```
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.54      SUBAREA RUNOFF(CFS) =    2.88
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.18   HALFSTREET FLOOD WIDTH(FEET) =   8.34
  FLOW VELOCITY(FEET/SEC.) =  5.28   DEPTH*VELOCITY(FT*FT/SEC.) =   0.98
  LONGEST FLOWPATH FROM NODE   2003.00 TO NODE   2005.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2006.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   717.00  DOWNSTREAM(FEET) =   716.75
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.22
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.68
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    6.05
  LONGEST FLOWPATH FROM NODE   2003.00 TO NODE   2006.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2006.00 TO NODE   2006.00 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.) =    6.05
  RAINFALL INTENSITY(INCH/HR) =   7.45
  TOTAL STREAM AREA(ACRES) =     0.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.17     6.56        7.074          0.63
      2        3.68     6.05        7.452          0.69

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        6.60     6.05       7.452
      2        6.66     6.56       7.074

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.66   Tc(MIN.) =    6.56
  TOTAL AREA(ACRES) =        1.3
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2006.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2006.00 TO NODE   2013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   716.75  DOWNSTREAM(FEET) =   713.50
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.37
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.66
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =    7.24
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2013.00 =     745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2007.00 TO NODE   2008.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    726.00
  DOWNSTREAM ELEVATION(FEET) =    722.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.480
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.80
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.80

****************************************************************************
  FLOW PROCESS FROM NODE   2008.00 TO NODE   2009.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  722.00  DOWNSTREAM ELEVATION(FEET) =  719.50
  STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =   10.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =    4.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.19      SUBAREA RUNOFF(CFS) =    1.14
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       2.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =  10.84
  FLOW VELOCITY(FEET/SEC.) =  2.49   DEPTH*VELOCITY(FT*FT/SEC.) =   0.59
  LONGEST FLOWPATH FROM NODE   2007.00 TO NODE   2009.00 =     275.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2009.00 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.) =    4.90
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.93

****************************************************************************
  FLOW PROCESS FROM NODE   2014.00 TO NODE   2015.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   130.00
  UPSTREAM ELEVATION(FEET) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    731.00
  ELEVATION DIFFERENCE(FEET) =      9.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.684
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.78
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.78

****************************************************************************
  FLOW PROCESS FROM NODE   2015.00 TO NODE   2009.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  731.00  DOWNSTREAM ELEVATION(FEET) =  719.50
  STREET LENGTH(FEET) =   250.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.15
    HALFSTREET FLOOD WIDTH(FEET) =    6.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =    4.91
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.22      SUBAREA RUNOFF(CFS) =    1.32
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       2.10

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.17   HALFSTREET FLOOD WIDTH(FEET) =   7.48
  FLOW VELOCITY(FEET/SEC.) =  3.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.63
  LONGEST FLOWPATH FROM NODE   2014.00 TO NODE   2009.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2009.00 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.) =    4.91
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.93     4.90        8.431          0.49
      2        2.10     4.91        8.431          0.35

  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        5.02     4.90       8.431
      2        5.03     4.91       8.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.03   Tc(MIN.) =    4.91
  TOTAL AREA(ACRES) =        0.8
  LONGEST FLOWPATH FROM NODE   2014.00 TO NODE   2009.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   713.35  DOWNSTREAM(FEET) =   713.30
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.03
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.92
  LONGEST FLOWPATH FROM NODE   2014.00 TO NODE   2013.00 =     383.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2011.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    726.00
  DOWNSTREAM ELEVATION(FEET) =    722.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.480
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE   2011.00 TO NODE   2012.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  722.00  DOWNSTREAM ELEVATION(FEET) =  719.50
  STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.91
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
    HALFSTREET FLOOD WIDTH(FEET) =    6.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =    5.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.140
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.23      SUBAREA RUNOFF(CFS) =    1.33
```

```
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       1.56

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.19   HALFSTREET FLOOD WIDTH(FEET) =   8.59
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   0.40
  LONGEST FLOWPATH FROM NODE   2010.00 TO NODE   2012.00 =     275.00 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.) =    5.28
  RAINFALL INTENSITY(INCH/HR) =   8.14
  TOTAL STREAM AREA(ACRES) =     0.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.56

****************************************************************************
  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 = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   160.00
  UPSTREAM ELEVATION(FEET) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    731.00
  ELEVATION DIFFERENCE(FEET) =      9.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.947
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.54
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.54

****************************************************************************
  FLOW PROCESS FROM NODE   2017.00 TO NODE   2012.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  731.00  DOWNSTREAM ELEVATION(FEET) =  719.50
  STREET LENGTH(FEET) =   275.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.13
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    5.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =    5.51
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.921
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.14      SUBAREA RUNOFF(CFS) =    0.79
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       1.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.15   HALFSTREET FLOOD WIDTH(FEET) =   6.36
  FLOW VELOCITY(FEET/SEC.) =  3.18   DEPTH*VELOCITY(FT*FT/SEC.) =   0.46
  LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2012.00 =     435.00 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.) =    5.51
  RAINFALL INTENSITY(INCH/HR) =   7.92
  TOTAL STREAM AREA(ACRES) =     0.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.56     5.28        8.140          0.27
      2        1.29     5.51        7.921          0.23

  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        2.80     5.28       8.140
      2        2.81     5.51       7.921

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.81   Tc(MIN.) =    5.51
  TOTAL AREA(ACRES) =        0.5
  LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2012.00 =     435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2012.00 TO NODE   2013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   713.50  DOWNSTREAM(FEET) =   713.30
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.81
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.81
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    5.58
```

```
 LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2013.00 =     455.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 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         2.81     5.58       7.857        0.50
 LONGEST FLOWPATH FROM NODE   2016.00 TO NODE   2013.00 =     455.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1         6.66     7.24       6.638        1.32
 LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2013.00 =     745.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1        7.94       5.58       7.857
    2        9.04       7.24       6.638

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       9.04   Tc(MIN.) =    7.24
 TOTAL AREA(ACRES) =        1.8

****************************************************************************
 FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 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         9.04     7.24       6.638        1.82
 LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2013.00 =     745.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1         5.03     4.92       8.431        0.84
 LONGEST FLOWPATH FROM NODE   2014.00 TO NODE   2013.00 =     383.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1       11.16       4.92       8.431
    2       13.00       7.24       6.638

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      13.00   Tc(MIN.) =    7.24
 TOTAL AREA(ACRES) =        2.7

****************************************************************************
 FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2013.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 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) =   713.30  DOWNSTREAM(FEET) =   712.45
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.03
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.00
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    7.45
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2019.00 =     830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 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) =   712.45  DOWNSTREAM(FEET) =   702.25
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.15
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.00
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    8.09
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2025.00 =    1220.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 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.) =    8.09
  RAINFALL INTENSITY(INCH/HR) =   6.18
  TOTAL STREAM AREA(ACRES) =     2.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.00

****************************************************************************
  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 = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    721.00
  DOWNSTREAM ELEVATION(FEET) =    718.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.458
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
```

```
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2022.50 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  718.00  DOWNSTREAM ELEVATION(FEET) =  708.50
  STREET LENGTH(FEET) =   275.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    7.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.54
  STREET FLOW TRAVEL TIME(MIN.) =   1.41   Tc(MIN.) =    5.87
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.603
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.54      SUBAREA RUNOFF(CFS) =    2.92
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       3.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   9.28
  FLOW VELOCITY(FEET/SEC.) =  3.75   DEPTH*VELOCITY(FT*FT/SEC.) =   0.76
  LONGEST FLOWPATH FROM NODE   2020.00 TO NODE   2022.50 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2022.50 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) =   702.50  DOWNSTREAM(FEET) =   702.25
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.24
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    5.95
  LONGEST FLOWPATH FROM NODE   2020.00 TO NODE   2025.00 =     390.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 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) =   7.53
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.00     8.09        6.183          2.66
      2        3.24     5.95        7.533          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       12.81     5.95       7.533
      2       15.66     8.09       6.183

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.66   Tc(MIN.) =    8.09
  TOTAL AREA(ACRES) =        3.3
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2025.00 =    1220.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2027.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   702.25  DOWNSTREAM(FEET) =   698.00
  FLOW LENGTH(FEET) =   315.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.66
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    8.73
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2027.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2027.00 TO NODE   2027.00 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.) =    8.73
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     3.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.66

****************************************************************************
  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 = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   130.00
  UPSTREAM ELEVATION(FEET) =    721.00
  DOWNSTREAM ELEVATION(FEET) =    715.50
  ELEVATION DIFFERENCE(FEET) =      5.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.299
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    98.08
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  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   2024.00 TO NODE   2026.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  715.50  DOWNSTREAM ELEVATION(FEET) =  704.00
  STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =   14.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.21
  STREET FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =    6.92
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.838
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    3.00      SUBAREA RUNOFF(CFS) =   14.56
  TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =      15.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  16.23
  FLOW VELOCITY(FEET/SEC.) =  3.99   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  600.0 FT WITH ELEVATION-DROP =  11.5 FT, IS   17.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2026.00
  LONGEST FLOWPATH FROM NODE   2023.00 TO NODE   2026.00 =     730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2027.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   698.25  DOWNSTREAM(FEET) =   698.00
```

```
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.53
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    6.97
  LONGEST FLOWPATH FROM NODE   2023.00 TO NODE   2027.00 =     755.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2027.00 TO NODE   2027.00 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.) =    6.97
  RAINFALL INTENSITY(INCH/HR) =   6.80
  TOTAL STREAM AREA(ACRES) =     3.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       15.66     8.73        5.887          3.26
      2       15.53     6.97        6.802          3.20

  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       29.08     6.97       6.802
      2       29.10     8.73       5.887

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      29.10   Tc(MIN.) =    8.73
  TOTAL AREA(ACRES) =        6.5
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2027.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2027.00 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) =   698.00  DOWNSTREAM(FEET) =   695.55
  FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.42
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.10
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =    9.21
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2028.00 =    1780.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2028.00 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) =   695.55  DOWNSTREAM(FEET) =   690.00
```

```
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.10
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    9.37
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2029.00 =    1920.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2029.00 TO NODE   2030.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   690.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.10
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    9.41
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2030.00 =    1960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2030.00 TO NODE   2041.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    660.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.0765
  CHANNEL FLOW THRU SUBAREA(CFS) =      29.10
  FLOW VELOCITY(FEET/SEC) =   9.18 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =   10.02
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2041.00 =    2300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2041.00 TO NODE   2041.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2031.00 TO NODE   2032.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    742.00
  DOWNSTREAM ELEVATION(FEET) =    740.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.817
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.848
  SUBAREA RUNOFF(CFS) =      0.43
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.43
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2032.00 TO NODE   2039.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    740.00  DOWNSTREAM(FEET) =    690.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00   CHANNEL SLOPE =  0.0658
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.64
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   1.91
  Tc(MIN.) =   10.73
  SUBAREA AREA(ACRES) =     2.64       SUBAREA RUNOFF(CFS) =    5.58
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        2.8         PEAK FLOW RATE(CFS) =       5.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   8.26
  LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2039.00 =     860.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2039.00 TO NODE   2039.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2034.00 TO NODE   2035.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    745.00
  DOWNSTREAM ELEVATION(FEET) =    744.50
  ELEVATION DIFFERENCE(FEET) =      0.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.782
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.863
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE   2035.00 TO NODE   2038.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.50  DOWNSTREAM(FEET) =    706.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.0786
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.35
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   2.44
  Tc(MIN.) =   11.22
  SUBAREA AREA(ACRES) =     1.11       SUBAREA RUNOFF(CFS) =    2.28
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        1.2         PEAK FLOW RATE(CFS) =       2.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.18   FLOW VELOCITY(FEET/SEC.) =   4.10
  LONGEST FLOWPATH FROM NODE   2034.00 TO NODE   2038.00 =     540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2038.00 TO NODE   2038.00 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.) =   11.22
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.48

****************************************************************************
  FLOW PROCESS FROM NODE   2036.00 TO NODE   2037.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    760.00
  DOWNSTREAM ELEVATION(FEET) =    754.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.466
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.35

****************************************************************************
  FLOW PROCESS FROM NODE   2037.00 TO NODE   2038.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    754.00  DOWNSTREAM(FEET) =    706.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00   CHANNEL SLOPE =  0.1333
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.867
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.45
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   1.10
  Tc(MIN.) =    5.57
  SUBAREA AREA(ACRES) =     1.99       SUBAREA RUNOFF(CFS) =    6.42
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
```

```
  TOTAL AREA(ACRES) =        2.1         PEAK FLOW RATE(CFS) =       6.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.28   FLOW VELOCITY(FEET/SEC.) =   6.83
  LONGEST FLOWPATH FROM NODE   2036.00 TO NODE   2038.00 =     420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2038.00 TO NODE   2038.00 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.) =    5.57
  RAINFALL INTENSITY(INCH/HR) =   7.87
  TOTAL STREAM AREA(ACRES) =     2.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.74

  ** CONFLUENCE DATA **
  STREAM     RUNOFF        Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.48    11.22        5.006          1.21
      2        6.74     5.57        7.867          2.09

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        7.97     5.57        7.867
      2        6.77    11.22        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.97   Tc(MIN.) =    5.57
  TOTAL AREA(ACRES) =        3.3
  LONGEST FLOWPATH FROM NODE   2034.00 TO NODE   2038.00 =     540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2038.00 TO NODE   2039.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    706.00  DOWNSTREAM(FEET) =    690.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00   CHANNEL SLOPE =  0.0696
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.300   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.891
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.22
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   3.15
  Tc(MIN.) =    8.72
  SUBAREA AREA(ACRES) =     1.99       SUBAREA RUNOFF(CFS) =    4.81
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        5.3         PEAK FLOW RATE(CFS) =      12.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.60   FLOW VELOCITY(FEET/SEC.) =   1.29
```

```
 LONGEST FLOWPATH FROM NODE   2034.00 TO NODE   2039.00 =     770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2039.00 TO NODE   2039.00 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       12.78     8.72       5.891        5.29
 LONGEST FLOWPATH FROM NODE   2034.00 TO NODE   2039.00 =     770.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1        5.96    10.73       5.153        2.82
 LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2039.00 =     860.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      17.62       8.72        5.891
    2      17.14      10.73        5.153

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      17.62   Tc(MIN.) =    8.72
 TOTAL AREA(ACRES) =        8.1

****************************************************************************
 FLOW PROCESS FROM NODE   2039.00 TO NODE   2039.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   2039.00 TO NODE   2040.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    690.00  DOWNSTREAM(FEET) =    680.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   205.00   CHANNEL SLOPE =  0.0488
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.681
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.65
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.78
 AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   0.50
 Tc(MIN.) =    9.22
 SUBAREA AREA(ACRES) =     1.74       SUBAREA RUNOFF(CFS) =    4.05
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
 TOTAL AREA(ACRES) =        9.9         PEAK FLOW RATE(CFS) =      22.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   7.05
 LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2040.00 =    1065.00 FEET.

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

```
 FLOW PROCESS FROM NODE   2040.00 TO NODE   2041.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    680.00  DOWNSTREAM(FEET) =    660.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.0645
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.440
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.74
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.05
 AVERAGE FLOW DEPTH(FEET) =   0.72   TRAVEL TIME(MIN.) =   0.64
 Tc(MIN.) =    9.86
 SUBAREA AREA(ACRES) =     2.51       SUBAREA RUNOFF(CFS) =    5.60
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
 TOTAL AREA(ACRES) =       12.4         PEAK FLOW RATE(CFS) =      27.57

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   8.24
 LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2041.00 =    1375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2041.00 TO NODE   2041.00 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       27.57     9.86       5.440       12.36
 LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2041.00 =    1375.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       29.10    10.02       5.383        6.46
 LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2041.00 =    2300.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      56.20       9.86        5.440
    2      56.38      10.02        5.383

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      56.38   Tc(MIN.) =   10.02
 TOTAL AREA(ACRES) =       18.8

****************************************************************************
 FLOW PROCESS FROM NODE   2041.00 TO NODE   2041.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   2041.00 TO NODE   2042.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    660.00  DOWNSTREAM(FEET) =    649.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   215.00   CHANNEL SLOPE =  0.0512
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.253
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.26
  AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   0.39
  Tc(MIN.) =   10.41
  SUBAREA AREA(ACRES) =     0.86       SUBAREA RUNOFF(CFS) =    1.85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.508
  TOTAL AREA(ACRES) =       19.7         PEAK FLOW RATE(CFS) =      56.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   9.26
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2042.00 =    2515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2042.00 TO NODE   2047.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    649.00  DOWNSTREAM(FEET) =    640.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =      56.38
  FLOW VELOCITY(FEET/SEC) =   8.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.39   Tc(MIN.) =   10.80
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2047.00 =    2715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2047.00 TO NODE   2047.00 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.) =   10.80
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =    19.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.38

****************************************************************************
  FLOW PROCESS FROM NODE   2043.00 TO NODE   2044.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   130.00
  UPSTREAM ELEVATION(FEET) =    696.00
  DOWNSTREAM ELEVATION(FEET) =    686.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.556
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
```

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          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.02
TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.02

****************************************************************************
 FLOW PROCESS FROM NODE   2044.00 TO NODE   2045.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    672.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   370.00   CHANNEL SLOPE =  0.0378
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.193
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.76
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.69
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.67
 Tc(MIN.) =    5.23
 SUBAREA AREA(ACRES) =     0.94       SUBAREA RUNOFF(CFS) =    5.47
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 TOTAL AREA(ACRES) =        1.1         PEAK FLOW RATE(CFS) =       6.46

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   4.43
 LONGEST FLOWPATH FROM NODE   2043.00 TO NODE   2045.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2045.00 TO NODE   2046.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    672.00  DOWNSTREAM(FEET) =    649.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   425.00   CHANNEL SLOPE =  0.0541
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.192
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.05
 AVERAGE FLOW DEPTH(FEET) =   0.50   TRAVEL TIME(MIN.) =   1.17
 Tc(MIN.) =    6.40
 SUBAREA AREA(ACRES) =     2.19       SUBAREA RUNOFF(CFS) =   11.18
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 TOTAL AREA(ACRES) =        3.3         PEAK FLOW RATE(CFS) =      16.85

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.60   FLOW VELOCITY(FEET/SEC.) =   6.69
 LONGEST FLOWPATH FROM NODE   2043.00 TO NODE   2046.00 =     925.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2046.00 TO NODE   2047.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    649.00  DOWNSTREAM(FEET) =    640.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.0290
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.582
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.49
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   0.94
  Tc(MIN.) =    7.34
  SUBAREA AREA(ACRES) =     0.88       SUBAREA RUNOFF(CFS) =    2.37
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.647
  TOTAL AREA(ACRES) =        4.2         PEAK FLOW RATE(CFS) =      17.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   5.47
  LONGEST FLOWPATH FROM NODE   2043.00 TO NODE   2047.00 =    1235.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2047.00 TO NODE   2047.00 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.) =    7.34
  RAINFALL INTENSITY(INCH/HR) =   6.58
  TOTAL STREAM AREA(ACRES) =     4.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       56.38    10.80        5.129         19.68
      2       17.80     7.34        6.582          4.18

  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       56.10     7.34       6.582
      2       70.25    10.80       5.129

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      70.25   Tc(MIN.) =   10.80
  TOTAL AREA(ACRES) =       23.9
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2047.00 =    2715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2047.00 TO NODE   2058.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    634.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   125.00   CHANNEL SLOPE =  0.0480
  CHANNEL FLOW THRU SUBAREA(CFS) =      70.25
```

```
  FLOW VELOCITY(FEET/SEC) =   9.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =   11.03
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2058.00 =    2840.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2058.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  4
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.03
  RAINFALL INTENSITY(INCH/HR) =   5.06
  TOTAL STREAM AREA(ACRES) =    23.86
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.25

****************************************************************************
  FLOW PROCESS FROM NODE   2048.00 TO NODE   2049.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    748.00
  DOWNSTREAM ELEVATION(FEET) =    742.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.261
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.293
  SUBAREA RUNOFF(CFS) =      0.33
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.33

****************************************************************************
  FLOW PROCESS FROM NODE   2049.00 TO NODE   2050.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    742.00  DOWNSTREAM(FEET) =    694.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   380.00   CHANNEL SLOPE =  0.1263
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.309
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  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.) =   4.01
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   1.58
  Tc(MIN.) =    7.84
  SUBAREA AREA(ACRES) =     0.92       SUBAREA RUNOFF(CFS) =    2.38
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        1.0         PEAK FLOW RATE(CFS) =       2.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   4.91
  LONGEST FLOWPATH FROM NODE   2048.00 TO NODE   2050.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2050.00 TO NODE   2058.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    694.00  DOWNSTREAM(FEET) =    634.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.00   CHANNEL SLOPE =  0.0698
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.088
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.62
  AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   3.10
  Tc(MIN.) =   10.94
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    2.71
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        2.3         PEAK FLOW RATE(CFS) =       4.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.28   FLOW VELOCITY(FEET/SEC.) =   4.93
  LONGEST FLOWPATH FROM NODE   2048.00 TO NODE   2058.00 =    1330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2058.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  4
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.94
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =     2.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

****************************************************************************
  FLOW PROCESS FROM NODE   2051.00 TO NODE   2052.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    637.50
  ELEVATION DIFFERENCE(FEET) =      0.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   10.437
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.245
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE   2052.00 TO NODE   2053.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    637.50  DOWNSTREAM(FEET) =    637.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    40.00   CHANNEL SLOPE =  0.0100
```

```
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.145
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.10
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   0.32
  Tc(MIN.) =   10.75
  SUBAREA AREA(ACRES) =     2.23       SUBAREA RUNOFF(CFS) =    4.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        2.3         PEAK FLOW RATE(CFS) =       4.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE   2051.00 TO NODE   2053.00 =     110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2058.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    637.10  DOWNSTREAM(FEET) =    634.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0124
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.780
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.21
  AVERAGE FLOW DEPTH(FEET) =   0.60   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   12.05
  SUBAREA AREA(ACRES) =     3.23       SUBAREA RUNOFF(CFS) =    6.33
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        5.6         PEAK FLOW RATE(CFS) =      10.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   3.51
  LONGEST FLOWPATH FROM NODE   2051.00 TO NODE   2058.00 =     360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2058.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  4
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.05
  RAINFALL INTENSITY(INCH/HR) =   4.78
  TOTAL STREAM AREA(ACRES) =     5.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.90

****************************************************************************
  FLOW PROCESS FROM NODE   2054.00 TO NODE   2055.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    760.00
  DOWNSTREAM ELEVATION(FEET) =    750.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.765
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.691
  SUBAREA RUNOFF(CFS) =      0.32
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.32

****************************************************************************
  FLOW PROCESS FROM NODE   2055.00 TO NODE   2056.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    684.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.1320
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.448
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.60
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   1.81
  Tc(MIN.) =    7.58
  SUBAREA AREA(ACRES) =     1.44       SUBAREA RUNOFF(CFS) =    3.81
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        1.5         PEAK FLOW RATE(CFS) =       4.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   5.70
  LONGEST FLOWPATH FROM NODE   2054.00 TO NODE   2056.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2056.00 TO NODE   2057.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    684.00  DOWNSTREAM(FEET) =    670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.0500
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.986
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
  AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   0.93
  Tc(MIN.) =    8.50
  SUBAREA AREA(ACRES) =     2.77       SUBAREA RUNOFF(CFS) =    6.80
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        4.3         PEAK FLOW RATE(CFS) =      10.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   5.62
  LONGEST FLOWPATH FROM NODE   2054.00 TO NODE   2057.00 =     880.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2057.00 TO NODE   2058.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    670.00  DOWNSTREAM(FEET) =    634.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00   CHANNEL SLOPE =  0.0474
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.177
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.90
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   10.65
  SUBAREA AREA(ACRES) =     2.25       SUBAREA RUNOFF(CFS) =    4.78
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =      13.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   6.04
  LONGEST FLOWPATH FROM NODE   2054.00 TO NODE   2058.00 =    1640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2058.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  4
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  4 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.65
  RAINFALL INTENSITY(INCH/HR) =   5.18
  TOTAL STREAM AREA(ACRES) =     6.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       70.25    11.03        5.062         23.86
      2        4.86    10.94        5.088          2.33
      3       10.90    12.05        4.780          5.56
      4       13.92    10.65        5.177          6.56

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  4 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       96.97    10.65       5.177
      2       98.33    10.94       5.088
      3       98.67    11.03       5.062
      4       94.65    12.05       4.780

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      98.67   Tc(MIN.) =   11.03
  TOTAL AREA(ACRES) =       38.3
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2058.00 =    2840.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2076.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    634.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0154
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.885
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.90
  AVERAGE FLOW DEPTH(FEET) =   2.03   TRAVEL TIME(MIN.) =   0.63
  Tc(MIN.) =   11.65
  SUBAREA AREA(ACRES) =     0.33       SUBAREA RUNOFF(CFS) =    0.66
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.486
  TOTAL AREA(ACRES) =       38.6         PEAK FLOW RATE(CFS) =      98.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.03   FLOW VELOCITY(FEET/SEC.) =   6.87
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2076.00 =    3100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    257.00 TO NODE    257.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   9.39   RAIN INTENSITY(INCH/HOUR) =  5.62
  TOTAL AREA(ACRES) =    69.57   TOTAL RUNOFF(CFS) =    200.43

****************************************************************************
  FLOW PROCESS FROM NODE    257.00 TO NODE   2062.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    672.00  DOWNSTREAM(FEET) =    654.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.0900
  CHANNEL FLOW THRU SUBAREA(CFS) =     200.43
  FLOW VELOCITY(FEET/SEC) =  17.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.19   Tc(MIN.) =    9.58
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2062.00 =    3300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2062.00 TO NODE   2062.00 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.) =    9.58
  RAINFALL INTENSITY(INCH/HR) =   5.54
```

```
  TOTAL STREAM AREA(ACRES) =    69.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    200.43

****************************************************************************
  FLOW PROCESS FROM NODE   2060.00 TO NODE   2061.00 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) =    724.00
  DOWNSTREAM ELEVATION(FEET) =    700.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.26
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
  FLOW PROCESS FROM NODE   2061.00 TO NODE   2062.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    700.00  DOWNSTREAM(FEET) =    654.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00   CHANNEL SLOPE =  0.1150
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.328
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.34
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   1.53
  Tc(MIN.) =    7.80
  SUBAREA AREA(ACRES) =     1.67       SUBAREA RUNOFF(CFS) =    3.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.8         PEAK FLOW RATE(CFS) =       3.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   5.44
  LONGEST FLOWPATH FROM NODE   2060.00 TO NODE   2062.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2062.00 TO NODE   2062.00 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.) =    7.80
  RAINFALL INTENSITY(INCH/HR) =   6.33
  TOTAL STREAM AREA(ACRES) =     1.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.92

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

```
    1      200.43     9.58        5.543         69.57
    2        3.92     7.80        6.328          1.77

  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      167.15     7.80       6.328
      2      203.86     9.58       5.543

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     203.86   Tc(MIN.) =    9.58
  TOTAL AREA(ACRES) =       71.3
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2062.00 =    3300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2062.00 TO NODE   2071.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    654.00  DOWNSTREAM(FEET) =    651.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   225.00   CHANNEL SLOPE =  0.0133
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.372
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     204.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.86
  AVERAGE FLOW DEPTH(FEET) =   2.93   TRAVEL TIME(MIN.) =   0.48
  Tc(MIN.) =   10.06
  SUBAREA AREA(ACRES) =     0.43       SUBAREA RUNOFF(CFS) =    0.81
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.508
  TOTAL AREA(ACRES) =       71.8         PEAK FLOW RATE(CFS) =     203.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.93   FLOW VELOCITY(FEET/SEC.) =   7.87
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2071.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2071.00 TO NODE   2071.00 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.) =   10.06
  RAINFALL INTENSITY(INCH/HR) =   5.37
  TOTAL STREAM AREA(ACRES) =    71.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    203.86

****************************************************************************
  FLOW PROCESS FROM NODE   2063.00 TO NODE   2064.00 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) =    762.00
  DOWNSTREAM ELEVATION(FEET) =    752.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.26
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
  FLOW PROCESS FROM NODE   2064.00 TO NODE   2065.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    752.00  DOWNSTREAM(FEET) =    732.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.1000
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.630
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.36
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   0.99
  Tc(MIN.) =    7.26
  SUBAREA AREA(ACRES) =     0.80       SUBAREA RUNOFF(CFS) =    1.86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        0.9         PEAK FLOW RATE(CFS) =       2.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   4.23
  LONGEST FLOWPATH FROM NODE   2063.00 TO NODE   2065.00 =     300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2065.00 TO NODE   2066.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    732.00  DOWNSTREAM(FEET) =    702.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.1000
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.162
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.73
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   0.87
  Tc(MIN.) =    8.13
  SUBAREA AREA(ACRES) =     2.85       SUBAREA RUNOFF(CFS) =    6.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       8.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   6.63
  LONGEST FLOWPATH FROM NODE   2063.00 TO NODE   2066.00 =     600.00 FEET.

