1.2	101.4 *	1 JAN 1702	303	15.	2.8	103.2 *	1 JAN 2056	537	3.	1.5	101.7
1 JAN 1309	70	2.	1.2	101.4 *	1 JAN 1703	304	15.	2.8	103.1 *	1 JAN 2057	538	3.	1.4	101.7
1 JAN 1310	71	2.	1.2	101.4 *	1 JAN 1704	305	15.	2.8	103.1 *	1 JAN 2058	539	3.	1.4	101.7

1	JAN	1311	72	3.	1.2	101.4	*	1 JAN 1705 306	14.	2.7	103.1	*	1 JAN 2059 540	3.	1.4	101.7
1	JAN	1312	73	3.	1.2	101.4	*	1 JAN 1706 307	14.	2.7	103.1	*	1 JAN 2100 541	3.	1.4	101.7
1	JAN	1313	74	3.	1.2	101.5	*	1 JAN 1707 308	14.	2.7	103.1	*	1 JAN 2101 542	3.	1.4	101.7
1	JAN	1314	75	3.	1.2	101.5	*	1 JAN 1708 309	13.	2.7	103.1	*	1 JAN 2102 543	3.	1.4	101.7
1	JAN	1315	76	3.	1.3	101.5	*	1 JAN 1709 310	13.	2.7	103.1	*	1 JAN 2103 544	3.	1.4	101.7
1	JAN	1316	77	3.	1.3	101.5	*	1 JAN 1710 311	13.	2.7	103.1	*	1 JAN 2104 545	3.	1.4	101.7
1	JAN	1317	78	3.	1.3	101.5	*	1 JAN 1711 312	13.	2.7	103.1	*	1 JAN 2105 546	3.	1.4	101.7
1	JAN	1318	79	3.	1.3	101.5	*	1 JAN 1712 313	12.	2.7	103.1	*	1 JAN 2106 547	3.	1.4	101.7
1	JAN	1319	80	3.	1.3	101.5	*	1 JAN 1713 314	12.	2.7	103.1	*	1 JAN 2107 548	3.	1.4	101.6
1	JAN	1320	81	3.	1.3	101.5	*	1 JAN 1714 315	12.	2.7	103.1	*	1 JAN 2108 549	3.	1.4	101.6
1	JAN	1321	82	3.	1.3	101.5	*	1 JAN 1715 316	12.	2.7	103.1	*	1 JAN 2109 550	3.	1.4	101.6
1	JAN	1322	83	3.	1.3	101.5	*	1 JAN 1716 317	12.	2.7	103.0	*	1 JAN 2110 551	3.	1.4	101.6
1	JAN	1323	84	3.	1.3	101.5	*	1 JAN 1717 318	11.	2.7	103.0	*	1 JAN 2111 552	3.	1.4	101.6
1	JAN	1324	85	3.	1.3	101.5	*	1 JAN 1718 319	11.	2.7	103.0	*	1 JAN 2112 553	3.	1.4	101.6
1	JAN	1325	86	3.	1.3	101.5	*	1 JAN 1719 320	11.	2.6	103.0	*	1 JAN 2113 554	3.	1.4	101.6
1	JAN	1326	87	3.	1.3	101.5	*	1 JAN 1720 321	11.	2.6	103.0	*	1 JAN 2114 555	3.	1.4	101.6
1	JAN	1327	88	3.	1.3	101.5	*	1 JAN 1721 322	11.	2.6	103.0	*	1 JAN 2115 556	3.	1.4	101.6
1	JAN	1328	89	3.	1.3	101.5	*	1 JAN 1722 323	10.	2.6	103.0	*	1 JAN 2116 557	3.	1.4	101.6
1	JAN	1329	90	3.	1.3	101.6	*	1 JAN 1723 324	10.	2.6	103.0	*	1 JAN 2117 558	3.	1.4	101.6
1	JAN	1330	91	3.	1.3	101.6	*	1 JAN 1724 325	10.	2.6	103.0	*	1 JAN 2118 559	3.	1.4	101.6
1	JAN	1331	92	3.	1.3	101.6	*	1 JAN 1725 326	10.	2.6	103.0	*	1 JAN 2119 560	3.	1.4	101.6
1	JAN	1332	93	3.	1.3	101.6	*	1 JAN 1726 327	10.	2.6	103.0	*	1 JAN 2120 561	3.	1.4	101.6
1	JAN	1333	94	3.	1.4	101.6	*	1 JAN 1727 328	10.	2.6	103.0	*	1 JAN 2121 562	3.	1.4	101.6
1	JAN	1334	95	3.	1.4	101.6	*	1 JAN 1728 329	10.	2.6	103.0	*	1 JAN 2122 563	3.	1.3	101.6
1	JAN	1335	96	3.	1.4	101.6	*	1 JAN 1729 330	10.	2.6	103.0	*	1 JAN 2123 564	3.	1.3	101.6
1	JAN	1336	97	3.	1.4	101.6	*	1 JAN 1730 331	10.	2.6	103.0	*	1 JAN 2124 565	3.	1.3	101.6
1	JAN	1337	98	3.	1.4	101.6	*	1 JAN 1731 332	10.	2.6	103.0	*	1 JAN 2125 566	3.	1.3	101.6
1	JAN	1338	99	3.	1.4	101.6	*	1 JAN 1732 333	10.	2.6	103.0	*	1 JAN 2126 567	3.	1.3	101.6
1	JAN	1339	100	3.	1.4	101.6	*	1 JAN 1733 334	10.	2.6	103.0	*	1 JAN 2127 568	3.	1.3	101.6
1	JAN	1340	101	3.	1.4	101.6	*	1 JAN 1734 335	10.	2.6	103.0	*	1 JAN 2128 569	3.	1.3	101.6
1	JAN	1341	102	3.	1.4	101.6	*	1 JAN 1735 336	10.	2.6	102.9	*	1 JAN 2129 570	3.	1.3	101.5
1	JAN	1342	103	3.	1.4	101.6	*	1 JAN 1736 337	9.	2.6	102.9	*	1 JAN 2130 571	3.	1.3	101.5
1	JAN	1343	104	3.	1.4	101.6	*	1 JAN 1737 338	9.	2.6	102.9	*	1 JAN 2131 572	3.	1.3	101.5
1	JAN	1344	105	3.	1.4	101.7	*	1 JAN 1738 339	9.	2.6	102.9	*	1 JAN 2132 573	3.	1.3	101.5
1	JAN	1345	106	3.	1.4	101.7	*	1 JAN 1739 340	9.	2.6	102.9	*	1 JAN 2133 574	3.	1.3	101.5
1	JAN	1346	107	3.	1.4	101.7	*	1 JAN 1740 341	9.	2.5	102.9	*	1 JAN 2134 575	3.	1.3	101.5
1	JAN	1347	108	3.	1.4	101.7	*	1 JAN 1741 342	9.	2.5	102.9	*	1 JAN 2135 576	3.	1.3	101.5
1	JAN	1348	109	3.	1.4	101.7	*	1 JAN 1742 343	9.	2.5	102.9	*	1 JAN 2136 577	3.	1.3	101.5
1	JAN	1349	110	3.	1.4	101.7	*	1 JAN 1743 344	9.	2.5	102.9	*	1 JAN 2137 578	3.	1.3	101.5
1	JAN	1350	111	3.	1.5	101.7	*	1 JAN 1744 345	9.	2.5	102.9	*	1 JAN 2138 579	3.	1.3	101.5
1	JAN	1351	112	3.	1.5	101.7	*	1 JAN 1745 346	9.	2.5	102.9	*	1 JAN 2139 580	3.	1.3	101.5
1	JAN	1352	113	3.	1.5	101.7	*	1 JAN 1746 347	9.	2.5	102.9	*	1 JAN 2140 581	3.	1.3	101.5
1	JAN	1353	114	3.	1.5	101.7	*	1 JAN 1747 348	9.	2.5	102.9	*	1 JAN 2141 582	3.	1.3	101.5
1	JAN	1354	115	3.	1.5	101.7	*	1 JAN 1748 349	9.	2.5	102.9	*	1 JAN 2142 583	3.	1.3	101.5
1	JAN	1355	116	3.	1.5	101.7	*	1 JAN 1749 350	9.	2.5	102.9	*	1 JAN 2143 584	3.	1.3	101.5
1	JAN	1356	117	3.	1.5	101.7	*	1 JAN 1750 351	9.	2.5	102.9	*	1 JAN 2144 585	3.	1.3	101.5
1	JAN	1357	118	3.	1.5	101.8	*	1 JAN 1751 352	9.	2.5	102.9	*	1 JAN 2145 586	3.	1.3	101.5
1	JAN	1358	119	3.	1.5	101.8	*	1 JAN 1752 353	9.	2.5	102.9	*	1 JAN 2146 587	3.	1.3	101.5
1	JAN	1359	120	3.	1.5	101.8	*	1 JAN 1753 354	9.	2.5	102.9	*	1 JAN 2147 588	3.	1.3	101.5
1	JAN	1400	121	3.	1.5	101.8	*	1 JAN 1754 355	9.	2.5	102.9	*	1 JAN 2148 589	3.	1.3	101.5
1	JAN	1401	122	3.	1.5	101.8	*	1 JAN 1755 356	9.	2.5	102.9	*	1 JAN 2149 590	3.	1.3	101.5
1	JAN	1402	123	3.	1.5	101.8	*	1 JAN 1756 357	9.	2.5	102.8	*	1 JAN 2150 591	3.	1.2	101.5
1	JAN	1403	124	3.	1.5	101.8	*	1 JAN 1757 358	9.	2.5	102.8	*	1 JAN 2151 592	3.	1.2	101.5
1	JAN	1404	125	3.	1.5	101.8	*	1 JAN 1758 359	8.	2.5	102.8	*	1 JAN 2152 593	3.	1.2	101.5
1	JAN	1405	126	3.	1.5	101.8	*	1 JAN 1759 360	8.	2.5	102.8	*	1 JAN 2153 594	3.	1.2	101.4
1	JAN	1406	127	3.	1.6	101.8	*	1 JAN 1800 361	8.	2.5	102.8	*	1 JAN 2154 595	3.	1.2	101.4
1	JAN	1407	128	3.	1.6	101.8	*	1 JAN 1801 362	8.	2.5	102.8	*	1 JAN 2155 596	3.	1.2	101.4
1	JAN	1408	129	3.	1.6	101.8	*	1 JAN 1802 363	8.	2.4	102.8	*	1 JAN 2156 597	2.	1.2	101.4
1	JAN	1409	130	3.	1.6	101.8	*	1 JAN 1803 364	8.	2.4	102.8	*	1 JAN 2157 598	2.	1.2	101.4
1	JAN	1410	131	3.	1.6	101.9	*	1 JAN 1804 365	8.	2.4	102.8	*	1 JAN 2158 599	2.	1.2	101.4

1 JAN 1411 132	3.	1.6	101.9 *	1 JAN 1805 366	8.	2.4	102.8 *	1 JAN 2159 600	2.	1.2	101.4
1 JAN 1412 133	3.	1.6	101.9 *	1 JAN 1806 367	8.	2.4	102.8 *	1 JAN 2200 601	2.	1.2	101.4
1 JAN 1413 134	3.	1.6	101.9 *	1 JAN 1807 368	8.	2.4	102.8 *	1 JAN 2201 602	2.	1.2	101.4
1 JAN 1414 135	3.	1.6	101.9 *	1 JAN 1808 369	8.	2.4	102.8 *	1 JAN 2202 603	2.	1.2	101.4
1 JAN 1415 136	3.	1.6	101.9 *	1 JAN 1809 370	8.	2.4	102.8 *	1 JAN 2203 604	2.	1.2	101.4
1 JAN 1416 137	3.	1.6	101.9 *	1 JAN 1810 371	8.	2.4	102.8 *	1 JAN 2204 605	2.	1.2	101.4
1 JAN 1417 138	3.	1.6	101.9 *	1 JAN 1811 372	8.	2.4	102.7 *	1 JAN 2205 606	2.	1.2	101.4
1 JAN 1418 139	3.	1.6	101.9 *	1 JAN 1812 373	7.	2.4	102.7 *	1 JAN 2206 607	2.	1.2	101.4
1 JAN 1419 140	3.	1.6	101.9 *	1 JAN 1813 374	7.	2.4	102.7 *	1 JAN 2207 608	2.	1.2	101.4
1 JAN 1420 141	3.	1.7	101.9 *	1 JAN 1814 375	7.	2.3	102.7 *	1 JAN 2208 609	2.	1.2	101.4
1 JAN 1421 142	3.	1.7	101.9 *	1 JAN 1815 376	7.	2.3	102.7 *	1 JAN 2209 610	2.	1.2	101.4
1 JAN 1422 143	3.	1.7	102.0 *	1 JAN 1816 377	7.	2.3	102.7 *	1 JAN 2210 611	2.	1.2	101.4
1 JAN 1423 144	3.	1.7	102.0 *	1 JAN 1817 378	7.	2.3	102.7 *	1 JAN 2211 612	2.	1.2	101.4
1 JAN 1424 145	3.	1.7	102.0 *	1 JAN 1818 379	7.	2.3	102.7 *	1 JAN 2212 613	2.	1.2	101.4
1 JAN 1425 146	3.	1.7	102.0 *	1 JAN 1819 380	7.	2.3	102.7 *	1 JAN 2213 614	2.	1.2	101.4
1 JAN 1426 147	3.	1.7	102.0 *	1 JAN 1820 381	7.	2.3	102.7 *	1 JAN 2214 615	2.	1.2	101.4
1 JAN 1427 148	3.	1.7	102.0 *	1 JAN 1821 382	7.	2.3	102.6 *	1 JAN 2215 616	2.	1.2	101.4
1 JAN 1428 149	3.	1.7	102.0 *	1 JAN 1822 383	6.	2.3	102.6 *	1 JAN 2216 617	2.	1.2	101.4
1 JAN 1429 150	4.	1.7	102.0 *	1 JAN 1823 384	6.	2.3	102.6 *	1 JAN 2217 618	2.	1.2	101.4
1 JAN 1430 151	4.	1.7	102.0 *	1 JAN 1824 385	6.	2.3	102.6 *	1 JAN 2218 619	2.	1.2	101.3
1 JAN 1431 152	4.	1.7	102.0 *	1 JAN 1825 386	6.	2.2	102.6 *	1 JAN 2219 620	2.	1.1	101.3
1 JAN 1432 153	4.	1.7	102.0 *	1 JAN 1826 387	6.	2.2	102.6 *	1 JAN 2220 621	2.	1.1	101.3
1 JAN 1433 154	4.	1.8	102.1 *	1 JAN 1827 388	6.	2.2	102.6 *	1 JAN 2221 622	2.	1.1	101.3
1 JAN 1434 155	4.	1.8	102.1 *	1 JAN 1828 389	6.	2.2	102.6 *	1 JAN 2222 623	2.	1.1	101.3
1 JAN 1435 156	4.	1.8	102.1 *	1 JAN 1829 390	6.	2.2	102.6 *	1 JAN 2223 624	2.	1.1	101.3
1 JAN 1436 157	4.	1.8	102.1 *	1 JAN 1830 391	6.	2.2	102.6 *	1 JAN 2224 625	2.	1.1	101.3
1 JAN 1437 158	4.	1.8	102.1 *	1 JAN 1831 392	6.	2.2	102.6 *	1 JAN 2225 626	2.	1.1	101.3
1 JAN 1438 159	4.	1.8	102.1 *	1 JAN 1832 393	6.	2.2	102.5 *	1 JAN 2226 627	2.	1.1	101.3
1 JAN 1439 160	4.	1.8	102.1 *	1 JAN 1833 394	6.	2.2	102.5 *	1 JAN 2227 628	2.	1.1	101.3
1 JAN 1440 161	4.	1.8	102.1 *	1 JAN 1834 395	5.	2.2	102.5 *	1 JAN 2228 629	2.	1.1	101.3
1 JAN 1441 162	4.	1.8	102.1 *	1 JAN 1835 396	5.	2.2	102.5 *	1 JAN 2229 630	2.	1.1	101.3
1 JAN 1442 163	4.	1.8	102.1 *	1 JAN 1836 397	5.	2.2	102.5 *	1 JAN 2230 631	2.	1.1	101.3
1 JAN 1443 164	4.	1.8	102.2 *	1 JAN 1837 398	5.	2.2	102.5 *	1 JAN 2231 632	2.	1.1	101.3
1 JAN 1444 165	4.	1.9	102.2 *	1 JAN 1838 399	5.	2.1	102.5 *	1 JAN 2232 633	2.	1.1	101.3
1 JAN 1445 166	4.	1.9	102.2 *	1 JAN 1839 400	5.	2.1	102.5 *	1 JAN 2233 634	2.	1.1	101.3
1 JAN 1446 167	4.	1.9	102.2 *	1 JAN 1840 401	5.	2.1	102.5 *	1 JAN 2234 635	2.	1.1	101.3
1 JAN 1447 168	4.	1.9	102.2 *	1 JAN 1841 402	5.	2.1	102.5 *	1 JAN 2235 636	2.	1.1	101.3
1 JAN 1448 169	4.	1.9	102.2 *	1 JAN 1842 403	5.	2.1	102.5 *	1 JAN 2236 637	2.	1.1	101.3
1 JAN 1449 170	4.	1.9	102.2 *	1 JAN 1843 404	5.	2.1	102.5 *	1 JAN 2237 638	2.	1.1	101.3
1 JAN 1450 171	4.	1.9	102.2 *	1 JAN 1844 405	5.	2.1	102.5 *	1 JAN 2238 639	2.	1.1	101.3
1 JAN 1451 172	4.	1.9	102.2 *	1 JAN 1845 406	5.	2.1	102.5 *	1 JAN 2239 640	2.	1.1	101.3
1 JAN 1452 173	4.	1.9	102.3 *	1 JAN 1846 407	5.	2.1	102.4 *	1 JAN 2240 641	2.	1.1	101.3
1 JAN 1453 174	4.	1.9	102.3 *	1 JAN 1847 408	5.	2.1	102.4 *	1 JAN 2241 642	2.	1.1	101.3
1 JAN 1454 175	4.	1.9	102.3 *	1 JAN 1848 409	4.	2.1	102.4 *	1 JAN 2242 643	2.	1.1	101.3
1 JAN 1455 176	4.	2.0	102.3 *	1 JAN 1849 410	4.	2.1	102.4 *	1 JAN 2243 644	2.	1.1	101.3
1 JAN 1456 177	4.	2.0	102.3 *	1 JAN 1850 411	4.	2.1	102.4 *	1 JAN 2244 645	2.	1.1	101.3
1 JAN 1457 178	4.	2.0	102.3 *	1 JAN 1851 412	4.	2.1	102.4 *	1 JAN 2245 646	2.	1.1	101.3
1 JAN 1458 179	4.	2.0	102.3 *	1 JAN 1852 413	4.	2.1	102.4 *	1 JAN 2246 647	2.	1.1	101.2
1 JAN 1459 180	4.	2.0	102.3 *	1 JAN 1853 414	4.	2.0	102.4 *	1 JAN 2247 648	2.	1.1	101.2
1 JAN 1500 181	4.	2.0	102.4 *	1 JAN 1854 415	4.	2.0	102.4 *	1 JAN 2248 649	2.	1.1	101.2
1 JAN 1501 182	4.	2.0	102.4 *	1 JAN 1855 416	4.	2.0	102.4 *	1 JAN 2249 650	2.	1.1	101.2
1 JAN 1502 183	4.	2.0	102.4 *	1 JAN 1856 417	4.	2.0	102.4 *	1 JAN 2250 651	2.	1.1	101.2
1 JAN 1503 184	4.	2.0	102.4 *	1 JAN 1857 418	4.	2.0	102.4 *	1 JAN 2251 652	2.	1.1	101.2
1 JAN 1504 185	4.	2.1	102.4 *	1 JAN 1858 419	4.	2.0	102.4 *	1 JAN 2252 653	2.	1.0	101.2
1 JAN 1505 186	4.	2.1	102.4 *	1 JAN 1859 420	4.	2.0	102.4 *	1 JAN 2253 654	2.	1.0	101.2
1 JAN 1506 187	4.	2.1	102.4 *	1 JAN 1900 421	4.	2.0	102.4 *	1 JAN 2254 655	2.	1.0	101.2
1 JAN 1507 188	5.	2.1	102.4 *	1 JAN 1901 422	4.	2.0	102.3 *	1 JAN 2255 656	2.	1.0	101.2
1 JAN 1508 189	5.	2.1	102.5 *	1 JAN 1902 423	4.	2.0	102.3 *	1 JAN 2256 657	2.	1.0	101.2
1 JAN 1509 190	5.	2.1	102.5 *	1 JAN 1903 424	4.	2.0	102.3 *	1 JAN 2257 658	2.	1.0	101.2
1 JAN 1510 191	5.	2.1	102.5 *	1 JAN 1904 425	4.	2.0	102.3 *	1 JAN 2258 659	2.	1.0	101.2