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

```
 FLOW PROCESS FROM NODE   2066.00 TO NODE   2067.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    702.00  DOWNSTREAM(FEET) =    672.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.1000
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.845
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 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.) =   7.21
 AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   0.69
 Tc(MIN.) =    8.82
 SUBAREA AREA(ACRES) =     2.61       SUBAREA RUNOFF(CFS) =    5.34
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        6.4         PEAK FLOW RATE(CFS) =      13.01

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   7.67
 LONGEST FLOWPATH FROM NODE   2063.00 TO NODE   2067.00 =     900.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2067.00 TO NODE   2071.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    672.00  DOWNSTREAM(FEET) =    651.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.0875
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.627
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.47
 AVERAGE FLOW DEPTH(FEET) =   0.47   TRAVEL TIME(MIN.) =   0.54
 Tc(MIN.) =    9.36
 SUBAREA AREA(ACRES) =     0.85       SUBAREA RUNOFF(CFS) =    1.67
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        7.2         PEAK FLOW RATE(CFS) =      14.20

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   7.51
 LONGEST FLOWPATH FROM NODE   2063.00 TO NODE   2071.00 =    1140.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2071.00 TO NODE   2071.00 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.) =    9.36
 RAINFALL INTENSITY(INCH/HR) =   5.63
 TOTAL STREAM AREA(ACRES) =     7.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.20
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2068.00 TO NODE   2069.00 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) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    732.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.750
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.947
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE   2069.00 TO NODE   2070.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    732.00  DOWNSTREAM(FEET) =    654.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   650.00   CHANNEL SLOPE =  0.1200
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.751
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.71
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   2.30
  Tc(MIN.) =    9.05
  SUBAREA AREA(ACRES) =     2.18       SUBAREA RUNOFF(CFS) =    4.39
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.3         PEAK FLOW RATE(CFS) =       4.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   5.88
  LONGEST FLOWPATH FROM NODE   2068.00 TO NODE   2070.00 =     750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2070.00 TO NODE   2071.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    654.00  DOWNSTREAM(FEET) =    651.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   100.00   CHANNEL SLOPE =  0.0300
  CHANNEL FLOW THRU SUBAREA(CFS) =       4.59
  FLOW VELOCITY(FEET/SEC) =   3.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.47   Tc(MIN.) =    9.51
  LONGEST FLOWPATH FROM NODE   2068.00 TO NODE   2071.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2071.00 TO NODE   2071.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.51
  RAINFALL INTENSITY(INCH/HR) =   5.57
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      203.86    10.06        5.372         71.77
      2       14.20     9.36        5.627          7.21
      3        4.59     9.51        5.568          2.28

  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      213.34     9.36       5.627
      2      215.34     9.51       5.568
      3      221.85    10.06       5.372

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     221.85   Tc(MIN.) =   10.06
  TOTAL AREA(ACRES) =       81.3
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2071.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2071.00 TO NODE   2076.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    651.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.0356
  CHANNEL FLOW THRU SUBAREA(CFS) =     221.85
  FLOW VELOCITY(FEET/SEC) =  11.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   10.92
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2076.00 =    4115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 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.) =   10.92
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =    81.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    221.85

****************************************************************************
  FLOW PROCESS FROM NODE   2072.00 TO NODE   2073.00 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) =    664.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    654.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
  FLOW PROCESS FROM NODE   2073.00 TO NODE   2074.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    654.00  DOWNSTREAM(FEET) =    638.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0615
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.454
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.33
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =    7.57
  SUBAREA AREA(ACRES) =     0.95       SUBAREA RUNOFF(CFS) =    2.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.2         PEAK FLOW RATE(CFS) =       2.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   3.95
  LONGEST FLOWPATH FROM NODE   2072.00 TO NODE   2074.00 =     360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2074.00 TO NODE   2076.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    638.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   355.00   CHANNEL SLOPE =  0.0225
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.652
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.42
  AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   1.73
  Tc(MIN.) =    9.30
  SUBAREA AREA(ACRES) =     2.39       SUBAREA RUNOFF(CFS) =    4.73
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        3.6         PEAK FLOW RATE(CFS) =       7.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   3.79
  LONGEST FLOWPATH FROM NODE   2072.00 TO NODE   2076.00 =     715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 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.) =    9.30
  RAINFALL INTENSITY(INCH/HR) =   5.65
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.12

********************************************************************************
  FLOW PROCESS FROM NODE   2075.00 TO NODE   2075.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.00   RAIN INTENSITY(INCH/HOUR) =  5.39
  TOTAL AREA(ACRES) =     3.43   TOTAL RUNOFF(CFS) =      5.40

********************************************************************************
  FLOW PROCESS FROM NODE   2075.00 TO NODE   2076.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    660.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.0417
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.641
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.59
  AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   2.62
  Tc(MIN.) =   12.62
  SUBAREA AREA(ACRES) =     1.53       SUBAREA RUNOFF(CFS) =    2.49
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
  TOTAL AREA(ACRES) =        5.0         PEAK FLOW RATE(CFS) =       7.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =   4.70
  LONGEST FLOWPATH FROM NODE   2068.00 TO NODE   2076.00 =    1570.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 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.) =   12.62
  RAINFALL INTENSITY(INCH/HR) =   4.64
  TOTAL STREAM AREA(ACRES) =     4.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      221.85    10.92        5.095         81.26
      2        7.12     9.30        5.652          3.60
      3        7.13    12.62        4.641          4.96
```

```
  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      212.37     9.30       5.652
      2      234.44    10.92       5.095
      3      215.06    12.62       4.641

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     234.44   Tc(MIN.) =   10.92
  TOTAL AREA(ACRES) =       89.8
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2076.00 =    4115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 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      234.44    10.92       5.095       89.82
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2076.00 =    4115.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       98.67    11.65       4.885       38.64
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2076.00 =    3100.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF      Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     326.86      10.92       5.095
      2     323.43      11.65       4.885

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     326.86   Tc(MIN.) =   10.92
  TOTAL AREA(ACRES) =      128.5

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2076.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2076.00 TO NODE   2077.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    629.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   125.00   CHANNEL SLOPE =  0.0080
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.011
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     327.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.32
  AVERAGE FLOW DEPTH(FEET) =   4.04   TRAVEL TIME(MIN.) =   0.28
  Tc(MIN.) =   11.20
  SUBAREA AREA(ACRES) =     0.93       SUBAREA RUNOFF(CFS) =    1.63
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.477
  TOTAL AREA(ACRES) =      129.4         PEAK FLOW RATE(CFS) =     326.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.03   FLOW VELOCITY(FEET/SEC.) =   7.32
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2077.00 =    4240.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2077.00 TO NODE   2077.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2079.00 TO NODE   2080.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    646.00
  DOWNSTREAM ELEVATION(FEET) =    644.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.86
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      1.86

****************************************************************************
  FLOW PROCESS FROM NODE   2080.00 TO NODE   2081.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  643.50  DOWNSTREAM ELEVATION(FEET) =  641.00
  STREET LENGTH(FEET) =   360.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.65
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.34   FLOOD WIDTH(FEET) =   16.23
```

```
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.40
    SPLIT DEPTH(FEET) =    0.14   SPLIT FLOOD WIDTH(FEET) =    6.30
    SPLIT FLOW(CFS) =    0.51   SPLIT VELOCITY(FEET/SEC.) =    1.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   16.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =    7.48
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.499
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.08      SUBAREA RUNOFF(CFS) =    9.60
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =      11.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  16.23
  FLOW VELOCITY(FEET/SEC.) =  2.40   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  360.0 FT WITH ELEVATION-DROP =   2.5 FT, IS   11.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2081.00
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2081.00 =     460.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2081.00 TO NODE   2082.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   635.00  DOWNSTREAM(FEET) =   632.40
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.80
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.03
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.53
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2082.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2082.00 TO NODE   2082.00 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) =   6.47
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.03

****************************************************************************
  FLOW PROCESS FROM NODE   2081.10 TO NODE   2081.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    646.00
  DOWNSTREAM ELEVATION(FEET) =    644.00
```

```
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.92
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      1.92

****************************************************************************
  FLOW PROCESS FROM NODE   2081.20 TO NODE   2082.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  644.00  DOWNSTREAM ELEVATION(FEET) =  641.00
  STREET LENGTH(FEET) =   260.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =   13.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =    6.55
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.086
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    6.49
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       8.10

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  16.23
  FLOW VELOCITY(FEET/SEC.) =  3.09   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
  LONGEST FLOWPATH FROM NODE   2081.10 TO NODE   2082.00 =     360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2082.00 TO NODE   2082.00 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.) =    6.55
  RAINFALL INTENSITY(INCH/HR) =   7.09
  TOTAL STREAM AREA(ACRES) =     1.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.10
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.03     7.53        6.473          2.39
      2        8.10     6.55        7.086          1.61

  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       17.68     6.55       7.086
      2       18.43     7.53       6.473

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.43   Tc(MIN.) =    7.53
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2082.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2082.00 TO NODE   2083.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   632.40  DOWNSTREAM(FEET) =   632.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.68
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.43
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    7.62
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2083.00 =     540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2083.00 TO NODE   2083.00 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.) =    7.62
  RAINFALL INTENSITY(INCH/HR) =   6.42
  TOTAL STREAM AREA(ACRES) =     4.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.43

****************************************************************************
  FLOW PROCESS FROM NODE   2082.10 TO NODE   2082.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    640.00
  DOWNSTREAM ELEVATION(FEET) =    638.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.02
TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.02

****************************************************************************
 FLOW PROCESS FROM NODE   2082.20 TO NODE   2082.30 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  638.00  DOWNSTREAM ELEVATION(FEET) =  637.00
 STREET LENGTH(FEET) =   100.00   CURB HEIGHT(INCHES) =  4.0
 STREET HALFWIDTH(FEET) = 16.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.16
   HALFSTREET FLOOD WIDTH(FEET) =    7.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.28
 STREET FLOW TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =    5.96
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.529
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 SUBAREA AREA(ACRES) =    0.30      SUBAREA RUNOFF(CFS) =    1.60
 TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       2.51

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.18   HALFSTREET FLOOD WIDTH(FEET) =   8.22
 FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.34
 LONGEST FLOWPATH FROM NODE   2082.10 TO NODE   2082.30 =     200.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2082.30 TO NODE   2083.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   632.30  DOWNSTREAM(FEET) =   632.00
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.72
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.51
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    6.07
 LONGEST FLOWPATH FROM NODE   2082.10 TO NODE   2083.00 =     230.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2083.00 TO NODE   2083.00 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.) =    6.07
  RAINFALL INTENSITY(INCH/HR) =   7.44
  TOTAL STREAM AREA(ACRES) =     0.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.43     7.62        6.425          4.00
      2        2.51     6.07        7.444          0.47

  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       18.42     6.07       7.444
      2       20.60     7.62       6.425

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.60   Tc(MIN.) =    7.62
  TOTAL AREA(ACRES) =        4.5
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2083.00 =     540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2083.00 TO NODE   2076.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   632.00  DOWNSTREAM(FEET) =   631.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.46
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.60
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.65
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2076.50 =     565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2076.50 TO NODE   2077.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    631.00  DOWNSTREAM(FEET) =    629.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   100.00   CHANNEL SLOPE =  0.0200
  CHANNEL FLOW THRU SUBAREA(CFS) =      20.60
  FLOW VELOCITY(FEET/SEC) =   4.27 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.39   Tc(MIN.) =    8.04
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2077.00 =     665.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2077.00 TO NODE   2077.00 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       20.60     8.04       6.206        4.47
  LONGEST FLOWPATH FROM NODE   2079.00 TO NODE   2077.00 =     665.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      326.86    11.20       5.011      129.39
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2077.00 =    4240.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     255.24       8.04        6.206
      2     343.49      11.20        5.011

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     343.49   Tc(MIN.) =   11.20
  TOTAL AREA(ACRES) =      133.9

****************************************************************************
  FLOW PROCESS FROM NODE   2077.00 TO NODE   2077.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2077.00 TO NODE   2078.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   629.00  DOWNSTREAM(FEET) =   627.50
  FLOW LENGTH(FEET) =   115.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  51.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.42
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     343.49
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   11.31
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2078.00 =    4355.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2078.00 TO NODE   2102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    627.50  DOWNSTREAM(FEET) =    626.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0055
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.787
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     344.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.42
  AVERAGE FLOW DEPTH(FEET) =   4.48   TRAVEL TIME(MIN.) =   0.71
  Tc(MIN.) =   12.03
  SUBAREA AREA(ACRES) =     1.31       SUBAREA RUNOFF(CFS) =    2.19
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.483
  TOTAL AREA(ACRES) =      135.2         PEAK FLOW RATE(CFS) =     343.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.48   FLOW VELOCITY(FEET/SEC.) =   6.42
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2102.00 =    4630.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2102.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2088.00 TO NODE   2089.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    698.40
  DOWNSTREAM ELEVATION(FEET) =    696.40
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.08
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      1.08

****************************************************************************
  FLOW PROCESS FROM NODE   2089.00 TO NODE   2093.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  695.00  DOWNSTREAM ELEVATION(FEET) =  670.00
  STREET LENGTH(FEET) =   375.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.13
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    9.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =    6.22
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.324
  *USER SPECIFIED(SUBAREA):
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.17      SUBAREA RUNOFF(CFS) =    6.08
  TOTAL AREA(ACRES) =       1.3        PEAK FLOW RATE(CFS) =       7.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  11.03
  FLOW VELOCITY(FEET/SEC.) =  5.76   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2093.00 =     475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2093.00 TO NODE   2093.00 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.) =    6.22
  RAINFALL INTENSITY(INCH/HR) =   7.32
  TOTAL STREAM AREA(ACRES) =     1.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.02

****************************************************************************
  FLOW PROCESS FROM NODE   2090.00 TO NODE   2091.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    695.00
  DOWNSTREAM ELEVATION(FEET) =    692.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.458
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   2091.00 TO NODE   2092.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  692.00  DOWNSTREAM ELEVATION(FEET) =  670.00
  STREET LENGTH(FEET) =   250.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    6.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =    5.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.117
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.67      SUBAREA RUNOFF(CFS) =    3.86
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       4.32

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.19   HALFSTREET FLOOD WIDTH(FEET) =   8.72
  FLOW VELOCITY(FEET/SEC.) =  5.68   DEPTH*VELOCITY(FT*FT/SEC.) =   1.09
  LONGEST FLOWPATH FROM NODE   2090.00 TO NODE   2092.00 =     340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2092.00 TO NODE   2093.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   663.30  DOWNSTREAM(FEET) =   663.00
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.41
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.32
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    5.40
  LONGEST FLOWPATH FROM NODE   2090.00 TO NODE   2093.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2093.00 TO NODE   2093.00 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.) =    5.40
  RAINFALL INTENSITY(INCH/HR) =   8.03
  TOTAL STREAM AREA(ACRES) =     0.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.02     6.22        7.324          1.35
      2        4.32     5.40        8.027          0.75

  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       10.41     5.40       8.027
      2       10.96     6.22       7.324

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.96   Tc(MIN.) =    6.22
  TOTAL AREA(ACRES) =        2.1
```

```
 LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2093.00 =     475.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2093.00 TO NODE   2097.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   663.00  DOWNSTREAM(FEET) =   632.00
 FLOW LENGTH(FEET) =   570.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.83
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      10.96
 PIPE TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =    6.96
 LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2097.00 =    1045.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2097.00 TO NODE   2097.00 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.) =    6.96
 RAINFALL INTENSITY(INCH/HR) =   6.81
 TOTAL STREAM AREA(ACRES) =     2.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.96

****************************************************************************
 FLOW PROCESS FROM NODE   2095.00 TO NODE   2096.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    669.70
 DOWNSTREAM ELEVATION(FEET) =    667.70
 ELEVATION DIFFERENCE(FEET) =      2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.78
 TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.78

****************************************************************************
 FLOW PROCESS FROM NODE   2096.00 TO NODE   2097.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  666.00  DOWNSTREAM ELEVATION(FEET) =  638.00
 STREET LENGTH(FEET) =   520.00   CURB HEIGHT(INCHES) =  4.0
 STREET HALFWIDTH(FEET) = 16.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =   10.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =    6.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.942
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.67      SUBAREA RUNOFF(CFS) =    8.23
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       8.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =  12.53
  FLOW VELOCITY(FEET/SEC.) =  5.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.52
  LONGEST FLOWPATH FROM NODE   2095.00 TO NODE   2097.00 =     620.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2097.00 TO NODE   2097.00 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.) =    6.76
  RAINFALL INTENSITY(INCH/HR) =   6.94
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.87

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.96     6.96        6.812          2.10
      2        8.87     6.76        6.942          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       19.63     6.76       6.942
      2       19.67     6.96       6.812

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.67   Tc(MIN.) =    6.96
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2097.00 =    1045.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2097.00 TO NODE   2098.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   636.00  DOWNSTREAM(FEET) =   635.70
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.67
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    7.02
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2098.00 =    1075.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2098.00 TO NODE   2098.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.02
  RAINFALL INTENSITY(INCH/HR) =   6.77
  TOTAL STREAM AREA(ACRES) =     3.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.67

****************************************************************************
  FLOW PROCESS FROM NODE   2094.50 TO NODE   2094.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    672.80
  DOWNSTREAM ELEVATION(FEET) =    670.80
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
  FLOW PROCESS FROM NODE   2094.00 TO NODE   2098.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  668.00  DOWNSTREAM ELEVATION(FEET) =  638.00
  STREET LENGTH(FEET) =   475.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.80
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.19
   HALFSTREET FLOOD WIDTH(FEET) =    8.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.85
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
 STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =    6.62
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.038
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 SUBAREA AREA(ACRES) =    1.25      SUBAREA RUNOFF(CFS) =    6.25
 TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       6.80

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  10.97
 FLOW VELOCITY(FEET/SEC.) =  5.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
 LONGEST FLOWPATH FROM NODE   2094.50 TO NODE   2098.00 =     575.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2098.00 TO NODE   2098.00 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) =   7.04
 TOTAL STREAM AREA(ACRES) =     1.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.80

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       19.67     7.02        6.771         3.90
     2        6.80     6.62        7.038         1.36

 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       25.72     6.62       7.038
     2       26.21     7.02       6.771

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      26.21   Tc(MIN.) =    7.02
 TOTAL AREA(ACRES) =        5.3
 LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2098.00 =    1075.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2098.00 TO NODE   2100.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   635.70  DOWNSTREAM(FEET) =   635.00
 FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.62
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.21
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    7.15
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2100.00 =    1140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2100.00 TO NODE   2100.00 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.) =    7.15
  RAINFALL INTENSITY(INCH/HR) =   6.69
  TOTAL STREAM AREA(ACRES) =     5.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.21

****************************************************************************
  FLOW PROCESS FROM NODE   2084.00 TO NODE   2085.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    695.60
  DOWNSTREAM ELEVATION(FEET) =    693.60
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE   2085.00 TO NODE   2086.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  693.60  DOWNSTREAM ELEVATION(FEET) =  683.00
  STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    9.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =    6.26
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.292
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.55      SUBAREA RUNOFF(CFS) =   13.20
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =      14.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =  12.41
  FLOW VELOCITY(FEET/SEC.) =  4.55   DEPTH*VELOCITY(FT*FT/SEC.) =   1.21
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2086.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2086.00 TO NODE   2087.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   677.00  DOWNSTREAM(FEET) =   676.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.10
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.03
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    6.50
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2087.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2087.00 TO NODE   2100.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   676.00  DOWNSTREAM(FEET) =   635.00
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.41
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.03
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    6.62
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2100.00 =     675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2100.00 TO NODE   2100.00 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) =   7.03
  TOTAL STREAM AREA(ACRES) =     2.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.03

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

```
    1       26.21     7.15        6.694          5.26
    2       14.03     6.62        7.034          2.71

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.97     6.62       7.034
      2       39.56     7.15       6.694

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      39.56   Tc(MIN.) =    7.15
  TOTAL AREA(ACRES) =        8.0
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2100.00 =    1140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2100.00 TO NODE   2101.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    635.00  DOWNSTREAM(FEET) =    634.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =    50.00   CHANNEL SLOPE =  0.0100
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.589
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.69
  AVERAGE FLOW DEPTH(FEET) =   1.50   TRAVEL TIME(MIN.) =   0.18
  Tc(MIN.) =    7.33
  SUBAREA AREA(ACRES) =     2.26       SUBAREA RUNOFF(CFS) =    5.21
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  TOTAL AREA(ACRES) =       10.2         PEAK FLOW RATE(CFS) =      42.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.50   FLOW VELOCITY(FEET/SEC.) =   4.72
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2101.00 =    1190.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2100.00 TO NODE   2101.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   634.50  DOWNSTREAM(FEET) =   631.00
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.35
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.50
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.35
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2101.00 =    1225.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2101.00 TO NODE   2102.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```

```
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    631.00  DOWNSTREAM(FEET) =    626.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.0208
  CHANNEL FLOW THRU SUBAREA(CFS) =      42.50
  FLOW VELOCITY(FEET/SEC) =   5.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =    8.10
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2102.00 =    1465.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2102.00 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.) =    8.10
  RAINFALL INTENSITY(INCH/HR) =   6.17
  TOTAL STREAM AREA(ACRES) =    10.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.50

****************************************************************************
  FLOW PROCESS FROM NODE   2103.00 TO NODE   2103.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.00   RAIN INTENSITY(INCH/HOUR) =  5.39
  TOTAL AREA(ACRES) =    14.53   TOTAL RUNOFF(CFS) =     16.20

****************************************************************************
  FLOW PROCESS FROM NODE   2103.00 TO NODE   2102.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   638.80  DOWNSTREAM(FEET) =   627.00
  FLOW LENGTH(FEET) =   425.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.71
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.20
  PIPE TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =   10.66
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2102.50 =    1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2102.50 TO NODE   2102.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    627.00  DOWNSTREAM(FEET) =    626.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   120.00   CHANNEL SLOPE =  0.0083
  CHANNEL FLOW THRU SUBAREA(CFS) =      16.20
  FLOW VELOCITY(FEET/SEC) =   2.59 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =   11.43
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2102.00 =    1220.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2102.00 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) =   4.94
  TOTAL STREAM AREA(ACRES) =    14.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.20

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       42.50     8.10        6.175         10.23
      2       16.20    11.43        4.945         14.53

  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       53.98     8.10       6.175
      2       50.23    11.43       4.945

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.98   Tc(MIN.) =    8.10
  TOTAL AREA(ACRES) =       24.8
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2102.00 =    1465.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2102.00 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       53.98     8.10       6.175        24.76
  LONGEST FLOWPATH FROM NODE   2088.00 TO NODE   2102.00 =    1465.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      343.49    12.03        4.787       135.17
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2102.00 =    4630.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     285.45       8.10        6.175
      2     385.34      12.03        4.787

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     385.34   Tc(MIN.) =   12.03
  TOTAL AREA(ACRES) =      159.9

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2102.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2104.00 IS CODE =  51
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    626.00  DOWNSTREAM(FEET) =    618.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0125
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.523
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     393.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.05
  AVERAGE FLOW DEPTH(FEET) =   3.97   TRAVEL TIME(MIN.) =   1.10
  Tc(MIN.) =   13.13
  SUBAREA AREA(ACRES) =     4.85       SUBAREA RUNOFF(CFS) =   15.58
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.475
  TOTAL AREA(ACRES) =      164.8         PEAK FLOW RATE(CFS) =     385.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.93   FLOW VELOCITY(FEET/SEC.) =   9.01
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2104.00 =    5230.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2104.00 TO NODE   2104.00 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.) =   13.13
  RAINFALL INTENSITY(INCH/HR) =   4.52
  TOTAL STREAM AREA(ACRES) =   164.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    385.34

****************************************************************************
  FLOW PROCESS FROM NODE   2103.50 TO NODE   2103.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.00   RAIN INTENSITY(INCH/HOUR) =  5.39
  TOTAL AREA(ACRES) =    26.68   TOTAL RUNOFF(CFS) =     24.90

****************************************************************************
  FLOW PROCESS FROM NODE   2103.50 TO NODE   2104.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   628.81  DOWNSTREAM(FEET) =   618.50
  FLOW LENGTH(FEET) =   325.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.64
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.90
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   10.43
  LONGEST FLOWPATH FROM NODE   2084.00 TO NODE   2104.00 =    1545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2104.00 TO NODE   2104.00 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.) =   10.43
  RAINFALL INTENSITY(INCH/HR) =   5.25
  TOTAL STREAM AREA(ACRES) =    26.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.90

****************************************************************************
  FLOW PROCESS FROM NODE   2103.10 TO NODE   2103.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    644.00
  DOWNSTREAM ELEVATION(FEET) =    642.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      1.14

****************************************************************************
  FLOW PROCESS FROM NODE   2103.20 TO NODE   2103.30 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  641.00  DOWNSTREAM ELEVATION(FEET) =  634.00
  STREET LENGTH(FEET) =   220.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    8.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.06   Tc(MIN.) =    6.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.460
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.64      SUBAREA RUNOFF(CFS) =    8.69
```

```
  TOTAL AREA(ACRES) =        1.8         PEAK FLOW RATE(CFS) =       9.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  11.03
  FLOW VELOCITY(FEET/SEC.) =  3.98   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  LONGEST FLOWPATH FROM NODE   2103.10 TO NODE   2103.30 =     320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2103.30 TO NODE   2135.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    634.00  DOWNSTREAM(FEET) =    626.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   680.00   CHANNEL SLOPE =  0.0118
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.755
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.79
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   2.99
  Tc(MIN.) =    9.04
  SUBAREA AREA(ACRES) =     2.73       SUBAREA RUNOFF(CFS) =   11.16
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  TOTAL AREA(ACRES) =        4.6         PEAK FLOW RATE(CFS) =      18.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.95   FLOW VELOCITY(FEET/SEC.) =   4.00
  LONGEST FLOWPATH FROM NODE   2103.10 TO NODE   2135.00 =    1000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2135.00 TO NODE   2104.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   618.30  DOWNSTREAM(FEET) =   617.00
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.91
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.63
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =    9.44
  LONGEST FLOWPATH FROM NODE   2103.10 TO NODE   2104.00 =    1165.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2104.00 TO NODE   2104.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.44
  RAINFALL INTENSITY(INCH/HR) =   5.60
  TOTAL STREAM AREA(ACRES) =     4.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.63

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

NUMBER	(CFS)	(MIN.)	(INCH/HOUR)	(ACRE)
1	385.34	13.13	4.523	164.78
2	24.90	10.43	5.248	26.68
3	18.63	9.44	5.598	4.56

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	318.07	9.44	5.598
2	348.42	10.43	5.248
3	421.86	13.13	4.523

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 421.86 Tc(MIN.) = 13.13
TOTAL AREA(ACRES) = 196.0
LONGEST FLOWPATH FROM NODE 2001.00 TO NODE 2104.00 = 5230.00 FEET.

****
FLOW PROCESS FROM NODE 2104.00 TO NODE 2131.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 618.50 DOWNSTREAM(FEET) = 612.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 210.00 CHANNEL SLOPE = 0.0310
CHANNEL FLOW THRU SUBAREA(CFS) = 421.86
FLOW VELOCITY(FEET/SEC) = 13.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 13.40
LONGEST FLOWPATH FROM NODE 2001.00 TO NODE 2131.00 = 5440.00 FEET.

****
FLOW PROCESS FROM NODE 2131.00 TO NODE 2131.00 IS CODE = 10

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

****
FLOW PROCESS FROM NODE 2108.00 TO NODE 2109.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 698.40
DOWNSTREAM ELEVATION(FEET) = 696.40
ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.96
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 0.96

****
FLOW PROCESS FROM NODE 2109.00 TO NODE 2110.00 IS CODE = 62

```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  695.00  DOWNSTREAM ELEVATION(FEET) =  667.00
  STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
    HALFSTREET FLOOD WIDTH(FEET) =    7.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.73
  STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =    6.42
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.178
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.54      SUBAREA RUNOFF(CFS) =    2.75
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.57

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.19   HALFSTREET FLOOD WIDTH(FEET) =   8.41
  FLOW VELOCITY(FEET/SEC.) =  5.04   DEPTH*VELOCITY(FT*FT/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2110.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2110.00 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.) =    6.42
  RAINFALL INTENSITY(INCH/HR) =   7.18
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.57

****************************************************************************
  FLOW PROCESS FROM NODE   2105.00 TO NODE   2106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   125.00
  UPSTREAM ELEVATION(FEET) =    695.00
  DOWNSTREAM ELEVATION(FEET) =    689.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.151
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    99.50
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE   2106.00 TO NODE   2107.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  689.00  DOWNSTREAM ELEVATION(FEET) =  667.00
 STREET LENGTH(FEET) =   260.00   CURB HEIGHT(INCHES) =  4.0
 STREET HALFWIDTH(FEET) = 16.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 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 =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.97
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.12
   HALFSTREET FLOOD WIDTH(FEET) =    5.01
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.85
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
 STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =    5.28
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.144
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 SUBAREA AREA(ACRES) =    0.17      SUBAREA RUNOFF(CFS) =    0.98
 TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       1.45

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.13   HALFSTREET FLOOD WIDTH(FEET) =   5.81
 FLOW VELOCITY(FEET/SEC.) =  4.27   DEPTH*VELOCITY(FT*FT/SEC.) =   0.57
 LONGEST FLOWPATH FROM NODE   2105.00 TO NODE   2107.00 =     385.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2107.00 TO NODE   2110.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   661.00  DOWNSTREAM(FEET) =   660.70
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.13
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.45
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    5.40
 LONGEST FLOWPATH FROM NODE   2105.00 TO NODE   2110.00 =     415.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2110.00 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.) =    5.40
  RAINFALL INTENSITY(INCH/HR) =   8.03
  TOTAL STREAM AREA(ACRES) =     0.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.57     6.42        7.178          0.70
      2        1.45     5.40        8.026          0.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        4.45     5.40       8.026
      2        4.86     6.42       7.178

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.86   Tc(MIN.) =    6.42
  TOTAL AREA(ACRES) =        1.0
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2110.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2116.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   660.70  DOWNSTREAM(FEET) =   622.50
  FLOW LENGTH(FEET) =   600.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.21
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.86
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2116.00 =    1090.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2116.00 TO NODE   2116.00 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.) =    7.31
  RAINFALL INTENSITY(INCH/HR) =   6.60
  TOTAL STREAM AREA(ACRES) =     0.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

****************************************************************************
  FLOW PROCESS FROM NODE   2111.00 TO NODE   2112.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    665.00
  DOWNSTREAM ELEVATION(FEET) =    663.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.42
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.42

****************************************************************************
  FLOW PROCESS FROM NODE   2112.00 TO NODE   2113.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  663.00  DOWNSTREAM ELEVATION(FEET) =  625.50
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =   10.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
  STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =    7.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.604
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.18      SUBAREA RUNOFF(CFS) =   10.22
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =      10.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =  13.34
  FLOW VELOCITY(FEET/SEC.) =  5.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.69
  LONGEST FLOWPATH FROM NODE   2111.00 TO NODE   2113.00 =     800.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2113.00 TO NODE   2116.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   622.80  DOWNSTREAM(FEET) =   622.50
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.76
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.55
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    7.38
  LONGEST FLOWPATH FROM NODE   2111.00 TO NODE   2116.00 =     830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2116.00 TO NODE   2116.00 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.) =    7.38
  RAINFALL INTENSITY(INCH/HR) =   6.56
  TOTAL STREAM AREA(ACRES) =     2.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.55

****************************************************************************
  FLOW PROCESS FROM NODE   2114.00 TO NODE   2115.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    662.00
  DOWNSTREAM ELEVATION(FEET) =    654.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.066
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE   2115.00 TO NODE   2116.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  654.00  DOWNSTREAM ELEVATION(FEET) =  625.50
  STREET LENGTH(FEET) =   485.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  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 =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =   10.47
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
 STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =    4.59
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 SUBAREA AREA(ACRES) =    1.84      SUBAREA RUNOFF(CFS) =   11.01
 TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =      11.31

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =  13.47
 FLOW VELOCITY(FEET/SEC.) =  6.23   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
 LONGEST FLOWPATH FROM NODE   2114.00 TO NODE   2116.00 =     570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2116.00 TO NODE   2116.00 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.) =    4.59
 RAINFALL INTENSITY(INCH/HR) =   8.43
 TOTAL STREAM AREA(ACRES) =     1.89
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.31

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.86     7.31        6.600          0.95
     2       10.55     7.38        6.561          2.25
     3       11.31     4.59        8.431          1.89

 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       21.69     4.59       8.431
     2       24.17     7.31       6.600
     3       24.19     7.38       6.561

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      24.19   Tc(MIN.) =    7.38
 TOTAL AREA(ACRES) =        5.1
 LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2116.00 =    1090.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2116.00 TO NODE   2117.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   622.50  DOWNSTREAM(FEET) =   621.00
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.53
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =      24.19
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.42
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2117.00 =    1130.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2117.00 TO NODE   2117.00 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.) =    7.42
  RAINFALL INTENSITY(INCH/HR) =   6.53
  TOTAL STREAM AREA(ACRES) =     5.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.19

****************************************************************************
  FLOW PROCESS FROM NODE   2117.10 TO NODE   2117.00 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) =    622.00
  DOWNSTREAM ELEVATION(FEET) =    621.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   10.884
  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) =  5.105
  SUBAREA RUNOFF(CFS) =      0.45
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.45

****************************************************************************
  FLOW PROCESS FROM NODE   2117.00 TO NODE   2117.00 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.) =   10.88
  RAINFALL INTENSITY(INCH/HR) =   5.10
  TOTAL STREAM AREA(ACRES) =     0.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       24.19     7.42        6.533          5.09
      2        0.45    10.88        5.105          0.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       24.49     7.42        6.533
```

```
     2       19.35    10.88       5.105

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.49   Tc(MIN.) =    7.42
  TOTAL AREA(ACRES) =        5.3
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2117.00 =    1130.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2117.00 TO NODE   2131.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   621.00  DOWNSTREAM(FEET) =   612.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.09
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.49
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.46
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2131.00 =    1180.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2131.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2121.00 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) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    730.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.26
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
  FLOW PROCESS FROM NODE   2121.00 TO NODE   2125.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    730.00  DOWNSTREAM(FEET) =    668.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.1148
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.076
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.41
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   2.04
```

```
  Tc(MIN.) =    8.31
  SUBAREA AREA(ACRES) =     1.79       SUBAREA RUNOFF(CFS) =    3.81
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.9         PEAK FLOW RATE(CFS) =       4.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   5.41
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2125.00 =     640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2125.00 TO NODE   2125.00 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.) =    8.31
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     1.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.02

****************************************************************************
  FLOW PROCESS FROM NODE   2123.00 TO NODE   2124.00 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) =    730.00
  DOWNSTREAM ELEVATION(FEET) =    724.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.430
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.530
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE   2124.00 TO NODE   2125.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    724.00  DOWNSTREAM(FEET) =    668.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.1120
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.549
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.91
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =    9.56
  SUBAREA AREA(ACRES) =     1.29       SUBAREA RUNOFF(CFS) =    2.51
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.4         PEAK FLOW RATE(CFS) =       2.72

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.17   FLOW VELOCITY(FEET/SEC.) =   4.71
  LONGEST FLOWPATH FROM NODE   2123.00 TO NODE   2125.00 =     600.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2125.00 TO NODE   2125.00 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.) =    9.56
  RAINFALL INTENSITY(INCH/HR) =   5.55
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.72

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.02     8.31        6.076          1.89
      2        2.72     9.56        5.549          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        6.38     8.31       6.076
      2        6.39     9.56       5.549

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.39   Tc(MIN.) =    9.56
  TOTAL AREA(ACRES) =        3.3
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2125.00 =     640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2125.00 TO NODE   2126.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   662.00  DOWNSTREAM(FEET) =   654.00
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.13
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.39
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    9.73
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2126.00 =     760.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2126.00 TO NODE   2129.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    654.00  DOWNSTREAM(FEET) =    642.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   120.00   CHANNEL SLOPE =  0.1000
  CHANNEL FLOW THRU SUBAREA(CFS) =       6.39
  FLOW VELOCITY(FEET/SEC) =   7.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =   10.01
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2129.00 =     880.00 FEET.