1 JAN 1511 192	5.	2.1	102.5	*	1 JAN 1905 426	4.	2.0	102.3	*	1 JAN 2259 660	2.	1.0	101.2
1 JAN 1512 193	5.	2.1	102.5	*	1 JAN 1906 427	4.	2.0	102.3	*	1 JAN 2300 661	2.	1.0	101.2
1 JAN 1513 194	5.	2.2	102.5	*	1 JAN 1907 428	4.	2.0	102.3	*	1 JAN 2301 662	2.	1.0	101.2
1 JAN 1514 195	5.	2.2	102.5	*	1 JAN 1908 429	4.	2.0	102.3	*	1 JAN 2302 663	2.	1.0	101.2
1 JAN 1515 196	6.	2.2	102.5	*	1 JAN 1909 430	4.	2.0	102.3	*	1 JAN 2303 664	2.	1.0	101.2
1 JAN 1516 197	6.	2.2	102.6	*	1 JAN 1910 431	4.	2.0	102.3	*	1 JAN 2304 665	2.	1.0	101.2
1 JAN 1517 198	6.	2.2	102.6	*	1 JAN 1911 432	4.	1.9	102.3	*	1 JAN 2305 666	2.	1.0	101.2
1 JAN 1518 199	6.	2.2	102.6	*	1 JAN 1912 433	4.	1.9	102.3	*	1 JAN 2306 667	2.	1.0	101.2
1 JAN 1519 200	6.	2.2	102.6	*	1 JAN 1913 434	4.	1.9	102.3	*	1 JAN 2307 668	2.	1.0	101.2
1 JAN 1520 201	6.	2.2	102.6	*	1 JAN 1914 435	4.	1.9	102.3	*	1 JAN 2308 669	2.	1.0	101.2
1 JAN 1521 202	6.	2.3	102.6	*	1 JAN 1915 436	4.	1.9	102.3	*	1 JAN 2309 670	2.	1.0	101.2
1 JAN 1522 203	6.	2.3	102.6	*	1 JAN 1916 437	4.	1.9	102.2	*	1 JAN 2310 671	2.	1.0	101.2
1 JAN 1523 204	7.	2.3	102.6	*	1 JAN 1917 438	4.	1.9	102.2	*	1 JAN 2311 672	2.	1.0	101.2
1 JAN 1524 205	7.	2.3	102.7	*	1 JAN 1918 439	4.	1.9	102.2	*	1 JAN 2312 673	2.	1.0	101.2
1 JAN 1525 206	7.	2.3	102.7	*	1 JAN 1919 440	4.	1.9	102.2	*	1 JAN 2313 674	2.	1.0	101.2
1 JAN 1526 207	7.	2.3	102.7	*	1 JAN 1920 441	4.	1.9	102.2	*	1 JAN 2314 675	2.	1.0	101.2
1 JAN 1527 208	7.	2.3	102.7	*	1 JAN 1921 442	4.	1.9	102.2	*	1 JAN 2315 676	2.	1.0	101.1
1 JAN 1528 209	7.	2.3	102.7	*	1 JAN 1922 443	4.	1.9	102.2	*	1 JAN 2316 677	2.	1.0	101.1
1 JAN 1529 210	7.	2.4	102.7	*	1 JAN 1923 444	4.	1.9	102.2	*	1 JAN 2317 678	2.	1.0	101.1
1 JAN 1530 211	8.	2.4	102.7	*	1 JAN 1924 445	4.	1.9	102.2	*	1 JAN 2318 679	2.	1.0	101.1
1 JAN 1531 212	8.	2.4	102.8	*	1 JAN 1925 446	4.	1.9	102.2	*	1 JAN 2319 680	2.	1.0	101.1
1 JAN 1532 213	8.	2.4	102.8	*	1 JAN 1926 447	4.	1.9	102.2	*	1 JAN 2320 681	2.	1.0	101.1
1 JAN 1533 214	8.	2.4	102.8	*	1 JAN 1927 448	4.	1.9	102.2	*	1 JAN 2321 682	2.	1.0	101.1
1 JAN 1534 215	8.	2.4	102.8	*	1 JAN 1928 449	4.	1.9	102.2	*	1 JAN 2322 683	2.	1.0	101.1
1 JAN 1535 216	8.	2.5	102.8	*	1 JAN 1929 450	4.	1.9	102.2	*	1 JAN 2323 684	2.	1.0	101.1
1 JAN 1536 217	9.	2.5	102.8	*	1 JAN 1930 451	4.	1.8	102.2	*	1 JAN 2324 685	2.	1.0	101.1
1 JAN 1537 218	9.	2.5	102.9	*	1 JAN 1931 452	4.	1.8	102.2	*	1 JAN 2325 686	2.	1.0	101.1
1 JAN 1538 219	9.	2.5	102.9	*	1 JAN 1932 453	4.	1.8	102.2	*	1 JAN 2326 687	2.	1.0	101.1
1 JAN 1539 220	9.	2.5	102.9	*	1 JAN 1933 454	4.	1.8	102.1	*	1 JAN 2327 688	2.	.9	101.1
1 JAN 1540 221	9.	2.6	102.9	*	1 JAN 1934 455	4.	1.8	102.1	*	1 JAN 2328 689	2.	.9	101.1
1 JAN 1541 222	10.	2.6	102.9	*	1 JAN 1935 456	4.	1.8	102.1	*	1 JAN 2329 690	2.	.9	101.1
1 JAN 1542 223	10.	2.6	103.0	*	1 JAN 1936 457	4.	1.8	102.1	*	1 JAN 2330 691	2.	.9	101.1
1 JAN 1543 224	10.	2.6	103.0	*	1 JAN 1937 458	4.	1.8	102.1	*	1 JAN 2331 692	2.	.9	101.1
1 JAN 1544 225	10.	2.6	103.0	*	1 JAN 1938 459	4.	1.8	102.1	*	1 JAN 2332 693	2.	.9	101.1
1 JAN 1545 226	11.	2.6	103.0	*	1 JAN 1939 460	4.	1.8	102.1	*	1 JAN 2333 694	2.	.9	101.1
1 JAN 1546 227	11.	2.6	103.0	*	1 JAN 1940 461	4.	1.8	102.1	*	1 JAN 2334 695	2.	.9	101.1
1 JAN 1547 228	12.	2.7	103.0	*	1 JAN 1941 462	4.	1.8	102.1	*	1 JAN 2335 696	2.	.9	101.1
1 JAN 1548 229	12.	2.7	103.1	*	1 JAN 1942 463	4.	1.8	102.1	*	1 JAN 2336 697	2.	.9	101.1
1 JAN 1549 230	12.	2.7	103.1	*	1 JAN 1943 464	4.	1.8	102.1	*	1 JAN 2337 698	2.	.9	101.1
1 JAN 1550 231	13.	2.7	103.1	*	1 JAN 1944 465	4.	1.8	102.1	*	1 JAN 2338 699	2.	.9	101.1
1 JAN 1551 232	13.	2.7	103.1	*	1 JAN 1945 466	4.	1.8	102.1	*	1 JAN 2339 700	2.	.9	101.1
1 JAN 1552 233	13.	2.7	103.1	*	1 JAN 1946 467	4.	1.8	102.1	*				
1 JAN 1553 234	14.	2.7	103.1	*	1 JAN 1947 468	4.	1.8	102.1	*				
				*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	11.65-HR
79.	4.22	(CFS)	12.	7.	7.	7.
		(INCHES)	1.169	1.397	1.397	1.397
		(AC-FT)	6.	7.	7.	7.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	11.65-HR
4.	4.22	2.	2.	2.	2.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	11.65-HR
104.00	4.22	102.70	102.09	102.09	102.09

CUMULATIVE AREA = .10 SQ MI

STATION DETAIN

(I) INFLOW, (O) OUTFLOW

0. 20. 40. 60. 80. 100. 120. 140. 0. 0. 0. 0. 0

(S) STORAGE

0. 0. 0. 0. 0. 0. 0. 1. 2. 3. 4. 0. 0

DAHRMN	PER												
11200	1.I							S					
11201	2.I							S					
11202	3.I							S					
11203	4.I							S					
11204	5.OI							S					
11205	6.OI							S					
11206	7.OI							S					
11207	8.OI							S					
11208	9.OI							S					
11209	10.O I							S					
11210	11.O.I							S					
11211	12.O I							S					
11212	13.O I							S					
11213	14.O I							S					
11214	15.O I							S					
11215	16.O I							S					
11216	17.O I							S					
11217	18.O I							S					
11218	19.O I							S					
11219	20.O I							S					
11220	21.O.I							S					
11221	22.O I							S					
11222	23.O I							S					
11223	24.O I							S					
11224	25.O I							S					
11225	26.O I							S					
11226	27.O I							S					
11227	28.O I							S					
11228	29.O I							S					
11229	30.O I							S					
11230	31.O.I							S					
11231	32.O I							S					
11232	33.O I							S					
11233	34.O I							S					
11234	35.O I							S					
11235	36.O I							.S					
11236	37.O I							.S					
11237	38.O I							.S					
11238	39.O I							.S					
11239	40.O I							.S					
11240	41.O.I							.S					
11241	42.O I							.S					
11242	43.O I							.S					
11243	44.O I							.S					
11244	45.O I							.S					
11245	46.O I							.S					
11246	47.O I							.S					
11247	48.O I							.S					
11248	49.O I							.S					
11249	50.O I							.S					
11250	51.O.I							.S					
11251	52.O I							.S					
11252	53.O I							.S					

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11253  54.0 I                                                    S
11254  55.0 I                                                    S
11255  56.0 I                                                    S
11256  57.0 I                                                     S
11257  58.0 I                                                     S
11258  59.0 I                                                     S
11259  60.0 I                                                     S
11300  61.0 I                                                     S
11301  62.0 I                                                     S
11302  63.0 I                                                     S
11303  64.0 I                                                     S
11304  65.0 I                                                     S
11305  66.0 I                                                     S
11306  67.0 I                                                     S
11307  68.0 I                                                     S
11308  69.0 I                                                     S
11309  70.0 I                                                     S
11310  71.0 I                                                     S
11311  72.0 I                                                     S
11312  73.0 I                                                     S
11313  74.0 I                                                     S
11314  75.0 I                                                     S
11315  76.0 I                                                      S
11316  77.0 I                                                      S
11317  78.0 I                                                      S
11318  79.0 I                                                      S
11319  80.0 I                                                      S
11320  81.0 I                                                      S
11321  82.0 I                                                      S
11322  83.0 I                                                      S
11323  84.0 I                                                      S
11324  85.0 I                                                      S
11325  86.0 I                                                      S
11326  87.0 I                                                      S
11327  88.0 I                                                      S
11328  89.0 I                                                      S
11329  90.0 I                                                      S
11330  91.0 I                                                      S
11331  92.0 I                                                      S
11332  93.0 I                                                      S
11333  94.0 I                                                       S
11334  95.0 I                                                       S
11335  96.0 I                                                       S
11336  97.0 I                                                       S
11337  98.0 I                                                       S
11338  99.0 I                                                       S
11339 100.0 I                                                       S
11340 101.0 I                                                       S
11341 102.0 I                                                       S
11342 103.0 I                                                       S
11343 104.0 I                                                       S
11344 105.0 I                                                       S
11345 106.0 I                                                       S
11346 107.0 I                                                       S
11347 108.0 I                                                       S
11348 109.0 I                                                       S
11349 110.0 I                                                       S
11350 111.0 I                                                       S
11351 112.0 I                                                        S
11352 113.0 I                                                        S
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11353 114.O  I                                                    S
11354 115. O I                                                    S
11355 116. O I                                                    S
11356 117. O I                                                    S
11357 118. O I                                                    S
11358 119. O I                                                    S
11359 120. O I                                                    S
11400 121. O I                                                    S
11401 122. O I                                                    S
11402 123. O I                                                    S
11403 124. O I                                                    S
11404 125. O I                                                    S
11405 126. O I                                                    S
11406 127. O I                                                     S
11407 128. O I                                                     S
11408 129. O I                                                     S
11409 130. O I                                                     S
11410 131. O I                                                     S
11411 132. O I                                                     S
11412 133. O I                                                     S
11413 134. O I                                                     S
11414 135. O I                                                     S
11415 136. O I                                                     S
11416 137. O I                                                     S
11417 138. O I                                                     S
11418 139. O I                                                     S
11419 140. O I                                                     S
11420 141. O I                                                     S
11421 142. O I                                                      S
11422 143. O I                                                      S
11423 144. O I                                                      S
11424 145. O I                                                      S
11425 146. O I                                                      S
11426 147. O I                                                      S
11427 148. O  I                                                     S
11428 149. O  I                                                     S
11429 150. O  I                                                     S
11430 151. O .I                                                     S
11431 152. O  I                                                     S
11432 153. O  I                                                     S
11433 154. O  I                                                      S
11434 155. O  I                                                      S
11435 156. O  I                                                      S
11436 157. O  I                                                      S
11437 158. O  I                                                      S
11438 159. O  I                                                      S
11439 160. O  I                                                      S
11440 161. O .I                                                      S
11441 162. O  I                                                      S
11442 163. O  I                                                      S
11443 164. O  I                                                      S
11444 165. O  I                                                       S.
11445 166. O  I                                                       S.
11446 167. O  I                                                       S.
11447 168. O  I                                                       S.
11448 169. O  I                                                       S.
11449 170. O  I                                                       S.
11450 171. O .I                                                       S.
11451 172. O   I                                                      S.
11452 173. O   I                                                      S.
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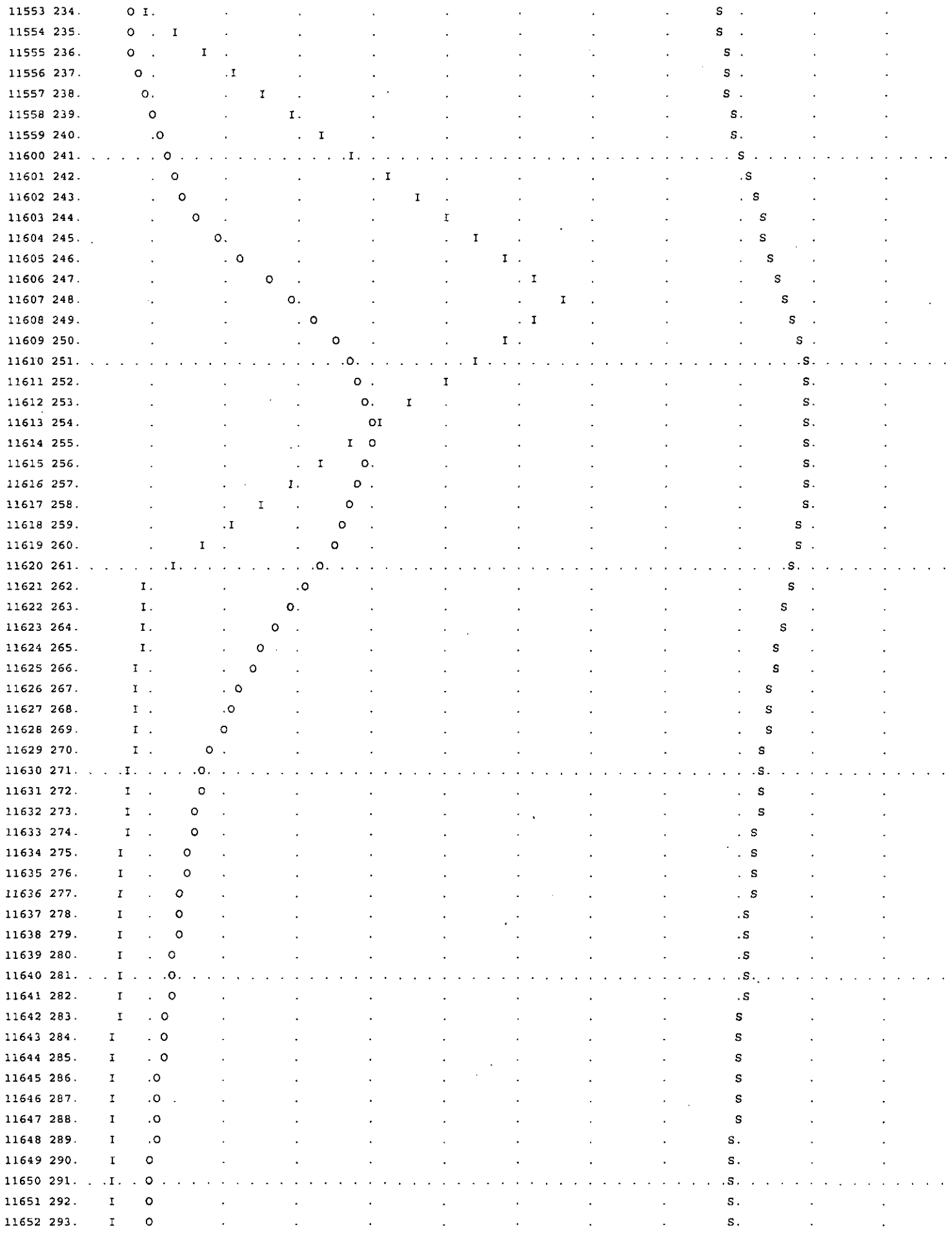
11453 174. O   I   .   .   .   .   .   .   .   .   .   S.  .   .   .
11454 175. O   I   .   .   .   .   .   .   .   .   .   S.  .   .   .
11455 176. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11456 177. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11457 178. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11458 179. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11459 180. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11500 181. O . I . . . . . . . . . . . . . . . . . . . . . . S . . . . . .
11501 182. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11502 183. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11503 184. O   I   .   .   .   .   .   .   .   .   .    S  .   .   .
11504 185. O   I   .   .   .   .   .   .   .   .   .   .S  .   .   .
11505 186. O   I   .   .   .   .   .   .   .   .   .   .S  .   .   .
11506 187. O    I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11507 188. O    I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11508 189. O    I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11509 190. O    I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11510 191. O . .I. . . . . . . . . . . . . . . . . . . . . .S. . . . . .
11511 192.  O   I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11512 193.  O   I  .   .   .   .   .   .   .   .   .   .S  .   .   .
11513 194.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11514 195.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11515 196.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11516 197.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11517 198.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11518 199.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11519 200.  O   I  .   .   .   .   .   .   .   .   .    S  .   .   .
11520 201. .O. . I . . . . . . . . . . . . . . . . . . . . . S . . . . . .
11521 202.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11522 203.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11523 204.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11524 205.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11525 206.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11526 207.  O    I .   .   .   .   .   .   .   .   .    S  .   .   .
11527 208.   O   I .   .   .   .   .   .   .   .   .    S  .   .   .
11528 209.   O    I.   .   .   .   .   .   .   .   .    S  .   .   .
11529 210.   O    I.   .   .   .   .   .   .   .   .     S .   .   .
11530 211. . O . .I. . . . . . . . . . . . . . . . . . . . . S . . . . . .
11531 212.   O    I.   .   .   .   .   .   .   .   .     S .   .   .
11532 213.   O     I   .   .   .   .   .   .   .   .     S .   .   .
11533 214.   O     I   .   .   .   .   .   .   .   .     S .   .   .
11534 215.   O     I   .   .   .   .   .   .   .   .     S .   .   .
11535 216.   O     .I  .   .   .   .   .   .   .   .      S.   .   .
11536 217.   O     .I  .   .   .   .   .   .   .   .      S.   .   .
11537 218.   O     .I  .   .   .   .   .   .   .   .      S.   .   .
11538 219.   O     .I  .   .   .   .   .   .   .   .      S.   .   .
11539 220.    O    . I .   .   .   .   .   .   .   .      S.   .   .
11540 221. . .O. . .I. . . . . . . . . . . . . . . . . . . . . S . . . . . .
11541 222.    O    .I  .   .   .   .   .   .   .   .      S.   .   .
11542 223.    O    .I  .   .   .   .   .   .   .   .      S.   .   .
11543 224.    O    .I  .   .   .   .   .   .   .   .      S.   .   .
11544 225.    O    .I  .   .   .   .   .   .   .   .      S.   .   .
11545 226.    O    .I  .   .   .   .   .   .   .   .      S.   .   .
11546 227.     O   .I  .   .   .   .   .   .   .   .      S.   .   .
11547 228.     O   I   .   .   .   .   .   .   .   .       S   .   .
11548 229.     O   I   .   .   .   .   .   .   .   .       S   .   .
11549 230.     O   I   .   .   .   .   .   .   .   .       S   .   .
11550 231. . . O . I . . . . . . . . . . . . . . . . . . . . . S. . . . . .
11551 232.      O  I   .   .   .   .   .   .   .   .       S   .   .
11552 233.      O  I   .   .   .   .   .   .   .   .       S   .   .
```



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11653 294.    I   O.                                                    S.
11654 295.    I   O.                                                    S.
11655 296.    I   O.                                                    S
11656 297.    I   O.                                                    S
11657 298.   I    O.                                                    S
11658 299.   I   O                                                     S
11659 300.   I   O                                                     S
11700 301.  I . O                                                      S
11701 302.   I   O                                                     S
11702 303.   I   O                                                     S
11703 304.   I  O                                                     S
11704 305.   I  O                                                     S
11705 306.   I  O                                                    S
11706 307.   I  O                                                    S
11707 308.   I  O                                                    S
11708 309.   I  O                                                    S
11709 310.   I  O                                                    S
11710 311.  I O                                                      S
11711 312.   I O                                                    S
11712 313.   I O                                                    S
11713 314.   I O                                                    S
11714 315.   I O                                                    S
11715 316.   I O                                                    S
11716 317.   I O                                                    S
11717 318.   I O                                                    S
11718 319.   I O                                                    S
11719 320.  I O                                                    S
11720 321.  I.O.                                                   S
11721 322.  I O                                                    S
11722 323.  I O                                                    S
11723 324.  I O                                                    S
11724 325.  I O                                                    S
11725 326.  I O                                                    S
11726 327.  I O                                                    S
11727 328.  I O                                                    S
11728 329.  I O                                                    S
11729 330.  I O                                                    S
11730 331.  I.O.                                                   S
11731 332.  I O                                                    S
11732 333.  I O                                                    S
11733 334.  I O                                                    S
11734 335.  I O                                                    S
11735 336.  I O                                                    S
11736 337.  I O                                                    S
11737 338.  I O                                                    S
11738 339.  I O                                                    S
11739 340.  I O                                                    S
11740 341.  I.O.                                                   S.
11741 342.  I O                                                   S
11742 343.  I O                                                   S
11743 344.  I O                                                   S
11744 345.  I O                                                   S
11745 346.  I O                                                   S
11746 347.  I O                                                   S
11747 348.  IO                                                    S
11748 349.  IO                                                    S
11749 350.  IO                                                    S
11750 351.  IO                                                   S.
11751 352.  IO                                                    S
11752 353.  IO                                                    S
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11753 354.  IO                                                    S
11754 355.  IO                                                    S
11755 356.  IO                                                    S
11756 357.  IO                                                    S
11757 358.  IO                                                    S
11758 359.  IO                                                    S
11759 360.  IO                                                    S
11800 361. I O                                                    S
11801 362. I O                                                    S
11802 363. I O                                                   S
11803 364. I O                                                   S
11804 365. I O                                                   S
11805 366. I O                                                   S
11806 367.I  O                                                   S
11807 368.I  O                                                   S
11808 369.I  O                                                   S
11809 370.I  O                                                   S
11810 371.I. O                                                   S
11811 372I   O                                                   S
11812 373I   O                                                   S
11813 374I   O                                                   S
11814 375I   O                                                  S
11815 376I   O                                                  S
11816 377I   O                                                  S
11817 378I  O                                                   S
11818 379I  O                                                   S
11819 380I  O                                                   S
11820 381I .O                                                   S
11821 382I  O                                                   S
11822 383I  O                                                   S
11823 384I  O                                                   S
11824 385I  O                                                   S
11825 386I  O                                                  S
11826 387I  O                                                  S
11827 388I  O                                                  S
11828 389I  O                                                  S
11829 390I  O                                                  S
11830 391I .O                                                  S
11831 392I  O                                                  S
11832 393I  O                                                  S
11833 394I  O                                                  S
11834 395I  O                                                  S
11835 396I  O                                                  S
11836 397I  O                                                  S
11837 398I  O                                                  S
11838 399I  O                                                 .S
11839 400I  O                                                 .S
11840 401I .O                                                 .S
11841 402I O                                                  .S
11842 403I O                                                  .S
11843 404I O                                                  .S
11844 405I O                                                  .S
11845 406I O                                                  .S
11846 407I O                                                  .S
11847 408I O                                                  .S
11848 409I O                                                  .S
11849 410I O                                                  .S
11850 411I O                                                  .S
11851 412I O                                                  .S
11852 413I O                                                  .S
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11853 414I O                                                    S
11854 415I O                                                    S
11855 416I O                                                    S
11856 417I O                                                    S
11857 418I O                                                    S
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11901 422I O                                                    S
11902 423I O                                                    S
11903 424I O                                                    S
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11906 427I O                                                    S
11907 428I O                                                    S
11908 429I O                                                    S
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11910 431I O                                                    S
11911 432I O                                                    S.
11912 433I O                                                    S.
11913 434I O                                                    S.
11914 435I O                                                    S.
11915 436I O                                                    S.
11916 437I O                                                    S.
11917 438I O                                                    S.
11918 439I O                                                    S.
11919 440I O                                                    S.
11920 441I O                                                    S.
11921 442I O                                                    S.
11922 443I O                                                    S.
11923 444I O                                                    S.
11924 445I O                                                    S.
11925 446I O                                                    S.
11926 447I O                                                    S.
11927 448I O                                                    S.
11928 449I O                                                    S.
11929 450I O                                                    S.
11930 451I O                                                    S
11931 452I O                                                    S
11932 453I O                                                    S
11933 454I O                                                    S
11934 455I O                                                    S
11935 456I O                                                    S
11936 457I O                                                    S
11937 458I O                                                    S
11938 459I O                                                    S
11939 460I O                                                    S
11940 461I O                                                    S
11941 462I O                                                    S
11942 463I O                                                    S
11943 464I O                                                    S
11944 465I O                                                    S
11945 466I O                                                    S
11946 467I O                                                    S
11947 468I O                                                    S
11948 469I O                                                    S
11949 470I O                                                    S
11950 471I O                                                    S.
11951 472I O                                                    S
11952 473I O                                                    S
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11953 474I O                                                    S
11954 475I O                                                    S
11955 476I O                                                    S
11956 477I O                                                    S
11957 478I O                                                    S
11958 479I O                                                    S
11959 480I O                                                    S
12000 481I O                                                    S
12001 482I O                                                    S
12002 483I O                                                    S
12003 484I O                                                    S
12004 485I O                                                    S
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12006 487I O                                                    S
12007 488I O                                                    S
12008 489I O                                                    S
12009 490I O                                                    S
12010 491I O                                                    S
12011 492I O                                                    S
12012 493I O                                                    S
12013 494I O                                                    S
12014 495I O                                                    S
12015 496I O                                                    S
12016 497I O                                                    S
12017 498I O                                                    S
12018 499I O                                                    S
12019 500I O                                                    S
12020 501I O                                                    S
12021 502I O                                                    S
12022 503I O                                                    S
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12024 505I O                                                    S
12025 506I O                                                    S
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12028 509I O                                                    S
12029 510I O                                                    S
12030 511I O                                                    S
12031 512I O                                                    S
12032 513I O                                                    S
12033 514I O                                                    S
12034 515I O                                                    S
12035 516I O                                                    S
12036 517I O                                                    S
12037 518I O                                                    S
12038 519I O                                                    S
12039 520I O                                                    S
12040 521I O                                                    S
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12043 524I O                                                    S
12044 525I O                                                    S
12045 526I O                                                    S
12046 527I O                                                    S
12047 528I O                                                    S
12048 529I O                                                    S
12049 530I O                                                    S
12050 531I O                                                    S
12051 532I O                                                    S
12052 533IO                                                     S
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12053 534IO                                    S
12054 535IO                                    S
12055 536IO                                    S
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12057 538IO                                   S
12058 539IO                                   S
12059 540IO                                   S
12100 541IO                                   S
12101 542IO                                   S
12102 543IO                                   S
12103 544IO                                   S
12104 545IO                                   S
12105 546IO                                   S
12106 547IO                                   S
12107 548IO                                   S
12108 549IO                                   S
12109 550IO                                   S
12110 551IO                                   S
12111 552IO                                   S
12112 553IO                                   S
12113 554IO                                   S
12114 555IO                                   S
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12116 557IO                                   S
12117 558IO                                   S
12118 559IO                                   S
12119 560IO                                   S
12120 561IO                                   S
12121 562IO                                   S
12122 563IO                                  S
12123 564IO                                  S
12124 565IO                                  S
12125 566IO                                  S
12126 567IO                                  S
12127 568IO                                  S
12128 569IO                                  S
12129 570IO                                  S
12130 571IO                                  S
12131 572IO                                  S
12132 573IO                                  S
12133 574IO                                  S
12134 575IO                                  S
12135 576IO                                  S
12136 577IO                                  S
12137 578IO                                  S
12138 579IO                                  S
12139 580IO                                  S
12140 581IO                                  S
12141 582IO                                  S
12142 583IO                                  S
12143 584IO                                  S
12144 585IO                                  S
12145 586IO                                  S
12146 587IO                                  S
12147 588IO                                  S
12148 589IO                                  S
12149 590IO                                  S
12150 591IO                                  S
12151 592IO                                  S
12152 593IO                                  S
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12153 594IO                                                    S
12154 595IO                                                    S
12155 596IO                                                    S
12156 597IO                                                    S
12157 598IO                                                    S
12158 599IO                                                    S
12159 600IO                                                    S
12200 601IO                                                    S
12201 602IO                                                    S
12202 603IO                                                    S
12203 604IO                                                    S
12204 605IO                                                    S
12205 606IO                                                    S
12206 607IO                                                    S
12207 608IO                                                    S
12208 609IO                                                    S
12209 610IO                                                    S
12210 611IO                                                    S
12211 612IO                                                    S
12212 613IO                                                    S
12213 614IO                                                    S
12214 615IO                                                    S
12215 616IO                                                    S
12216 617IO                                                    S
12217 618IO                                                    S
12218 619IO                                                    S
12219 620IO                                                   .S
12220 621IO                                                   .S
12221 622IO                                                   .S
12222 623IO                                                   .S
12223 624IO                                                   .S
12224 625IO                                                   .S
12225 626IO                                                   .S
12226 627IO                                                   .S
12227 628IO                                                   .S
12228 629IO                                                   .S
12229 630IO                                                   .S
12230 631IO                                                   .S
12231 632IO                                                   .S
12232 633IO                                                   .S
12233 634IO                                                   .S
12234 635IO                                                   .S
12235 636IO                                                   .S
12236 637IO                                                   .S
12237 638IO                                                   .S
12238 639IO                                                   .S
12239 640IO                                                   .S
12240 641IO                                                   .S
12241 642IO                                                   .S
12242 643IO                                                   .S
12243 644IO                                                   .S
12244 645IO                                                   .S
12245 646IO                                                   .S
12246 647IO                                                   .S
12247 648IO                                                   .S
12248 649IO                                                   .S
12249 650IO                                                   .S
12250 651IO                                                   .S
12251 652IO                                                   .S
12252 653IO                                                   S
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12253 654IO                                                    S
12254 655IO                                                    S
12255 656IO                                                    S
12256 657IO                                                    S
12257 658IO                                                    S
12258 659IO                                                    S
12259 660IO                                                    S
12300 661IO                                                    S
12301 662IO                                                    S
12302 663IO                                                    S
12303 664IO                                                    S
12304 665IO                                                    S
12305 666IO                                                    S
12306 667IO                                                    S
12307 668IO                                                    S
12308 669IO                                                    S
12309 670IO                                                    S
12310 671IO                                                    S
12311 672IO                                                    S
12312 673IO                                                    S
12313 674IO                                                    S
12314 675IO                                                    S
12315 676IO                                                    S
12316 677IO                                                    S
12317 678IO                                                    S
12318 679IO                                                    S
12319 680IO                                                    S
12320 681IO                                                    S
12321 682IO                                                    S
12322 683IO                                                    S
12323 684IO                                                    S
12324 685IO                                                    S
12325 686IO                                                    S
12326 687IO                                                    S
12327 688IO                                                    S.
12328 689IO                                                    S.
12329 690IO                                                    S.
12330 691IO                                                    S.
12331 692IO                                                    S.
12332 693IO                                                    S.
12333 694IO                                                    S.
12334 695IO                                                    S.
12335 696IO                                                    S.
12336 697IO                                                    S.
12337 698IO                                                    S.
12338 699IO                                                    S.
12339 700IO                                                    S.
```

RUNOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND

TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	3000	131.	4.12	14.	7.	7.	.10		
ROUTED TO	DETAIN	79.	4.22	12.	7.	7.	.10	104.00	4.22

*** NORMAL END OF HEC-1 ***

Drainage Basin 4000

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                JUN   1998             *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   29JUL09  TIME  14:50:13   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX  XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE..
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***

              *DIAGRAM
    1         ID   MEADOWOOD J-15956 01/13/09 FILE: MW4000D.HC1
    2         ID   DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
    3         ID   R/0=.50, PRECIP=3.6IN, TC 6.66MIN
    4         IT       1 01JAN90    1200     600
    5         IO       3       1

    6         KK    4003
    7         KM   RUN DATE   7/16/2009
    8         KM   RATIONAL METHOD HYDROGRAPH PROGRAM
    9         KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   10         KM   6HR RAINFALL IS  3.6  INCHES
   11         KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.62
   12         KM   RATIONAL METHOD TIME OF CONCENTRATION IS  6  MIN.
   13         KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   14         KM   IT 2 01JAN90 1200 200
   15         KO       0       0       0       0      21
   16         BA  0.0108
   17         IN       6 01JAN90    1157
   18         QI       0     0.9     0.9     0.9       1       1       1       1       1     1.1
   19         QI     1.1     1.1     1.1     1.2     1.2     1.2     1.2     1.3     1.3     1.4
   20         QI     1.4     1.4     1.5     1.5     1.6     1.7     1.7     1.8     1.9       2
   21         QI     2.1     2.3     2.4     2.7     2.8     3.2     3.5     4.3     4.9     7.1
   22         QI    10.2   35.92     5.7     3.8       3     2.5     2.2       2     1.8     1.6
   23         QI     1.5     1.4     1.3     1.3     1.2     1.1     1.1       1       1       1
   24         QI     0.9       0       0       0       0       0       0       0       0       0
   25         QI       0       0