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

```
  FLOW PROCESS FROM NODE   2129.00 TO NODE   2129.00 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.) =   10.01
  RAINFALL INTENSITY(INCH/HR) =   5.39
  TOTAL STREAM AREA(ACRES) =     3.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.39

****************************************************************************
  FLOW PROCESS FROM NODE   2127.00 TO NODE   2128.00 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) =   120.00
  UPSTREAM ELEVATION(FEET) =    676.00
  DOWNSTREAM ELEVATION(FEET) =    661.00
  ELEVATION DIFFERENCE(FEET) =     15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.61
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.61

****************************************************************************
  FLOW PROCESS FROM NODE   2128.00 TO NODE   2129.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    661.00  DOWNSTREAM(FEET) =    642.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   160.00   CHANNEL SLOPE =  0.1187
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.835
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   0.66
  Tc(MIN.) =    6.92
  SUBAREA AREA(ACRES) =     0.89       SUBAREA RUNOFF(CFS) =    2.13
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.1         PEAK FLOW RATE(CFS) =       2.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.17   FLOW VELOCITY(FEET/SEC.) =   4.74
  LONGEST FLOWPATH FROM NODE   2127.00 TO NODE   2129.00 =     280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2129.00 TO NODE   2129.00 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.) =    6.92
  RAINFALL INTENSITY(INCH/HR) =   6.83
  TOTAL STREAM AREA(ACRES) =     1.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.39    10.01        5.388          3.29
      2        2.70     6.92        6.835          1.13

  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        7.74     6.92       6.835
      2        8.52    10.01       5.388

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.52   Tc(MIN.) =   10.01
  TOTAL AREA(ACRES) =        4.4
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2129.00 =     880.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2129.00 TO NODE   2131.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    642.00  DOWNSTREAM(FEET) =    612.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.0545
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.925
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.13
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   1.49
  Tc(MIN.) =   11.51
  SUBAREA AREA(ACRES) =     4.57       SUBAREA RUNOFF(CFS) =    7.88
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      15.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOW VELOCITY(FEET/SEC.) =   6.58
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2131.00 =    1430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2131.00 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       15.50    11.51        4.925         8.99
  LONGEST FLOWPATH FROM NODE   2120.00 TO NODE   2131.00 =    1430.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       421.86    13.40        4.465       196.02
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2131.00 =    5440.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      377.76       11.51        4.925
    2      435.91       13.40        4.465

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     435.91   Tc(MIN.) =   13.40
  TOTAL AREA(ACRES) =      205.0

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2131.00 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       435.91    13.40        4.465       205.01
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2131.00 =    5440.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1        24.49     7.46        6.514         5.34
  LONGEST FLOWPATH FROM NODE   2108.00 TO NODE   2131.00 =    1180.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      267.18        7.46        6.514
    2      452.69       13.40        4.465

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     452.69   Tc(MIN.) =   13.40
  TOTAL AREA(ACRES) =      210.3

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2131.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2131.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2131.00 TO NODE   2132.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   612.00  DOWNSTREAM(FEET) =   611.50
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  87.0 INCH PIPE IS  65.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.62
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     452.69
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   13.51
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2132.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2132.00 TO NODE   2200.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    611.50  DOWNSTREAM(FEET) =    608.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   370.00   CHANNEL SLOPE =  0.0095
  CHANNEL FLOW THRU SUBAREA(CFS) =     452.69
  FLOW VELOCITY(FEET/SEC) =   7.38 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =   14.34
  LONGEST FLOWPATH FROM NODE   2001.00 TO NODE   2200.00 =    5900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2200.00 TO NODE   2200.00 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.) =   14.34
  RAINFALL INTENSITY(INCH/HR) =   4.27
  TOTAL STREAM AREA(ACRES) =   210.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    452.69

****************************************************************************
  FLOW PROCESS FROM NODE   2132.10 TO NODE   2132.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    696.00
  DOWNSTREAM ELEVATION(FEET) =    695.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   10.013
  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) =  5.387
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE   2132.20 TO NODE   2132.30 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =    695.00  DOWNSTREAM(FEET) =    664.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   375.00   CHANNEL SLOPE =  0.0827
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.852
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.54
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   1.76
  Tc(MIN.) =   11.78
  SUBAREA AREA(ACRES) =     1.39       SUBAREA RUNOFF(CFS) =    2.77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        1.5         PEAK FLOW RATE(CFS) =       2.98

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   4.36
  LONGEST FLOWPATH FROM NODE   2132.10 TO NODE   2132.30 =     475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2132.30 TO NODE   2200.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    664.00  DOWNSTREAM(FEET) =    608.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0700
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.333
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.91
  AVERAGE FLOW DEPTH(FEET) =   0.37   TRAVEL TIME(MIN.) =   2.26
  Tc(MIN.) =   14.03
  SUBAREA AREA(ACRES) =     5.86       SUBAREA RUNOFF(CFS) =   10.41
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        7.4         PEAK FLOW RATE(CFS) =      13.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   6.78
  LONGEST FLOWPATH FROM NODE   2132.10 TO NODE   2200.00 =    1275.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2200.00 TO NODE   2200.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.03
  RAINFALL INTENSITY(INCH/HR) =   4.33
  TOTAL STREAM AREA(ACRES) =     7.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.08

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      452.69    14.34        4.272        210.35
```

2	13.08	14.03	4.333	7.36

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	455.98	14.03	4.333
2	465.59	14.34	4.272

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 465.59 Tc(MIN.) = 14.34
TOTAL AREA(ACRES) = 217.7
LONGEST FLOWPATH FROM NODE 2001.00 TO NODE 2200.00 = 5900.00 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 217.7 TC(MIN.) = 14.34
PEAK FLOW RATE(CFS) = 465.59

==========
==========

END OF RATIONAL METHOD ANALYSIS

BASIN C

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Valiano
Proposed Hydrology
100 Year Design Storm
2690-007-02

Date: Oct 2014

P-300.dat
Run Name: 300 Series

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
300	301	2	1205	1200	70	0.35	0.10	
301	302	5	1200	854	1780	0.35	24.06	
302	302	1	-	-	-	-	-	1 of 2
303	304	2	1090	1086	70	0.35	0.11	
304	302	5	1086	854	1350	0.35	17.12	
302	302	1	-	-	-	-	-	2 of 2
302	303	5	854	764	810	0.35	7.25	
303	303	1	-	-	-	-	-	1 of 2
305.5	306.5	2	978	958	70	0.35	0.22	
306.5	307.5	5	958	810	450	0.35	3.65	
307.5	308.5	3	804	788	450			
308.5	303	3	788	764	460			
303	303	1						2 of 2
303	305	5	764	742	300	0.35	1.94	
305	305	10						SAVE TO BANK 1
300	310	2	1205	1200	70	0.35	0.11	
310	311	5	1200	1100	800	0.35	5.47	
311	312	5	1100	858	1050	0.35	8.23	
312	313	9	858	832	310	0.35	1.37	
313	313	1						1 OF 2
314	315	2	896	872	70	0.35	0.16	
315	313	3	868	832	85		-	
313	313	1	-	-	-	-	-	2 of 2
313	317	3	832	820	250		-	
317	317	1	-	-	-	-	-	1 of 3
318	319	2	952	938	70	0.35	0.10	
319	317	5	938	820	640	0.35	4.09	
317	317	1	-	-	-	-	-	2 of 3
300	320	2	1205	1200	70	0.35	0.10	
320	321	5	1200	1075	815	0.35	6.99	
321	322	5	1075	935	620	0.35	12.76	
322	317	5	935	820	790	0.35	4.93	
317	317	1	-	-	-	-	-	3 of 3

317	323	9	820	770	440	0.35	3.77	
323	323	1	-	-	-	-	-	1 of 2
324	325	2	944	929	70	0.35	0.10	
325	326	5	929	906	175	0.35	0.54	
326	327	9	906	871	310	0.35	0.80	
327	328	3	865	820	780		-	
328	323	5	820	770	200			
323	323	1	-	-	-	-	-	2 OF 2
323	329	3	767	750	280		-	
329	329.5	5	750	734	140			
329.5	329.5	10						SAVE TO BANK 2
331	332	2	872	871	70	0.71	0.23	
332	333	6	871	817	540	0.71	1.48	1 side
333	334	3	811	810	35		-	
334	334	1						1 of 2
335	336	2	872	871	70	0.71	0.22	
336	334	6	871	817	600	0.71	1.93	one side
334	334	1	-	-	-	-	-	2 of 2
334	337	3	810	759	205			
337	329.5	3	759	734	100			
329.5	329.5	11						ADD BANK 2
329.5	329.5	12						CLEAR BANK 2
329.5	330	5	734	710	420	0.35	5.48	
330	309.5	3	710	700	380			
309.5	309	5	700	692	300	0.35	2.05	
309	309	10	-	-	-	-	-	SAVE TO BANK 2
339	340	2	818	817	70	0.71	0.09	
340	341	6	817	790	370	0.71	0.37	1 side of street
341	338	3	784	783	12	0.01		
338	338	1	-	-	-	-	-	1 of 2
342	343	2	818	817	70	0.71	0.04	
343	344	6	817	790	345	0.71	0.16	1 side of street
344	338	3	784	783	12		-	
338	338	1	-	-	-	-	-	2 of 2
338	345	3	783	782	55		-	
345	345	10	-	-	-	-	-	Save to Bank 3
346	347	2	836	835	70	0.71	0.26	
347	348	6	835	820	350	0.71	2.09	1 side of street
348	349	3	814	813	65		-	
349	349	1	-	-	-	-	-	1 of 2
350	351	2	882	832	70	0.35	0.33	
351	352	6	832	822	205	0.71	1.11	1 side of street

352	349	3	816	813	23		-	
349	349	1	-	-	-	-	-	2 of 2
349	353	3	813	782	380		-	
353	353	1	-	-	-	-	-	1 of 2
354	355	2	825	813	70	0.71	0.19	
355	356	6	813	784	280	0.71	1.63	1 side of street
356	353	3	784	783	23		-	
353	353	1	-	-	-	-	-	2 of 2
353	345	3	783	782	35		-	
345	345	11	-	-	-	-	-	Confluence with Bank 3
345	345	12	-	-	-	-	-	Clear Bank 3
345	357	3	782	743	480			
357	357	1						1 of 2
361	362	2	786	774	145	0.71	0.09	
362	363	6	774	750	350	0.71	1.11	1 side of street
363	357	3	744	743	23		-	
357	357	1	-	-	-	-	-	2 of 2
357	360	3	743	742	2		-	
360	360	1	-	-	-	-	-	1 of 2
358	359	2	790	780	70	0.71	0.16	
359	360	6	780	750	375	0.71	0.34	1 sides of street
360	360	1	-	-				2 OF 2
360	305.5	3	744	743	40			
305.5	305.5	1						1 OF 2
306	307	2	834	780	70	0.35	0.45	
307	305.5	5	780	743	250	0.35	2.47	
305.5	305.5	1						2 OF 2
305.5	305	3	743	742	32			
305	305	11						ADD BANK 1
305	305	12						CLEAR BANK 1
305	308	3	742	736	205		-	
308	309	5	736	692	750	0.35	4.58	
309	309	10	-	-	-	-	-	SAVE TO BANK 1
3007	3008	2	815	766	70	0.35	0.54	
3008	3009	5	766	709	680	0.35	4.95	
3009	3009	1	-	-	-	-	-	1 of 2
3010	3011	2	751	744	70	0.35	0.43	
3011	3009	5	744	709	400	0.35	4.82	
3009	3009	1	-	-	-	-	-	2 of 2
3009	395	3	709	694	580			

395	309	5	694	692	200			
309	309	11						ADD BANK 1
309	309	11						ADD BANK 2
309	309	12						CLEAR BANK 1
309	309	12						CLEAR BANK 2
309	390	3	692	689	60			
390	391	5	689	678	490	0.35	3.46	
391	391	10						SAVE TO BANK 1
392	393	2	724	722	70	0.71	0.24	
393	394	6	722	709	420	0.71	2.78	
394	396	3	703	699	335	0.01	-	
396	396	1						1 OF 2
397	398	2	708	707	70	0.71	0.20	
398	396	6	707	705	185	0.71	1.91	
396	396	1						2 OF 2
396	3004	3	699	686	350		-	
3004	3004	1	-	-	-	-	-	1 of 2
3001	3002	2	706	704	70	0.71	0.31	
3002	3003	6	704	691	335	0.71	3.07	
3003	3004	3	687	686	25		-	
3004	3004	1	-	-	-	-	-	2 of 2
3004	3005	3	686	682	260	0.01	-	
3005	3005	1						1 OF 2
387	388	2	715	713	100	0.71	0.23	
388	389	6	713	699	640	0.71	3.09	1 side of street
389	3005	3	693	682	225			
3005	3005	1						2 of 2
3005	391	3	682	678	200			
391	391	11						ADD BANK 1
391	391	12						CLEAR BANK 1
391	3006	5	678	675	190	0.35	0.86	
3006	3006	1	-	-	-	-	-	1 OF 2
3014	3012	2	739	710	70	0.35	0.33	
3012	3006	9	710	675	650	0.01	0.77	
3006	3006	1	-	-	-	-	-	2 OF 2
3006	3013	5	675	670	260	0.35	0.50	
3013	3013	1						1 OF 2
3016	3017	2	708	688	70	0.35	0.24	
3017	3013	5	688	670	505	0.35	1.76	
3013	3013	1						2 OF 2

3013	3013	10						SAVE TO BANK 1
368	369	2	757	749	70	0.71	0.25	
369	370	6	749	746	225	0.71	0.31	
370	364	3	740	735	20		-	
364	364	1	-	-	-	-	-	1 OF 3
365	366	2	754	749	70	0.71	0.10	
366	367	6	749	746	230	0.71	0.48	1side of street
367	364	3	740	735	3		-	
364	364	1	-	-	-	-	-	2 OF 2
364	364	10						SAVE TO BANK 2
372	373	2	760	755	70	0.71	0.25	
373	374	6	755	745	203	0.71	1.56	
374	375	3	739	738	3		-	
375	375	1	-	-	-	-	-	1 of 2
376	377	2	762	755	70	0.71	0.20	
377	378	6	755	745	210	0.71	1.50	
378	375	3	739	738	21		-	
375	375	1	-	-	-	-	-	2 of 2
375	364	3	738	735	275		-	
364	364	11	-	-	-	-	-	Confluence with Bank
364	371	3	735	734	50	-	-	
371	376	3	734	695	840		-	
376	376	1	-	-	-	-	-	1 of 2
377	379.2	2	746	744	70	0.71	0.16	
379.2	379	6	744	701	760	0.71	2.61	1 side of street
379	376	3	696	695	25		-	
376	376	1	-	-	-	-	-	2 of 2
376	382	3	695	686	70	-	-	
382	382	1	-	-	-	-	-	1 of 2
380	381	2	750	692	70	0.35	0.81	
381	382	3	687	686	34		-	
382	382	1	-	-	-	-	-	2 of 2
382	3015	3	686	685	50		-	
3015	3015	1						1 OF 2
3014	3015	2	690	686	70	0.35	0.79	
3015	3015	1						2 OF 2
3015	3013	5	686	670	721	0.35	2.94	
3013	3013	11	-	-	-	-	-	ADD BANK 1

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2012 Advanced Engineering Software (aes)
              Ver. 19.0 Release Date: 06/01/2012  License ID 1355

                              Analysis prepared by:

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                                6390 Greenwich Dr.
                                    Suite 170
                               San Diego, CA 92122

 ************************** DESCRIPTION OF STUDY **************************
* VALIANO - 300 SERIES                                                    *
* PROPOSED HYDROLOGY 100 YEAR DESIGN STORM                                *
* OCTOBER 20, 2014                                                        *
 **************************************************************************

  FILE NAME: P-300.DAT
  TIME/DATE OF STUDY: 17:23 10/20/2014
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.200
  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      6.0    0.020/0.020/0.020   0.33    0.10 0.0100 0.010 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.33 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 = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =   1205.00
  DOWNSTREAM ELEVATION(FEET) =   1200.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.865
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.606
```

```
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  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) =   1200.00  DOWNSTREAM(FEET) =    854.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1780.00   CHANNEL SLOPE =  0.1944
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.054
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.91
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   2.49
  Tc(MIN.) =    8.36
  SUBAREA AREA(ACRES) =    24.06       SUBAREA RUNOFF(CFS) =   50.98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       24.2         PEAK FLOW RATE(CFS) =      51.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =  14.56
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    302.00 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.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   6.05
  TOTAL STREAM AREA(ACRES) =    24.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.19

****************************************************************************
  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 = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =   1090.00
  DOWNSTREAM ELEVATION(FEET) =   1086.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.318
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.250
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    304.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1086.00  DOWNSTREAM(FEET) =    854.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1350.00   CHANNEL SLOPE =  0.1719
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.989
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.32
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   2.18
  Tc(MIN.) =    8.50
  SUBAREA AREA(ACRES) =    17.12       SUBAREA RUNOFF(CFS) =   35.88
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       17.2         PEAK FLOW RATE(CFS) =      36.11

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOW VELOCITY(FEET/SEC.) =  12.64
  LONGEST FLOWPATH FROM NODE    303.00 TO NODE    302.00 =    1420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    302.00 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.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   5.99
  TOTAL STREAM AREA(ACRES) =    17.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       51.19     8.36        6.054         24.16
      2       36.11     8.50        5.989         17.23

  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       86.70     8.36        6.054
      2       86.75     8.50        5.989

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      86.75   Tc(MIN.) =    8.50
  TOTAL AREA(ACRES) =       41.4
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    854.00  DOWNSTREAM(FEET) =    764.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   810.00   CHANNEL SLOPE =  0.1111
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
```

```
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.590
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.08
  AVERAGE FLOW DEPTH(FEET) =   1.22   TRAVEL TIME(MIN.) =   0.96
  Tc(MIN.) =    9.46
  SUBAREA AREA(ACRES) =     7.25       SUBAREA RUNOFF(CFS) =   14.18
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       48.6         PEAK FLOW RATE(CFS) =      95.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =  14.12
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    303.00 =    2660.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 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.) =    9.46
  RAINFALL INTENSITY(INCH/HR) =   5.59
  TOTAL STREAM AREA(ACRES) =    48.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     95.16

****************************************************************************
  FLOW PROCESS FROM NODE    305.50 TO NODE    306.50 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    978.00
  DOWNSTREAM ELEVATION(FEET) =    958.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.63
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.63

****************************************************************************
  FLOW PROCESS FROM NODE    306.50 TO NODE    307.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    958.00  DOWNSTREAM(FEET) =    810.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.3289
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.402
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.56
```

```
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   0.88
  Tc(MIN.) =    6.12
  SUBAREA AREA(ACRES) =     3.65       SUBAREA RUNOFF(CFS) =    9.46
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        3.9         PEAK FLOW RATE(CFS) =      10.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.27   FLOW VELOCITY(FEET/SEC.) =  10.49
  LONGEST FLOWPATH FROM NODE    305.50 TO NODE    307.50 =     520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    307.50 TO NODE    308.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   804.00  DOWNSTREAM(FEET) =   788.00
  FLOW LENGTH(FEET) =   450.00   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.) =  10.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.03
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =    6.81
  LONGEST FLOWPATH FROM NODE    305.50 TO NODE    308.50 =     970.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    308.50 TO NODE    303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   788.00  DOWNSTREAM(FEET) =   764.00
  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   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.47
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.03
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =    7.43
  LONGEST FLOWPATH FROM NODE    305.50 TO NODE    303.00 =    1430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 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.) =    7.43
  RAINFALL INTENSITY(INCH/HR) =   6.53
  TOTAL STREAM AREA(ACRES) =     3.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       95.16     9.46        5.590         48.64
      2       10.03     7.43        6.532          3.87

  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       91.45     7.43       6.532
      2      103.74     9.46       5.590

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     103.74   Tc(MIN.) =    9.46
  TOTAL AREA(ACRES) =       52.5
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    303.00 =    2660.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    305.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    742.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0733
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.442
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     105.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.48
  AVERAGE FLOW DEPTH(FEET) =   1.44   TRAVEL TIME(MIN.) =   0.40
  Tc(MIN.) =    9.86
  SUBAREA AREA(ACRES) =     1.94       SUBAREA RUNOFF(CFS) =    3.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       54.4         PEAK FLOW RATE(CFS) =     103.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.43   FLOW VELOCITY(FEET/SEC.) =  12.38
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    305.00 =    2960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE    305.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    310.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =   1205.00
  DOWNSTREAM ELEVATION(FEET) =   1200.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.865
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.606
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  51
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1200.00  DOWNSTREAM(FEET) =   1100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.1250
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.285
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.60
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   2.02
  Tc(MIN.) =    7.88
  SUBAREA AREA(ACRES) =     5.47       SUBAREA RUNOFF(CFS) =   12.03
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.6         PEAK FLOW RATE(CFS) =      12.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =   8.09
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    311.00 =     870.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1100.00  DOWNSTREAM(FEET) =    858.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1050.00   CHANNEL SLOPE =  0.2305
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.622
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.77
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   1.49
  Tc(MIN.) =    9.37
  SUBAREA AREA(ACRES) =     8.23       SUBAREA RUNOFF(CFS) =   16.19
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       13.8         PEAK FLOW RATE(CFS) =      27.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =  12.82
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    312.00 =    1920.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    858.00
  DOWNSTREAM NODE ELEVATION(FEET) =    832.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.800
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0130
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.20000
  MAXIMUM DEPTH(FEET) =   1.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.510
```

```
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     28.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.35
  AVERAGE FLOW DEPTH(FEET) =   0.81   FLOOD WIDTH(FEET) =    4.01
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =    9.67
  SUBAREA AREA(ACRES) =    1.37       SUBAREA RUNOFF(CFS) =    2.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       15.2         PEAK FLOW RATE(CFS) =      29.27

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.82   FLOOD WIDTH(FEET) =    4.07
  FLOW VELOCITY(FEET/SEC.) =  17.53   DEPTH*VELOCITY(FT*FT/SEC) =  14.33
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    313.00 =    2230.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 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.) =    9.67
  RAINFALL INTENSITY(INCH/HR) =   5.51
  TOTAL STREAM AREA(ACRES) =    15.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.27

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    896.00
  DOWNSTREAM ELEVATION(FEET) =    872.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   868.00  DOWNSTREAM(FEET) =   832.00
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.46
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    5.38
  LONGEST FLOWPATH FROM NODE    314.00 TO NODE    313.00 =     155.00 FEET.

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

```
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 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.) =    5.38
 RAINFALL INTENSITY(INCH/HR) =   8.04
 TOTAL STREAM AREA(ACRES) =     0.16
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.46

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       29.27     9.67        5.510         15.18
     2        0.46     5.38        8.045          0.16

 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       16.74     5.38       8.045
     2       29.59     9.67       5.510

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      29.59   Tc(MIN.) =    9.67
 TOTAL AREA(ACRES) =       15.3
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    313.00 =    2230.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   832.00  DOWNSTREAM(FEET) =   820.00
 FLOW LENGTH(FEET) =     0.02   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 470.14
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.59
 PIPE TRAVEL TIME(MIN.) =   0.00    Tc(MIN.) =    9.67
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    317.00 =    2230.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 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.) =    9.67
 RAINFALL INTENSITY(INCH/HR) =   5.51
 TOTAL STREAM AREA(ACRES) =    15.34
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.59

****************************************************************************
 FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    952.00
  DOWNSTREAM ELEVATION(FEET) =    938.00
  ELEVATION DIFFERENCE(FEET) =     14.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    317.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    938.00  DOWNSTREAM(FEET) =    820.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   640.00   CHANNEL SLOPE =  0.1844
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.943
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.04
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   1.51
  Tc(MIN.) =    6.76
  SUBAREA AREA(ACRES) =     4.09       SUBAREA RUNOFF(CFS) =    9.94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        4.2         PEAK FLOW RATE(CFS) =      10.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   8.82
  LONGEST FLOWPATH FROM NODE    318.00 TO NODE    317.00 =     710.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 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.) =    6.76
  RAINFALL INTENSITY(INCH/HR) =   6.94
  TOTAL STREAM AREA(ACRES) =     4.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.18

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    320.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =   1205.00
```

```
  DOWNSTREAM ELEVATION(FEET) =   1200.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.865
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.606
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1200.00  DOWNSTREAM(FEET) =   1075.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   815.00   CHANNEL SLOPE =  0.1534
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.401
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.55
  AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =    7.66
  SUBAREA AREA(ACRES) =     6.99       SUBAREA RUNOFF(CFS) =   15.66
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        7.1         PEAK FLOW RATE(CFS) =      15.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.43   FLOW VELOCITY(FEET/SEC.) =   9.52
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    321.00 =     885.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1075.00  DOWNSTREAM(FEET) =    935.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.2258
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.009
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.10
  AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =    8.45
  SUBAREA AREA(ACRES) =    12.76       SUBAREA RUNOFF(CFS) =   26.84
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       19.9         PEAK FLOW RATE(CFS) =      41.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =  14.45
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    322.00 =    1505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    317.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    935.00  DOWNSTREAM(FEET) =    820.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   790.00   CHANNEL SLOPE =  0.1456
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.578
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.73
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   1.03
  Tc(MIN.) =    9.49
  SUBAREA AREA(ACRES) =     4.93       SUBAREA RUNOFF(CFS) =    9.63
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       24.8         PEAK FLOW RATE(CFS) =      48.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.81   FLOW VELOCITY(FEET/SEC.) =  12.89
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    317.00 =    2295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.49
  RAINFALL INTENSITY(INCH/HR) =   5.58
  TOTAL STREAM AREA(ACRES) =    24.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       29.59     9.67        5.510         15.34
      2       10.18     6.76        6.943          4.19
      3       48.38     9.49        5.578         24.78

  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       68.12     6.76       6.943
      2       85.78     9.49       5.578
      3       85.45     9.67       5.510

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      85.78   Tc(MIN.) =    9.49
  TOTAL AREA(ACRES) =       44.3
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    317.00 =    2295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    323.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    820.00
```

```
 DOWNSTREAM NODE ELEVATION(FEET) =    770.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00
 "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.800
 PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0130
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.20000
 MAXIMUM DEPTH(FEET) =   1.50
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.477
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     89.40
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.72
 AVERAGE FLOW DEPTH(FEET) =   1.12   FLOOD WIDTH(FEET) =    7.08
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =    9.76
 SUBAREA AREA(ACRES) =    3.77       SUBAREA RUNOFF(CFS) =    7.23
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =       48.1         PEAK FLOW RATE(CFS) =      92.16

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  1.13   FLOOD WIDTH(FEET) =    7.20
 FLOW VELOCITY(FEET/SEC.) =  26.85   DEPTH*VELOCITY(FT*FT/SEC) =  30.34
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    323.00 =    2735.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 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) =   5.48
 TOTAL STREAM AREA(ACRES) =    48.08
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.16

****************************************************************************
 FLOW PROCESS FROM NODE    324.00 TO NODE    325.00 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) =    70.00
 UPSTREAM ELEVATION(FEET) =    944.00
 DOWNSTREAM ELEVATION(FEET) =    929.00
 ELEVATION DIFFERENCE(FEET) =     15.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
 SUBAREA RUNOFF(CFS) =      0.29
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
 FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    929.00  DOWNSTREAM(FEET) =    906.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   175.00   CHANNEL SLOPE =  0.1314
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.437
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.99
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.51
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   0.83
 Tc(MIN.) =    6.07
 SUBAREA AREA(ACRES) =     0.54       SUBAREA RUNOFF(CFS) =    1.41
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =       1.67

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   4.10
 LONGEST FLOWPATH FROM NODE    324.00 TO NODE    326.00 =     245.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  91
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =    906.00
 DOWNSTREAM NODE ELEVATION(FEET) =    871.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00
 "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.800
 PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0130
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.20000
 MAXIMUM DEPTH(FEET) =   1.50
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.238
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.68
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  19.84
 AVERAGE FLOW DEPTH(FEET) =   0.80   FLOOD WIDTH(FEET) =    4.00
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =    6.33
 SUBAREA AREA(ACRES) =    0.80       SUBAREA RUNOFF(CFS) =    2.03
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        1.4         PEAK FLOW RATE(CFS) =       3.65

        NOTE:TRAVEL TIME ESTIMATES BASED ON NORMAL DEPTH
        IN A FLOWING-FULL GUTTER(NORMAL DEPTH = GUTTER HIKE)


 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.80   FLOOD WIDTH(FEET) =    4.00
 FLOW VELOCITY(FEET/SEC.) =  19.84   DEPTH*VELOCITY(FT*FT/SEC) =  15.88
 LONGEST FLOWPATH FROM NODE    324.00 TO NODE    327.00 =     555.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    327.00 TO NODE    328.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   865.00  DOWNSTREAM(FEET) =   820.00
 FLOW LENGTH(FEET) =   780.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.78
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.65
 PIPE TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =    7.66
```

```
 LONGEST FLOWPATH FROM NODE    324.00 TO NODE    328.00 =    1335.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    328.00 TO NODE    323.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    820.00  DOWNSTREAM(FEET) =    770.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.2500
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.65
 FLOW VELOCITY(FEET/SEC) =   6.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =    8.20
 LONGEST FLOWPATH FROM NODE    324.00 TO NODE    323.00 =    1535.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 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.) =    8.20
 RAINFALL INTENSITY(INCH/HR) =   6.13
 TOTAL STREAM AREA(ACRES) =     1.44
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.65

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       92.16     9.76        5.477         48.08
     2        3.65     8.20        6.128          1.44

 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       86.02     8.20       6.128
     2       95.42     9.76       5.477

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      95.42   Tc(MIN.) =    9.76
 TOTAL AREA(ACRES) =       49.5
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    323.00 =    2735.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    329.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   767.00  DOWNSTREAM(FEET) =   750.00
 FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.27
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      95.42
 PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    9.97
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    329.00 =    3015.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    329.00 TO NODE    329.50 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    734.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   140.00   CHANNEL SLOPE =  0.1143
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      95.42
  FLOW VELOCITY(FEET/SEC.) =  14.28   FLOW DEPTH(FEET) =   1.23
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =   10.13
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    329.50 =    3155.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    329.50 TO NODE    329.50 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    872.00
  DOWNSTREAM ELEVATION(FEET) =    871.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      1.34
  TOTAL AREA(ACRES) =      0.23   TOTAL RUNOFF(CFS) =      1.34

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    333.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  871.00  DOWNSTREAM ELEVATION(FEET) =  817.00
  STREET LENGTH(FEET) =   540.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    8.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.27
```

```
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.23
  STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =    6.65
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.014
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.48      SUBAREA RUNOFF(CFS) =    7.37
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       8.52

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  10.92
  FLOW VELOCITY(FEET/SEC.) =  7.13   DEPTH*VELOCITY(FT*FT/SEC.) =   1.69
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    333.00 =     610.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    333.00 TO NODE    334.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   811.00  DOWNSTREAM(FEET) =   810.00
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.52
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    6.71
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    334.00 =     645.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    334.00 TO NODE    334.00 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.) =    6.71
  RAINFALL INTENSITY(INCH/HR) =   6.97
  TOTAL STREAM AREA(ACRES) =     1.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.52

****************************************************************************
  FLOW PROCESS FROM NODE    335.00 TO NODE    336.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    872.00
  DOWNSTREAM ELEVATION(FEET) =    871.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      1.28
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.28

****************************************************************************
  FLOW PROCESS FROM NODE    336.00 TO NODE    334.00 IS CODE =  62
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  871.00  DOWNSTREAM ELEVATION(FEET) =  817.00
  STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
    HALFSTREET FLOOD WIDTH(FEET) =    9.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.34
  STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =    6.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.909
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.93      SUBAREA RUNOFF(CFS) =    9.47
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =      10.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  7.13   DEPTH*VELOCITY(FT*FT/SEC.) =   1.84
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    334.00 =     670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    334.00 TO NODE    334.00 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.) =    6.81
  RAINFALL INTENSITY(INCH/HR) =   6.91
  TOTAL STREAM AREA(ACRES) =     2.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.52     6.71        6.973          1.71
      2       10.55     6.81        6.909          2.15

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       18.91     6.71       6.973
      2       18.98     6.81       6.909
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.98   Tc(MIN.) =    6.81
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    334.00 =     670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    334.00 TO NODE    337.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   810.00  DOWNSTREAM(FEET) =   759.00
  FLOW LENGTH(FEET) =   205.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.98
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    6.94
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    337.00 =     875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    337.00 TO NODE    329.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   759.00  DOWNSTREAM(FEET) =   734.00
  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   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.98
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    7.00
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    329.50 =     975.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    329.50 TO NODE    329.50 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       18.98     7.00       6.785        3.86
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    329.50 =     975.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       95.42    10.13       5.346       49.52
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    329.50 =    3155.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      84.92       7.00        6.785
      2     110.38      10.13        5.346

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     110.38   Tc(MIN.) =   10.13
  TOTAL AREA(ACRES) =       53.4

****************************************************************************
  FLOW PROCESS FROM NODE    329.50 TO NODE    329.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    329.50 TO NODE    330.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    734.00  DOWNSTREAM(FEET) =    710.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   420.00   CHANNEL SLOPE =  0.0571
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.151
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.65
  AVERAGE FLOW DEPTH(FEET) =   1.60   TRAVEL TIME(MIN.) =   0.60
  Tc(MIN.) =   10.73
  SUBAREA AREA(ACRES) =     5.48       SUBAREA RUNOFF(CFS) =    9.88
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.374
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     113.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.58   FLOW VELOCITY(FEET/SEC.) =  11.59
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    330.00 =    3575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    309.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   710.00  DOWNSTREAM(FEET) =   700.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.31
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     113.27
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   11.10
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.50 =    3955.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    309.50 TO NODE    309.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    700.00  DOWNSTREAM(FEET) =    692.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0267
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.881
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.77
  AVERAGE FLOW DEPTH(FEET) =   1.92   TRAVEL TIME(MIN.) =   0.57
  Tc(MIN.) =   11.67
  SUBAREA AREA(ACRES) =     2.05       SUBAREA RUNOFF(CFS) =    3.50
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.373
  TOTAL AREA(ACRES) =       60.9         PEAK FLOW RATE(CFS) =     113.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.90   FLOW VELOCITY(FEET/SEC.) =   8.75
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.00 =    4255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    339.00 TO NODE    340.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    818.00
  DOWNSTREAM ELEVATION(FEET) =    817.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  817.00  DOWNSTREAM ELEVATION(FEET) =  790.00
  STREET LENGTH(FEET) =   370.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.14
    HALFSTREET FLOOD WIDTH(FEET) =    5.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =    6.74
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.954
```

```
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.37      SUBAREA RUNOFF(CFS) =    1.83
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       2.27

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.16   HALFSTREET FLOOD WIDTH(FEET) =   7.08
  FLOW VELOCITY(FEET/SEC.) =  4.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.72
  LONGEST FLOWPATH FROM NODE    339.00 TO NODE    341.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    338.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   784.00  DOWNSTREAM(FEET) =   783.00
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.030
  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.) =   5.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.27
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.78
  LONGEST FLOWPATH FROM NODE    339.00 TO NODE    338.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 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.) =    6.78
  RAINFALL INTENSITY(INCH/HR) =   6.93
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.27

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    343.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    818.00
  DOWNSTREAM ELEVATION(FEET) =    817.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE    343.00 TO NODE    344.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) =  817.00  DOWNSTREAM ELEVATION(FEET) =  790.00
  STREET LENGTH(FEET) =   345.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.10
    HALFSTREET FLOOD WIDTH(FEET) =    4.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =    6.93
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.830
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.16      SUBAREA RUNOFF(CFS) =    0.78
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       0.97

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.12   HALFSTREET FLOOD WIDTH(FEET) =   5.03
  FLOW VELOCITY(FEET/SEC.) =  3.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.45
  LONGEST FLOWPATH FROM NODE    342.00 TO NODE    344.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    344.00 TO NODE    338.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   784.00  DOWNSTREAM(FEET) =   783.00
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  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.) =   7.53
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.97
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.96
  LONGEST FLOWPATH FROM NODE    342.00 TO NODE    338.00 =     427.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 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) =   6.81
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.27     6.78        6.930          0.46
      2        0.97     6.96        6.813          0.20

  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        3.22     6.78       6.930
      2        3.20     6.96       6.813

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.22   Tc(MIN.) =    6.78
  TOTAL AREA(ACRES) =        0.7
  LONGEST FLOWPATH FROM NODE    339.00 TO NODE    338.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    345.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   783.00  DOWNSTREAM(FEET) =   782.00
  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   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.22
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    6.92
  LONGEST FLOWPATH FROM NODE    339.00 TO NODE    345.00 =     507.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    345.00 TO NODE    345.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    346.00 TO NODE    347.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    836.00
  DOWNSTREAM ELEVATION(FEET) =    835.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      1.51
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      1.51

****************************************************************************
  FLOW PROCESS FROM NODE    347.00 TO NODE    348.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION(FEET) =  835.00  DOWNSTREAM ELEVATION(FEET) =  820.00
  STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.85
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =   11.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =    6.41
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.180
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.09      SUBAREA RUNOFF(CFS) =   10.65
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =      11.98

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  4.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    348.00 =     420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    348.00 TO NODE    349.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   814.00  DOWNSTREAM(FEET) =   813.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.97
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.98
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    6.55
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    349.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    349.00 TO NODE    349.00 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.) =    6.55
  RAINFALL INTENSITY(INCH/HR) =   7.08
  TOTAL STREAM AREA(ACRES) =     2.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.98

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    882.00
  DOWNSTREAM ELEVATION(FEET) =    832.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.94
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.94

************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  832.00  DOWNSTREAM ELEVATION(FEET) =  822.00
  STREET LENGTH(FEET) =   205.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.87
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    9.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.91
  STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =    6.01
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.486
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.627
  SUBAREA AREA(ACRES) =    1.11      SUBAREA RUNOFF(CFS) =    5.90
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       6.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =  11.48
  FLOW VELOCITY(FEET/SEC.) =  5.12   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     275.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    349.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   816.00  DOWNSTREAM(FEET) =   813.00
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
```

```
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.76
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    6.04
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    349.00 =     298.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    349.00 TO NODE    349.00 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.) =    6.04
  RAINFALL INTENSITY(INCH/HR) =   7.47
  TOTAL STREAM AREA(ACRES) =     1.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.98     6.55        7.083          2.35
      2        6.76     6.04        7.466          1.44

  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       17.81     6.04       7.466
      2       18.40     6.55       7.083

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.40   Tc(MIN.) =    6.55
  TOTAL AREA(ACRES) =        3.8
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    349.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    349.00 TO NODE    353.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   813.00  DOWNSTREAM(FEET) =   782.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.13
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.40
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    6.92
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    353.00 =     865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    353.00 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.) =    6.92
  RAINFALL INTENSITY(INCH/HR) =   6.84
  TOTAL STREAM AREA(ACRES) =     3.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.40

****************************************************************************
  FLOW PROCESS FROM NODE    354.00 TO NODE    355.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    825.00
  DOWNSTREAM ELEVATION(FEET) =    813.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.726
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      1.14

****************************************************************************
  FLOW PROCESS FROM NODE    355.00 TO NODE    356.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  813.00  DOWNSTREAM ELEVATION(FEET) =  784.00
  STREET LENGTH(FEET) =   280.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.02
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
    HALFSTREET FLOOD WIDTH(FEET) =    9.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.38
  STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =    3.43
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.63      SUBAREA RUNOFF(CFS) =    9.76
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =      10.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  11.95
  FLOW VELOCITY(FEET/SEC.) =  7.62   DEPTH*VELOCITY(FT*FT/SEC.) =   1.96
  LONGEST FLOWPATH FROM NODE    354.00 TO NODE    356.00 =     350.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    356.00 TO NODE    353.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   784.00  DOWNSTREAM(FEET) =   783.00
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.89
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    3.46
  LONGEST FLOWPATH FROM NODE    354.00 TO NODE    353.00 =     373.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    353.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.46
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     1.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.89

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.40     6.92        6.837          3.79
      2       10.89     3.46        8.431          1.82

  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       25.81     3.46       8.431
      2       27.23     6.92       6.837

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.23   Tc(MIN.) =    6.92
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    353.00 =     865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    345.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   783.00  DOWNSTREAM(FEET) =   782.00
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.67
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.23
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    6.97
```

```
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    345.00 =     900.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    345.00 TO NODE    345.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       27.23     6.97       6.808        5.61
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    345.00 =     900.00 FEET.

 ** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        3.22     6.92       6.835        0.66
 LONGEST FLOWPATH FROM NODE    339.00 TO NODE    345.00 =     507.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      30.28       6.92        6.835
     2      30.44       6.97        6.808

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      30.44   Tc(MIN.) =    6.97
 TOTAL AREA(ACRES) =        6.3

****************************************************************************
 FLOW PROCESS FROM NODE    345.00 TO NODE    345.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    345.00 TO NODE    357.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   782.00  DOWNSTREAM(FEET) =   743.00
 FLOW LENGTH(FEET) =   480.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.33
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      30.44
 PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =    7.38
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    357.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    357.00 TO NODE    357.00 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.) =    7.38
 RAINFALL INTENSITY(INCH/HR) =   6.56
 TOTAL STREAM AREA(ACRES) =     6.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.44
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   145.00
  UPSTREAM ELEVATION(FEET) =    786.00
  DOWNSTREAM ELEVATION(FEET) =    774.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.471
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.54
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.54

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  774.00  DOWNSTREAM ELEVATION(FEET) =  750.00
  STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.86
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.19
    HALFSTREET FLOOD WIDTH(FEET) =    8.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =    4.63
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.11      SUBAREA RUNOFF(CFS) =    6.64
  TOTAL AREA(ACRES) =        1.2        PEAK FLOW RATE(CFS) =       7.18

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  11.02
  FLOW VELOCITY(FEET/SEC.) =  5.91   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    363.00 =     495.00 FEET.

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