   26         KK  4002.1
   27         KM   RUN DATE   7/16/2009
   28         KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   29         KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   30         KM   6HR RAINFALL IS  3.6  INCHES
   31         KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.3
   32         KM   RATIONAL METHOD TIME OF CONCENTRATION IS  13  MIN.
   33         KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   34         KM   IT 2 01JAN90 1200 200
   35         BA   0.005
   36         IN      13 01JAN90    1147
   37         QI       0       0     0.2     0.2     0.2     0.2     0.2     0.3     0.3     0.3
   38         QI     0.3     0.3     0.4     0.4     0.4     0.5     0.6     0.7       1     0.9
   39         QI     5.4     0.8     0.5     0.4     0.3     0.3     0.3     0.2     0.2       0
   40         QI       0       0       0       0       0       0       0       0       0       0

   41         KK Combine
   42         KM   Combine the two drainage areas entering the detention basin
   43         HC       2

   44         KK  DETAIN
   45         KM   100-YEAR DETENTION
   46         KO       0       0       0       0      21
   47         RS       1    STOR      -1
   48         SV       0    0.72    0.94    1.05   1.246
   49         SQ       0    0.67    2.76    5.51    15.5
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  50      SE     100   102.4     103  103.32     104

  51      KK    4006
  52      KM   Undetained Area Trib to Node 4006
  53      KM   RUN DATE   7/16/2009
  54      KM   RATIONAL METHOD HYDROGRAPH PROGRAM
  55      KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
  56      KM   6HR RAINFALL IS  3.6  INCHES
  57      KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.284
  58      KM   RATIONAL METHOD TIME OF CONCENTRATION IS  16  MIN.
  59      KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
  60      KM   IT 2 01JAN90 1200 200
  61      BA  0.0017
  62      IN      16 01JAN90    1152
  63      QI       0      0.1      0.1      0.1      0.1      0.1      0.1      0.1      0.1      0.1
  64      QI     0.1      0.1      0.2      0.2      0.3      0.4     1.38      0.2      0.1      0.1
  65      QI     0.1      0.1      0.1      0.1        0        0        0        0        0        0
  66      QI       0        0        0        0        0

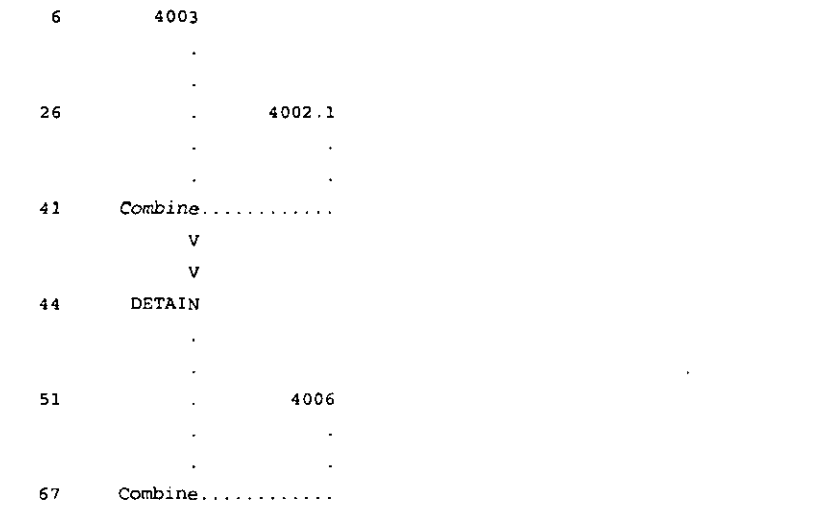
  67      KK Combine
  68      KM   Combine detained outflow from DB4 and area trib to Node 4006
  69      KO       0        0        0        0       21
  70      HC       2
  71      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                JUN   1998             *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   29JUL09  TIME  14:50:13   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


MEADOWOOD J-15956 01/13/09 FILE: MW4000D.HC1
DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
R/0=.50, PRECIP=3.6IN, TC 6.66MIN

5 IO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	1	MINUTES IN COMPUTATION INTERVAL
IDATE	1JAN90	STARTING DATE
ITIME	1200	STARTING TIME
NQ	600	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1JAN90	ENDING DATE
NDTIME	2159	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .02 HOURS
TOTAL TIME BASE 9.98 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

*** **

```
**************
*            *
*      4003  *
*            *
**************
```

RUN DATE 7/16/2009
RATIONAL METHOD HYDROGRAPH PROGRAM

6HR RAINFALL IS 3.6 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.62
RATIONAL METHOD TIME OF CONCENTRATION IS 6 MIN.

FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
IT 2 01JAN90 1200 200

```
15 KO         OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          1  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                    IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                     IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        600  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT       .017  TIME INTERVAL IN HOURS


17 IN         TIME DATA FOR INPUT TIME SERIES
                    JXMIN          6  TIME INTERVAL IN MINUTES
                   JXDATE     1JAN90  STARTING DATE
                   JXTIME       1157  STARTING TIME

            SUBBASIN RUNOFF DATA

16 BA         SUBBASIN CHARACTERISTICS
                    TAREA        .01  SUBBASIN AREA
```

***

*** *** *** *** ***

HYDROGRAPH AT STATION 4003

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	9.98-HR
36.	4.05	(CFS)	3.	2.	2.	2.
		(INCHES)	2.210	2.211	2.211	2.211
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .01 SQ MI

*** **

```
         **************
         *            *
26 KK    *   4002.1   *
         *            *
         **************
```

RUN DATE 7/16/2009
RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
6HR RAINFALL IS 3.6 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.3
RATIONAL METHOD TIME OF CONCENTRATION IS 13 MIN.
FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
IT 2 01JAN90 1200 200

```
36 IN         TIME DATA FOR INPUT TIME SERIES
                    JXMIN         13  TIME INTERVAL IN MINUTES
```

```
                    JXDATE       1JAN90  STARTING DATE
                    JXTIME         1147  STARTING TIME

              SUBBASIN RUNOFF DATA

 35 BA         SUBBASIN CHARACTERISTICS
                    TAREA           .00  SUBBASIN AREA

                                                      ***

     ***         ***          ***          ***          ***

                     HYDROGRAPH AT STATION   4002.1

PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                 6-HR        24-HR        72-HR      9.98-HR
      5.       4.12      (CFS)        1.           0.           0.           0.
                       (INCHES)    1.061        1.061        1.061        1.061
                        (AC-FT)       0.           0.           0.           0.

                     CUMULATIVE AREA =     .00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


            **************
            *            *
 41 KK      *  Combine   *
            *            *
            **************
                      Combine the two drainage areas entering the detention basin

 43 HC         HYDROGRAPH COMBINATION
                    ICOMP             2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                      ***

     ***         ***          ***          ***          ***

                     HYDROGRAPH AT STATION   Combine

PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                 6-HR        24-HR        72-HR      9.98-HR
     40.       4.05      (CFS)        3.           2.           2.           2.
                       (INCHES)    1.846        1.847        1.847        1.847
                        (AC-FT)       2.           2.           2.           2.

                     CUMULATIVE AREA =     .02 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


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

```
 44 KK      *    DETAIN  *
            *             *
            **************
                          100-YEAR DETENTION

 46 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL           0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         600  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .017  TIME INTERVAL IN HOURS


            HYDROGRAPH ROUTING DATA

 47 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 48 SV            STORAGE         .0         .7         .9        1.0        1.2

 49 SQ          DISCHARGE         0.         1.         3.         6.        16.

 50 SE          ELEVATION     100.00     102.40     103.00     103.32     104.00

                                                                      ***

    ***            ***             ***             ***             ***

                         HYDROGRAPH AT STATION   DETAIN

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                     6-HR         24-HR       72-HR       9.98-HR
      15.       4.13        (CFS)          3.            2.          2.            2.
                         (INCHES)      1.504         1.718       1.718         1.718
                          (AC-FT)         1.            1.          1.            1.

 PEAK STORAGE   TIME                            MAXIMUM AVERAGE STORAGE
   (AC-FT)      (HR)                     6-HR         24-HR       72-HR       9.98-HR
        1.      4.13                       1.            1.          1.            1.

 PEAK STAGE     TIME                              MAXIMUM AVERAGE STAGE
   (FEET)       (HR)                     6-HR         24-HR       72-HR       9.98-HR
   104.00       4.13                   102.74        102.43      102.43        102.43

                        CUMULATIVE AREA =     .02 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

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

```
51 KK      *       4006  *
           *              *
           ****************
                       Undetained Area Trib to Node 4006
                       RUN DATE   7/16/2009
                       RATIONAL METHOD HYDROGRAPH PROGRAM
                       COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                       6HR RAINFALL IS  3.6  INCHES
                       RATIONAL METHOD RUNOFF COEFFICIENT IS  0.284
                       RATIONAL METHOD TIME OF CONCENTRATION IS  16  MIN.
                       FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                       IT 2 01JAN90 1200 200

62 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN          16  TIME INTERVAL IN MINUTES
                    JXDATE      1JAN90  STARTING DATE
                    JXTIME        1152  STARTING TIME

            SUBBASIN RUNOFF DATA

61 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .00  SUBBASIN AREA

                                                   ***

     ***         ***         ***         ***         ***

                      HYDROGRAPH AT STATION     4006

PEAK FLOW      TIME                        MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                 6-HR        24-HR        72-HR      9.98-HR
      1.       4.13      (CFS)        0.           0.           0.           0.
                       (INCHES)    1.051        1.062        1.062        1.062
                        (AC-FT)       0.           0.           0.           0.

                      CUMULATIVE AREA =     .00 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

           ****************
           *              *
67 KK      *   Combine    *
           *              *
           ****************
                       Combine detained outflow from DB4 and area trib to Node 4006

69 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         600  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .017  TIME INTERVAL IN HOURS
```

70 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

*** *** *** *** ***

HYDROGRAPH AT STATION Combine

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	9.98-HR
17.	4.13	(CFS)	3.	2.	2.	2.
		(INCHES)	1.443	1.654	1.654	1.654
		(AC-FT)	1.	2.	2.	2.

CUMULATIVE AREA = .02 SQ MI

RUNOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND

TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	4003	36.	4.05	3.	2.	2.	.01		
HYDROGRAPH AT	4002.1	5.	4.12	1.	0.	0.	.00		
2 COMBINED AT	Combine	40.	4.05	3.	2.	2.	.02		
ROUTED TO	DETAIN	15.	4.13	3.	2.	2.	.02	104.00	4.13
HYDROGRAPH AT	4006	1.	4.13	0.	0.	0.	.00		
2 COMBINED AT	Combine	17.	4.13	3.	2.	2.	.02		

*** NORMAL END OF HEC-1 ***

Drainage Basin 7000A and 7000B

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                JUN  1998              *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   13AUG09  TIME  16:26:33   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***

              *DIAGRAM
    1         ID   MEADOWOOD J-15956 01/19/09 FILE: MW7A7B.HC1
    2         ID   DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
    3         ID   FOR COMINED DRAINAGE BASINS 7000A AND 7000B
    4         IT       1 01JAN90    1200     900
    5         IO       3       1

    6         KK   7000A
    7         KM   DRAINAGE BASIN 7000A
    8         KM   RUN DATE   8/8/2009
    9         KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   10         KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   11         KM   6HR RAINFALL IS  3.6  INCHES
   12         KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.49
   13         KM   RATIONAL METHOD TIME OF CONCENTRATION IS  10  MIN.
   14         KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   15         KM   IT 2 01JAN90 1200 200
   16         KO       0       0       0       0      21
   17         BA  0.3039
   18         IN      10 01JAN90    1155
   19         QI       0    20.5    20.9    21.7    22.2    23.1    23.7    24.8    25.4    26.8
   20         QI    27.5    29.3    30.2    32.4    33.7    36.6    38.3    42.5    45.1    51.6
   21         QI      56    68.4      78   114.5   233.6  505.77    91.8    61.4    48.1    40.3
   22         QI      35    31.3    28.4    26.1    24.2    22.6    21.3       0       0       0
   23         QI       0       0       0       0       0       0       0       0

   24         KK    DB7A
   25         KM   100-YEAR DETENTION
   26         KO       0       0       0       0      21
   27         RS       1    STOR    6.75
   28         SV       0   9.329   11.95   14.77    18.8
   29         SQ       0   13.08   31.51    96.4     255
   30         SE     100 103.167   104.0  104.87     106

   31         KK   7000B
   32         KM   DRIANAGE BASIN 7000B
   33         KM   RUN DATE   8/8/2009
   34         KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   35         KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   36         KM   6HR RAINFALL IS  3.6  INCHES
   37         KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.41
   38         KM   RATIONAL METHOD TIME OF CONCENTRATION IS  12  MIN.
   39         KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   40         KM   IT 2 01JAN90 1200 200
   41         KO       0       0       0       0      21
   42         BA    0.07
   43         IN      12 01JAN90    1154
   44         QI       0       4     4.1     4.2     4.4     4.6     4.7       5     5.2     5.6
   45         QI     5.8     6.3     6.6     7.3     7.7     8.8     9.6    11.7    13.4    19.6
   46         QI    29.3   97.43    15.7    10.5     8.2     6.9       6     5.4     4.9     4.5
   47         QI     4.1       0       0       0       0       0       0       0       0       0
   48         QI       0       0
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  49          KK    DB7B
  50          KM   DETAIN 7000B
  51          KO       0     . 0       0       0      21
  52          RS       1    STOR     1.3
  53          SV       0   2.544   3.302    3.69     4.2
  54          SQ       0   2.642   11.50   21.90    45.6
  55          SE     100 103.167   104.0  104.41     106

  56          KK7000B_DS
  57          KM   DRAIANGE BASIN DOWNSTREAM OF DB7B (NOT DETAINED)
  58          KM   RUN DATE   8/8/2009
  59          KM   RATIONAL METHOD HYDROGRAPH PROGRAM
  60          KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
  61          KM   6HR RAINFALL IS  3.6  INCHES
  62          KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.6
  63          KM   RATIONAL METHOD TIME OF CONCENTRATION IS  6  MIN.
  64          KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
  65          KM   IT 2 01JAN90 1200 200
  66          BA  0.0008
  67          IN       6 01JAN90    1157
  68          QI       0     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1
  69          QI     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1
  70          QI     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1
  71          QI     0.1     0.2     0.2     0.2     0.2     0.2     0.2     0.3     0.3     0.5
  72          QI     0.8    2.44     0.4     0.3     0.2     0.2     0.2     0.1     0.1     0.1
  73          QI     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1
  74          QI     0.1       0       0       0       0       0       0       0       0       0
  75          QI       0       0

  76          KK COMBINE
  77          KO       0       0       0       0      21
  78          HC       3
  79          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    6       7000A
              V
              V
   24         DB7A
              .
              .
   31         .        7000B
              .           V
              .           V
   49         .         DB7B
              .           .
              .           .
   56         .           .     7000B_DS
              .           .           .
              .           .           .
   76     COMBINE.....................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************                                        ****************************************
*                                       *                                        *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                        *   U.S. ARMY CORPS OF ENGINEERS
*              JUN   1998               *                                        *   HYDROLOGIC ENGINEERING CENTER
*             VERSION 4.1               *                                        *         609 SECOND STREET
*                                       *                                        *      DAVIS, CALIFORNIA 95616
* RUN DATE   13AUG09  TIME  16:26:33    *                                        *          (916) 756-1104
*                                       *                                        *
*****************************************                                        ****************************************
```

```
                    MEADOWOOD J-15956 01/19/09 FILE: MW7A7B.HC1
                    DETENTION FOR 100-YEAR STORM EVENT (BASED ON RATIONAL METHOD)
                    FOR COMINED DRAINAGE BASINS 7000A AND 7000B

  5 IO         OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          1  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT         HYDROGRAPH TIME DATA
                     NMIN          1  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1JAN90  STARTING DATE
                    ITIME       1200  STARTING TIME
                       NQ        900  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     2JAN90  ENDING DATE
                   NDTIME       0259  ENDING TIME
                    ICENT         19  CENTURY MARK

               COMPUTATION INTERVAL    .02 HOURS
                    TOTAL TIME BASE  14.98 HOURS

         ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

          **************
          *            *
  6 KK    *    7000A   *
          *            *
          **************
                    DRAINAGE BASIN 7000A
                    RUN DATE   8/8/2009
                    RATIONAL METHOD HYDROGRAPH PROGRAM
                    COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                    6HR RAINFALL IS  3.6  INCHES
                    RATIONAL METHOD RUNOFF COEFFICIENT IS  0.49
```

```
                    RATIONAL METHOD TIME OF CONCENTRATION IS  10  MIN.
                    FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                    IT 2 01JAN90 1200 200

 16 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        900  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .017  TIME INTERVAL IN HOURS


 18 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN         10  TIME INTERVAL IN MINUTES
                     JXDATE     1JAN90  STARTING DATE
                     JXTIME       1155  STARTING TIME

              SUBBASIN RUNOFF DATA

 17 BA          SUBBASIN CHARACTERISTICS
                      TAREA        .30  SUBBASIN AREA

                                                                ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION    7000A

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR        24-HR       72-HR     14.98-HR
    506.       4.08       (CFS)      57.          23.         23.          23.
                       (INCHES)   1.749        1.751       1.751        1.751
                        (AC-FT)     28.          28.         28.          28.