```
 FLOW PROCESS FROM NODE    363.00 TO NODE    357.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   744.00  DOWNSTREAM(FEET) =   743.00
 FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.68
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.18
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    4.67
 LONGEST FLOWPATH FROM NODE    361.00 TO NODE    357.00 =     518.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    357.00 TO NODE    357.00 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.) =    4.67
 RAINFALL INTENSITY(INCH/HR) =   8.43
 TOTAL STREAM AREA(ACRES) =     1.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.18

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       30.44     7.38        6.559          6.27
     2        7.18     4.67        8.431          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       26.44     4.67       8.431
     2       36.02     7.38       6.559

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      36.02   Tc(MIN.) =    7.38
 TOTAL AREA(ACRES) =        7.5
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    357.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    357.00 TO NODE    360.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   743.00  DOWNSTREAM(FEET) =   742.00
 FLOW LENGTH(FEET) =     2.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  40.10
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      36.02
 PIPE TRAVEL TIME(MIN.) =   0.00    Tc(MIN.) =    7.38
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    360.00 =    1382.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    360.00 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.) =    7.38
  RAINFALL INTENSITY(INCH/HR) =   6.56
  TOTAL STREAM AREA(ACRES) =     7.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.02

****************************************************************************
  FLOW PROCESS FROM NODE    358.00 TO NODE    359.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    790.00
  DOWNSTREAM ELEVATION(FEET) =    780.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.726
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE    359.00 TO NODE    360.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  780.00  DOWNSTREAM ELEVATION(FEET) =  750.00
  STREET LENGTH(FEET) =   375.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.15
    HALFSTREET FLOOD WIDTH(FEET) =    6.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =    4.11
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.34     SUBAREA RUNOFF(CFS) =    2.04
  TOTAL AREA(ACRES) =        0.5       PEAK FLOW RATE(CFS) =       2.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.17   HALFSTREET FLOOD WIDTH(FEET) =   7.73
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  LONGEST FLOWPATH FROM NODE    358.00 TO NODE    360.00 =     445.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    360.00 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.) =    4.11
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       36.02     7.38        6.558          7.47
      2        2.99     4.11        8.431          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       31.02     4.11       8.431
      2       38.35     7.38       6.558

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.35   Tc(MIN.) =    7.38
  TOTAL AREA(ACRES) =        8.0
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    360.00 =    1382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    305.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   744.00  DOWNSTREAM(FEET) =   743.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.35
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.43
  LONGEST FLOWPATH FROM NODE    346.00 TO NODE    305.50 =    1422.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    305.50 TO NODE    305.50 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.) =    7.43
 RAINFALL INTENSITY(INCH/HR) =   6.53
 TOTAL STREAM AREA(ACRES) =     7.97
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.35

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    307.00 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) =    70.00
 UPSTREAM ELEVATION(FEET) =    834.00
 DOWNSTREAM ELEVATION(FEET) =    780.00
 ELEVATION DIFFERENCE(FEET) =     54.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
 SUBAREA RUNOFF(CFS) =      1.29
 TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      1.29

****************************************************************************
 FLOW PROCESS FROM NODE    307.00 TO NODE    305.50 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    780.00  DOWNSTREAM(FEET) =    743.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.1480
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.559
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.13
 AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   0.68
 Tc(MIN.) =    5.92
 SUBAREA AREA(ACRES) =     2.47       SUBAREA RUNOFF(CFS) =    6.53
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        2.9         PEAK FLOW RATE(CFS) =       7.73

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   7.36
 LONGEST FLOWPATH FROM NODE    306.00 TO NODE    305.50 =     320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    305.50 TO NODE    305.50 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.) =    5.92
 RAINFALL INTENSITY(INCH/HR) =   7.56
 TOTAL STREAM AREA(ACRES) =     2.92
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.73
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       38.35     7.43        6.529         7.97
     2        7.73     5.92        7.559         2.92

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       40.85     5.92       7.559
     2       45.02     7.43       6.529

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      45.02   Tc(MIN.) =    7.43
 TOTAL AREA(ACRES) =       10.9
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    305.50 =    1422.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    305.50 TO NODE    305.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   743.00  DOWNSTREAM(FEET) =   742.00
 FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.71
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      45.02
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    7.47
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    305.00 =    1454.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    305.00 TO NODE    305.00 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       45.02     7.47       6.509       10.89
 LONGEST FLOWPATH FROM NODE    346.00 TO NODE    305.00 =    1454.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1      103.74     9.86       5.442       54.45
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    305.00 =    2960.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     123.62       7.47        6.509
     2     141.38       9.86        5.442

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     141.38   Tc(MIN.) =    9.86
 TOTAL AREA(ACRES) =       65.3
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE    305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE    308.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   742.00  DOWNSTREAM(FEET) =   736.00
  FLOW LENGTH(FEET) =   205.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.11
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     141.38
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   10.04
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    308.00 =    3165.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    308.00 TO NODE    309.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    736.00  DOWNSTREAM(FEET) =    692.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =  0.0587
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.060
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     145.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.51
  AVERAGE FLOW DEPTH(FEET) =   1.77   TRAVEL TIME(MIN.) =   1.00
  Tc(MIN.) =   11.03
  SUBAREA AREA(ACRES) =     4.58       SUBAREA RUNOFF(CFS) =    8.11
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.389
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     141.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.75   FLOW VELOCITY(FEET/SEC.) =  12.41
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.00 =    3915.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   3007.00 TO NODE   3008.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    815.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    766.00
  ELEVATION DIFFERENCE(FEET) =     49.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      1.55
  TOTAL AREA(ACRES) =      0.54   TOTAL RUNOFF(CFS) =      1.55

****************************************************************************
  FLOW PROCESS FROM NODE   3008.00 TO NODE   3009.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    766.00  DOWNSTREAM(FEET) =    709.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   680.00   CHANNEL SLOPE =  0.0838
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.719
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.41
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.08
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   1.87
  Tc(MIN.) =    7.11
  SUBAREA AREA(ACRES) =     4.95       SUBAREA RUNOFF(CFS) =   11.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.5         PEAK FLOW RATE(CFS) =      12.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.46   FLOW VELOCITY(FEET/SEC.) =   7.15
  LONGEST FLOWPATH FROM NODE   3007.00 TO NODE   3009.00 =     750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE   3009.00 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.) =    7.11
  RAINFALL INTENSITY(INCH/HR) =   6.72
  TOTAL STREAM AREA(ACRES) =     5.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.91

****************************************************************************
  FLOW PROCESS FROM NODE   3010.00 TO NODE   3011.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    751.00
  DOWNSTREAM ELEVATION(FEET) =    744.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      1.23
  TOTAL AREA(ACRES) =      0.43   TOTAL RUNOFF(CFS) =      1.23
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3011.00 TO NODE   3009.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.00  DOWNSTREAM(FEET) =    709.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00   CHANNEL SLOPE =  0.0875
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.233
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.07
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   1.10
  Tc(MIN.) =    6.34
  SUBAREA AREA(ACRES) =     4.82       SUBAREA RUNOFF(CFS) =   12.20
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.2         PEAK FLOW RATE(CFS) =      13.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.46   FLOW VELOCITY(FEET/SEC.) =   7.36
  LONGEST FLOWPATH FROM NODE   3010.00 TO NODE   3009.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE   3009.00 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.) =    6.34
  RAINFALL INTENSITY(INCH/HR) =   7.23
  TOTAL STREAM AREA(ACRES) =     5.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.91     7.11        6.719          5.49
      2       13.29     6.34        7.233          5.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       24.81     6.34       7.233
      2       25.26     7.11       6.719

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.26   Tc(MIN.) =    7.11
  TOTAL AREA(ACRES) =       10.7
  LONGEST FLOWPATH FROM NODE   3007.00 TO NODE   3009.00 =     750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE    395.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   709.00  DOWNSTREAM(FEET) =   694.00
  FLOW LENGTH(FEET) =   580.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.00
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.26
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =    7.91
  LONGEST FLOWPATH FROM NODE   3007.00 TO NODE    395.00 =    1330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    395.00 TO NODE    309.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    694.00  DOWNSTREAM(FEET) =    692.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.0100
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0100 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      25.26
  FLOW VELOCITY(FEET/SEC) =   1.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =    9.95
  LONGEST FLOWPATH FROM NODE   3007.00 TO NODE    309.00 =    1530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 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       25.26     9.95       5.411       10.74
  LONGEST FLOWPATH FROM NODE   3007.00 TO NODE    309.00 =    1530.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      141.38    11.03       5.060       69.92
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.00 =    3915.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     152.67       9.95        5.411
      2     165.00      11.03        5.060

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     165.00   Tc(MIN.) =   11.03
  TOTAL AREA(ACRES) =       80.7

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 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      165.00    11.03       5.060        80.66
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.00 =    3915.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      113.27    11.67       4.881        60.91
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    309.00 =    4255.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     272.11      11.03        5.060
      2     272.42      11.67        4.881

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     272.42   Tc(MIN.) =   11.67
  TOTAL AREA(ACRES) =      141.6

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    309.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    390.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   692.00  DOWNSTREAM(FEET) =   689.00
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.42
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     272.42
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   11.71
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    390.00 =    4315.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    689.00  DOWNSTREAM(FEET) =    678.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.0224
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.669
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     275.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.31
```

```
  AVERAGE FLOW DEPTH(FEET) =   2.98   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =   12.50
  SUBAREA AREA(ACRES) =     3.46       SUBAREA RUNOFF(CFS) =    5.65
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.379
  TOTAL AREA(ACRES) =      145.0         PEAK FLOW RATE(CFS) =     272.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.96   FLOW VELOCITY(FEET/SEC.) =  10.29
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    391.00 =    4805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    391.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    393.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    724.00
  DOWNSTREAM ELEVATION(FEET) =    722.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.139
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.44
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.44

****************************************************************************
  FLOW PROCESS FROM NODE    393.00 TO NODE    394.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  722.00  DOWNSTREAM ELEVATION(FEET) =  709.00
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.99
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.26   FLOOD WIDTH(FEET) =   12.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.18
    SPLIT DEPTH(FEET) =    0.20   SPLIT FLOOD WIDTH(FEET) =    9.23
    SPLIT FLOW(CFS) =    2.96   SPLIT VELOCITY(FEET/SEC.) =    3.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =   12.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.18
```

```
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =    5.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.650
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.78      SUBAREA RUNOFF(CFS) =   15.10
  TOTAL AREA(ACRES) =        3.0        PEAK FLOW RATE(CFS) =      16.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  4.71   DEPTH*VELOCITY(FT*FT/SEC.) =   1.33
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE    394.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    394.00 TO NODE    396.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   703.00  DOWNSTREAM(FEET) =   699.00
  FLOW LENGTH(FEET) =   335.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.78
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.40
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =    6.53
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE    396.00 =     825.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    396.00 TO NODE    396.00 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.) =    6.53
  RAINFALL INTENSITY(INCH/HR) =   7.10
  TOTAL STREAM AREA(ACRES) =     3.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.40

****************************************************************************
  FLOW PROCESS FROM NODE    397.00 TO NODE    398.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    708.00
  DOWNSTREAM ELEVATION(FEET) =    707.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.215
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.205
  SUBAREA RUNOFF(CFS) =      1.17
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.17

****************************************************************************
  FLOW PROCESS FROM NODE    398.00 TO NODE    396.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  707.00  DOWNSTREAM ELEVATION(FEET) =  705.00
  STREET LENGTH(FEET) =   185.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.01
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.26   FLOOD WIDTH(FEET) =   12.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.47
    SPLIT DEPTH(FEET) =    0.23   SPLIT FLOOD WIDTH(FEET) =   10.45
    SPLIT FLOW(CFS) =    2.45   SPLIT VELOCITY(FEET/SEC.) =    2.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =   12.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =    6.46
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.145
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.91      SUBAREA RUNOFF(CFS) =    9.69
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =      10.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  2.90   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
  LONGEST FLOWPATH FROM NODE    397.00 TO NODE    396.00 =     255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    396.00 TO NODE    396.00 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.) =    6.46
  RAINFALL INTENSITY(INCH/HR) =   7.14
  TOTAL STREAM AREA(ACRES) =     2.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.40     6.53        7.097          3.02
      2       10.70     6.46        7.145          2.11

  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       26.94     6.46       7.145
      2       27.03     6.53       7.097

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.03   Tc(MIN.) =    6.53
  TOTAL AREA(ACRES) =        5.1
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE    396.00 =     825.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    396.00 TO NODE   3004.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   699.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.68
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.03
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =    6.96
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE   3004.00 =    1175.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3004.00 TO NODE   3004.00 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.) =    6.96
  RAINFALL INTENSITY(INCH/HR) =   6.81
  TOTAL STREAM AREA(ACRES) =     5.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.03

****************************************************************************
  FLOW PROCESS FROM NODE   3001.00 TO NODE   3002.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    706.00
  DOWNSTREAM ELEVATION(FEET) =    704.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.139
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.86
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      1.86

****************************************************************************
  FLOW PROCESS FROM NODE   3002.00 TO NODE   3003.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  704.00  DOWNSTREAM ELEVATION(FEET) =  691.00
  STREET LENGTH(FEET) =   335.00   CURB HEIGHT(INCHES) =  4.0
```

```
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.67
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.26   FLOOD WIDTH(FEET) =   12.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.68
    SPLIT DEPTH(FEET) =    0.21   SPLIT FLOOD WIDTH(FEET) =    9.80
    SPLIT FLOW(CFS) =    3.92   SPLIT VELOCITY(FEET/SEC.) =    4.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =   12.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.21
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =    5.33
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.089
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    3.07      SUBAREA RUNOFF(CFS) =   17.63
  TOTAL AREA(ACRES) =        3.4        PEAK FLOW RATE(CFS) =      19.41

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  5.39   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE   3001.00 TO NODE   3003.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3003.00 TO NODE   3004.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   687.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.41
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    5.36
  LONGEST FLOWPATH FROM NODE   3001.00 TO NODE   3004.00 =     430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3004.00 TO NODE   3004.00 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) =   8.06
  TOTAL STREAM AREA(ACRES) =     3.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.41
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       27.03     6.96        6.813          5.13
      2       19.41     5.36        8.057          3.38

  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       42.27     5.36       8.057
      2       43.45     6.96       6.813

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      43.45   Tc(MIN.) =    6.96
  TOTAL AREA(ACRES) =        8.5
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE   3004.00 =    1175.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3004.00 TO NODE   3005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   686.00  DOWNSTREAM(FEET) =   682.00
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.13
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      43.45
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =    7.35
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE   3005.00 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3005.00 TO NODE   3005.00 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.) =    7.35
  RAINFALL INTENSITY(INCH/HR) =   6.58
  TOTAL STREAM AREA(ACRES) =     8.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.45

****************************************************************************
  FLOW PROCESS FROM NODE    387.00 TO NODE    388.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    715.00
  DOWNSTREAM ELEVATION(FEET) =    713.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
```

```
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.38
TOTAL AREA(ACRES) =      0.23   TOTAL RUNOFF(CFS) =      1.38

****************************************************************************
 FLOW PROCESS FROM NODE    388.00 TO NODE    389.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  713.00  DOWNSTREAM ELEVATION(FEET) =  699.00
 STREET LENGTH(FEET) =   640.00   CURB HEIGHT(INCHES) =  4.0
 STREET HALFWIDTH(FEET) = 12.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
 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) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.23
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =    0.26   FLOOD WIDTH(FEET) =   12.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    3.51
   SPLIT DEPTH(FEET) =    0.22   SPLIT FLOOD WIDTH(FEET) =   10.08
   SPLIT FLOW(CFS) =    3.17   SPLIT VELOCITY(FEET/SEC.) =    3.12
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =   12.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.51
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.91
 STREET FLOW TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =    8.02
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.217
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
 SUBAREA AREA(ACRES) =    3.09      SUBAREA RUNOFF(CFS) =   13.64
 TOTAL AREA(ACRES) =        3.3        PEAK FLOW RATE(CFS) =      14.65

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =  12.00
 FLOW VELOCITY(FEET/SEC.) =  4.07   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
 LONGEST FLOWPATH FROM NODE    387.00 TO NODE    389.00 =     740.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    389.00 TO NODE   3005.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   693.00  DOWNSTREAM(FEET) =   682.00
 FLOW LENGTH(FEET) =   225.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.34
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      14.65
```

```
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    8.30
  LONGEST FLOWPATH FROM NODE    387.00 TO NODE   3005.00 =     965.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3005.00 TO NODE   3005.00 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.) =    8.30
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     3.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.65

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       43.45     7.35        6.578          8.51
      2       14.65     8.30        6.080          3.32

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       56.42     7.35       6.578
      2       54.81     8.30       6.080

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.42   Tc(MIN.) =    7.35
  TOTAL AREA(ACRES) =       11.8
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE   3005.00 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3005.00 TO NODE    391.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   682.00  DOWNSTREAM(FEET) =   678.00
  FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.26
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.42
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    7.60
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE    391.00 =    1635.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    391.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       56.42     7.60       6.437        11.83
  LONGEST FLOWPATH FROM NODE    392.00 TO NODE    391.00 =    1635.00 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1      272.42    12.50       4.669      145.03
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    391.00 =    4805.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     222.03       7.60        6.437
     2     313.35      12.50        4.669

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     313.35   Tc(MIN.) =   12.50
 TOTAL AREA(ACRES) =      156.9

****************************************************************************
 FLOW PROCESS FROM NODE    391.00 TO NODE    391.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    391.00 TO NODE   3006.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    678.00  DOWNSTREAM(FEET) =    675.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   190.00   CHANNEL SLOPE =  0.0158
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.589
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     314.04
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.35
 AVERAGE FLOW DEPTH(FEET) =   3.42   TRAVEL TIME(MIN.) =   0.34
 Tc(MIN.) =   12.84
 SUBAREA AREA(ACRES) =     0.86       SUBAREA RUNOFF(CFS) =    1.38
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.403
 TOTAL AREA(ACRES) =      157.7         PEAK FLOW RATE(CFS) =     313.35

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.42   FLOW VELOCITY(FEET/SEC.) =   9.33
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE   3006.00 =    4995.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   3006.00 TO NODE   3006.00 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.) =   12.84
 RAINFALL INTENSITY(INCH/HR) =   4.59
 TOTAL STREAM AREA(ACRES) =   157.72
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    313.35

****************************************************************************
 FLOW PROCESS FROM NODE   3014.00 TO NODE   3012.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    739.00
  DOWNSTREAM ELEVATION(FEET) =    710.00
  ELEVATION DIFFERENCE(FEET) =     29.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.94
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.94

********************************************************************************
  FLOW PROCESS FROM NODE   3012.00 TO NODE   3006.00 IS CODE =  91
--------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =    710.00
  DOWNSTREAM NODE ELEVATION(FEET) =    675.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   650.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.800
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0130
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.20000
  MAXIMUM DEPTH(FEET) =   1.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.469
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.70
  AVERAGE FLOW DEPTH(FEET) =   0.80   FLOOD WIDTH(FEET) =    4.00
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =    6.03
  SUBAREA AREA(ACRES) =    0.77       SUBAREA RUNOFF(CFS) =    2.01
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.1         PEAK FLOW RATE(CFS) =       2.88

         NOTE:TRAVEL TIME ESTIMATES BASED ON NORMAL DEPTH
         IN A FLOWING-FULL GUTTER(NORMAL DEPTH = GUTTER HIKE)


  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.80   FLOOD WIDTH(FEET) =    4.00
  FLOW VELOCITY(FEET/SEC.) =  13.70   DEPTH*VELOCITY(FT*FT/SEC) =  10.96
  LONGEST FLOWPATH FROM NODE   3014.00 TO NODE   3006.00 =     720.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   3006.00 TO NODE   3006.00 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.) =    6.03
  RAINFALL INTENSITY(INCH/HR) =   7.47
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.88

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

```
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      313.35    12.84        4.589        157.72
      2        2.88     6.03        7.469          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      150.15     6.03       7.469
      2      315.12    12.84       4.589

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     315.12   Tc(MIN.) =   12.84
  TOTAL AREA(ACRES) =      158.8
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE   3006.00 =    4995.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3006.00 TO NODE   3013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    675.00  DOWNSTREAM(FEET) =    670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0192
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.493
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     315.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.07
  AVERAGE FLOW DEPTH(FEET) =   3.28   TRAVEL TIME(MIN.) =   0.43
  Tc(MIN.) =   13.27
  SUBAREA AREA(ACRES) =     0.50       SUBAREA RUNOFF(CFS) =    0.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.403
  TOTAL AREA(ACRES) =      159.3         PEAK FLOW RATE(CFS) =     315.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.28   FLOW VELOCITY(FEET/SEC.) =  10.06
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE   3013.00 =    5255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3013.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.27
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =   159.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    315.12

****************************************************************************
  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 = .3500
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    708.00
  DOWNSTREAM ELEVATION(FEET) =    688.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.69
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE   3017.00 TO NODE   3013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    688.00  DOWNSTREAM(FEET) =    670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   505.00   CHANNEL SLOPE =  0.0356
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.285
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.19
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   2.64
  Tc(MIN.) =    7.88
  SUBAREA AREA(ACRES) =     1.76       SUBAREA RUNOFF(CFS) =    3.87
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =       4.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   3.81
  LONGEST FLOWPATH FROM NODE   3016.00 TO NODE   3013.00 =     575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3013.00 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.) =    7.88
  RAINFALL INTENSITY(INCH/HR) =   6.29
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      315.12    13.27        4.493        159.32
      2        4.40     7.88        6.285          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      229.66     7.88        6.285
```

```
     2      318.26    13.27       4.493

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     318.26   Tc(MIN.) =   13.27
  TOTAL AREA(ACRES) =      161.3
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE   3013.00 =    5255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3013.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    368.00 TO NODE    369.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    757.00
  DOWNSTREAM ELEVATION(FEET) =    749.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.726
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.50
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.50

****************************************************************************
  FLOW PROCESS FROM NODE    369.00 TO NODE    370.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  749.00  DOWNSTREAM ELEVATION(FEET) =  746.00
  STREET LENGTH(FEET) =   225.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    9.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =    4.27
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.31      SUBAREA RUNOFF(CFS) =    1.86
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       3.35

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =  11.30
  FLOW VELOCITY(FEET/SEC.) =  2.62   DEPTH*VELOCITY(FT*FT/SEC.) =   0.64
  LONGEST FLOWPATH FROM NODE    368.00 TO NODE    370.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    364.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   740.00  DOWNSTREAM(FEET) =   735.00
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  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.) =  16.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.35
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    4.29
  LONGEST FLOWPATH FROM NODE    368.00 TO NODE    364.00 =     315.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    364.00 TO NODE    364.00 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.) =    4.29
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.35

****************************************************************************
  FLOW PROCESS FROM NODE    365.00 TO NODE    366.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    754.00
  DOWNSTREAM ELEVATION(FEET) =    749.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.050
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.60
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.60

****************************************************************************
  FLOW PROCESS FROM NODE    366.00 TO NODE    367.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  749.00  DOWNSTREAM ELEVATION(FEET) =  746.00
  STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  4.0
```

```
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
    HALFSTREET FLOOD WIDTH(FEET) =    9.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =    4.72
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.48      SUBAREA RUNOFF(CFS) =    2.87
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       3.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =  11.48
  FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
  LONGEST FLOWPATH FROM NODE    365.00 TO NODE    367.00 =     300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    367.00 TO NODE    364.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   740.00  DOWNSTREAM(FEET) =   735.00
  FLOW LENGTH(FEET) =     3.00   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.) =  31.58
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.47
  PIPE TRAVEL TIME(MIN.) =   0.00    Tc(MIN.) =    4.73
  LONGEST FLOWPATH FROM NODE    365.00 TO NODE    364.00 =     303.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    364.00 TO NODE    364.00 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.) =    4.73
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.47

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

```
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.35     4.29        8.431          0.56
      2        3.47     4.73        8.431          0.58

  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        6.50     4.29       8.431
      2        6.82     4.73       8.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.82   Tc(MIN.) =    4.73
  TOTAL AREA(ACRES) =        1.1
  LONGEST FLOWPATH FROM NODE    368.00 TO NODE    364.00 =     315.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    364.00 TO NODE    364.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    760.00
  DOWNSTREAM ELEVATION(FEET) =    755.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.050
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.50
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.50

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    374.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  755.00  DOWNSTREAM ELEVATION(FEET) =  745.00
  STREET LENGTH(FEET) =   203.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.17
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =   11.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =    3.73
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.56      SUBAREA RUNOFF(CFS) =    9.34
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =      10.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  5.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.36
  LONGEST FLOWPATH FROM NODE    372.00 TO NODE    374.00 =     273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    374.00 TO NODE    375.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   739.00  DOWNSTREAM(FEET) =   738.00
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.83
  PIPE TRAVEL TIME(MIN.) =   0.00    Tc(MIN.) =    3.73
  LONGEST FLOWPATH FROM NODE    372.00 TO NODE    375.00 =     276.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    375.00 TO NODE    375.00 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.) =    3.73
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     1.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.83

****************************************************************************
  FLOW PROCESS FROM NODE    376.00 TO NODE    377.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    762.00
  DOWNSTREAM ELEVATION(FEET) =    755.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.726
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  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    377.00 TO NODE    378.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  755.00  DOWNSTREAM ELEVATION(FEET) =  745.00
  STREET LENGTH(FEET) =   210.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =   10.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =    3.45
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.50      SUBAREA RUNOFF(CFS) =    8.98
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =      10.18

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    378.00 =     280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    378.00 TO NODE    375.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   739.00  DOWNSTREAM(FEET) =   738.00
  FLOW LENGTH(FEET) =    21.00   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.) =  12.10
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.18
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    3.48
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    375.00 =     301.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    375.00 TO NODE    375.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.48
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.18

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.83     3.73        8.431          1.81
      2       10.18     3.48        8.431          1.70

  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       20.28     3.48       8.431
      2       21.01     3.73       8.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.01   Tc(MIN.) =    3.73
  TOTAL AREA(ACRES) =        3.5
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    375.00 =     301.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    375.00 TO NODE    364.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   738.00  DOWNSTREAM(FEET) =   735.00
  FLOW LENGTH(FEET) =   275.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.11
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.01
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    4.30
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    364.00 =     576.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    364.00 TO NODE    364.00 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       21.01     4.30       8.431        3.51
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    364.00 =     576.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.82     4.73       8.431        1.14
  LONGEST FLOWPATH FROM NODE    368.00 TO NODE    364.00 =     315.00 FEET.

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      27.21       4.30        8.431
      2      27.84       4.73        8.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.84   Tc(MIN.) =    4.73
  TOTAL AREA(ACRES) =        4.7

****************************************************************************
  FLOW PROCESS FROM NODE    364.00 TO NODE    371.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   735.00  DOWNSTREAM(FEET) =   734.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.96
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.84
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    4.80
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    371.00 =     626.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    376.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   734.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   840.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.14
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.84
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =    5.73
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    376.00 =    1466.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    376.00 TO NODE    376.00 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.) =    5.73
  RAINFALL INTENSITY(INCH/HR) =   7.72
  TOTAL STREAM AREA(ACRES) =     4.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.84

****************************************************************************
  FLOW PROCESS FROM NODE    377.00 TO NODE    379.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    746.00
  DOWNSTREAM ELEVATION(FEET) =    744.00
  ELEVATION DIFFERENCE(FEET) =      2.00
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.139
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE    379.20 TO NODE    379.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  744.00  DOWNSTREAM ELEVATION(FEET) =  701.00
  STREET LENGTH(FEET) =   760.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   6.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.63
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =   11.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   2.26   Tc(MIN.) =    6.40
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.188
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.61      SUBAREA RUNOFF(CFS) =   13.32
  TOTAL AREA(ACRES) =        2.8        PEAK FLOW RATE(CFS) =      14.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.00
  FLOW VELOCITY(FEET/SEC.) =  5.65   DEPTH*VELOCITY(FT*FT/SEC.) =   1.46
  LONGEST FLOWPATH FROM NODE    377.00 TO NODE    379.00 =     830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    379.00 TO NODE    376.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   696.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.14
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.44
  LONGEST FLOWPATH FROM NODE    377.00 TO NODE    376.00 =     855.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    376.00 TO NODE    376.00 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.) =    6.44
  RAINFALL INTENSITY(INCH/HR) =   7.16
  TOTAL STREAM AREA(ACRES) =     2.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.14

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       27.84     5.73        7.724          4.65
      2       14.14     6.44        7.164          2.77

  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       40.41     5.73       7.724
      2       39.95     6.44       7.164

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      40.41   Tc(MIN.) =    5.73
  TOTAL AREA(ACRES) =        7.4
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    376.00 =    1466.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    376.00 TO NODE    382.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   695.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.59
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.41
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    5.77
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    382.00 =    1536.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    382.00 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.) =    5.77
  RAINFALL INTENSITY(INCH/HR) =   7.68
  TOTAL STREAM AREA(ACRES) =     7.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.41

****************************************************************************
  FLOW PROCESS FROM NODE    380.00 TO NODE    381.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    750.00
  DOWNSTREAM ELEVATION(FEET) =    692.00
  ELEVATION DIFFERENCE(FEET) =     58.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      2.32
  TOTAL AREA(ACRES) =      0.81   TOTAL RUNOFF(CFS) =      2.32

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   687.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =    34.00   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.) =   6.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.32
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    5.33
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    382.00 =     104.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    382.00 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.) =    5.33
  RAINFALL INTENSITY(INCH/HR) =   8.09
  TOTAL STREAM AREA(ACRES) =     0.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       40.41     5.77        7.683          7.42
      2        2.32     5.33        8.094          0.81

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       40.68     5.33       8.094
      2       42.62     5.77       7.683

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.62   Tc(MIN.) =    5.77
  TOTAL AREA(ACRES) =        8.2
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE    382.00 =    1536.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 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) =   686.00  DOWNSTREAM(FEET) =   685.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.38
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.62
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    5.84
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE   3015.00 =    1586.00 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.) =    5.84
  RAINFALL INTENSITY(INCH/HR) =   7.63
  TOTAL STREAM AREA(ACRES) =     8.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.62

****************************************************************************
  FLOW PROCESS FROM NODE   3014.00 TO NODE   3015.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    690.00
  DOWNSTREAM ELEVATION(FEET) =    686.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.318
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.250
  SUBAREA RUNOFF(CFS) =      2.00
  TOTAL AREA(ACRES) =      0.79   TOTAL RUNOFF(CFS) =      2.00

****************************************************************************
  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.) =    6.32
  RAINFALL INTENSITY(INCH/HR) =   7.25
  TOTAL STREAM AREA(ACRES) =     0.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       42.62     5.84        7.626          8.23
      2        2.00     6.32        7.250          0.79

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

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.47     5.84       7.626
      2       42.52     6.32       7.250

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.47   Tc(MIN.) =    5.84
  TOTAL AREA(ACRES) =        9.0
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE   3015.00 =    1586.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3015.00 TO NODE   3013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   721.00   CHANNEL SLOPE =  0.0222
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.388
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.51
  AVERAGE FLOW DEPTH(FEET) =   1.31   TRAVEL TIME(MIN.) =   1.85
  Tc(MIN.) =    7.69
  SUBAREA AREA(ACRES) =     2.94       SUBAREA RUNOFF(CFS) =    6.57
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.573
  TOTAL AREA(ACRES) =       12.0         PEAK FLOW RATE(CFS) =      44.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.26   FLOW VELOCITY(FEET/SEC.) =   6.38
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE   3013.00 =    2307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3013.00 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       44.47     7.69       6.388       11.96
  LONGEST FLOWPATH FROM NODE    376.00 TO NODE   3013.00 =    2307.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      318.26    13.27       4.493      161.32
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE   3013.00 =    5255.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     228.91       7.69        6.388
      2     349.54      13.27        4.493

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     349.54   Tc(MIN.) =   13.27
  TOTAL AREA(ACRES) =      173.3
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      173.3  TC(MIN.) =     13.27
  PEAK FLOW RATE(CFS)   =     349.54
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

BASIN D

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Job Name: Valiano Date: Oct 2014
Proposed Hydrology
100 Year Design Storm
Job #: 2690-007-02 Run Name: P-400.DAT

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
400	401	2	808	806	100	0.71	0.25	
401	402	6	805.0	793.0	320.0	0.71	1.39	one side
402	403	3	787.0	786.9	10.0			
403	407	3	786.9	780.6	35.0			
407	407	1						1 of 2
404	405	2	797.0	795.0	100.0	0.71	0.14	
405	406	6	795.0	788.0	270.0	0.71	2.31	two sides
406	407	3	784.0	780.6	335.0			
407	407	1						2 of 2
407	408	3	780.6	757.3	390.0			
408	408	1						1 of 2
409	409.1	2	798.0	796.0	100.0	0.71	0.15	
409.1	408	6	796.0	764.5	346.0	0.71	1.95	two sides
408	408	1						2 of 2
408	416	3	757.3	757.0	30.0			
416	416	10						save to bank 1
410	411	2	910.0	872.0	70.0	0.35	0.18	
411	415	5	872.0	762.0	620.0	0.35	1.62	
415	415	1						1 of 2
412	413	2	1,070.0	1,005.0	240.0	0.35	0.32	
413	414	5	1,005.0	788.0	730.0	0.35	8.13	
414	415	3	782.0	757.2	50.0			
415	415	1						2 of 2
415	416	3	757.2	757.0	20.0			
416	416	11						add bank 1
416	416	12						clear bank 1
416	417	3	757.0	755.0	170.0			
417	429.4	3	755.0	722.0	90.0			
429.4	429.4	10						save to bank 1
418	419	2	978.0	964.0	70.0	0.35	0.19	
419	420	5	964.0	780.0	450.0	0.35	2.25	
420	421	3	774.0	749.0	50.0			
421	426	3	749.0	747.6	130.0			
426	426	1						1 of 2

423	424	2	762.0	760.0	100.0	0.35	0.14	
424	425	5	760.0	753.0	230.0	0.35	0.51	
425	426	3	748.4	747.6	75.0			
426	426	1						2 of 2
426	427	3	747.6	746.7	90			
427	427	10						save to bank 2
428	429	2	764.7	762.7	100	0.71	0.13	
429	430	6	762	750	550	0.71	2.81	two sides
430	431	3	747.2	747	15			
431	427	3	747	746.7	30			
427	427	11						add bank 2
427	427	12						clear bank 2
427	429.2	3	746.7	746.3	35			
429.2	429.4	3	746.3	722	350			
429.4	429.4	11						add bank 1
429.4	429.4	12						clear bank 1
429.4	430	5	722	707	200	0.35	1.32	
430	436	5	707	686	530	0.35	1.63	
436	436	10						save to bank 1
432.5	432	2	950	934	115	0.35	0.18	
432	434	5	934	734	560	0.35	1.21	
434	434							1 of 2
432.5	433	2	950	934	90	0.35	0.08	
433	434	5	934	734	550	0.35	1.57	
434	434	1						2 of 2
434	435	5	734	693	790	0.41	7.9	
435	436	5	693	686	410	0.41	0.74	
436	436	11						add bank 1
436	439	5	686	682	260	0.41	3.43	
439	439	1						1 of 2
437	438	2	740	724	100	0.41	0.52	
438	439	5	724	682	560	0.41	5.39	
439	439	1						2 of 2

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2012 Advanced Engineering Software (aes)
              Ver. 19.0 Release Date: 06/01/2012  License ID 1355

                              Analysis prepared by:

                                Fuscoe Engineering
                                6390 Greenwich Dr.
                                    Suite 170
                               San Diego, CA 92122

 ************************** DESCRIPTION OF STUDY **************************
* Valiano                                                                 *
* Proposed Hydrology - 400 Series                                         *
* October 20, 2014                                                        *
 *************************************************************************

  FILE NAME: P-400.DAT
  TIME/DATE OF STUDY: 17:16 10/20/2014
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  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   16.0      8.0    0.020/0.020/0.020   0.33    0.10 0.0100 0.010 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.33 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 = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    808.00
  DOWNSTREAM ELEVATION(FEET) =    806.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.50
TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.50

****************************************************************************
FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) =  805.00  DOWNSTREAM ELEVATION(FEET) =  793.00
STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  4.0
STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
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 =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.12
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.24
  HALFSTREET FLOOD WIDTH(FEET) =   10.91
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =    6.22
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.321
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
SUBAREA AREA(ACRES) =    1.39      SUBAREA RUNOFF(CFS) =    7.23
TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       8.52

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =  13.16
FLOW VELOCITY(FEET/SEC.) =  4.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     420.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    402.00 TO NODE    403.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   787.00  DOWNSTREAM(FEET) =   786.90
FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.34
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       8.52
PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.25
LONGEST FLOWPATH FROM NODE    400.00 TO NODE    403.00 =     430.00 FEET.

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

```
 FLOW PROCESS FROM NODE    403.00 TO NODE    407.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   786.90  DOWNSTREAM(FEET) =   780.60
 FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.04
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.52
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.28
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    407.00 =     465.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    407.00 TO NODE    407.00 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.) =    6.28
 RAINFALL INTENSITY(INCH/HR) =   7.28
 TOTAL STREAM AREA(ACRES) =     1.64
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.52

****************************************************************************
 FLOW PROCESS FROM NODE    404.00 TO NODE    405.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    797.00
 DOWNSTREAM ELEVATION(FEET) =    795.00
 ELEVATION DIFFERENCE(FEET) =      2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.84
 TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.84

****************************************************************************
 FLOW PROCESS FROM NODE    405.00 TO NODE    406.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  795.00  DOWNSTREAM ELEVATION(FEET) =  788.00
 STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  4.0
 STREET HALFWIDTH(FEET) = 16.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =   10.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =    6.32
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.252
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.31      SUBAREA RUNOFF(CFS) =   11.89
  TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =      12.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =  12.59
  FLOW VELOCITY(FEET/SEC.) =  3.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.07
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    406.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    406.00 TO NODE    407.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   784.00  DOWNSTREAM(FEET) =   780.60
  FLOW LENGTH(FEET) =   335.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.04
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.62
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =    7.11
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    407.00 =     705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    407.00 TO NODE    407.00 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.) =    7.11
  RAINFALL INTENSITY(INCH/HR) =   6.72
  TOTAL STREAM AREA(ACRES) =     2.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.62

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.52     6.28        7.278          1.64
      2       12.62     7.11        6.720          2.45

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

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

```
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       19.67     6.28       7.278
      2       20.49     7.11       6.720

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.49   Tc(MIN.) =    7.11
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    407.00 =     705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    407.00 TO NODE    408.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   780.60  DOWNSTREAM(FEET) =   757.30
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.45
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.49
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =    7.53
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    408.00 =    1095.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 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) =   6.47
  TOTAL STREAM AREA(ACRES) =     4.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.49

****************************************************************************
  FLOW PROCESS FROM NODE    409.00 TO NODE    409.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    798.00
  DOWNSTREAM ELEVATION(FEET) =    796.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.825
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.90
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.90

****************************************************************************
  FLOW PROCESS FROM NODE    409.10 TO NODE    408.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
```

```
==============================================================================
  UPSTREAM ELEVATION(FEET) =  796.00  DOWNSTREAM ELEVATION(FEET) =  764.50
  STREET LENGTH(FEET) =   346.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    7.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =    5.91
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.568
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.95      SUBAREA RUNOFF(CFS) =   10.48
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =      11.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =   9.53
  FLOW VELOCITY(FEET/SEC.) =  6.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
  LONGEST FLOWPATH FROM NODE    409.00 TO NODE    408.00 =     446.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 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.) =    5.91
  RAINFALL INTENSITY(INCH/HR) =   7.57
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.49     7.53        6.475          4.09
      2       11.28     5.91        7.568          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       28.81     5.91       7.568
      2       30.14     7.53       6.475

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      30.14   Tc(MIN.) =    7.53
  TOTAL AREA(ACRES) =        6.2
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    408.00 =    1095.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    416.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   757.30  DOWNSTREAM(FEET) =   757.00
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.75
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.14
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    7.59
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    416.00 =    1125.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    416.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    910.00
  DOWNSTREAM ELEVATION(FEET) =    872.00
  ELEVATION DIFFERENCE(FEET) =     38.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    415.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    872.00  DOWNSTREAM(FEET) =    762.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1774
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.659
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.26
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   1.97
  Tc(MIN.) =    7.21
  SUBAREA AREA(ACRES) =     1.62       SUBAREA RUNOFF(CFS) =    3.78
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
```

```
  TOTAL AREA(ACRES) =        1.8         PEAK FLOW RATE(CFS) =       4.20

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.19   FLOW VELOCITY(FEET/SEC.) =   6.40
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    415.00 =     690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    415.00 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.) =    7.21
  RAINFALL INTENSITY(INCH/HR) =   6.66
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.20

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    413.00 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) =   240.00
  UPSTREAM ELEVATION(FEET) =   1070.00
  DOWNSTREAM ELEVATION(FEET) =   1005.00
  ELEVATION DIFFERENCE(FEET) =     65.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.82
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      0.82

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1005.00  DOWNSTREAM(FEET) =    788.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.2973
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.517
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.26
  AVERAGE FLOW DEPTH(FEET) =   0.28   TRAVEL TIME(MIN.) =   1.19
  Tc(MIN.) =    7.45
  SUBAREA AREA(ACRES) =     8.13       SUBAREA RUNOFF(CFS) =   18.55
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        8.4         PEAK FLOW RATE(CFS) =      19.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =  12.62
```

```
 LONGEST FLOWPATH FROM NODE    412.00 TO NODE    414.00 =     970.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   782.00  DOWNSTREAM(FEET) =   757.20
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  33.74
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      19.27
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    7.48
 LONGEST FLOWPATH FROM NODE    412.00 TO NODE    415.00 =    1020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    415.00 TO NODE    415.00 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.) =    7.48
 RAINFALL INTENSITY(INCH/HR) =   6.50
 TOTAL STREAM AREA(ACRES) =     8.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.27

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.20     7.21        6.659          1.80
     2       19.27     7.48        6.503          8.45

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       22.78     7.21       6.659
     2       23.37     7.48       6.503

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      23.37   Tc(MIN.) =    7.48
 TOTAL AREA(ACRES) =       10.2
 LONGEST FLOWPATH FROM NODE    412.00 TO NODE    415.00 =    1020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    415.00 TO NODE    416.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   757.20  DOWNSTREAM(FEET) =   757.00
 FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.20
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      23.37
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    7.52
```

```
 LONGEST FLOWPATH FROM NODE    412.00 TO NODE    416.00 =    1040.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    416.00 TO NODE    416.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       23.37     7.52       6.481       10.25
 LONGEST FLOWPATH FROM NODE    412.00 TO NODE    416.00 =    1040.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       30.14     7.59       6.443        6.19
 LONGEST FLOWPATH FROM NODE    404.00 TO NODE    416.00 =    1125.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      53.24       7.52        6.481
     2      53.38       7.59        6.443

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      53.38   Tc(MIN.) =    7.59
 TOTAL AREA(ACRES) =       16.4

****************************************************************************
 FLOW PROCESS FROM NODE    416.00 TO NODE    416.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   757.00  DOWNSTREAM(FEET) =   755.00
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.44
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      53.38
 PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =    7.86
 LONGEST FLOWPATH FROM NODE    404.00 TO NODE    417.00 =    1295.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    417.00 TO NODE    429.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   755.00  DOWNSTREAM(FEET) =   722.00
 FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  38.56
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      53.38
```

```
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    7.90
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    429.40 =    1385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    429.40 TO NODE    429.40 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    419.00 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) =    70.00
  UPSTREAM ELEVATION(FEET) =    978.00
  DOWNSTREAM ELEVATION(FEET) =    964.00
  ELEVATION DIFFERENCE(FEET) =     14.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.243
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.177
  SUBAREA RUNOFF(CFS) =      0.54
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.54

****************************************************************************
  FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    964.00  DOWNSTREAM(FEET) =    780.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.4089
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.338
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  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.) =   7.83
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   0.96
  Tc(MIN.) =    6.20
  SUBAREA AREA(ACRES) =     2.25       SUBAREA RUNOFF(CFS) =    5.78
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       6.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.19   FLOW VELOCITY(FEET/SEC.) =   9.56
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    420.00 =     520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   774.00  DOWNSTREAM(FEET) =   749.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   4.2 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.64
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.27
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.23
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    421.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    426.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   749.00  DOWNSTREAM(FEET) =   747.60
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.91
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.27
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    6.60
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    426.00 =     700.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    426.00 TO NODE    426.00 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.) =    6.60
  RAINFALL INTENSITY(INCH/HR) =   7.05
  TOTAL STREAM AREA(ACRES) =     2.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.27

****************************************************************************
  FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 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) =    762.00
  DOWNSTREAM ELEVATION(FEET) =    760.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.584
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.541
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    424.00 TO NODE    425.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    760.00  DOWNSTREAM(FEET) =    753.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00   CHANNEL SLOPE =  0.0304
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
```

```
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.920
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.98
 AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   1.94
 Tc(MIN.) =   11.52
 SUBAREA AREA(ACRES) =     0.51       SUBAREA RUNOFF(CFS) =    0.88
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =       1.12

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   2.27
 LONGEST FLOWPATH FROM NODE    423.00 TO NODE    425.00 =     330.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   748.40  DOWNSTREAM(FEET) =   747.60
 FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   4.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.95
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.12
 PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   11.84
 LONGEST FLOWPATH FROM NODE    423.00 TO NODE    426.00 =     405.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    426.00 TO NODE    426.00 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.) =   11.84
 RAINFALL INTENSITY(INCH/HR) =   4.84
 TOTAL STREAM AREA(ACRES) =     0.65
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.12

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.27     6.60        7.049          2.44
     2        1.12    11.84        4.835          0.65

 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        6.89     6.60       7.049
     2        5.42    11.84       4.835

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.89   Tc(MIN.) =    6.60
```

```
  TOTAL AREA(ACRES) =        3.1
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    426.00 =     700.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   747.60  DOWNSTREAM(FEET) =   746.70
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.09
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.89
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    6.85
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    427.00 =     790.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    427.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    764.70
  DOWNSTREAM ELEVATION(FEET) =    762.70
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.984
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.78
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.78

****************************************************************************
  FLOW PROCESS FROM NODE    429.00 TO NODE    430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  762.00  DOWNSTREAM ELEVATION(FEET) =  750.00
  STREET LENGTH(FEET) =   550.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