                      CUMULATIVE AREA =      .30 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


           **************
           *            *
 24 KK     *    DB7A    *
           *            *
           **************
                    100-YEAR DETENTION

 26 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        900  LAST ORDINATE PUNCHED OR SAVED
```

```
            TIMINT         .017  TIME INTERVAL IN HOURS


         HYDROGRAPH ROUTING DATA

 27 RS          STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC       6.75  INITIAL CONDITION
                          X        .00 WORKING R AND D COEFFICIENT

 28 SV            STORAGE          .0        9.3       11.9       14.8       18.8

 29 SQ          DISCHARGE          0.        13.        32.        96.       255.

 30 SE          ELEVATION      100.00     103.17     104.00     104.87     106.00

                                                                        ***

    ***            ***             ***             ***             ***

                     HYDROGRAPH AT STATION     DB7A

 PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                       6-HR        24-HR       72-HR     14.98-HR
     254.      4.18         (CFS)          49.          25.         25.          25.
                          (INCHES)       1.513        1.926       1.926        1.926
                           (AC-FT)         25.          31.         31.          31.

PEAK STORAGE   TIME                             MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                       6-HR        24-HR       72-HR     14.98-HR
      19.      4.18                        12.           9.          9.           9.

 PEAK STAGE    TIME                              MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                       6-HR        24-HR       72-HR     14.98-HR
   106.00      4.18                     103.95       102.89      102.89       102.89

                     CUMULATIVE AREA =      .30 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


           **************
           *            *
 31 KK     *     7000B  *
           *            *
           **************
                              DRIANAGE BASIN 7000B
                              RUN DATE   8/8/2009
                              RATIONAL METHOD HYDROGRAPH PROGRAM
                              COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                              6HR RAINFALL IS  3.6  INCHES
                              RATIONAL METHOD RUNOFF COEFFICIENT IS  0.41
                              RATIONAL METHOD TIME OF CONCENTRATION IS  12  MIN.
                              FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                              IT 2 01JAN90 1200 200
```

```
41 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         900  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .017  TIME INTERVAL IN HOURS


43 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN          12  TIME INTERVAL IN MINUTES
                    JXDATE      1JAN90  STARTING DATE
                    JXTIME        1154  STARTING TIME

             SUBBASIN RUNOFF DATA

42 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .07  SUBBASIN AREA

                                                                      ***

    ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION    7000B

PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                      6-HR        24-HR       72-HR     14.98-HR
    97.       4.10        (CFS)          11.           4.          4.           4.
                        (INCHES)       1.463        1.466       1.466        1.466
                         (AC-FT)          5.           5.          5.           5.

                         CUMULATIVE AREA =      .07 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


           **************
           *            *
49 KK      *    DB7B    *
           *            *
           **************
                         DETAIN 7000B

51 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         900  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .017  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA
```

```
 52 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC        1.30  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

 53 SV            STORAGE          .0       2.5       3.3       3.7       4.2

 54 SQ          DISCHARGE          0.        3.       12.       22.       46.

 55 SE          ELEVATION      100.00    103.17    104.00    104.41    106.00

                                                        ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     DB7B

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                  6-HR       24-HR       72-HR     14.98-HR
     46.       4.23        (CFS)        8.          4.          4.          4.
                          (INCHES)    1.118       1.467       1.467       1.467
                           (AC-FT)        4.          5.          5.          5.

PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                  6-HR       24-HR       72-HR     14.98-HR
      4.       4.23                    3.          2.          2.          2.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                  6-HR       24-HR       72-HR     14.98-HR
   106.00      4.23                103.52      102.67      102.67      102.67

                       CUMULATIVE AREA =      .07 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


          **************
          *            *
 56 KK    *  7000B_DS  *
          *            *
          **************
                       DRAIANGE BASIN DOWNSTREAM OF DB7B (NOT DETAINED)
                       RUN DATE   8/8/2009
                       RATIONAL METHOD HYDROGRAPH PROGRAM
                       COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                       6HR RAINFALL IS  3.6  INCHES
                       RATIONAL METHOD RUNOFF COEFFICIENT IS  0.6
                       RATIONAL METHOD TIME OF CONCENTRATION IS  6  MIN.
                       FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                       IT 2 01JAN90 1200 200

 67 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN           6  TIME INTERVAL IN MINUTES
                    JXDATE      1JAN90  STARTING DATE
                    JXTIME        1157  STARTING TIME
```

SUBBASIN RUNOFF DATA

66 BA SUBBASIN CHARACTERISTICS

TAREA	.00	SUBBASIN AREA

***

*** *** *** *** ***

HYDROGRAPH AT STATION 7000B_DS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	14.98-HR
2.	4.05	(CFS)	0.	0.	0.	0.
		(INCHES)	2.172	2.175	2.175	2.175
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** **

```
          **************
          *            *
76 KK     *  COMBINE   *
          *            *
          **************
```

77 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	900	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.017	TIME INTERVAL IN HOURS

78 HC HYDROGRAPH COMBINATION

ICOMP	3	NUMBER OF HYDROGRAPHS TO COMBINE

***

*** *** *** *** ***

HYDROGRAPH AT STATION COMBINE

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	14.98-HR
299.	4.20	(CFS)	58.	30.	30.	30.
		(INCHES)	1.439	1.841	1.841	1.841
		(AC-FT)	29.	37.	37.	37.

CUMULATIVE AREA = .37 SQ MI

RUNOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND

TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	7000A	506.	4.08	57.	23.	23.	.30		
ROUTED TO	DB7A	254.	4.18	49.	25.	25.	.30	106.00	4.18
HYDROGRAPH AT	7000B	97.	4.10	11.	4.	4.	.07		
ROUTED TO	DB7B	46.	4.23	8.	4.	4.	.07	106.00	4.23
HYDROGRAPH AT	7000B_DS	2.	4.05	0.	0.	0.	.00		
3 COMBINED AT	COMBINE	299.	4.20	58.	30.	30.	.37		

*** NORMAL END OF HEC-1 ***

Drainage Basin 8000

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                JUN  1998              *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   29JUL09  TIME  09:30:52   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*            (916) 756-1104             *
*                                       *
*****************************************
```


```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX  XXXXX            XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS.DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***

          *DIAGRAM
    1     ID   Meadowood J-15956
    2     ID   100-YEAR, 6-HOUR DETENTION ANALYSIS
    3     ID   7/28/09 FILENAME: MW8000.HC1
    4     IT       1 01JAN90    1200    2000
    5     IO       3       1

    6     KK8149.hc1
    7     KM   RUN DATE   7/28/2009
    8     KM   FLOW INFORMATION AT NODE 8149 THAT ENTERS DET BASIN
    9     KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   10     KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   11     KM   6HR RAINFALL IS  3.6  INCHES
   12     KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.55
   13     KM   RATIONAL METHOD TIME OF CONCENTRATION IS  10  MIN.
   14     KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   15     KM   IT 2 01JAN90 1200 200
   16     BA  0.0384
   17     IN      10 01JAN90    1155
   18     QI       0       3       3     3.1     3.2     3.3     3.4     3.6     3.7     3.9
   19     QI       4     4.2     4.4     4.7     4.9     5.3     5.5     6.1     6.5     7.5
   20     QI     8.1     9.9    11.3    16.5    16.8   90.04    13.3     8.9     6.9     5.8
   21     QI     5.1     4.5     4.1     3.8     3.5     3.3     3.1       0       0       0
   22     QI       0       0       0       0       0       0       0       0

   23     KK    DetA
   24     KO       0       0       0       0      21
   25     RS       1    STOR      -1
   26     SV       0     .65     .86    1.11    1.78
   27     SQ       0    1.54    3.90   13.18      45
   28     SE       0  102.37     103  103.72     104

   29     KK8152.hc1
   30     KM   RUN DATE   7/28/2009
   31     KM   FLOW INFORMATION AT NODE 8152 THAT IS NOT DETAINED
   32     KM   RATIONAL METHOD HYDROGRAPH PROGRAM
   33     KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
   34     KM   6HR RAINFALL IS  3.6  INCHES
   35     KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.701
   36     KM   RATIONAL METHOD TIME OF CONCENTRATION IS  6  MIN.
   37     KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
   38     KM   IT 2 01JAN90 1200 200
   39     BA  0.0034
   40     IN       6 01JAN90    1157
   41     QI       0     0.3     0.3     0.3     0.3     0.4     0.4     0.4     0.4     0.4
   42     QI     0.4     0.4     0.4     0.4     0.4     0.4     0.4     0.5     0.5     0.5
   43     QI     0.5     0.5     0.5     0.6     0.6     0.6     0.6     0.7     0.7     0.7
   44     QI     0.8     0.8     0.9       1       1     1.2     1.3     1.5     1.8     2.6
   45     QI     2.9   13.73     2.1     1.4     1.1     0.9     0.8     0.7     0.6     0.6
   46     QI     0.5     0.5     0.5     0.5     0.4     0.4     0.4     0.4     0.4     0.4
   47     QI     0.3       0       0       0       0       0       0       0       0       0
   48     QI       0       0
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  49      KK Combine
  50      KO       0       0       0       0      21
  51      HC       2

  52      KK8200.hc1
  53      KM   RUN DATE   3/18/2009
  54      KM   FLOW INFORMATION FROM BASIN 8200 THAT ENTERS DET BASIN
  55      KM   RATIONAL METHOD HYDROGRAPH PROGRAM
  56      KM   COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
  57      KM   6HR RAINFALL IS  3.6  INCHES
  58      KM   RATIONAL METHOD RUNOFF COEFFICIENT IS  0.551
  59      KM   RATIONAL METHOD TIME OF CONCENTRATION IS  11  MIN.
  60      KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
  61      KM   IT 2 01JAN90 1200 200
  62      BA  0.0408
  63      IN      11 01JAN90    1153
  64      QI       0     3.1     3.1     3.3     3.4     3.5     3.6     3.8     3.9     4.2
  65      QI     4.3     4.6     4.8     5.2     5.4       6     6.4     7.3     7.9     9.7
  66      QI    11.1    16.2    24.6    80.3      13     8.7     6.8     5.7       5     4.4
  67      QI       4     3.7     3.4     3.2       0       0       0       0       0       0
  68      QI       0       0       0       0       0

  69      KK    DetB
  70      KO       0       0       0       0      21
  71      RS       1    STOR      -1
  72      SV       0    1.27    1.63    1.97    2.81
  73      SQ       0    1.05     3.2    9.40   38.18
  74      SE       0  102.34     103  103.54     104

  75      KK Combine
  76      KO       0       0       0       0      21
  77      HC       2
  78      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<----) *RETURN OF DIVERTED OR PUMPED FLOW*

```
   6    8149.hc1
             V
             V
  23       DetA
             .
             .
  29         .     8152.hc1
             .           .
             .           .
  49     Combine.....
             .
             .
  52         .     8200.hc1
             .           V
             .           V
  69         .       DetB
             .         .
             .           .
  75     Combine.....
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN  1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   29JUL09  TIME  09:30:52   *
*                                       *
*****************************************
```


```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*        DAVIS, CALIFORNIA 95616    *
*            (916) 756-1104         *
*                                   *
*************************************
```


Meadowood J-15956
100-YEAR, 6-HOUR DETENTION ANALYSIS
7/28/09 FILENAME: MW8000.HC1

5 IO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	1	MINUTES IN COMPUTATION INTERVAL
IDATE	1JAN90	STARTING DATE
ITIME	1200	STARTING TIME
NQ	2000	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2JAN90	ENDING DATE
NDTIME	2119	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .02 HOURS
TOTAL TIME BASE 33.32 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

*** **

```
**************
*            *
*  8149.hc1  *
*            *
**************
```

6 KK

RUN DATE 7/28/2009
FLOW INFORMATION AT NODE 8149 THAT ENTERS DET BASIN
RATIONAL METHOD HYDROGRAPH PROGRAM

6HR RAINFALL IS 3.6 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.55

```
                    RATIONAL METHOD TIME OF CONCENTRATION IS  10  MIN.
                    FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                    IT 2 01JAN90 1200 200

17 IN          TIME DATA FOR INPUT TIME SERIES
                    JXMIN          10  TIME INTERVAL IN MINUTES
                   JXDATE      1JAN90  STARTING DATE
                   JXTIME        1155  STARTING TIME

            SUBBASIN RUNOFF DATA

16 BA          SUBBASIN CHARACTERISTICS
                    TAREA         .04  SUBBASIN AREA

                                                      ***

      ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION 8149.hcl

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR        24-HR       72-HR      33.32-HR
    90.       4.08      (CFS)         8.           2.          1.           1.
                     (INCHES)     2.001        2.003       2.003        2.003
                      (AC-FT)         4.           4.          4.           4.

                     CUMULATIVE AREA =      .04 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

          **************
          *            *
23 KK     *     DetA   *
          *            *
          **************

24 KO          OUTPUT CONTROL VARIABLES
                    IPRNT           3  PRINT CONTROL
                    IPLOT           1  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        2000  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .017  TIME INTERVAL IN HOURS

            HYDROGRAPH ROUTING DATA

25 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

26 SV            STORAGE          .0          .6          .9         1.1         1.8
```

```
 27 SQ          DISCHARGE          0.        2.        4.       13.       45.

 28 SE          ELEVATION         .00    102.37    103.00    103.72    104.00

                                                                ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     DetA

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                 6-HR        24-HR        72-HR     33.32-HR
    45.       4.18       (CFS)        8.           2.           2.           2.
                        (INCHES)   1.926        2.301        2.311        2.311
                         (AC-FT)       4.           5.           5.           5.

PEAK STORAGE  TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)     (HR)                 6-HR        24-HR        72-HR     33.32-HR
     2.       4.18                    1.           0.           0.           0.

PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
  (FEET)      (HR)                 6-HR        24-HR        72-HR     33.32-HR
  104.00      4.18               103.11        50.90        37.16        37.16

                       CUMULATIVE AREA =      .04 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


          **************
          *            *
 29 KK    *  8152.hc1  *
          *            *
          **************
                        RUN DATE   7/28/2009
                        FLOW INFORMATION AT NODE 8152 THAT IS NOT DETAINED
                        RATIONAL METHOD HYDROGRAPH PROGRAM
                        COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                        6HR RAINFALL IS  3.6  INCHES
                        RATIONAL METHOD RUNOFF COEFFICIENT IS  0.701
                        RATIONAL METHOD TIME OF CONCENTRATION IS  6  MIN.
                        FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                        IT 2 01JAN90 1200 200

 40 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN           6  TIME INTERVAL IN MINUTES
                    JXDATE      1JAN90  STARTING DATE
                    JXTIME        1157  STARTING TIME

               SUBBASIN RUNOFF DATA

 39 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .00  SUBBASIN AREA

                                                                ***
```

*** *** *** *** ***

HYDROGRAPH AT STATION 8152.hc1

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	33.32-HR
14.	4.05	(CFS)	1.	0.	0.	0.
		(INCHES)	2.546	2.547	2.547	2.547
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** **

```
          **************
          *            *
49 KK     *  Combine   *
          *            *
          **************
```

50 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	2000	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.017	TIME INTERVAL IN HOURS

51 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

*** *** *** *** ***

HYDROGRAPH AT STATION Combine

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	33.32-HR
46.	4.18	(CFS)	9.	3.	2.	2.
		(INCHES)	1.969	2.321	2.330	2.330
		(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = .04 SQ MI

*** **

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

```
52 KK      *  8200.hc1  *
           *            *
           **************
                        RUN DATE   3/18/2009
                        FLOW INFORMATION FROM BASIN 8200 THAT ENTERS DET BASIN
                        RATIONAL METHOD HYDROGRAPH PROGRAM
                        COPYRIGHT 1992, 2001, RICK ENGINEERING COMPANY
                        6HR RAINFALL IS  3.6  INCHES
                        RATIONAL METHOD RUNOFF COEFFICIENT IS  0.551
                        RATIONAL METHOD TIME OF CONCENTRATION IS  11  MIN.
                        FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
                        IT 2 01JAN90 1200 200

63 IN           TIME DATA FOR INPUT TIME SERIES
                      JXMIN          11  TIME INTERVAL IN MINUTES
                     JXDATE      1JAN90  STARTING DATE
                     JXTIME        1153  STARTING TIME

              SUBBASIN RUNOFF DATA

62 BA           SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                                                          ***

     ***              ***              ***              ***              ***

                        HYDROGRAPH AT STATION 8200.hc1

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR        72-HR      33.32-HR
    80.       4.10          (CFS)        9.           2.           2.           2.
                          (INCHES)    1.966        1.970        1.970        1.970
                           (AC-FT)       4.           4.           4.           4.

                        CUMULATIVE AREA =      .04 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


           **************
           *            *
69 KK      *      DetB  *
           *            *
           **************

70 KO           OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2       2000  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .017  TIME INTERVAL IN HOURS
```

HYDROGRAPH ROUTING DATA

```
71 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

72 SV            STORAGE           .0       1.3       1.6       2.0       2.8

73 SQ          DISCHARGE           0.        1.        3.        9.       38.

74 SE          ELEVATION          .00    102.34    103.00    103.54    104.00

                                                                  ***

    ***         ***         ***         ***         ***

                    HYDROGRAPH AT STATION      DetB

PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                   6-HR        24-HR       72-HR     33.32-HR
     38.       4.22        (CFS)        8.           3.          2.           2.
                         (INCHES)    1.862        2.422       2.517        2.517
                          (AC-FT)       4.           5.          5.           5.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                   6-HR        24-HR       72-HR     33.32-HR
       3.      4.22                     2.           1.          1.           1.

PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
  (FEET)       (HR)                   6-HR        24-HR       72-HR     33.32-HR
  104.00       4.22                 103.23        77.45       63.19        63.19

                       CUMULATIVE AREA =      .04 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

          **************
          *            *
75 KK     *  Combine   *
          *            *
          **************

76 KO          OUTPUT CONTROL VARIABLES
                    IPRNT           3  PRINT CONTROL
                    IPLOT           1  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        2000  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .017  TIME INTERVAL IN HOURS

77 HC          HYDROGRAPH COMBINATION
```

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

*** *** ***. *** ***

HYDROGRAPH AT STATION Combine

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	33.32-HR
84.	4.20	(CFS)	17.	5.	4.	4.
		(INCHES)	1.915	2.371	2.422	2.422
		(AC-FT)	8.	10.	11.	11.

CUMULATIVE AREA = .08 SQ MI

RUNOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND

TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	8149.hc1	90.	4.08	8.	2.	1.	.04		
ROUTED TO	DetA	45.	4.18	8.	2.	2.	.04	104.00	4.18
HYDROGRAPH AT	8152.hc1	14.	4.05	1.	0.	0.	.00		
2 COMBINED AT	Combine	46.	4.18	9.	3.	2.	.04		
HYDROGRAPH AT	8200.hc1	80.	4.10	9.	2.	2.	.04		
ROUTED TO	DetB	38.	4.22	8.	3.	2.	.04	104.00	4.22
2 COMBINED AT	Combine	84.	4.20	17.	5.	4.	.08		

*** NORMAL END OF HEC-1 ***

Appendix F

WSPGW Analysis for SR-76 Crossing

```
T1 JN - 15956-A                                                                0
T2 Meadowood --- WSPGW Analysis for Existing Condition
T3 05/29/2009
SO        .000 256.430  1                          .258.210
R      471.600 258.820  1       .014                                .000
JX     471.700 258.821  4  3    .014    6.080          258.821      90.0
.000
TS     475.700 258.840  5       .014                                .000
WX     475.700 258.840  6
R      587.200 259.380  6       .013                                .000    .000 0
WE     587.200 259.380  7       .500
TS     591.200 259.400  8       .014                                .000
JX     591.300 259.401 10  9    .014    5.400          259.400      90.0
.000
R     1125.300 262.158 10       .014                                .000
JX    1129.300 262.159 14 13    .014    5.400          262.160        .0      -
90.000
R     1129.400 262.160 14       .014                                .000
WX    1129.400 262.160 15
R     1250.800 262.740 15       .013                                .000    .000 0
JX    1260.600 262.741 16       .013                   263.070
90.000
R     1286.800 262.920 16       .013                                .000    .000 0
TS    1286.810 262.921 17       .030
R     1670.670 264.960 17       .030                                .000    .000 0
SH    2156.800 268.960 18                                 268.200
CD    1  1   0     .000    3.300     2.000 1.500 1.500    .00
CD    2  1   0     .000    3.300     2.000 1.500 1.500    .00
CD    3  1   0     .000    3.300      .100  .000  .000    .00
CD    4  1   0     .000    3.300     2.000 1.500 1.500    .00
CD    5  1   0     .000    3.300    11.800  .000  .000    .00
CD    6  4   2     .000    3.000      .000  .000  .000    .00
CD    7  1   0     .000    3.300    11.800  .000  .000    .00
CD    8  1   0     .000    2.500     2.000 1.500 1.500    .00
CD    9  1   0     .000    2.500      .100  .000  .000    .00
CD   10  1   0     .000    2.500     2.000 1.500 1.500    .00
CD   11  1   0     .000    1.640     2.000 3.000 3.000    .00
CD   12  1   0     .000    2.500     9.800  .000  .000    .00
CD   13  1   0     .000    1.640     2.000  .000  .000    .00
CD   14  1   0     .000    2.500     9.800  .000  .000    .00
CD   15  4   2     .000    2.500      .000  .000  .000    .00
CD   16  1   0     .000    3.300     2.000 1.500 1.500    .00
CD   17  1   0     .000    3.300     2.000 3.000 3.000    .00
CD   18  1   0     .000    3.300     2.000 3.000 3.000    .00
Q              45.310   .0
```

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 6- 8-2009 Time: 3:44:12

JN - 15956-A

Meadowood --- WSPGW Analysis for Existing Condition

05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
.000	256.430	1.779	258.209	62.19	7.49	.87	259.08	.00	1.98	7.34	3.300	2.000	1.50	0 .0
343.115	.0051					.0051	1.74	1.78	1.24	1.78	.014	.00	1.50	TRAP
343.115	258.169	1.779	259.947	62.19	7.49	.87	260.82	.00	1.98	7.34	3.300	2.000	1.50	0 .0
85.133	.0051					.0049	.42	1.78	1.24	1.78	.014	.00	1.50	TRAP
428.248	258.600	1.809	260.409	62.19	7.29	.83	261.24	.00	1.98	7.43	3.300	2.000	1.50	0 .0
31.211	.0051					.0044	.14	1.81	1.20	1.78	.014	.00	1.50	TRAP
459.460	258.758	1.864	260.623	62.19	6.96	.75	261.37	.00	1.98	7.59	3.300	2.000	1.50	0 .0
9.830	.0051					.0039	.04	1.86	1.13	1.78	.014	.00	1.50	TRAP
469.290	258.808	1.921	260.729	62.19	6.63	.68	261.41	.00	1.98	7.76	3.300	2.000	1.50	0 .0
2.310	.0051					.0034	.01	1.92	1.06	1.78	.014	.00	1.50	TRAP
471.600	258.820	1.980	260.800	62.19	6.32	.62	261.42	.00	1.98	7.94	3.300	2.000	1.50	0 .0
JUNCT STR	.0101					.0022	.00	1.98	1.00		.014	.00	1.50	TRAP
471.700	258.821	2.404	261.225	56.11	4.16	.27	261.49	.00	1.88	9.21	3.300	2.000	1.50	0 .0
TRANS STR	.0047					.0006	.00	2.40	.61		.014	.00	1.50	TRAP
475.700	258.840	2.662	261.502	56.11	1.79	.05	261.55	.00	.89	11.80	3.300	11.800	.00	0 .0
WALL EXIT														
475.700	258.840	2.662	261.502	56.11	4.23	.28	261.78	.00	1.71	1.90	3.000	.000	.00	2 .0
38.203	.0048					.0016	.06	2.66	.28	1.68	.013	.00	.00	PIPE

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
513.903	259.025	2.512	261.537	56.11	4.44	.31	261.84	.00	1.71	2.21	3.000	.000	.00	2 .0
8.593	.0048					.0017	.01	2.51	.33	1.68	.013	.00	.00	PIPE
522.496	259.067	2.480	261.547	56.11	4.49	.31	261.86	.00	1.71	2.27	3.000	.000	.00	2 .0
HYDRAULIC JUMP														
522.496	259.067	1.683	260.749	56.11	6.88	.73	261.48	.00	1.71	2.98	3.000	.000	.00	2 .0
56.532	.0048					.0048	.27	1.68	.73	1.68	.013	.00	.00	PIPE
579.028	259.340	1.683	261.023	56.11	6.88	.73	261.76	.00	1.71	2.98	3.000	.000	.00	2 .0
8.172	.0048					.0047	.04	1.68	.73	1.68	.013	.00	.00	PIPE
587.200	259.380	1.713	261.093	56.11	6.72	.70	261.80	.00	1.71	2.97	3.000	.000	.00	2 .0
587.200	259.380	2.214	261.594	56.11	5.02	.39	261.98	.00	1.71	2.64	3.000	.000	.00	2 .0
WALL ENTRANCE														
587.200	259.380	3.397	262.777	56.11	1.40	.03	262.81	.00	.89	11.80	3.300	11.800	.00	0 .0
TRANS STR	.0050					.0002	.00	3.40	.13		.014	.00	.00	TRAP
591.200	259.400	3.349	262.749	56.11	2.39	.09	262.84	.00	1.88	12.05	2.500	2.000	1.50	0 .0
JUNCT STR	.0101					.0002	.00	3.35	.30		.014	.00	1.50	TRAP
591.300	259.401	3.383	262.784	50.71	2.12	.07	262.85	.00	1.79	12.15	2.500	2.000	1.50	0 .0
17.322	.0052					.0002	.00	3.38	.27	1.61	.014	.00	1.50	TRAP
608.622	259.490	3.290	262.780	50.71	2.22	.08	262.86	.00	1.79	11.87	2.500	2.000	1.50	0 .0
16.826	.0052					.0002	.00	3.29	.28	1.61	.014	.00	1.50	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
625.448	259.577	3.199	262.777	50.71	2.33	.08	262.86	.00	1.79	11.60	2.500	2.000	1.50	0 .0
16.332	.0052					.0003	.00	3.20	.30	1.61	.014	.00	1.50	TRAP
641.780	259.662	3.111	262.773	50.71	2.44	.09	262.87	.00	1.79	11.33	2.500	2.000	1.50	0 .0
15.842	.0052					.0003	.00	3.11	.32	1.61	.014	.00	1.50	TRAP
657.622	259.743	3.025	262.768	50.71	2.56	.10	262.87	.00	1.79	11.07	2.500	2.000	1.50	0 .0
15.352	.0052					.0004	.01	3.02	.34	1.61	.014	.00	1.50	TRAP
672.974	259.823	2.941	262.764	50.71	2.69	.11	262.88	.00	1.79	10.82	2.500	2.000	1.50	0 .0
14.863	.0052					.0004	.01	2.94	.36	1.61	.014	.00	1.50	TRAP
687.836	259.899	2.859	262.758	50.71	2.82	.12	262.88	.00	1.79	10.58	2.500	2.000	1.50	0 .0
14.371	.0052					.0005	.01	2.86	.38	1.61	.014	.00	1.50	TRAP
702.207	259.974	2.779	262.753	50.71	2.96	.14	262.89	.00	1.79	10.34	2.500	2.000	1.50	0 .0
13.875	.0052					.0005	.01	2.78	.40	1.61	.014	.00	1.50	TRAP
716.083	260.045	2.701	262.746	50.71	3.10	.15	262.90	.00	1.79	10.10	2.500	2.000	1.50	0 .0
13.374	.0052					.0006	.01	2.70	.43	1.61	.014	.00	1.50	TRAP
729.457	260.114	2.625	262.739	50.71	3.25	.16	262.90	.00	1.79	9.87	2.500	2.000	1.50	0 .0
12.864	.0052					.0007	.01	2.62	.46	1.61	.014	.00	1.50	TRAP
742.320	260.181	2.550	262.731	50.71	3.41	.18	262.91	.00	1.79	9.65	2.500	2.000	1.50	0 .0
12.341	.0052					.0008	.01	2.55	.48	1.61	.014	.00	1.50	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
754.661	260.244	2.478	262.722	50.71	3.58	.20	262.92	.00	1.79	9.43	2.500	2.000	1.50	0 .0
11.801	.0052					.0009	.01	2.48	.51	1.61	.014	.00	1.50	TRAP
766.463	260.305	2.407	262.713	50.71	3.75	.22	262.93	.00	1.79	9.22	2.500	2.000	1.50	0 .0
11.240	.0052					.0010	.01	2.41	.55	1.61	.014	.00	1.50	TRAP
777.702	260.363	2.338	262.702	50.71	3.94	.24	262.94	.00	1.79	9.02	2.500	2.000	1.50	0 .0
10.648	.0052					.0011	.01	2.34	.58	1.61	.014	.00	1.50	TRAP
788.350	260.418	2.271	262.689	50.71	4.13	.26	262.95	.00	1.79	8.81	2.500	2.000	1.50	0 .0
10.017	.0052					.0013	.01	2.27	.62	1.61	.014	.00	1.50	TRAP
798.367	260.470	2.206	262.676	50.71	4.33	.29	262.97	.00	1.79	8.62	2.500	2.000	1.50	0 .0
9.331	.0052					.0014	.01	2.21	.65	1.61	.014	.00	1.50	TRAP
807.698	260.518	2.142	262.660	50.71	4.54	.32	262.98	.00	1.79	8.42	2.500	2.000	1.50	0 .0
8.572	.0052					.0016	.01	2.14	.70	1.61	.014	.00	1.50	TRAP
816.271	260.563	2.079	262.642	50.71	4.76	.35	262.99	.00	1.79	8.24	2.500	2.000	1.50	0 .0
7.710	.0052					.0018	.01	2.08	.74	1.61	.014	.00	1.50	TRAP
823.981	260.602	2.018	262.621	50.71	5.00	.39	263.01	.00	1.79	8.06	2.500	2.000	1.50	0 .0
4.235	.0052					.0020	.01	2.02	.78	1.61	.014	.00	1.50	TRAP
828.215	260.624	1.983	262.608	50.71	5.14	.41	263.02	.00	1.79	7.95	2.500	2.000	1.50	0 .0

HYDRAULIC JUMP

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
828.215	260.624	1.607	262.231	50.71	7.16	.80	263.03	.00	1.79	6.82	2.500	2.000	1.50	0 .0
180.776	.0052					.0052	.93	1.61	1.24	1.61	.014	.00	1.50	TRAP
1008.992	261.557	1.607	263.164	50.71	7.16	.80	263.96	.00	1.79	6.82	2.500	2.000	1.50	0 .0
75.732	.0052					.0050	.38	1.61	1.24	1.61	.014	.00	1.50	TRAP
1084.724	261.948	1.632	263.580	50.71	6.99	.76	264.34	.00	1.79	6.90	2.500	2.000	1.50	0 .0
29.422	.0052					.0045	.13	1.63	1.20	1.61	.014	.00	1.50	TRAP
1114.146	262.100	1.683	263.783	50.71	6.66	.69	264.47	.00	1.79	7.05	2.500	2.000	1.50	0 .0
9.046	.0052					.0040	.04	1.68	1.13	1.61	.014	.00	1.50	TRAP
1123.192	262.147	1.735	263.882	50.71	6.35	.63	264.51	.00	1.79	7.20	2.500	2.000	1.50	0 .0
2.108	.0052					.0035	.01	1.73	1.06	1.61	.014	.00	1.50	TRAP
1125.300	262.158	1.789	263.947	50.71	6.05	.57	264.52	4.28	1.79	7.37	2.500	2.000	1.50	0 .0
JUNCT STR	.0003					.0017	.01	6.07	1.00		.014	.00	1.50	TRAP
1129.300	262.159	2.379	264.538	45.31	1.94	.06	264.60	.00	.87	9.80	2.500	9.800	.00	0 .0
.100	.0101					.0002	.00	2.38	.22	.64	.014	.00	.00	TRAP
1129.400	262.160	2.378	264.538	45.31	1.94	.06	264.60	.00	.87	9.80	2.500	9.800	.00	0 .0
WALL EXIT														
1129.400	262.160	2.379	264.539	45.31	4.70	.34	264.88	.00	1.62	1.08	2.500	.000	.00	2 .0
62.672	.0048					.0027	.17	2.38	.28	1.69	.013	.00	.00	PIPE

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1192.072	262.459	2.213	264.673	45.31	4.93	.38	265.05	.00	1.62	1.59	2.500	.000	.00	2 .0
44.484	.0048					.0028	.13	2.21	.36	1.69	.013	.00	.00	PIPE
1236.556	262.672	2.089	264.761	45.31	5.17	.41	265.18	.00	1.62	1.85	2.500	.000	.00	2 .0
14.244	.0048					.0030	.04	2.09	.42	1.69	.013	.00	.00	PIPE
1250.800	262.740	2.049	264.789	45.31	5.26	.43	265.22	.26	1.62	1.92	2.500	.000	.00	2 .0
JUNCT STR	.0001					.0017	.02	2.31	.44		.013	.00	.00	PIPE
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
1260.600	262.741	2.667	265.408	45.31	2.83	.12	265.53	.00	1.69	10.00	3.300	2.000	1.50	0 .0
9.813	.0068					.0004	.00	2.67	.39	1.37	.013	.00	1.50	TRAP
1270.413	262.808	2.591	265.399	45.31	2.97	.14	265.54	.00	1.69	9.77	3.300	2.000	1.50	0 .0
9.416	.0068					.0005	.00	2.59	.42	1.37	.013	.00	1.50	TRAP
1279.829	262.872	2.518	265.390	45.31	3.12	.15	265.54	.00	1.69	9.55	3.300	2.000	1.50	0 .0
6.971	.0068					.0005	.00	2.52	.44	1.37	.013	.00	1.50	TRAP
1286.800	262.920	2.463	265.383	45.31	3.23	.16	265.55	.00	1.69	9.39	3.300	2.000	1.50	0 .0
TRANS STR	.0976					.0019	.00	2.46	.47		.030	.00	1.50	TRAP
1286.810	262.921	2.586	265.507	45.31	1.80	.05	265.56	.00	1.40	17.51	3.300	2.000	3.00	0 .0
14.298	.0053					.0009	.01	2.59	.26	1.76	.030	.00	3.00	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1301.108	262.997	2.518	265.515	45.31	1.88	.06	265.57	.00	1.40	17.11	3.300	2.000	3.00	0 .0
14.219	.0053					.0010	.01	2.52	.28	1.76	.030	.00	3.00	TRAP
1315.327	263.072	2.452	265.524	45.31	1.98	.06	265.58	.00	1.40	16.71	3.300	2.000	3.00	0 .0
14.191	.0053					.0012	.02	2.45	.30	1.76	.030	.00	3.00	TRAP
1329.518	263.148	2.387	265.535	45.31	2.07	.07	265.60	.00	1.40	16.32	3.300	2.000	3.00	0 .0
14.225	.0053					.0013	.02	2.39	.32	1.76	.030	.00	3.00	TRAP
1343.742	263.223	2.324	265.547	45.31	2.17	.07	265.62	.00	1.40	15.94	3.300	2.000	3.00	0 .0
14.337	.0053					.0015	.02	2.32	.33	1.76	.030	.00	3.00	TRAP
1358.080	263.300	2.262	265.562	45.31	2.28	.08	265.64	.00	1.40	15.57	3.300	2.000	3.00	0 .0
14.553	.0053					.0017	.03	2.26	.36	1.76	.030	.00	3.00	TRAP
1372.633	263.377	2.202	265.579	45.31	2.39	.09	265.67	.00	1.40	15.21	3.300	2.000	3.00	0 .0
14.909	.0053					.0020	.03	2.20	.38	1.76	.030	.00	3.00	TRAP
1387.542	263.456	2.144	265.600	45.31	2.51	.10	265.70	.00	1.40	14.86	3.300	2.000	3.00	0 .0
15.464	.0053					.0022	.03	2.14	.40	1.76	.030	.00	3.00	TRAP
1403.005	263.538	2.086	265.625	45.31	2.63	.11	265.73	.00	1.40	14.52	3.300	2.000	3.00	0 .0
16.317	.0053					.0025	.04	2.09	.43	1.76	.030	.00	3.00	TRAP
1419.323	263.625	2.030	265.655	45.31	2.76	.12	265.77	.00	1.40	14.18	3.300	2.000	3.00	0 .0
17.652	.0053					.0029	.05	2.03	.45	1.76	.030	.00	3.00	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Existing Condition
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1436.975	263.719	1.976	265.695	45.31	2.89	.13	265.82	.00	1.40	13.86	3.300	2.000	3.00	0 .0
19.848	.0053					.0033	.07	1.98	.48	1.76	.030	.00	3.00	TRAP
1456.823	263.824	1.923	265.747	45.31	3.03	.14	265.89	.00	1.40	13.54	3.300	2.000	3.00	0 .0
23.827	.0053					.0037	.09	1.92	.51	1.76	.030	.00	3.00	TRAP
1480.650	263.951	1.871	265.821	45.31	3.18	.16	265.98	.00	1.40	13.22	3.300	2.000	3.00	0 .0
32.606	.0053					.0042	.14	1.87	.54	1.76	.030	.00	3.00	TRAP
1513.257	264.124	1.820	265.944	45.31	3.34	.17	266.12	.00	1.40	12.92	3.300	2.000	3.00	0 .0
64.918	.0053					.0048	.31	1.82	.57	1.76	.030	.00	3.00	TRAP
1578.175	264.469	1.771	266.239	45.31	3.50	.19	266.43	.00	1.40	12.62	3.300	2.000	3.00	0 .0
77.199	.0053					.0052	.40	1.77	.61	1.76	.030	.00	3.00	TRAP
1655.374	264.879	1.757	266.636	45.31	3.55	.20	266.83	.00	1.40	12.54	3.300	2.000	3.00	0 .0
15.296	.0053					.0053	.08	1.76	.62	1.76	.030	.00	3.00	TRAP
1670.670	264.960	1.757	266.717	45.31	3.55	.20	266.91	.00	1.40	12.54	3.300	2.000	3.00	0 .0
486.130	.0053					.0026	4.41	1.76	.62	1.76	.030	.00	3.00	TRAP
2156.800	268.960	1.757	270.717	45.31	3.55	.20	270.91	.00	1.40	12.54	3.300	2.000	3.00	0 .0

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T1 JN - 15956-A                                                                0
T2 Meadowood --- WSPGW Analysis for Alt.1 Grading
T3 05/29/2009
SO        .000 256.430  1                              258.220
R      471.600 258.820  1       .014                                  .000
JX     471.700 258.821  4  3    .014     6.080           258.821       90.0
.000
TS     475.700 258.840  5       .014                                  .000
WX     475.700 258.840  6
R      587.200 259.380  6       .013                                  .000    .000 0
WE     587.200 259.380  7       .500
TS     591.200 259.400  8       .014                                  .000
JX     591.300 259.401 10  9    .014     5.400           259.400       90.0
.000
R     1125.300 262.158 10       .014                                  .000
JX    1129.300 262.159 14 13    .014     5.400           262.160        .0      -
90.000
R     1129.400 262.160 14       .014                                  .000
WX    1129.400 262.160 15
R     1250.800 262.740 15       .013                                  .000    .000 0
JX    1254.800 263.070 17 16    .013     6.420           263.070      -90.0
90.000
R     1968.800 266.640 17       .013                                  .000    .000 0
JX    1972.800 266.970 18       .013                                          -
90.000
R     2028.800 267.250 18       .013                                  .000    .000 0
JX    2032.800 267.580 19       .013
90.000
R     2156.800 268.200 19       .013                                  .000    .000 0
SH    2156.800 268.200 19                                  268.200