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

```
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =   10.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   2.84   Tc(MIN.) =    7.83
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.315
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    2.81      SUBAREA RUNOFF(CFS) =   12.60
  TOTAL AREA(ACRES) =        2.9        PEAK FLOW RATE(CFS) =      13.18

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =  13.28
  FLOW VELOCITY(FEET/SEC.) =  3.73   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    431.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   747.20  DOWNSTREAM(FEET) =   747.00
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.18
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.86
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    431.00 =     665.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    427.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   747.00  DOWNSTREAM(FEET) =   746.70
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.05
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.18
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    7.93
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    427.00 =     695.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    427.00 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       13.18     7.93       6.262        2.94
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    427.00 =     695.00 FEET.
```

```
  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.89     6.85       6.884        3.09
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    427.00 =     790.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      18.27       6.85        6.884
      2      19.45       7.93        6.262

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.45   Tc(MIN.) =    7.93
  TOTAL AREA(ACRES) =        6.0

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    427.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    429.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   746.70  DOWNSTREAM(FEET) =   746.30
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.19
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.45
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.00
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    429.20 =     825.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    429.20 TO NODE    429.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   746.30  DOWNSTREAM(FEET) =   722.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.27
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.45
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    418.00 TO NODE    429.40 =    1175.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    429.40 TO NODE    429.40 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      19.45     8.36       6.053        6.03
```

```
 LONGEST FLOWPATH FROM NODE    418.00 TO NODE    429.40 =    1175.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       53.38     7.90       6.279       16.44
 LONGEST FLOWPATH FROM NODE    404.00 TO NODE    429.40 =    1385.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      71.75       7.90        6.279
     2      70.90       8.36        6.053

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      71.75   Tc(MIN.) =    7.90
 TOTAL AREA(ACRES) =       22.5

****************************************************************************
 FLOW PROCESS FROM NODE    429.40 TO NODE    429.40 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    429.40 TO NODE    430.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    722.00  DOWNSTREAM(FEET) =    707.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   200.00   CHANNEL SLOPE =  0.0750
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.133
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.39
 AVERAGE FLOW DEPTH(FEET) =   1.19   TRAVEL TIME(MIN.) =   0.29
 Tc(MIN.) =    8.19
 SUBAREA AREA(ACRES) =     1.32       SUBAREA RUNOFF(CFS) =    2.83
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.488
 TOTAL AREA(ACRES) =       23.8         PEAK FLOW RATE(CFS) =      71.75

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =  11.35
 LONGEST FLOWPATH FROM NODE    404.00 TO NODE    430.00 =    1585.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    430.00 TO NODE    436.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    707.00  DOWNSTREAM(FEET) =    686.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   530.00   CHANNEL SLOPE =  0.0396
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.703
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.03
  AVERAGE FLOW DEPTH(FEET) =   1.40   TRAVEL TIME(MIN.) =   0.98
  Tc(MIN.) =    9.17
  SUBAREA AREA(ACRES) =     1.63       SUBAREA RUNOFF(CFS) =    3.25
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.479
  TOTAL AREA(ACRES) =       25.4         PEAK FLOW RATE(CFS) =      71.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.39   FLOW VELOCITY(FEET/SEC.) =   8.97
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    436.00 =    2115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    436.00 TO NODE    436.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    432.50 TO NODE    432.00 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) =   115.00
  UPSTREAM ELEVATION(FEET) =    950.00
  DOWNSTREAM ELEVATION(FEET) =    934.00
  ELEVATION DIFFERENCE(FEET) =     16.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE    432.00 TO NODE    434.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    934.00  DOWNSTREAM(FEET) =    734.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.00   CHANNEL SLOPE =  0.3571
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.297
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.85
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =    7.86
  SUBAREA AREA(ACRES) =     1.21       SUBAREA RUNOFF(CFS) =    2.67
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.4         PEAK FLOW RATE(CFS) =       3.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
 DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   7.08
 LONGEST FLOWPATH FROM NODE    432.50 TO NODE    434.00 =     675.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 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.) =    7.86
 RAINFALL INTENSITY(INCH/HR) =   6.30
 TOTAL STREAM AREA(ACRES) =     1.39
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.06

****************************************************************************
 FLOW PROCESS FROM NODE    432.50 TO NODE    433.00 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) =    950.00
 DOWNSTREAM ELEVATION(FEET) =    934.00
 ELEVATION DIFFERENCE(FEET) =     16.00
 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) =  7.540
 SUBAREA RUNOFF(CFS) =      0.21
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.21

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    434.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    934.00  DOWNSTREAM(FEET) =    734.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.3636
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.529
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =   0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.02
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.17
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.49
 Tc(MIN.) =    7.43
 SUBAREA AREA(ACRES) =     1.57       SUBAREA RUNOFF(CFS) =    3.59
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
 TOTAL AREA(ACRES) =        1.7         PEAK FLOW RATE(CFS) =       3.77

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   7.74
 LONGEST FLOWPATH FROM NODE    432.50 TO NODE    434.00 =     640.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 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.) =    7.43
  RAINFALL INTENSITY(INCH/HR) =   6.53
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.77

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.06     7.86        6.297          1.39
      2        3.77     7.43        6.529          1.65

  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        6.67     7.43       6.529
      2        6.70     7.86       6.297

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.70   Tc(MIN.) =    7.86
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE    432.50 TO NODE    434.00 =     675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    434.00 TO NODE    435.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    734.00  DOWNSTREAM(FEET) =    693.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   790.00   CHANNEL SLOPE =  0.0519
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.427
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.46
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   2.04
  Tc(MIN.) =    9.90
  SUBAREA AREA(ACRES) =     7.90       SUBAREA RUNOFF(CFS) =   17.58
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.393
  TOTAL AREA(ACRES) =       10.9         PEAK FLOW RATE(CFS) =      23.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.72   FLOW VELOCITY(FEET/SEC.) =   7.28
  LONGEST FLOWPATH FROM NODE    432.50 TO NODE    435.00 =    1465.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    435.00 TO NODE    436.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    693.00  DOWNSTREAM(FEET) =    686.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.0171
```

```
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.986
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   1.39
  Tc(MIN.) =   11.29
  SUBAREA AREA(ACRES) =     0.74       SUBAREA RUNOFF(CFS) =    1.51
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.394
  TOTAL AREA(ACRES) =       11.7         PEAK FLOW RATE(CFS) =      23.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   4.86
  LONGEST FLOWPATH FROM NODE    432.50 TO NODE    436.00 =    1875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    436.00 TO NODE    436.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       23.35    11.29       4.986       11.68
  LONGEST FLOWPATH FROM NODE    432.50 TO NODE    436.00 =    1875.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       71.75     9.17       5.703       25.42
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    436.00 =    2115.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      90.71       9.17        5.703
      2      86.08      11.29        4.986

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      90.71   Tc(MIN.) =    9.17
  TOTAL AREA(ACRES) =       37.1

****************************************************************************
  FLOW PROCESS FROM NODE    436.00 TO NODE    439.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    682.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0154
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.461
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.82
  AVERAGE FLOW DEPTH(FEET) =   1.99   TRAVEL TIME(MIN.) =   0.64
```

```
  Tc(MIN.) =    9.80
  SUBAREA AREA(ACRES) =     3.43       SUBAREA RUNOFF(CFS) =    7.68
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.449
  TOTAL AREA(ACRES) =       40.5         PEAK FLOW RATE(CFS) =      99.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.03   FLOW VELOCITY(FEET/SEC.) =   6.91
  LONGEST FLOWPATH FROM NODE    404.00 TO NODE    439.00 =    2375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    439.00 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.) =    9.80
  RAINFALL INTENSITY(INCH/HR) =   5.46
  TOTAL STREAM AREA(ACRES) =    40.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.38

****************************************************************************
  FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    724.00
  ELEVATION DIFFERENCE(FEET) =     16.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.765
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.691
  SUBAREA RUNOFF(CFS) =      1.64
  TOTAL AREA(ACRES) =      0.52   TOTAL RUNOFF(CFS) =      1.64

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    724.00  DOWNSTREAM(FEET) =    682.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.00   CHANNEL SLOPE =  0.0750
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.617
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.17
  AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   1.51
  Tc(MIN.) =    7.28
  SUBAREA AREA(ACRES) =     5.39       SUBAREA RUNOFF(CFS) =   14.62
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =      16.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.53   FLOW VELOCITY(FEET/SEC.) =   7.43
```

```
 LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =     660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    439.00 TO NODE    439.00 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.) =    7.28
 RAINFALL INTENSITY(INCH/HR) =   6.62
 TOTAL STREAM AREA(ACRES) =     5.91
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.03

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       99.38     9.80        5.461         40.53
     2       16.03     7.28        6.617          5.91

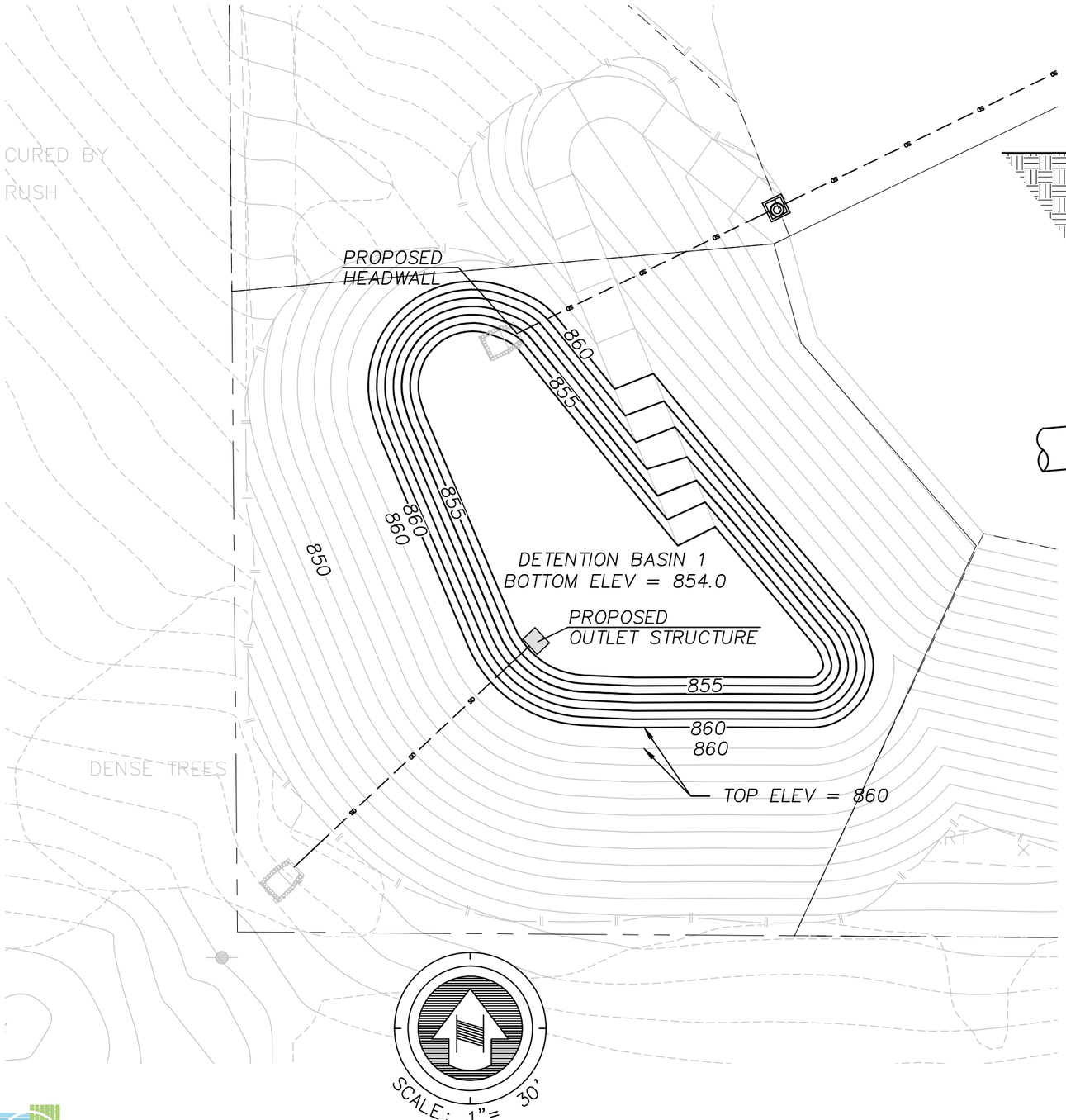
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

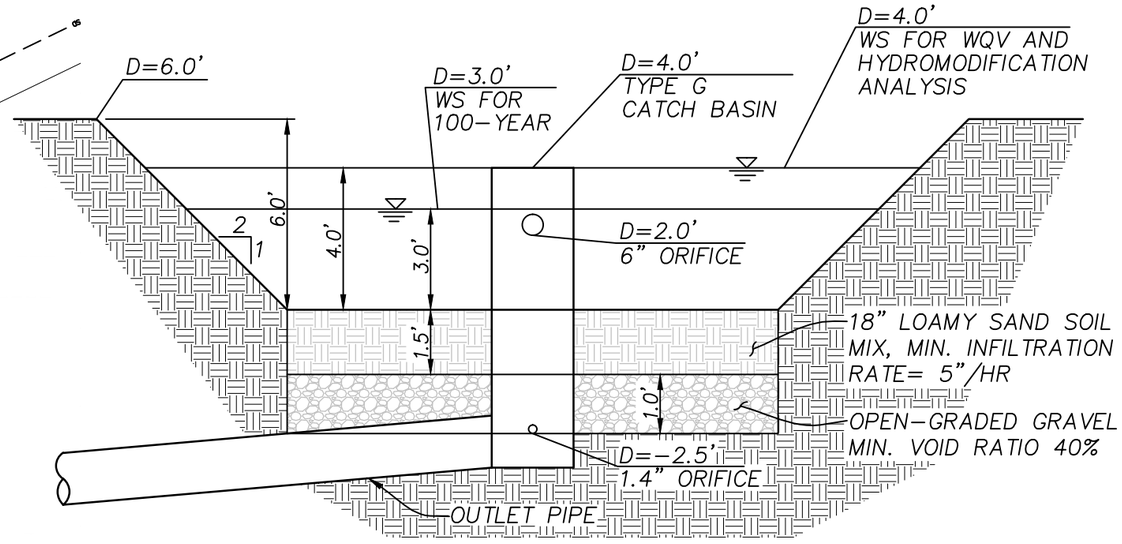
 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       89.82     7.28       6.617
     2      112.61     9.80       5.461

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     112.61   Tc(MIN.) =    9.80
 TOTAL AREA(ACRES) =       46.4
 LONGEST FLOWPATH FROM NODE    404.00 TO NODE    439.00 =    2375.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =       46.4  TC(MIN.) =      9.80
 PEAK FLOW RATE(CFS)   =     112.61
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

Appendix E

Detention Basin Analysis
Extended Detention Basin Outlet Structure Details
Detention Basin Analysis Output



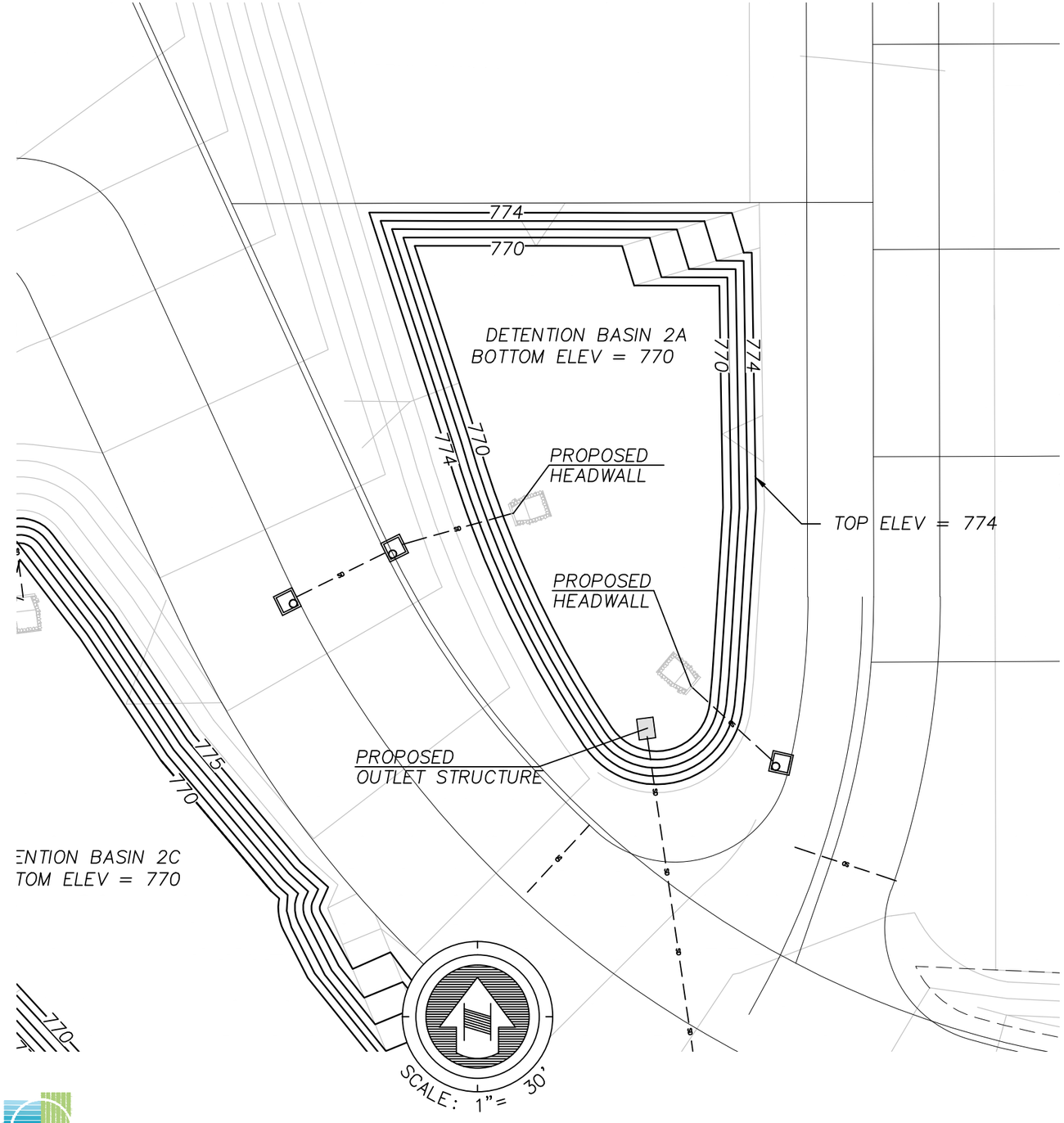


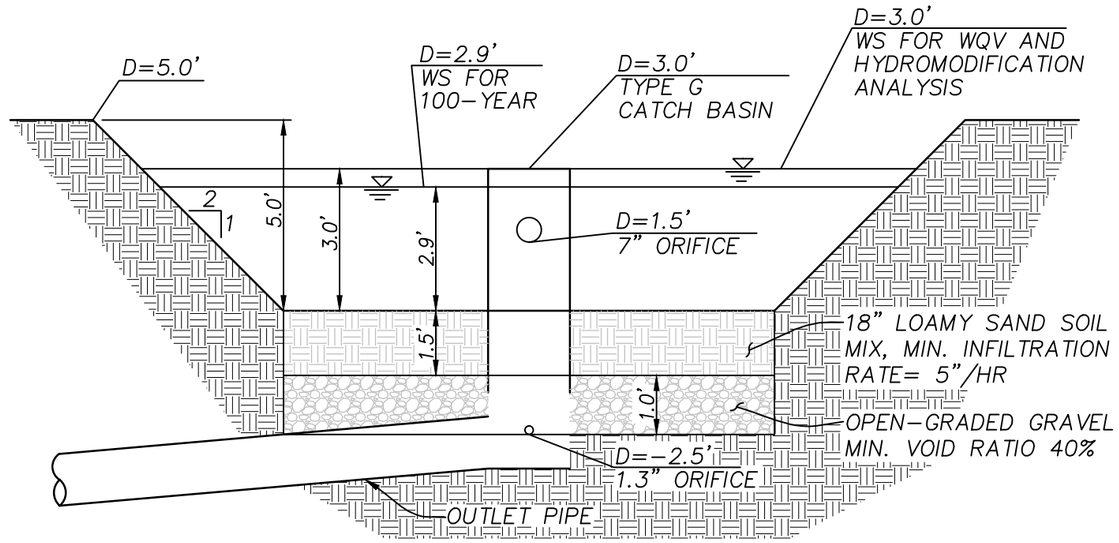
DMA 1

FUSCOE ENGINEERING
full circle thinking

30 15 0 30 60 90
GRAPHIC SCALE IN FEET

VALIANO
PROPOSED DETENTION BASIN
BASIN 1





DMA 2A

FUSCOE ENGINEERING
full circle thinking

30 15 0 30 60 90
GRAPHIC SCALE IN FEET

VALIANO
PROPOSED DETENTION BASIN
BASIN 2A

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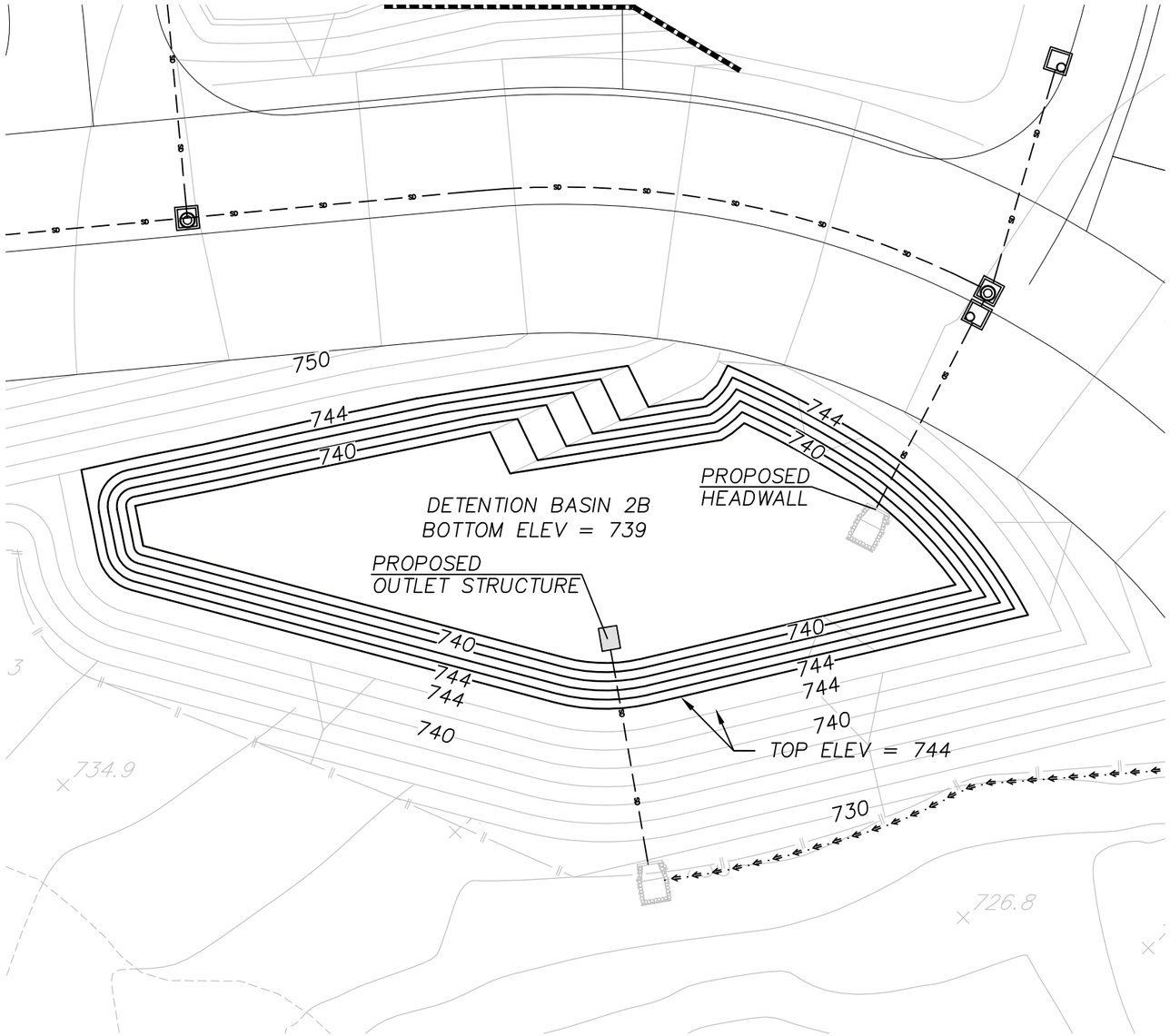

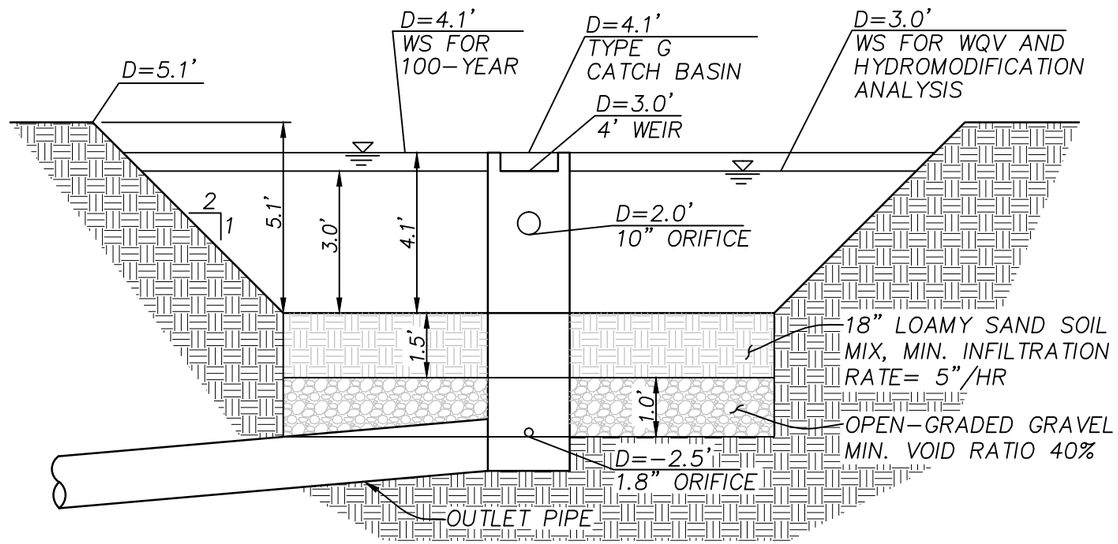

DMA 2B

SCALE: 1"= 30'

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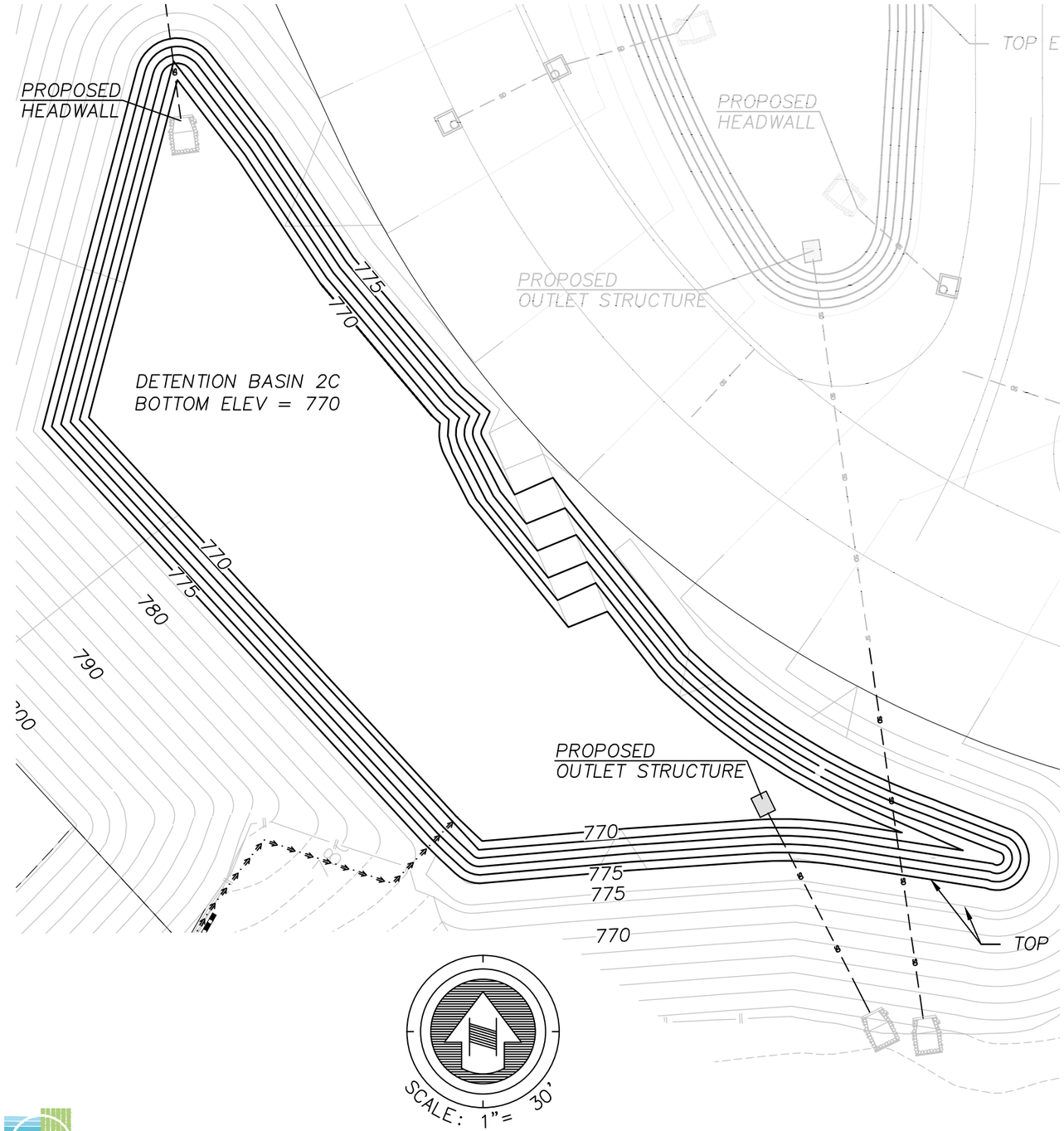
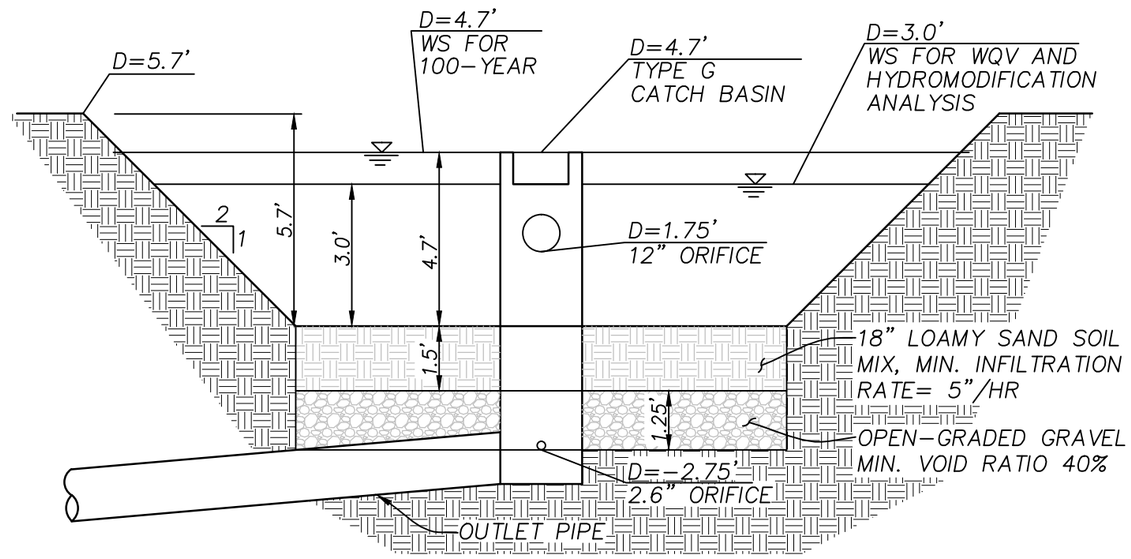
GRAPHIC SCALE IN FEET

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 2B

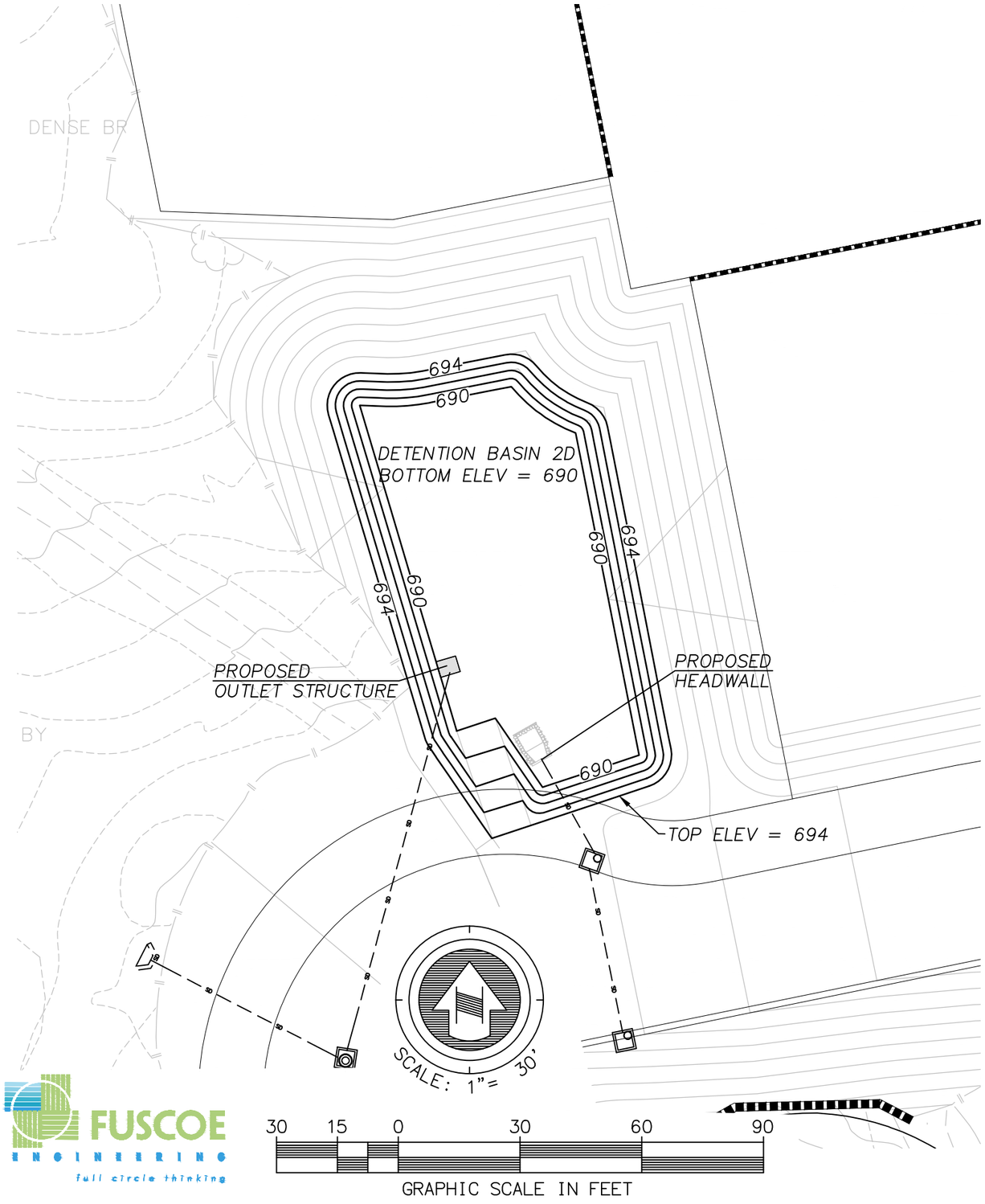


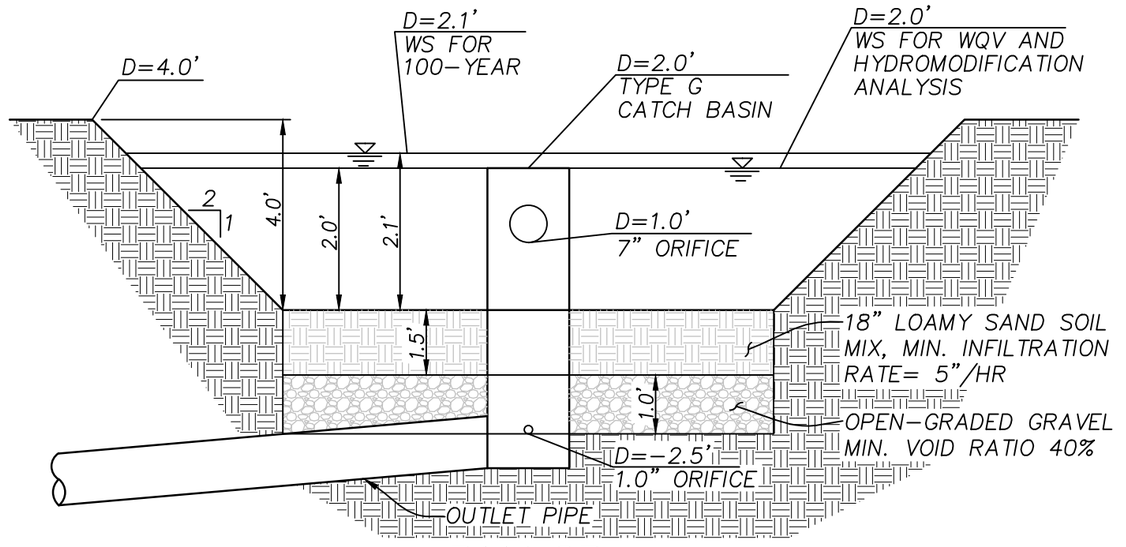


DMA 2C

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 2C

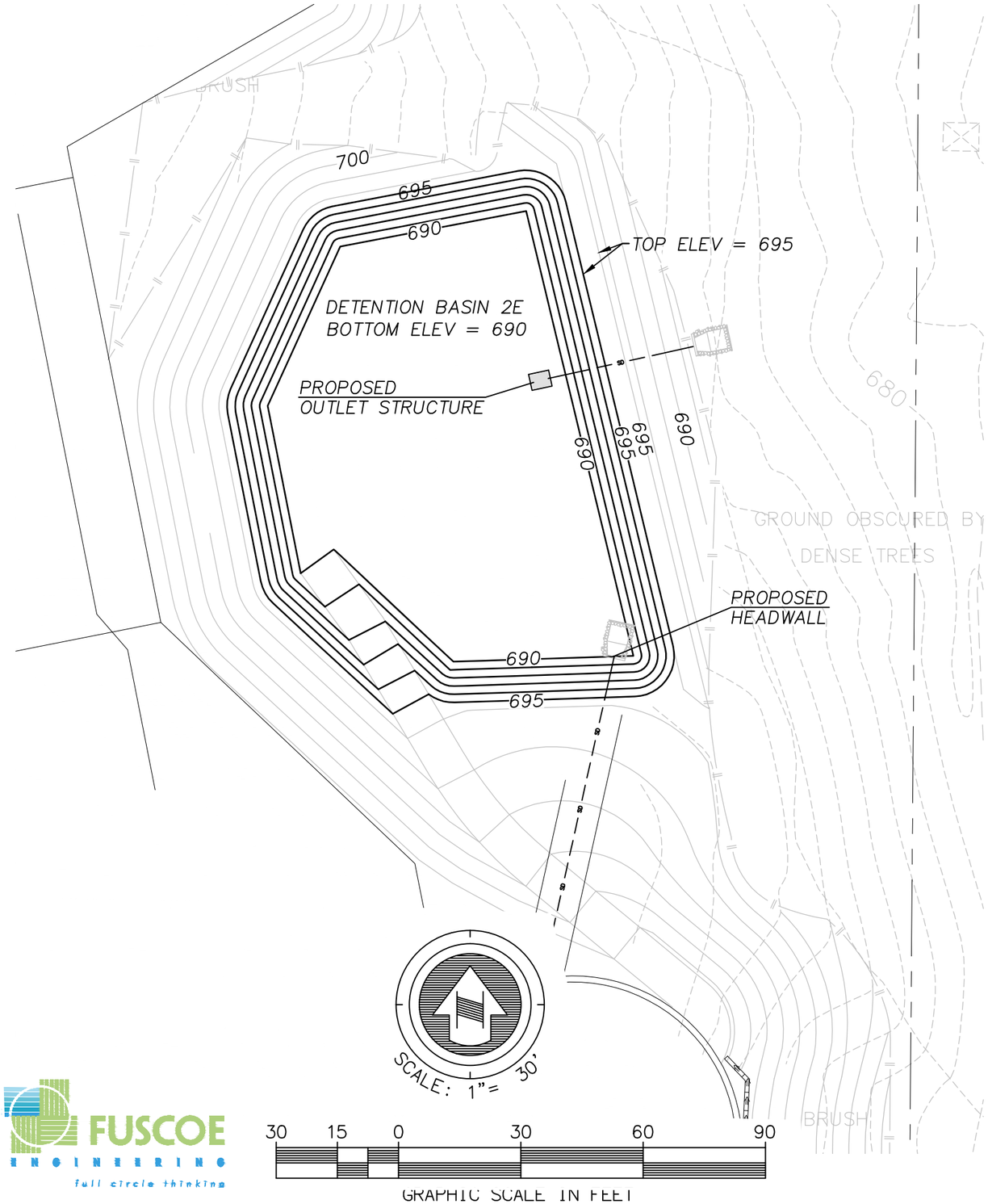


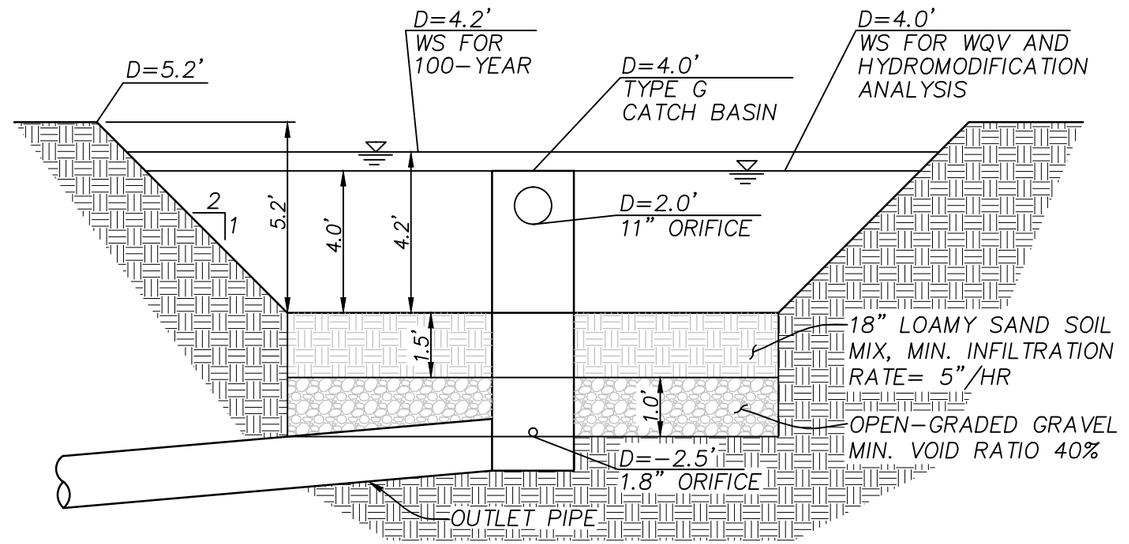


DMA 2D

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 2D

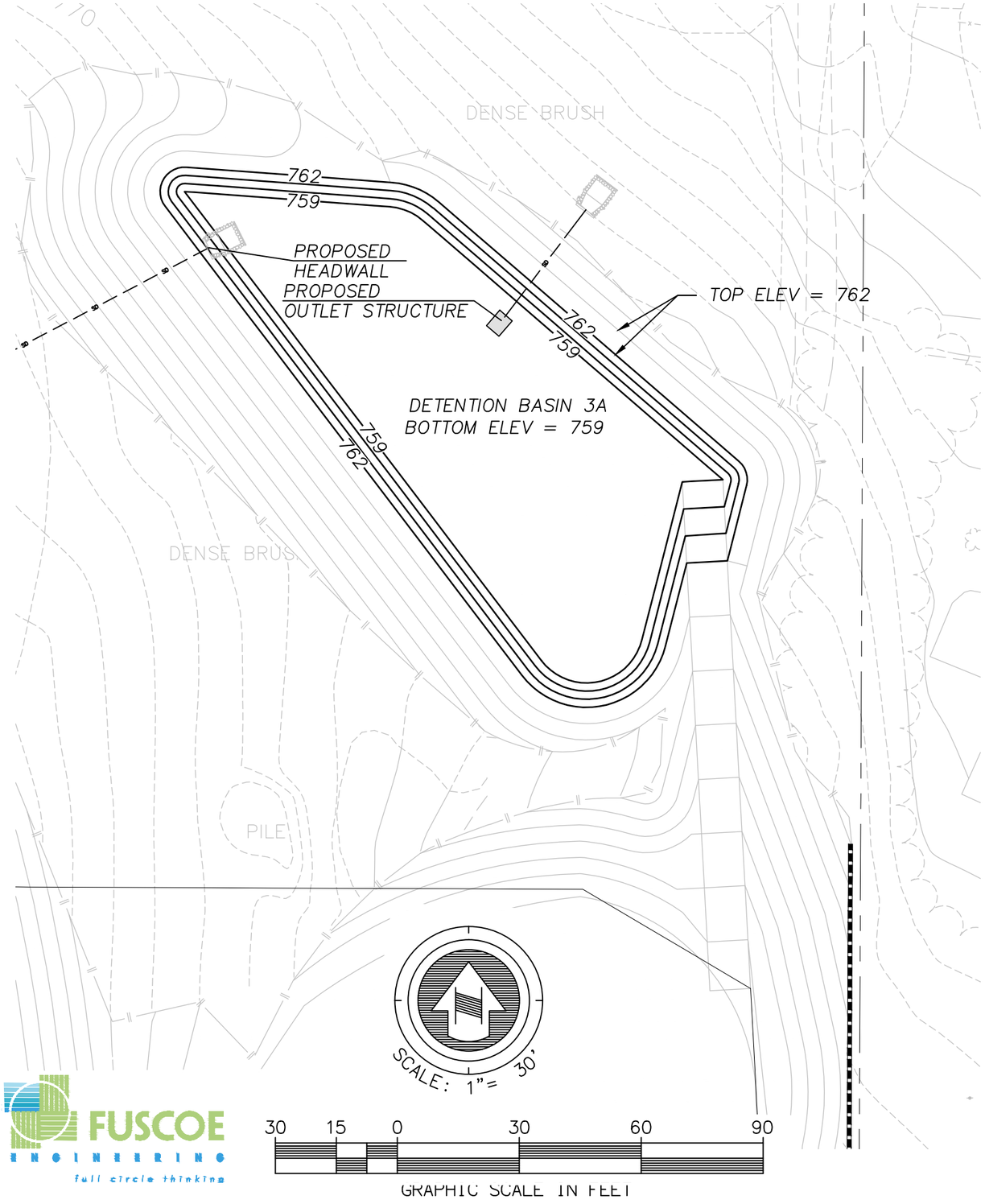


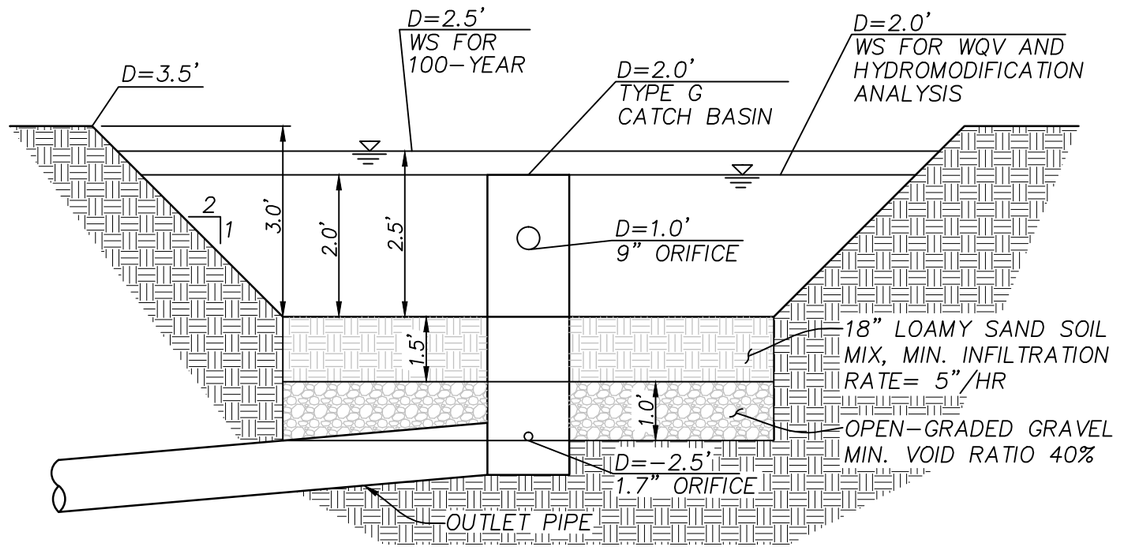


DMA 2E

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 2E

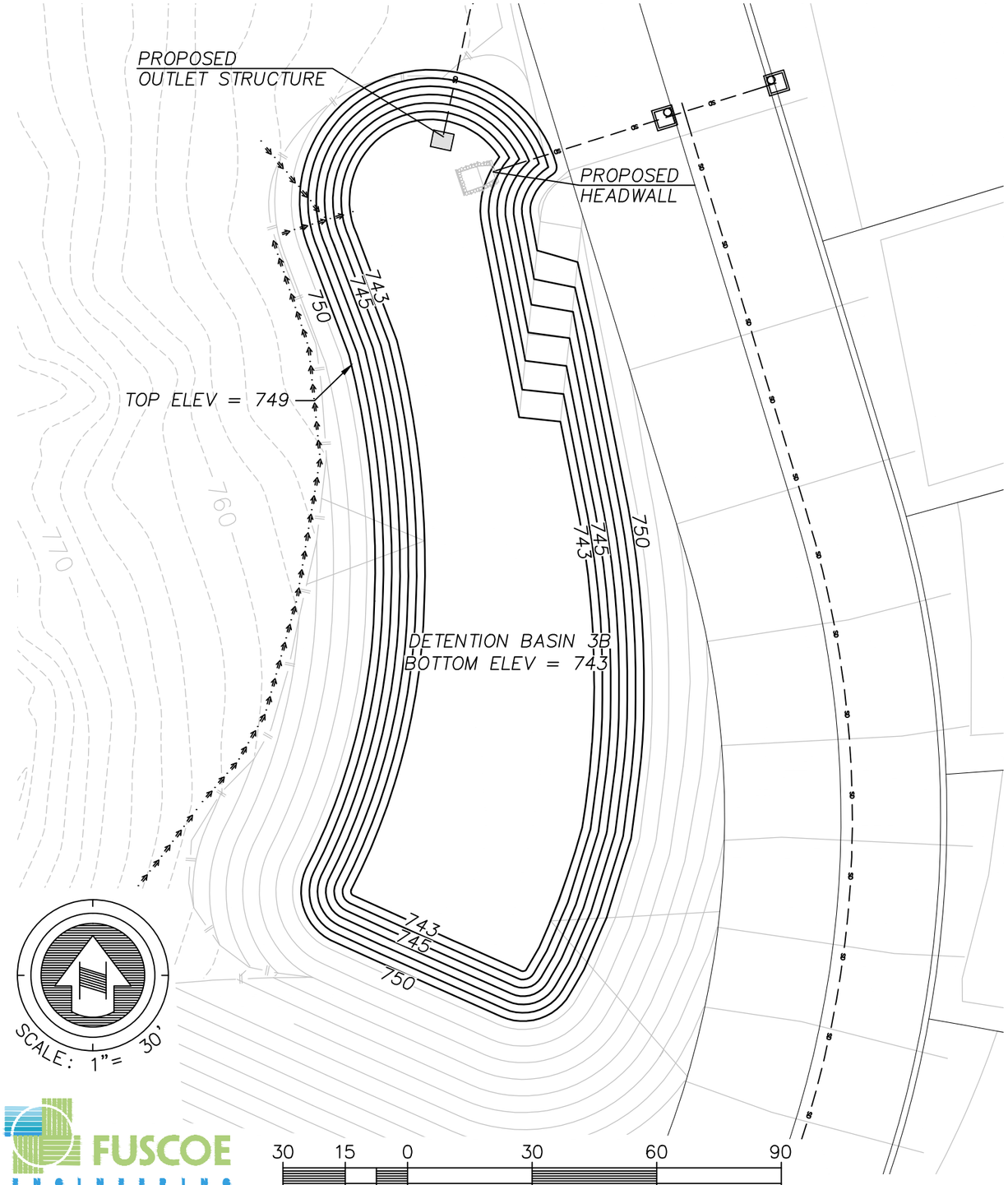


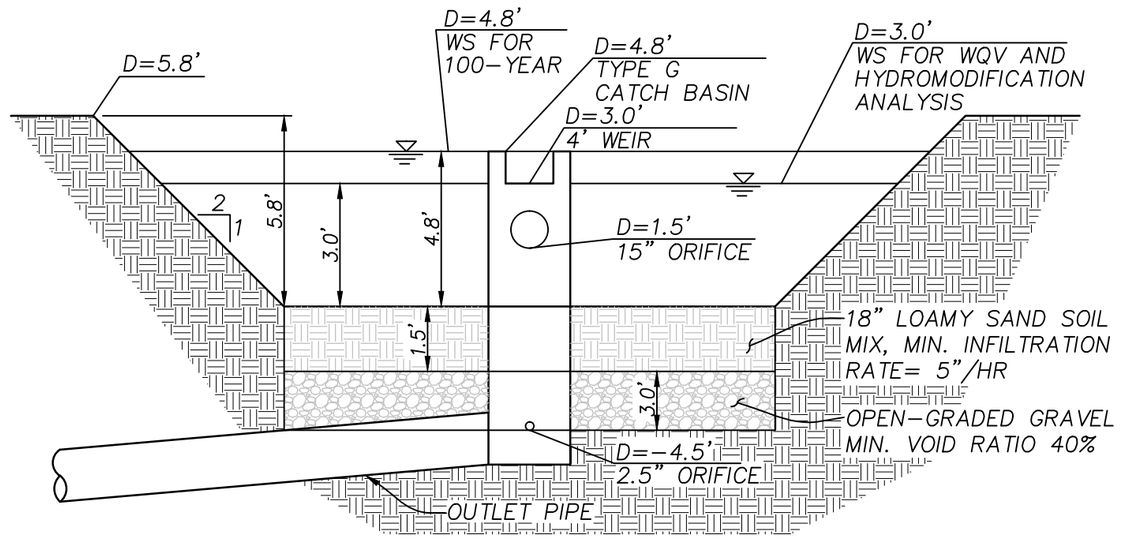


DMA 3A

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 3A





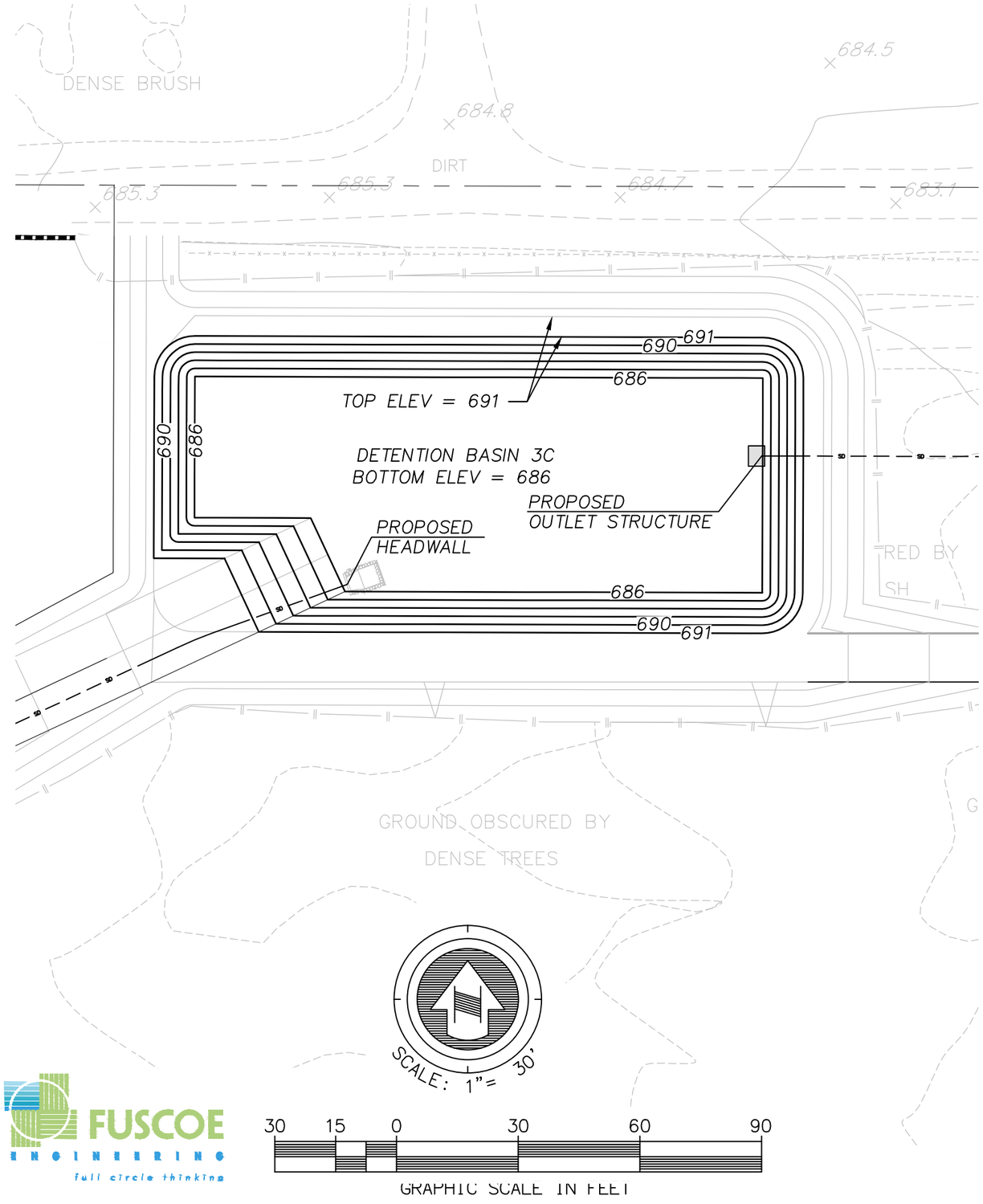
DMA 3B

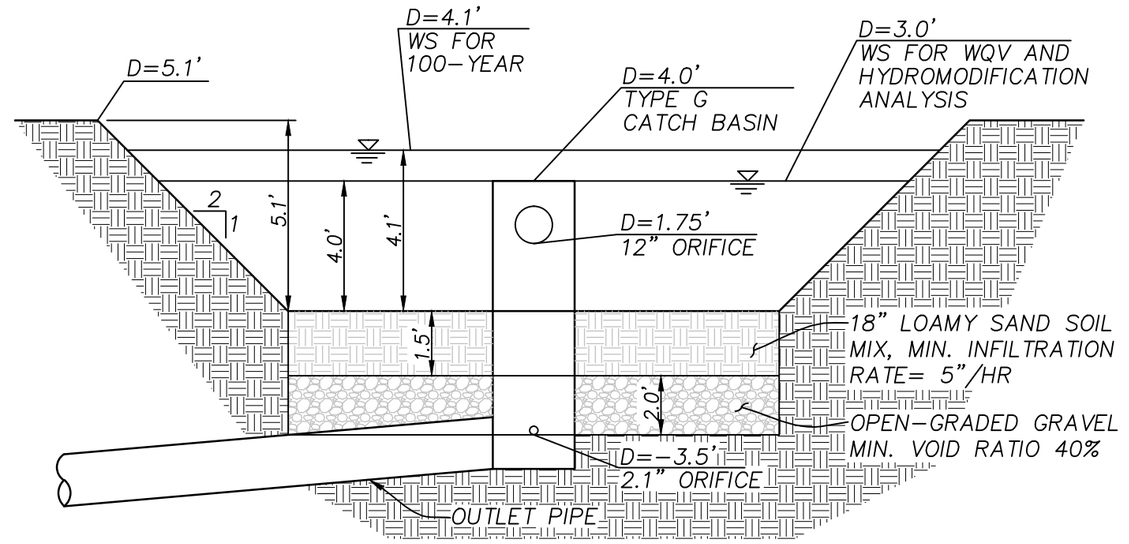
30 15 0 30 60 90

GRAPHIC SCALE IN FEET

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 3B

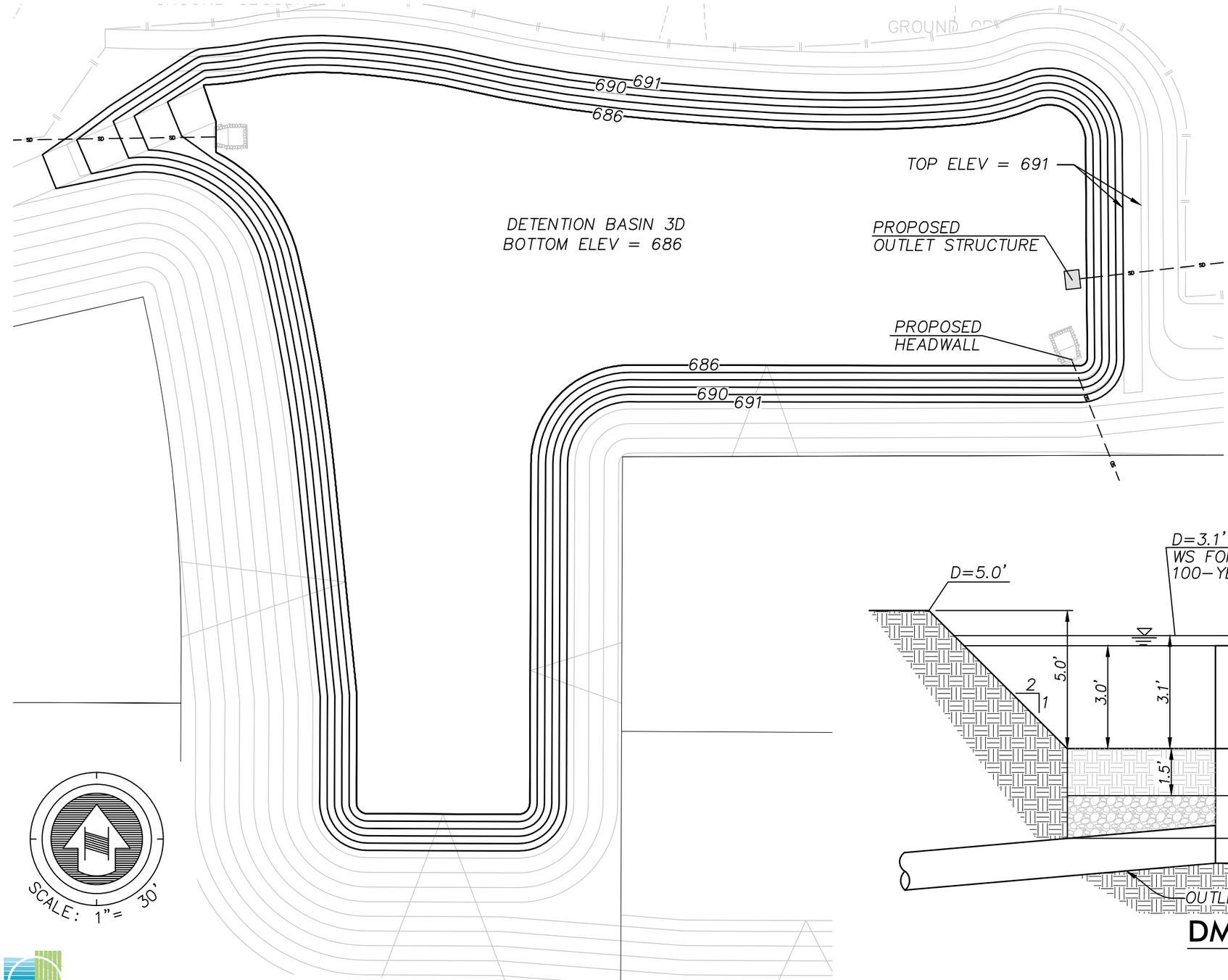


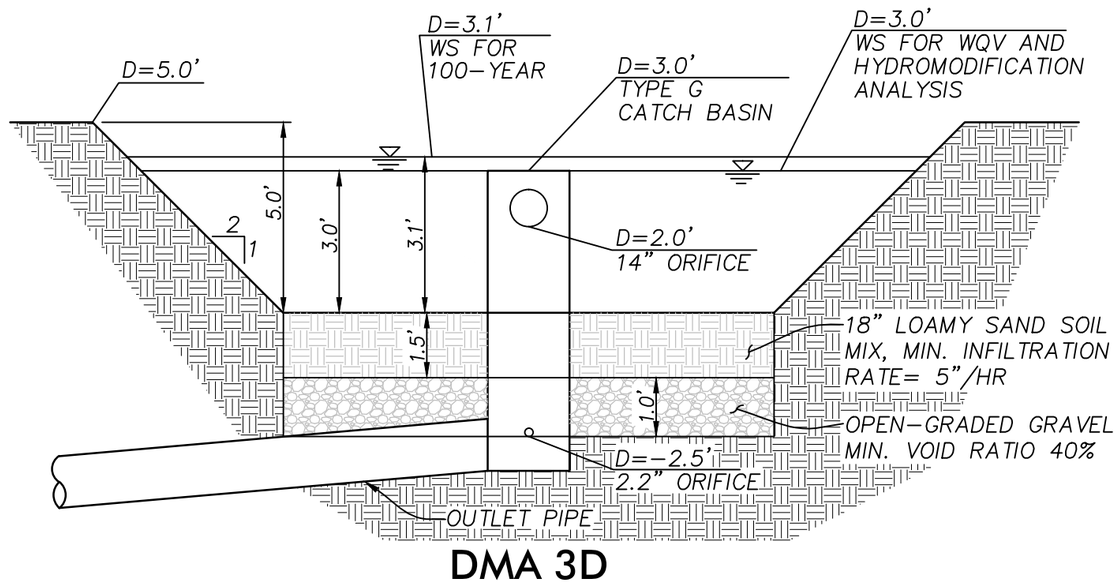


DMA 3C

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 3C

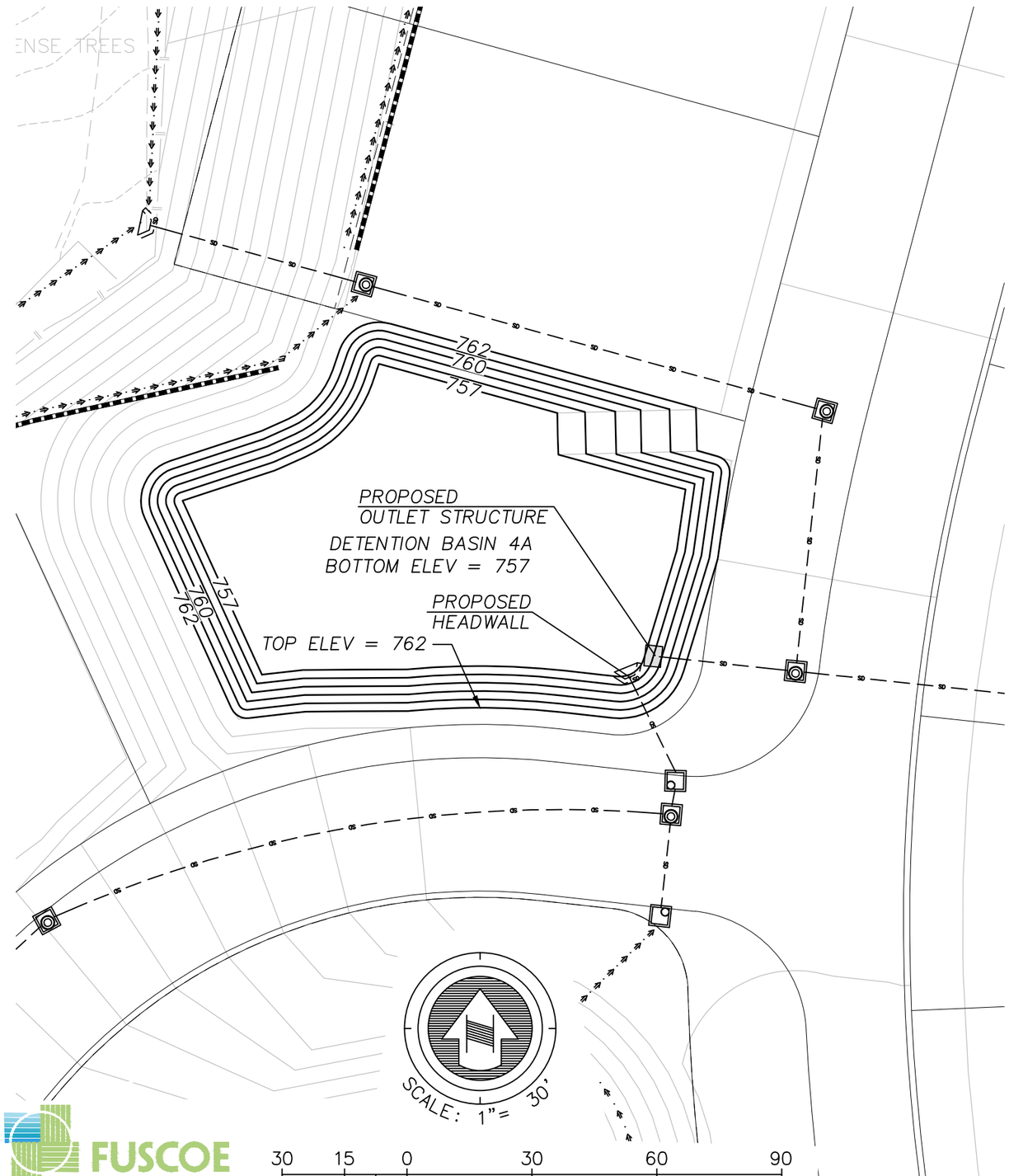


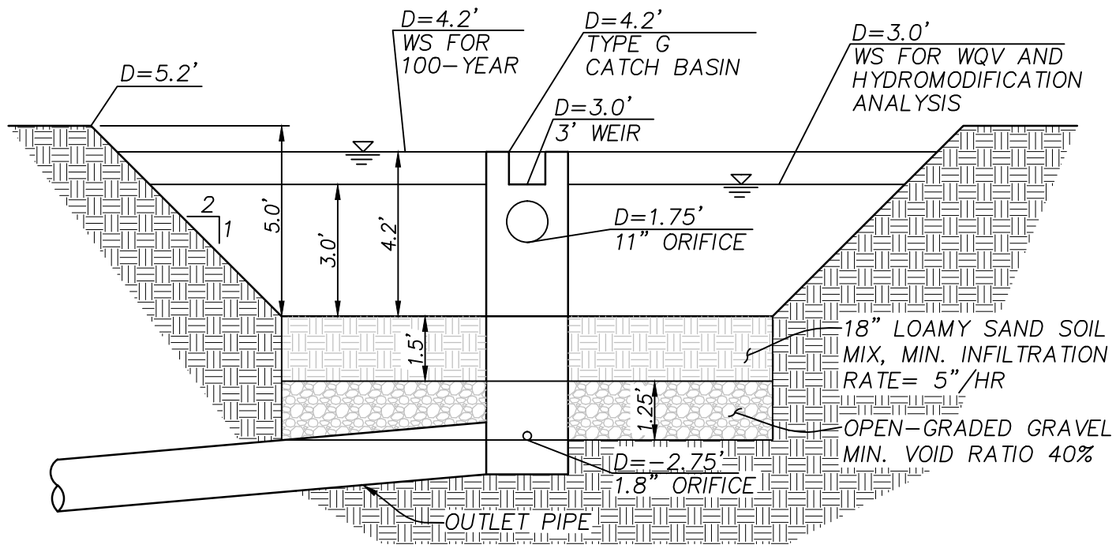


DMA 3D

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 3D

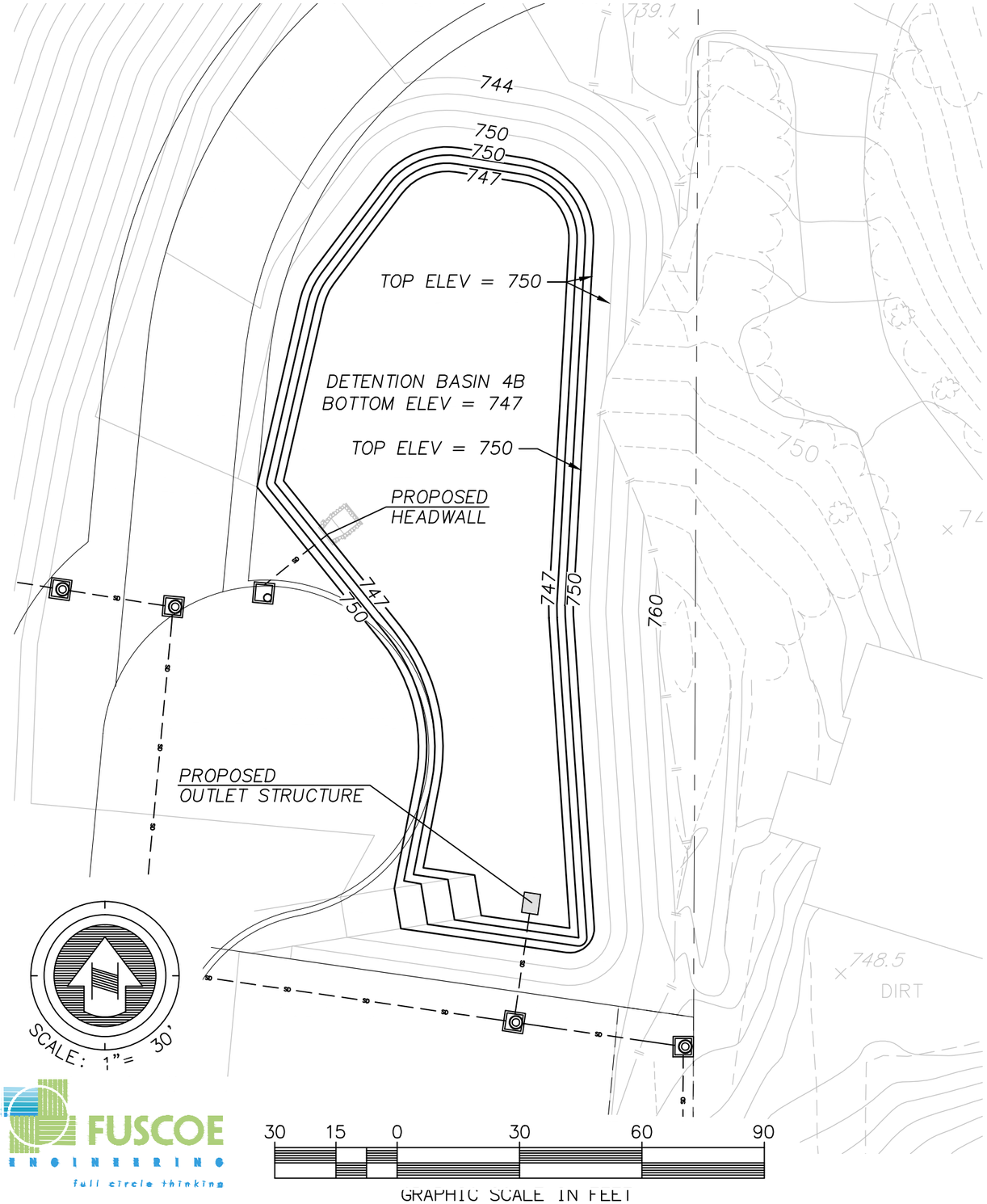


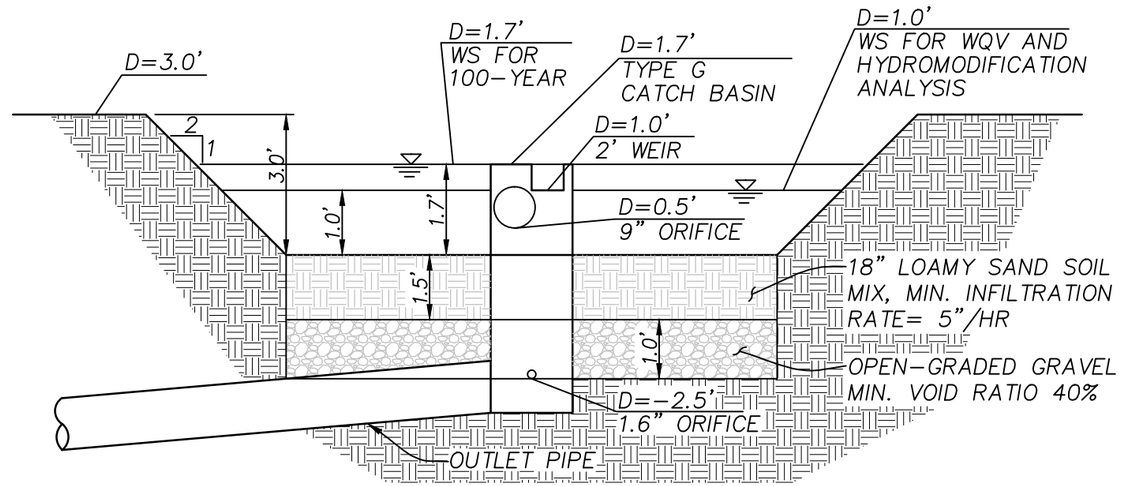


DMA 4A

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 4A

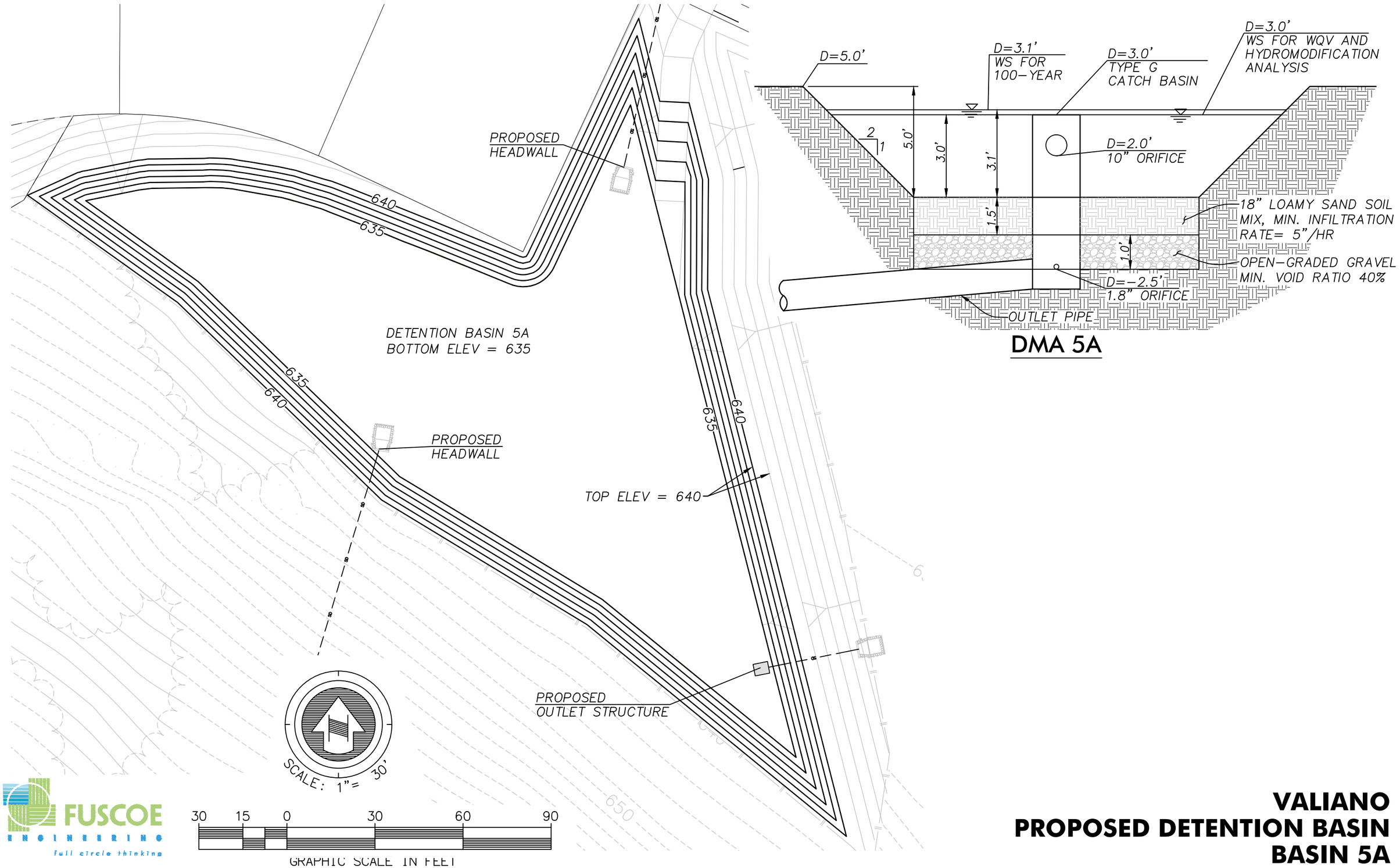




DMA 4B

FUSCOE ENGINEERING
full circle thinking

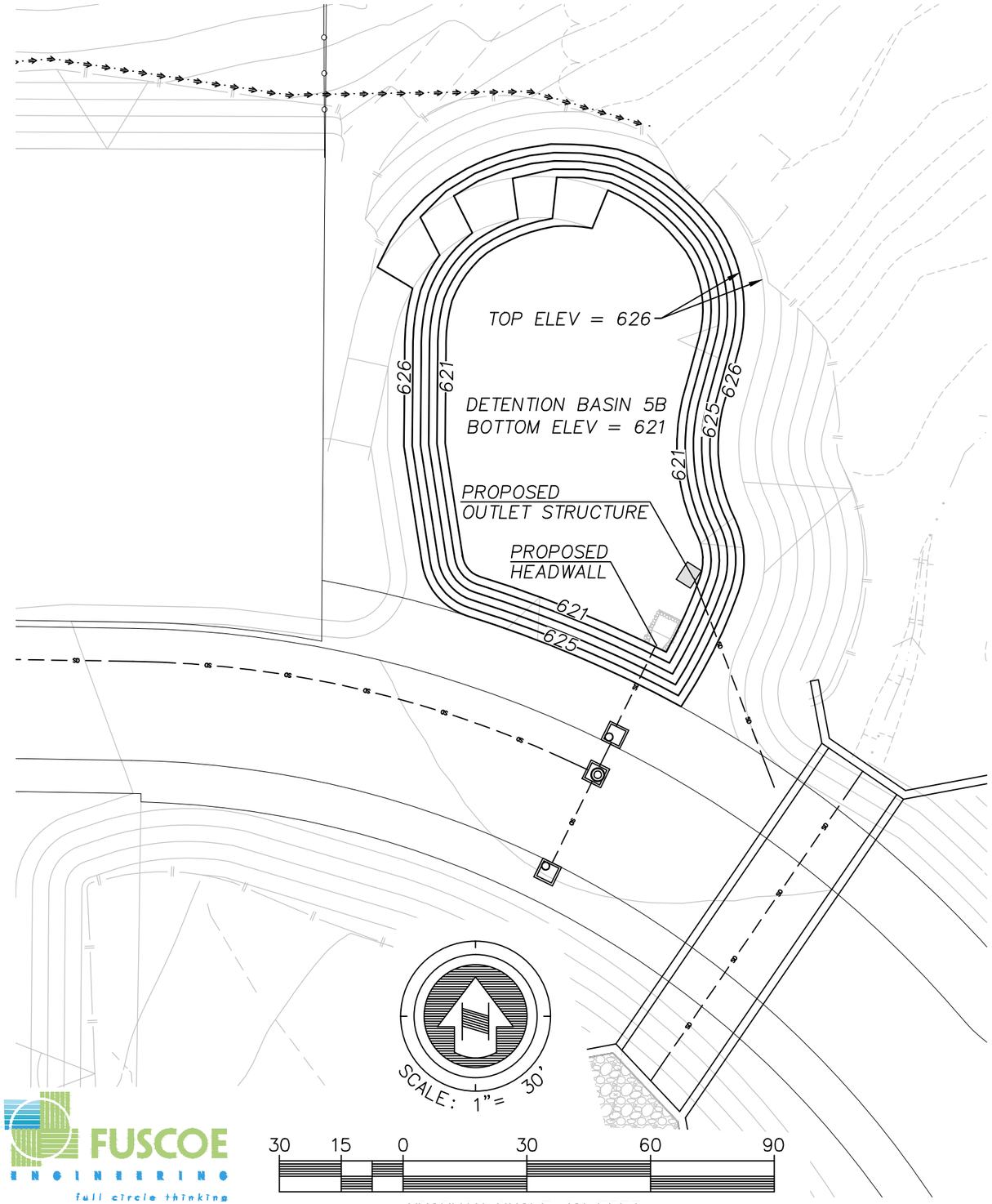
VALIANO
PROPOSED DETENTION BASIN
BASIN 4B

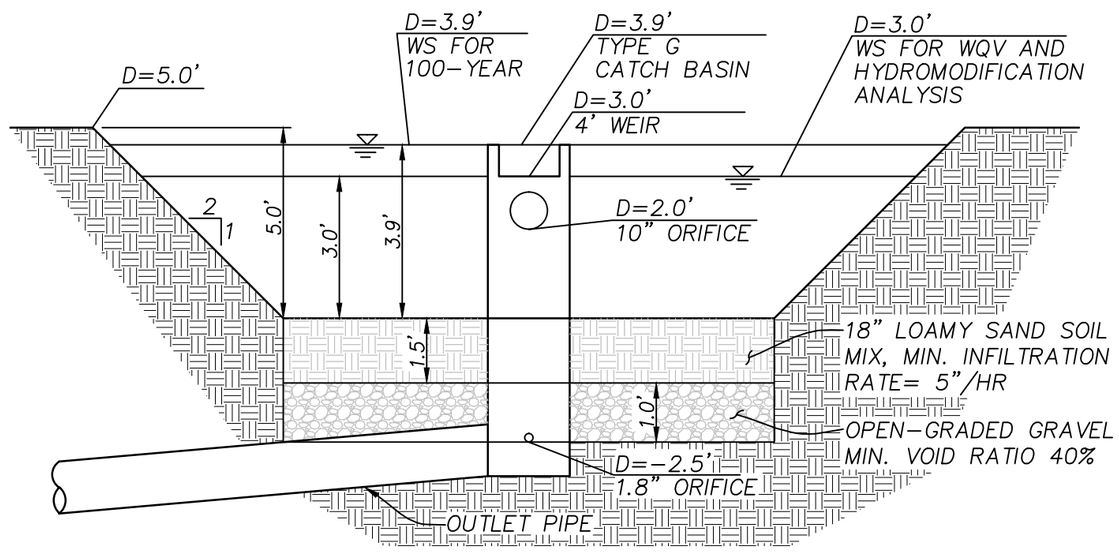


DMA 5A

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 5A

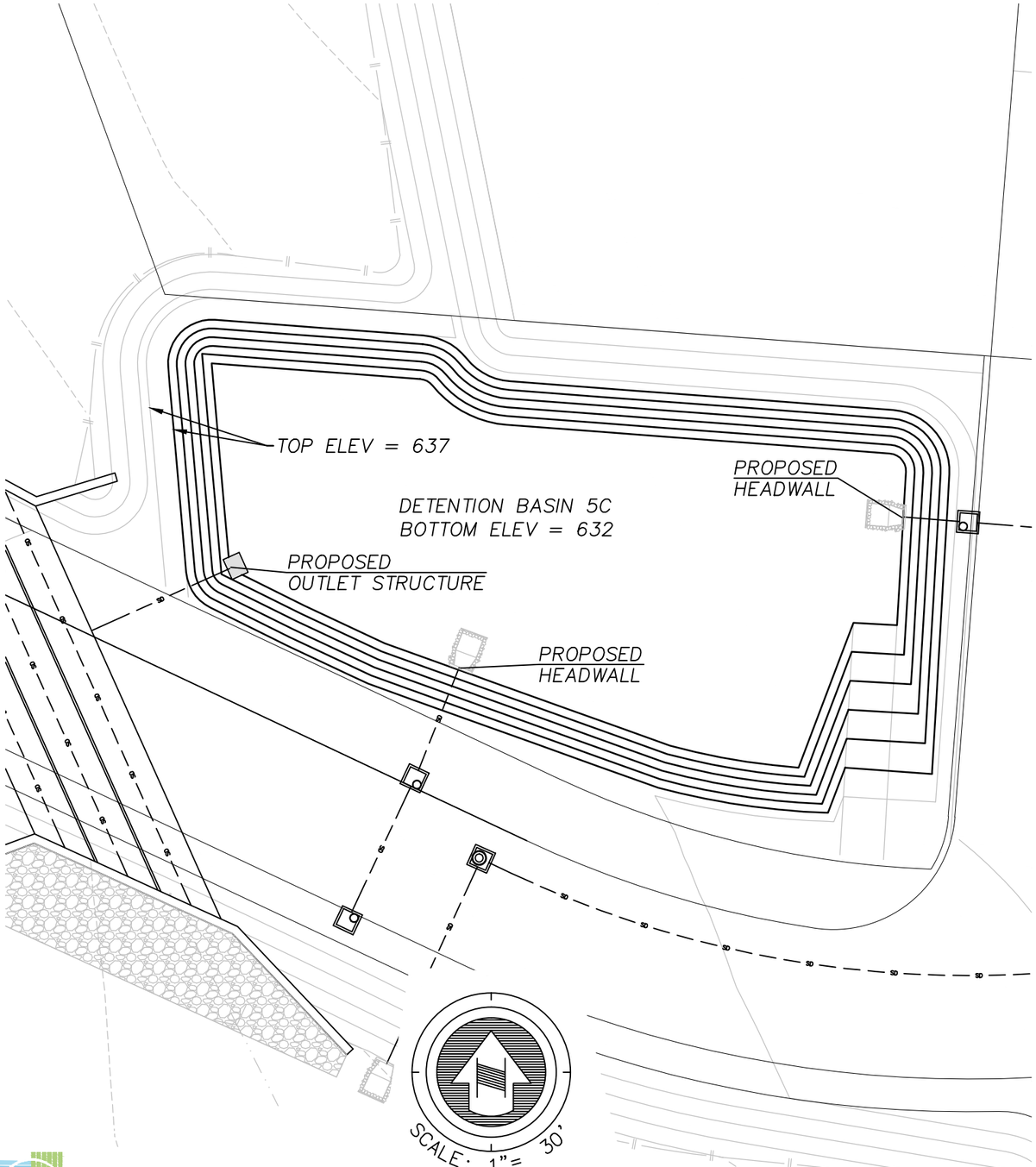


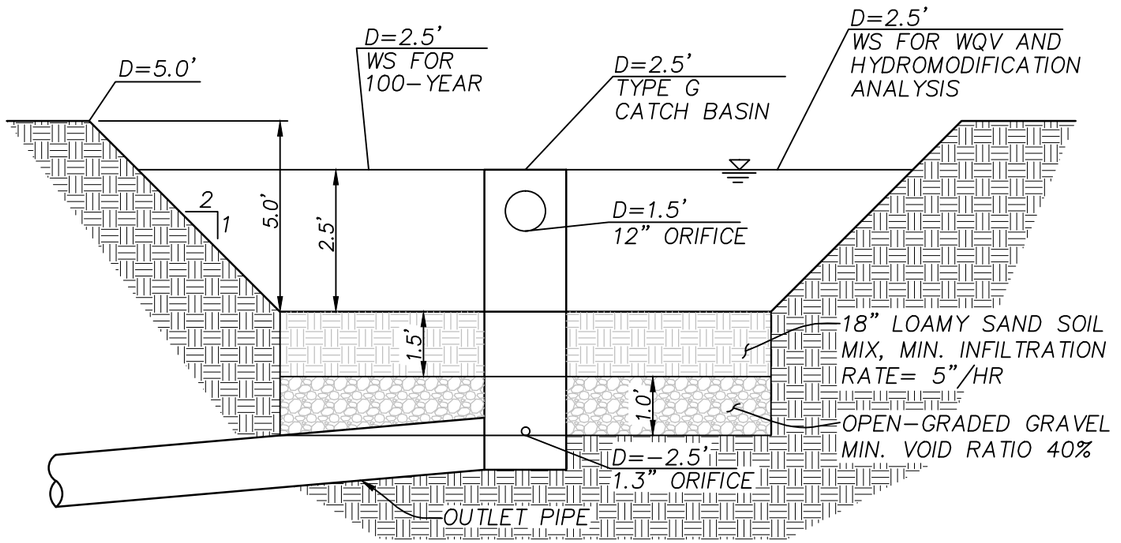


DMA 5B

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 5B



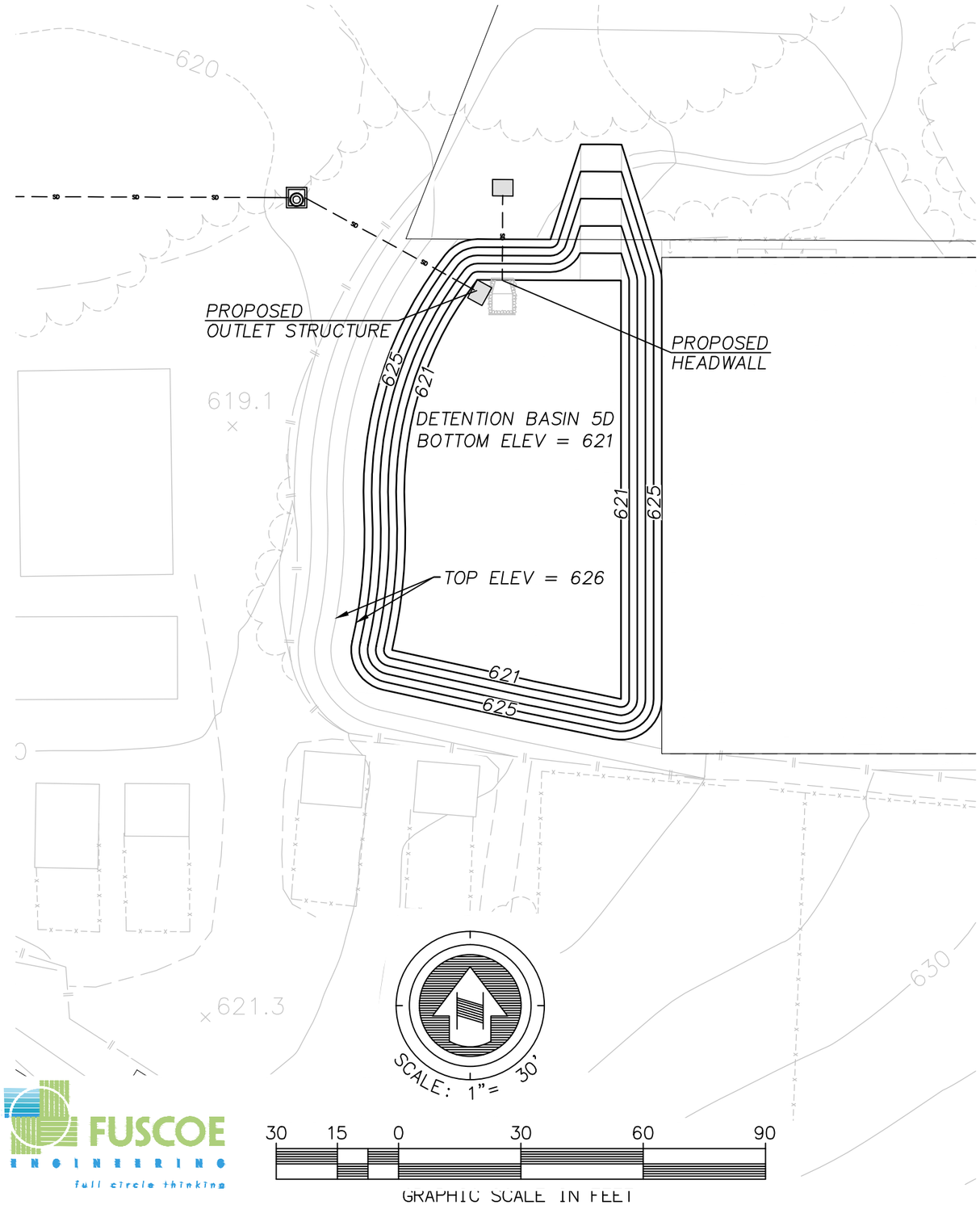


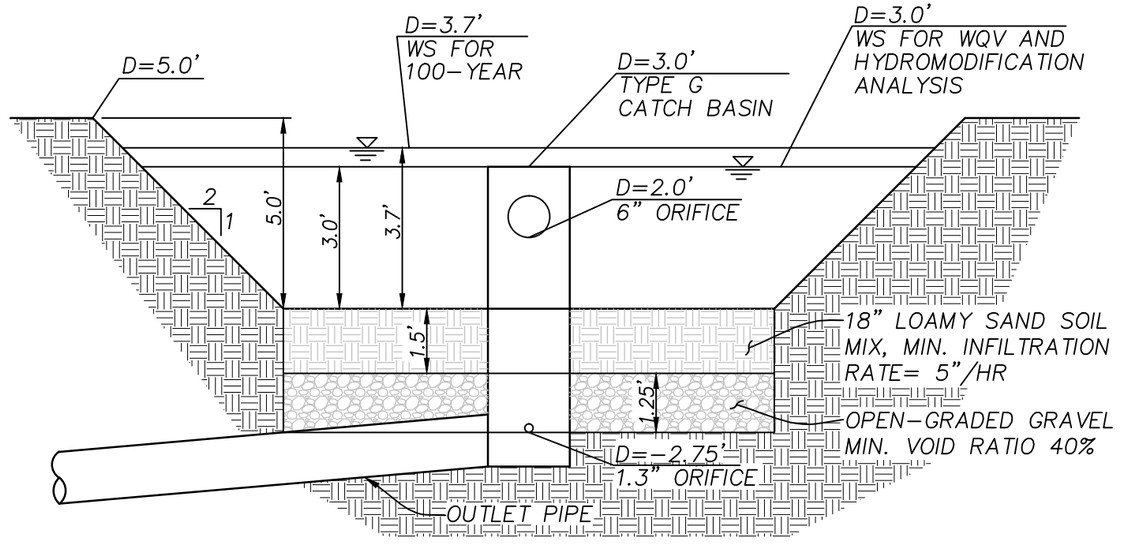
DMA 5C

FUSCOE ENGINEERING
full circle thinking

30 15 0 30 60 90
GRAPHIC SCALE IN FEET

VALIANO
PROPOSED DETENTION BASIN
BASIN 5C





DMA 5D

FUSCOE ENGINEERING
full circle thinking

VALIANO
PROPOSED DETENTION BASIN
BASIN 5D

Basin 1
Proposed Hydrology

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 6 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 3.1 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 15.15 CFS

62 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 6 DISCHARGE (CFS) = 0.4
TIME (MIN) = 12 DISCHARGE (CFS) = 0.4
TIME (MIN) = 18 DISCHARGE (CFS) = 0.4
TIME (MIN) = 24 DISCHARGE (CFS) = 0.4
TIME (MIN) = 30 DISCHARGE (CFS) = 0.4
TIME (MIN) = 36 DISCHARGE (CFS) = 0.5
TIME (MIN) = 42 DISCHARGE (CFS) = 0.5
TIME (MIN) = 48 DISCHARGE (CFS) = 0.5
TIME (MIN) = 54 DISCHARGE (CFS) = 0.5
TIME (MIN) = 60 DISCHARGE (CFS) = 0.5
TIME (MIN) = 66 DISCHARGE (CFS) = 0.5
TIME (MIN) = 72 DISCHARGE (CFS) = 0.5
TIME (MIN) = 78 DISCHARGE (CFS) = 0.5
TIME (MIN) = 84 DISCHARGE (CFS) = 0.5
TIME (MIN) = 90 DISCHARGE (CFS) = 0.6
TIME (MIN) = 96 DISCHARGE (CFS) = 0.6
TIME (MIN) = 102 DISCHARGE (CFS) = 0.6
TIME (MIN) = 108 DISCHARGE (CFS) = 0.6
TIME (MIN) = 114 DISCHARGE (CFS) = 0.6
TIME (MIN) = 120 DISCHARGE (CFS) = 0.6
TIME (MIN) = 126 DISCHARGE (CFS) = 0.7
TIME (MIN) = 132 DISCHARGE (CFS) = 0.7
TIME (MIN) = 138 DISCHARGE (CFS) = 0.7
TIME (MIN) = 144 DISCHARGE (CFS) = 0.7
TIME (MIN) = 150 DISCHARGE (CFS) = 0.8
TIME (MIN) = 156 DISCHARGE (CFS) = 0.8
TIME (MIN) = 162 DISCHARGE (CFS) = 0.8
TIME (MIN) = 168 DISCHARGE (CFS) = 0.9
TIME (MIN) = 174 DISCHARGE (CFS) = 0.9
TIME (MIN) = 180 DISCHARGE (CFS) = 1
TIME (MIN) = 186 DISCHARGE (CFS) = 1

TIME (MIN) = 192 DISCHARGE (CFS) = 1.1
TIME (MIN) = 198 DISCHARGE (CFS) = 1.2
TIME (MIN) = 204 DISCHARGE (CFS) = 1.3
TIME (MIN) = 210 DISCHARGE (CFS) = 1.5
TIME (MIN) = 216 DISCHARGE (CFS) = 1.6
TIME (MIN) = 222 DISCHARGE (CFS) = 2
TIME (MIN) = 228 DISCHARGE (CFS) = 2.2
TIME (MIN) = 234 DISCHARGE (CFS) = 3.3
TIME (MIN) = 240 DISCHARGE (CFS) = 6
TIME (MIN) = 246 DISCHARGE (CFS) = 15.15
TIME (MIN) = 252 DISCHARGE (CFS) = 2.6
TIME (MIN) = 258 DISCHARGE (CFS) = 1.8
TIME (MIN) = 264 DISCHARGE (CFS) = 1.4
TIME (MIN) = 270 DISCHARGE (CFS) = 1.1
TIME (MIN) = 276 DISCHARGE (CFS) = 1
TIME (MIN) = 282 DISCHARGE (CFS) = 0.9
TIME (MIN) = 288 DISCHARGE (CFS) = 0.8
TIME (MIN) = 294 DISCHARGE (CFS) = 0.7
TIME (MIN) = 300 DISCHARGE (CFS) = 0.7
TIME (MIN) = 306 DISCHARGE (CFS) = 0.6
TIME (MIN) = 312 DISCHARGE (CFS) = 0.6
TIME (MIN) = 318 DISCHARGE (CFS) = 0.6
TIME (MIN) = 324 DISCHARGE (CFS) = 0.5
TIME (MIN) = 330 DISCHARGE (CFS) = 0.5
TIME (MIN) = 336 DISCHARGE (CFS) = 0.5
TIME (MIN) = 342 DISCHARGE (CFS) = 0.5
TIME (MIN) = 348 DISCHARGE (CFS) = 0.5
TIME (MIN) = 354 DISCHARGE (CFS) = 0.4
TIME (MIN) = 360 DISCHARGE (CFS) = 0.4
TIME (MIN) = 366 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
        (c) Copyright 1983-2012 Advanced Engineering Software (aes)
            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 1                                                      *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN01.DAT
    TIME/DATE OF STUDY: 13:22 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   62
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    6.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.40*    3:         0.40*
    *    4:         0.40*    5:         0.40*    6:         0.40*
    *    7:         0.50*    8:         0.50*    9:         0.50*
    *   10:         0.50*   11:         0.50*   12:         0.50*
    *   13:         0.50*   14:         0.50*   15:         0.50*
    *   16:         0.60*   17:         0.60*   18:         0.60*
    *   19:         0.60*   20:         0.60*   21:         0.60*
    *   22:         0.70*   23:         0.70*   24:         0.70*
    *   25:         0.70*   26:         0.80*   27:         0.80*
    *   28:         0.80*   29:         0.90*   30:         0.90*
    *   31:         1.00*   32:         1.00*   33:         1.10*
    *   34:         1.20*   35:         1.30*   36:         1.50*
    *   37:         1.60*   38:         2.00*   39:         2.20*
    *   40:         3.30*   41:         6.00*   42:        15.15*
    *   43:         2.60*   44:         1.80*   45:         1.40*
    *   46:         1.10*   47:         1.00*   48:         0.90*
    *   49:         0.80*   50:         0.70*   51:         0.70*
    *   52:         0.60*   53:         0.60*   54:         0.60*
    *   55:         0.50*   56:         0.50*   57:         0.50*
    *   58:         0.50*   59:         0.50*   60:         0.40*
    *   61:         0.40*   62:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   7
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.097      0.530*
```

```
    *      2.000      0.208      1.139**      3.000      0.335      1.519*
    *      4.000      0.477      1.821**      5.000      0.637     10.330*
    *      6.000      0.813     10.990**
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.09481     0.09919
          3      0.20329     0.21271
          4      0.32872     0.34128
          5      0.46948     0.48452
          6      0.59431     0.67969
          7      0.76759     0.85841
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.      4.      8.     11.     15.
       0.10     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.20     0.40     0.02       0.003 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.03]
       0.30     0.40     0.03       0.006 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.07]
       0.40     0.40     0.05       0.009 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.10]
       0.50     0.40     0.07       0.012 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.12]
       0.60     0.40     0.08       0.015 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.70     0.50     0.10       0.018 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       0.80     0.50     0.12       0.021 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.22]
       0.90     0.50     0.13       0.025 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.25]
       1.00     0.50     0.15       0.027 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.28]
       1.10     0.50     0.17       0.030 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.31]
       1.20     0.50     0.18       0.033 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.34]
       1.30     0.50     0.19       0.036 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.37]
       1.40     0.50     0.21       0.038 OI      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    0.39]
1.50     0.50     0.22       0.040 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.42]
1.60     0.60     0.24       0.043 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.45]
1.70     0.60     0.25       0.046 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.48]
1.80     0.60     0.27       0.049 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.51]
1.90     0.60     0.28       0.052 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.53]
2.00     0.60     0.30       0.054 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.56]
2.10     0.60     0.31       0.057 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.59]
2.20     0.70     0.33       0.060 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.62]
2.30     0.70     0.34       0.063 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.65]
2.40     0.70     0.36       0.066 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.68]
2.50     0.70     0.38       0.069 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.71]
2.60     0.80     0.39       0.072 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.74]
2.70     0.80     0.41       0.075 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.78]
2.80     0.80     0.43       0.079 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.81]
2.90     0.90     0.45       0.082 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.85]
3.00     0.90     0.47       0.086 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.89]
3.10     1.00     0.49       0.090 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    0.93]
3.20     1.00     0.52       0.094 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    0.97]
3.30     1.10     0.54       0.099 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
3.40     1.20     0.57       0.104 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    1.07]
3.50     1.30     0.60       0.110 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    1.12]
3.60     1.50     0.64       0.118 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.18]
3.70     1.60     0.69       0.125 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.25]
3.80     2.00     0.74       0.136 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.35]
3.90     2.20     0.81       0.148 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.46]
4.00     3.30     0.92       0.168 .O    I .       .       .       .
  [BASIN DEPTH(FEET) =    1.64]
4.10     6.00     1.14       0.209 . O     .   I   .       .       .
  [BASIN DEPTH(FEET) =    2.01]
4.20    15.15     1.48       0.323 .  O    .       .       .       I
  [BASIN DEPTH(FEET) =    2.91]
4.30     2.60     1.51       0.332 .  O I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.98]
4.40     1.80     1.52       0.335 .  O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
4.50     1.40     1.52       0.334 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
```

```
4.60     1.10     1.51       0.330 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    2.96]
4.70     1.00     1.49       0.326 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    2.93]
4.80     0.90     1.48       0.321 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.89]
4.90     0.80     1.46       0.316 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.85]
5.00     0.70     1.44       0.310 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.80]
5.10     0.70     1.42       0.304 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.75]
5.20     0.60     1.40       0.297 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.70]
5.30     0.60     1.39       0.290 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.65]
5.40     0.60     1.37       0.284 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.60]
5.50     0.50     1.34       0.277 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
5.60     0.50     1.32       0.270 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.49]
5.70     0.50     1.30       0.263 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.43]
5.80     0.50     1.28       0.257 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.38]
5.90     0.50     1.27       0.250 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.33]
6.00     0.40     1.24       0.243 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
6.10     0.40     1.22       0.236 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.22]
6.20     0.00     1.19       0.226 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.14]
6.30     0.00     1.16       0.217 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
6.40     0.00     1.13       0.207 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.99]
6.50     0.00     1.08       0.198 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
6.60     0.00     1.04       0.189 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.83]
6.70     0.00     0.99       0.181 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.75]
6.80     0.00     0.95       0.173 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.68]
6.90     0.00     0.90       0.165 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.61]
7.00     0.00     0.86       0.158 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.55]
7.10     0.00     0.83       0.151 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.48]
7.20     0.00     0.79       0.144 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.42]
7.30     0.00     0.75       0.138 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.37]
7.40     0.00     0.72       0.132 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.31]
7.50     0.00     0.69       0.126 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.26]
7.60     0.00     0.66       0.120 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.21]
7.70     0.00     0.63       0.115 IO      .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    1.16]
 7.80     0.00     0.60       0.110 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    1.12]
 7.90     0.00     0.57       0.105 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    1.07]
 8.00     0.00     0.55       0.100 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    1.03]
 8.10     0.00     0.52       0.096 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
 8.20     0.00     0.50       0.092 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    0.95]
 8.30     0.00     0.48       0.088 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    0.90]
 8.40     0.00     0.46       0.084 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.86]
 8.50     0.00     0.44       0.080 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.83]
 8.60     0.00     0.42       0.077 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.79]
 8.70     0.00     0.40       0.073 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.75]
 8.80     0.00     0.38       0.070 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.72]
 8.90     0.00     0.37       0.067 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.69]
 9.00     0.00     0.35       0.064 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.66]
 9.10     0.00     0.33       0.061 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.63]
 9.20     0.00     0.32       0.058 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.60]
 9.30     0.00     0.30       0.056 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.58]
 9.40     0.00     0.29       0.053 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.55]
 9.50     0.00     0.28       0.051 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.53]
 9.60     0.00     0.27       0.049 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.50]
 9.70     0.00     0.25       0.047 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.48]
 9.80     0.00     0.24       0.045 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.46]
 9.90     0.00     0.23       0.043 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.44]
10.00     0.00     0.22       0.041 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.42]
```