CD   1  1   0    .000   3.300    2.000 1.500 1.500   .00
CD   2  1   0    .000   3.300    2.000 1.500 1.500   .00
CD   3  1   0    .000   3.300     .100  .000  .000   .00
CD   4  1   0    .000   3.300    2.000 1.500 1.500   .00
CD   5  1   0    .000   3.300   11.800  .000  .000   .00
CD   6  4   2    .000   3.000     .000  .000  .000   .00
CD   7  1   0    .000   3.300   11.800  .000  .000   .00
CD   8  1   0    .000   2.500    2.000 1.500 1.500   .00
CD   9  1   0    .000   2.500     .100  .000  .000   .00
CD  10  1   0    .000   2.500    2.000 1.500 1.500   .00
CD  11  1   0    .000   1.640    2.000 3.000 3.000   .00
CD  12  1   0    .000   2.500    9.800  .000  .000   .00
CD  13  1   0    .000   1.640    2.000  .000  .000   .00
CD  14  1   0    .000   2.500    9.800  .000  .000   .00
CD  15  4   2    .000   2.500     .000  .000  .000   .00
CD  16  4   1    .000   1.500     .000  .000  .000   .00
CD  17  4   1    .000   3.500     .000  .000  .000   .00
CD  18  4   1    .000   3.500     .000  .000  .000   .00
CD  19  4   1    .000   3.500     .000  .000  .000   .00
Q            39.530   .0
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W S P G W - CIVILDESIGN Version 14.05

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING

Date: 6- 8-2009 Time: 3:44:27

JN - 15956-A

Meadowood --- WSPGW Analysis for Alt.1 Grading

05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	%L / %R	No Wth Prs/Pip / Type Ch
.000	256.430	1.787	258.217	62.83	7.51	.88	259.09	.00	1.99	7.36	3.300	2.000	1.50	0 .0
343.353	.0051					.0051	1.74	1.79	1.24	1.79	.014	.00	1.50	TRAP
343.353	258.170	1.787	259.957	62.83	7.51	.88	260.83	.00	1.99	7.36	3.300	2.000	1.50	0 .0
85.315	.0051					.0049	.42	1.79	1.24	1.79	.014	.00	1.50	TRAP
428.668	258.602	1.818	260.421	62.83	7.31	.83	261.25	.00	1.99	7.46	3.300	2.000	1.50	0 .0
30.868	.0051					.0044	.14	1.82	1.20	1.79	.014	.00	1.50	TRAP
459.535	258.759	1.874	260.633	62.83	6.97	.75	261.39	.00	1.99	7.62	3.300	2.000	1.50	0 .0
9.776	.0051					.0039	.04	1.87	1.13	1.79	.014	.00	1.50	TRAP
469.312	258.808	1.931	260.740	62.83	6.64	.69	261.43	.00	1.99	7.79	3.300	2.000	1.50	0 .0
2.288	.0051					.0034	.01	1.93	1.06	1.79	.014	.00	1.50	TRAP
471.600	258.820	1.991	260.811	62.83	6.33	.62	261.43	.00	1.99	7.97	3.300	2.000	1.50	0 .0
JUNCT STR	.0101					.0022	.00	1.99	1.00		.014	.00	1.50	TRAP
471.700	258.821	2.414	261.235	56.75	4.18	.27	261.51	.00	1.89	9.24	3.300	2.000	1.50	0 .0
TRANS STR	.0047					.0006	.00	2.41	.61		.014	.00	1.50	TRAP
475.700	258.840	2.675	261.515	56.75	1.80	.05	261.56	.00	.90	11.80	3.300	11.800	.00	0 .0
WALL EXIT														
475.700	258.840	2.675	261.515	56.75	4.26	.28	261.80	.00	1.72	1.86	3.000	.000	.00	2 .0
39.003	.0048					.0017	.07	2.68	.28	1.69	.013	.00	.00	PIPE

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
514.703	259.029	2.523	261.552	56.75	4.47	.31	261.86	.00	1.72	2.19	3.000	.000	.00	2 .0
8.578	.0048					.0018	.02	2.52	.33	1.69	.013	.00	.00	PIPE
523.281	259.070	2.491	261.561	56.75	4.52	.32	261.88	.00	1.72	2.25	3.000	.000	.00	2 .0
HYDRAULIC JUMP														
523.281	259.070	1.694	260.765	56.75	6.89	.74	261.50	.00	1.72	2.97	3.000	.000	.00	2 .0
56.066	.0048					.0048	.27	1.69	.73	1.69	.013	.00	.00	PIPE
579.347	259.342	1.694	261.036	56.75	6.89	.74	261.77	.00	1.72	2.97	3.000	.000	.00	2 .0
7.853	.0048					.0047	.04	1.69	.73	1.69	.013	.00	.00	PIPE
587.200	259.380	1.723	261.103	56.75	6.75	.71	261.81	.00	1.72	2.97	3.000	.000	.00	2 .0
587.200	259.380	2.230	261.610	56.75	5.04	.39	262.00	.00	1.72	2.62	3.000	.000	.00	2 .0
WALL ENTRANCE														
587.200	259.380	3.428	262.808	56.75	1.40	.03	262.84	.00	.90	11.80	3.300	11.800	.00	0 .0
TRANS STR	.0050					.0002	.00	3.43	.13		.014	.00	.00	TRAP
591.200	259.400	3.381	262.781	56.75	2.37	.09	262.87	.00	1.89	12.14	2.500	2.000	1.50	0 .0
JUNCT STR	.0101					.0002	.00	3.38	.30		.014	.00	1.50	TRAP
591.300	259.401	3.414	262.815	51.35	2.11	.07	262.88	.00	1.80	12.24	2.500	2.000	1.50	0 .0
17.469	.0052					.0002	.00	3.41	.26	1.62	.014	.00	1.50	TRAP
608.769	259.491	3.320	262.811	51.35	2.22	.08	262.89	.00	1.80	11.96	2.500	2.000	1.50	0 .0
16.970	.0052					.0002	.00	3.32	.28	1.62	.014	.00	1.50	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
625.739	259.579	3.229	262.808	51.35	2.32	.08	262.89	.00	1.80	11.69	2.500	2.000	1.50	0 .0
16.474	.0052					.0003	.00	3.23	.30	1.62	.014	.00	1.50	TRAP
642.213	259.664	3.140	262.804	51.35	2.44	.09	262.90	.00	1.80	11.42	2.500	2.000	1.50	0 .0
15.980	.0052					.0003	.00	3.14	.32	1.62	.014	.00	1.50	TRAP
658.193	259.746	3.053	262.799	51.35	2.56	.10	262.90	.00	1.80	11.16	2.500	2.000	1.50	0 .0
15.488	.0052					.0003	.01	3.05	.34	1.62	.014	.00	1.50	TRAP
673.681	259.826	2.968	262.795	51.35	2.68	.11	262.91	.00	1.80	10.90	2.500	2.000	1.50	0 .0
14.996	.0052					.0004	.01	2.97	.36	1.62	.014	.00	1.50	TRAP
688.677	259.904	2.886	262.789	51.35	2.81	.12	262.91	.00	1.80	10.66	2.500	2.000	1.50	0 .0
14.502	.0052					.0004	.01	2.89	.38	1.62	.014	.00	1.50	TRAP
703.179	259.979	2.805	262.784	51.35	2.95	.14	262.92	.00	1.80	10.41	2.500	2.000	1.50	0 .0
14.004	.0052					.0005	.01	2.80	.40	1.62	.014	.00	1.50	TRAP
717.184	260.051	2.726	262.777	51.35	3.09	.15	262.93	.00	1.80	10.18	2.500	2.000	1.50	0 .0
13.501	.0052					.0006	.01	2.73	.43	1.62	.014	.00	1.50	TRAP
730.685	260.121	2.649	262.770	51.35	3.24	.16	262.93	.00	1.80	9.95	2.500	2.000	1.50	0 .0
12.989	.0052					.0007	.01	2.65	.45	1.62	.014	.00	1.50	TRAP
743.674	260.188	2.575	262.762	51.35	3.40	.18	262.94	.00	1.80	9.72	2.500	2.000	1.50	0 .0
12.465	.0052					.0007	.01	2.57	.48	1.62	.014	.00	1.50	TRAP

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
756.139	260.252	2.502	262.754	51.35	3.57	.20	262.95	.00	1.80	9.50	2.500	2.000	1.50	0 .0
11.925	.0052					.0008	.01	2.50	.51	1.62	.014	.00	1.50	TRAP
768.064	260.314	2.430	262.744	51.35	3.74	.22	262.96	.00	1.80	9.29	2.500	2.000	1.50	0 .0
11.363	.0052					.0010	.01	2.43	.54	1.62	.014	.00	1.50	TRAP
779.427	260.372	2.361	262.733	51.35	3.93	.24	262.97	.00	1.80	9.08	2.500	2.000	1.50	0 .0
10.772	.0052					.0011	.01	2.36	.58	1.62	.014	.00	1.50	TRAP
790.200	260.428	2.293	262.721	51.35	4.12	.26	262.98	.00	1.80	8.88	2.500	2.000	1.50	0 .0
10.143	.0052					.0012	.01	2.29	.61	1.62	.014	.00	1.50	TRAP
800.342	260.480	2.227	262.707	51.35	4.32	.29	263.00	.00	1.80	8.68	2.500	2.000	1.50	0 .0
9.461	.0052					.0014	.01	2.23	.65	1.62	.014	.00	1.50	TRAP
809.803	260.529	2.162	262.691	51.35	4.53	.32	263.01	.00	1.80	8.49	2.500	2.000	1.50	0 .0
8.708	.0052					.0016	.01	2.16	.69	1.62	.014	.00	1.50	TRAP
818.511	260.574	2.100	262.674	51.35	4.75	.35	263.02	.00	1.80	8.30	2.500	2.000	1.50	0 .0
7.855	.0052					.0018	.01	2.10	.73	1.62	.014	.00	1.50	TRAP
826.365	260.615	2.038	262.653	51.35	4.98	.39	263.04	.00	1.80	8.11	2.500	2.000	1.50	0 .0
5.043	.0052					.0020	.01	2.04	.78	1.62	.014	.00	1.50	TRAP
831.408	260.641	1.991	262.632	51.35	5.17	.42	263.05	.00	1.80	7.97	2.500	2.000	1.50	0 .0

HYDRAULIC JUMP

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

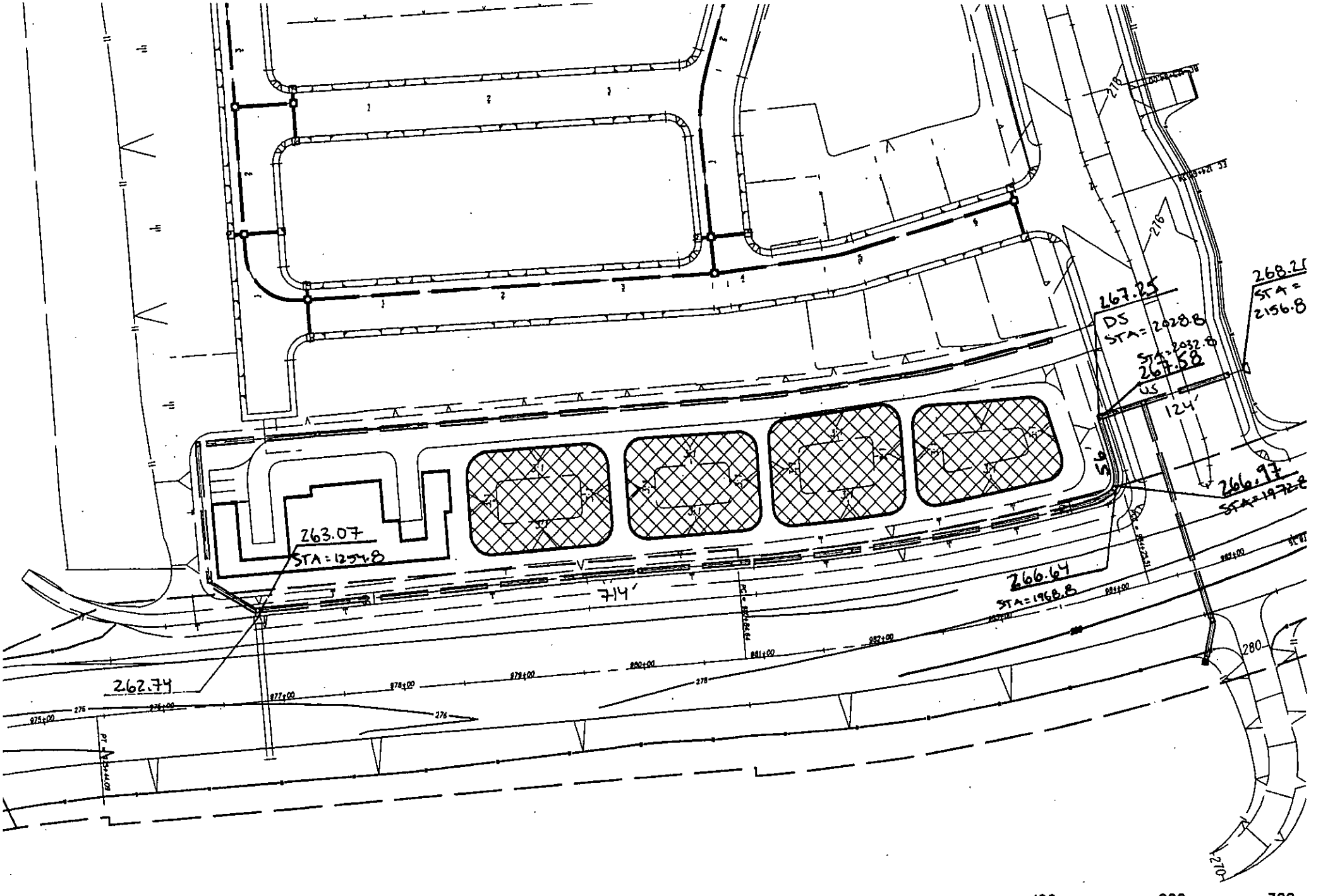
Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
831.408	260.641	1.616	262.257	51.35	7.18	.80	263.06	.00	1.80	6.85	2.500	2.000	1.50	0 .0
176.682	.0052					.0052	.91	1.62	1.24	1.62	.014	.00	1.50	TRAP
1008.090	261.553	1.616	263.169	51.35	7.18	.80	263.97	.00	1.80	6.85	2.500	2.000	1.50	0 .0
76.427	.0052					.0050	.38	1.62	1.24	1.62	.014	.00	1.50	TRAP
1084.516	261.947	1.642	263.589	51.35	7.01	.76	264.35	.00	1.80	6.93	2.500	2.000	1.50	0 .0
29.523	.0052					.0045	.13	1.64	1.20	1.62	.014	.00	1.50	TRAP
1114.039	262.100	1.693	263.793	51.35	6.68	.69	264.49	.00	1.80	7.08	2.500	2.000	1.50	0 .0
9.116	.0052					.0040	.04	1.69	1.13	1.62	.014	.00	1.50	TRAP
1123.156	262.147	1.745	263.892	51.35	6.37	.63	264.52	.00	1.80	7.24	2.500	2.000	1.50	0 .0
2.145	.0052					.0035	.01	1.75	1.06	1.62	.014	.00	1.50	TRAP
1125.300	262.158	1.800	263.958	51.35	6.07	.57	264.53	4.32	1.80	7.40	2.500	2.000	1.50	0 .0
JUNCT STR	.0003					.0017	.01	6.12	1.00		.014	.00	1.50	TRAP
1129.300	262.159	2.395	264.554	45.95	1.96	.06	264.61	.00	.88	9.80	2.500	9.800	.00	0 .0
.100	.0101					.0002	.00	2.39	.22	.64	.014	.00	.00	TRAP
1129.400	262.160	2.394	264.554	45.95	1.96	.06	264.61	.00	.88	9.80	2.500	9.800	.00	0 .0
WALL EXIT														
1129.400	262.160	2.394	264.554	45.95	4.75	.35	264.90	.00	1.63	1.01	2.500	.000	.00	2 .0
67.367	.0048					.0028	.19	2.39	.27	1.71	.013	.00	.00	PIPE

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1196.767	262.482	2.223	264.705	45.95	4.98	.39	265.09	.00	1.63	1.57	2.500	.000	.00	2 .0
46.671	.0048					.0029	.14	2.22	.36	1.71	.013	.00	.00	PIPE
1243.438	262.705	2.097	264.802	45.95	5.22	.42	265.23	.00	1.63	1.84	2.500	.000	.00	2 .0
7.363	.0048					.0030	.02	2.10	.42	1.71	.013	.00	.00	PIPE
1250.800	262.740	2.077	264.817	45.95	5.27	.43	265.25	2.50	1.63	1.87	2.500	.000	.00	2 .0
JUNCT STR	.0825							2.50	.43		.013	.00	.00	PIPE
1254.800	263.070	1.864	264.934	39.53	7.59	.89	265.83	.00	1.95	3.49	3.500	.000	.00	1 .0
653.108	.0050					.0050	3.27	1.86	1.10	1.86	.013	.00	.00	PIPE
1907.908	266.336	1.864	268.199	39.53	7.59	.89	269.09	.00	1.95	3.49	3.500	.000	.00	1 .0
48.078	.0050					.0049	.24	1.86	1.10	1.86	.013	.00	.00	PIPE
1955.986	266.576	1.879	268.455	39.53	7.51	.88	269.33	.00	1.95	3.49	3.500	.000	.00	1 .0
12.814	.0050					.0046	.06	1.88	1.08	1.86	.013	.00	.00	PIPE
1968.800	266.640	1.954	268.594	39.53	7.16	.80	269.39	3.50	1.95	3.48	3.500	.000	.00	1 .0
JUNCT STR	.0825							3.50	1.00		.013	.00	.00	PIPE
1972.800	266.970	1.864	268.834	39.53	7.59	.89	269.73	.00	1.95	3.49	3.500	.000	.00	1 .0
43.185	.0050					.0049	.21	1.86	1.10	1.86	.013	.00	.00	PIPE
2015.985	267.186	1.879	269.065	39.53	7.51	.88	269.94	.00	1.95	3.49	3.500	.000	.00	1 .0
12.815	.0050					.0046	.06	1.88	1.08	1.86	.013	.00	.00	PIPE

JN - 15956-A
Meadowood --- WSPGW Analysis for Alt.1 Grading
05/29/2009

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2028.800	267.250	1.954	269.204	39.53	7.16	.80	270.00	3.50	1.95	3.48	3.500	.000	.00	1 .0
JUNCT STR	.0825							3.50	1.00		.013	.00	.00	PIPE
2032.800	267.580	1.864	269.444	39.53	7.59	.89	270.34	.00	1.95	3.49	3.500	.000	.00	1 .0
62.706	.0050					.0050	.31	1.86	1.10	1.86	.013	.00	.00	PIPE
2095.506	267.894	1.864	269.757	39.53	7.59	.89	270.65	.00	1.95	3.49	3.500	.000	.00	1 .0
48.486	.0050					.0049	.24	1.86	1.10	1.86	.013	.00	.00	PIPE
2143.992	268.136	1.879	270.015	39.53	7.51	.88	270.89	.00	1.95	3.49	3.500	.000	.00	1 .0
12.808	.0050					.0046	.06	1.88	1.08	1.86	.013	.00	.00	PIPE
2156.800	268.200	1.954	270.154	39.53	7.16	.80	270.95	.00	1.95	3.48	3.500	.000	.00	1 .0


263.07
STA = 1254.8
714'
262.74
266.64
STA = 1968.8
267.25
DS
STA = 2028.8
267.58
US
124'
266.97
STA = 1972.8
268.25
STA = 2156.8
100 50 0 100 200 300
GRAPHIC SCALE 1"= 100'

ALT. 1

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	S
11	SD	76	R28.0-30.1	58	

Hadi Sami 2/14/08
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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HADI SAMII No. 46173 Exp. 12/31/08 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

GRANITE CONSTRUCTION COMPANY
38000 MONROE STREET
INDIO, CALIFORNIA 92203

URS CORPORATION
1615 MURRAY CANYON RD, SUITE 1000
SAN DIEGO, CALIFORNIA 92108

(6) (a) RIPRAP ENERGY DISSIPATOR (SEE DRAINAGE DETAIL ON SHEET DD-1)
(b) CUTOFF WALL (SEE DRAINAGE DETAIL SHEET DD-4)
(c) CONCRETE TRAPEZOIDAL DITCH (SEE DRAINAGE DETAIL SHEET DD-3)

(7) (a) BIOSWALE (SEE DRAINAGE DETAIL SHEET DD-3)

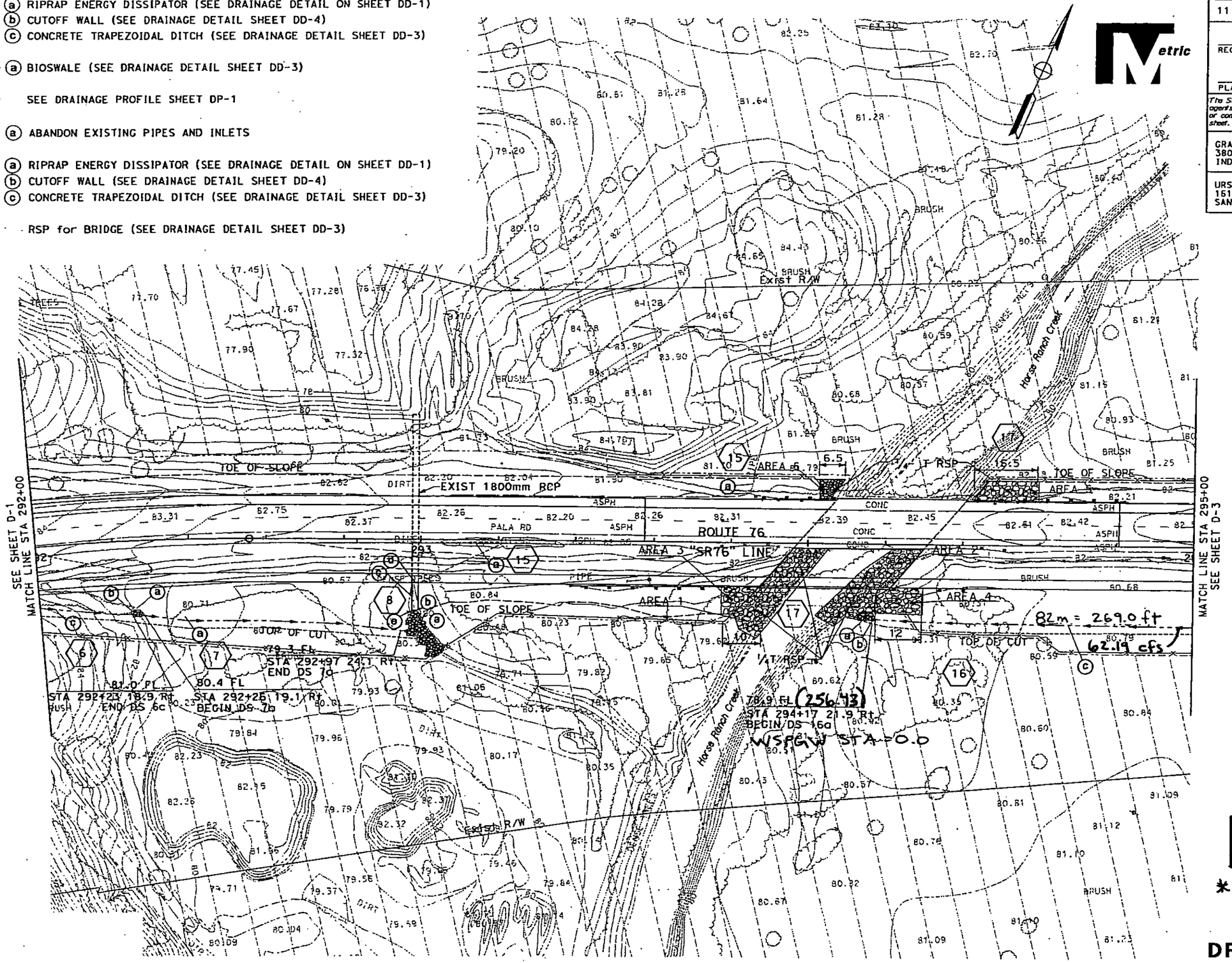
(8) SEE DRAINAGE PROFILE SHEET DP-1

(15) (a) ABANDON EXISTING PIPES AND INLETS

(16) (a) RIPRAP ENERGY DISSIPATOR (SEE DRAINAGE DETAIL ON SHEET DD-1)
(b) CUTOFF WALL (SEE DRAINAGE DETAIL SHEET DD-4)
(c) CONCRETE TRAPEZOIDAL DITCH (SEE DRAINAGE DETAIL SHEET DD-3)

(17) RSP for BRIDGE (SEE DRAINAGE DETAIL SHEET DD-3)

Metric



SCALE 1:1000

* Metric *

THIS PLAN ACCURATE FOR DRAINAGE WORK ONLY.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DRAINAGE PLAN

SCALE 1:500

D-2

DESIGN OVERSIGHT

DATE	REVISION No.	DATE REVISED

CALCULATED/ DESIGNED BY

CHECKED BY

USERNAME => jeremy_kahn
DGN FILE => ...\08 Drainage\io002.dgn

CU 00000

EA 231501

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	T SH
11	SD	76	R28.0-30.1	59	

Hadi Sawii 2/14/08
REGISTERED CIVIL ENGINEER

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REGISTERED PROFESSIONAL ENGINEER — HADI SAWII — No. 46173 — Exp. 12/31/08 — CIVIL — STATE OF CALIFORNIA

GRANITE CONSTRUCTION COMPANY
38000 MONROE STREET
INDIO, CALIFORNIA 92203

URS CORPORATION
1615 MURRAY CANYON RD, SUITE 1000
SAN DIEGO, CALIFORNIA 92108

16 (c) CONCRETE TRAPEZOIDAL DITCH (SEE DRAINAGE DETAILS SHEET DD-3)

18 SEE DRAINAGE PROFILE SHEET DP-2

19 (a) CONCRETE TRAPEZOIDAL DITCH (SEE DRAINAGE DETAILS SHEET DD-3)

20 (B) BIOSWALE (SEE DRAINAGE DETAILS SHEET DD-3)

21 SEE DRAINAGE PROFILE SHEET DP-2

22 (a) CONCRETE TRAPEZOIDAL DITCH (SEE DRAINAGE DETAILS SHEET DD-3)
(b) BIOSWALE (SEE DRAINAGE DETAILS SHEET DD-3)

PANKEY ROAD
EXIST R/W
PROP R/W
95 "PRC LINE"
96
ROUTE 76
SR76 "M" LINE
Exist ROUTE 76
Exist R/W
TOE OF SLOPE
TOP OF CUT
BRUSH
CULTIVATED
ASPH
SEE SHEET D-2 MATCH LINE STA 295+00
MATCH LINE STA 294+20 SEE SHEET D-1

63m = 206.7 ft
62.19 cfs
79.635 FL (258.84)
STA "PRC" 95+50.64 18.88Lt
END DS 16c
WSPGW STA=475.7

34m = 111.5 ft
56.11 cfs
(258.38) 79.80 FL
STA "PRC" 95+57.71 14.97Rt
BEGIN DS 19a
WSPGW STA = 587.2

164m = 538.1 ft
50.71 cfs
(262.17)*
264.60
80.65 FL
STA 297+70 18.6 Rt
END DS 19a
BEGIN DS 20a
WSPGW STA=1125.3

37m = 121.4 ft
45.31 cfs
262.74
For Extension See A11.1/A11.2
262.17
WSPGW STA = 1124.9

40m = 131.23 ft
WSPGW STA = 1250.8

(262.92) Ex WSPGW STA = 1286.8
262.74*
265.17
80.83 FL
STA 297+70 21.7 Lt
BEGIN DS 22a
Ex. WSPGW STA = 1260.6

80.88 FL
297+80 21.0 Lt
END DS 22a
BEGIN DS 22b

81.107 FL
298+17 20.7 Lt

* 2.43' datum shift

THIS PLAN ACCURATE FOR DRAINAGE WORK ONLY.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DRAINAGE PLAN

SCALE 1:500

D-3

DESIGN OVERSIGHT

	DATE	REVISION No.	DATE REVISED
CALCULATED/ DESIGNED BY			
CHECKED BY			

USERNAME => jeremy_kahn
DGN FILE => ...\08 Drainage\la003.dgn

CU 00000 EA 231501

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TO SH
11	SD	76	R28.0-30.1	60	

Hadi Sami 2/14/08
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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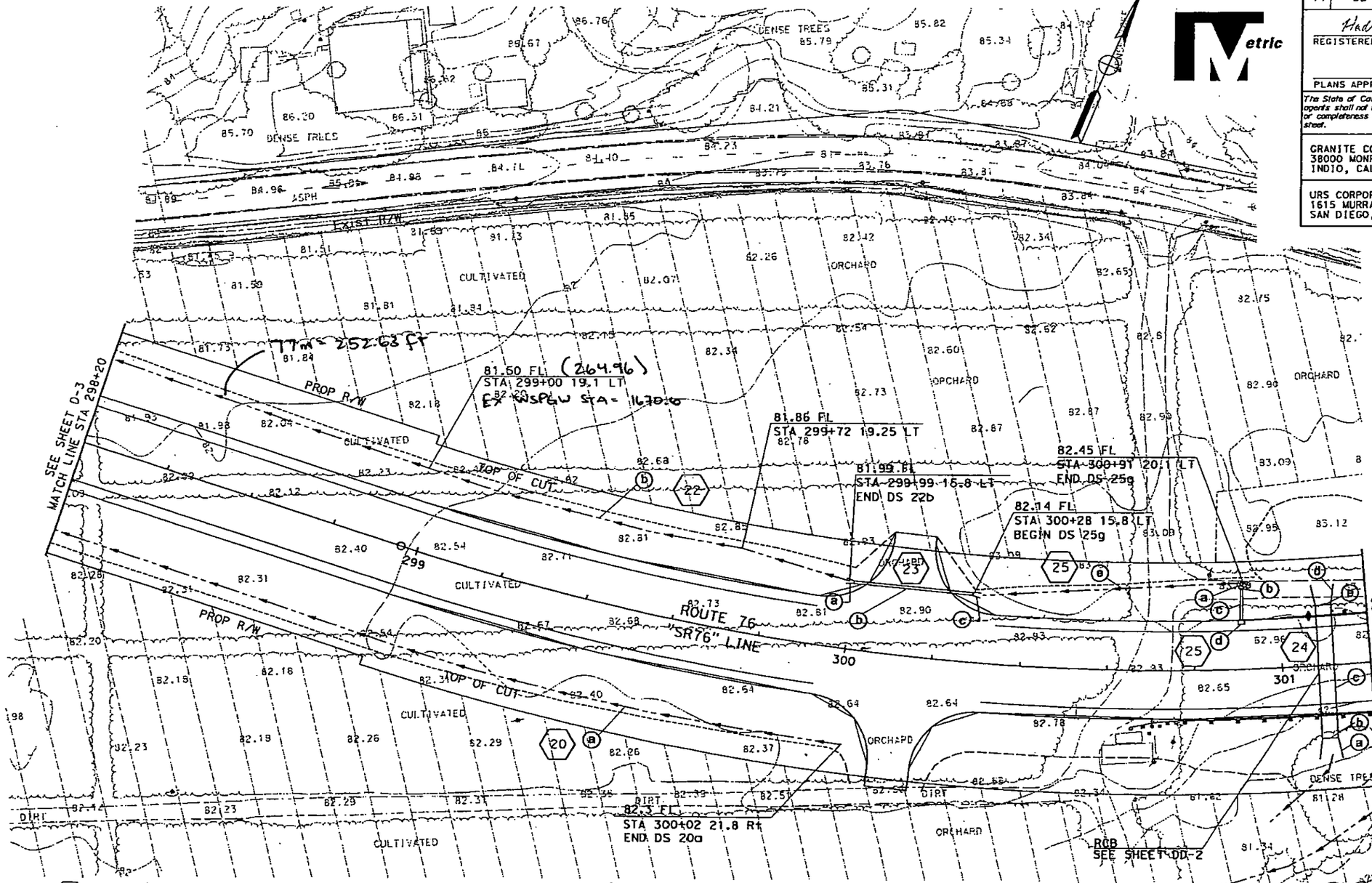
URS CORPORATION
1615 MURRAY CANYON RD, SUITE 1000
SAN DIEGO, CALIFORNIA 92108

DATE	REVISION No.	DATE REVISED

CALCULATED/ DESIGNED BY

CHECKED BY

DESIGN OVERSIGHT



20 (a) BIOSWALE (SEE DRAINAGE DETAIL SHEET DD-3)

22 (b) BIOSWALE (SEE DRAINAGE DETAIL SHEET DD-3)

23 SEE DRAINAGE PROFILE SHEET DP-2

24 (a) STA 301+10 HEADWALL (SEE DRAINAGE DETAIL SHEET DD-2)
(b) STA 301+10 CABLE RAILING (SEE DRAINAGE DETAIL SHEET DD-2)
(c) STA 301+10 REINF. CONC. BOX (SEE DRAINAGE DETAIL SHEET DD-2)
(d) STA 301+10 HEADWALL (SEE DRAINAGE DETAIL SHEET DD-2)
(e) STA 301+10 CABLE RAILING (SEE DRAINAGE DETAIL SHEET DD-2)

25 (a)-(d) SEE DRAINAGE PROFILE SHEET DP-3
(e) BIOSWALE (SEE DRAINAGE DETAIL SHEET DD-3)

~304+25 : 0% superelev

DRAINAGE PLAN

THIS PLAN ACCURATE FOR DRAINAGE WORK ONLY.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

SCALE 1:500

D-4

USERNAME => jeremy_kahn
DGN FILE => ...\08 Drainage\lo004.dgn

CU 00000 EA 231501