BASIN 2A
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 3.4 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 15.6 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 0.5
TIME (MIN) = 14 DISCHARGE (CFS) = 0.5
TIME (MIN) = 21 DISCHARGE (CFS) = 0.5
TIME (MIN) = 28 DISCHARGE (CFS) = 0.5
TIME (MIN) = 35 DISCHARGE (CFS) = 0.5
TIME (MIN) = 42 DISCHARGE (CFS) = 0.5
TIME (MIN) = 49 DISCHARGE (CFS) = 0.5
TIME (MIN) = 56 DISCHARGE (CFS) = 0.5
TIME (MIN) = 63 DISCHARGE (CFS) = 0.6
TIME (MIN) = 70 DISCHARGE (CFS) = 0.6
TIME (MIN) = 77 DISCHARGE (CFS) = 0.6
TIME (MIN) = 84 DISCHARGE (CFS) = 0.6
TIME (MIN) = 91 DISCHARGE (CFS) = 0.6
TIME (MIN) = 98 DISCHARGE (CFS) = 0.6
TIME (MIN) = 105 DISCHARGE (CFS) = 0.7
TIME (MIN) = 112 DISCHARGE (CFS) = 0.7
TIME (MIN) = 119 DISCHARGE (CFS) = 0.7
TIME (MIN) = 126 DISCHARGE (CFS) = 0.7
TIME (MIN) = 133 DISCHARGE (CFS) = 0.8
TIME (MIN) = 140 DISCHARGE (CFS) = 0.8
TIME (MIN) = 147 DISCHARGE (CFS) = 0.8
TIME (MIN) = 154 DISCHARGE (CFS) = 0.9
TIME (MIN) = 161 DISCHARGE (CFS) = 0.9
TIME (MIN) = 168 DISCHARGE (CFS) = 1
TIME (MIN) = 175 DISCHARGE (CFS) = 1
TIME (MIN) = 182 DISCHARGE (CFS) = 1.1
TIME (MIN) = 189 DISCHARGE (CFS) = 1.2
TIME (MIN) = 196 DISCHARGE (CFS) = 1.3
TIME (MIN) = 203 DISCHARGE (CFS) = 1.5
TIME (MIN) = 210 DISCHARGE (CFS) = 1.6
TIME (MIN) = 217 DISCHARGE (CFS) = 1.9

TIME (MIN) = 224 DISCHARGE (CFS) = 2.2
TIME (MIN) = 231 DISCHARGE (CFS) = 3.2
TIME (MIN) = 238 DISCHARGE (CFS) = 5.4
TIME (MIN) = 245 DISCHARGE (CFS) = 15.6
TIME (MIN) = 252 DISCHARGE (CFS) = 2.6
TIME (MIN) = 259 DISCHARGE (CFS) = 1.7
TIME (MIN) = 266 DISCHARGE (CFS) = 1.4
TIME (MIN) = 273 DISCHARGE (CFS) = 1.1
TIME (MIN) = 280 DISCHARGE (CFS) = 1
TIME (MIN) = 287 DISCHARGE (CFS) = 0.9
TIME (MIN) = 294 DISCHARGE (CFS) = 0.8
TIME (MIN) = 301 DISCHARGE (CFS) = 0.7
TIME (MIN) = 308 DISCHARGE (CFS) = 0.7
TIME (MIN) = 315 DISCHARGE (CFS) = 0.6
TIME (MIN) = 322 DISCHARGE (CFS) = 0.6
TIME (MIN) = 329 DISCHARGE (CFS) = 0.6
TIME (MIN) = 336 DISCHARGE (CFS) = 0.5
TIME (MIN) = 343 DISCHARGE (CFS) = 0.5
TIME (MIN) = 350 DISCHARGE (CFS) = 0.5
TIME (MIN) = 357 DISCHARGE (CFS) = 0.5
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
        (c) Copyright 1983-2012 Advanced Engineering Software (aes)
            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 2A                                                     *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN2A.DAT
    TIME/DATE OF STUDY: 13:55 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.50*    3:         0.50*
    *    4:         0.50*    5:         0.50*    6:         0.50*
    *    7:         0.50*    8:         0.50*    9:         0.50*
    *   10:         0.60*   11:         0.60*   12:         0.60*
    *   13:         0.60*   14:         0.60*   15:         0.60*
    *   16:         0.70*   17:         0.70*   18:         0.70*
    *   19:         0.70*   20:         0.80*   21:         0.80*
    *   22:         0.80*   23:         0.90*   24:         0.90*
    *   25:         1.00*   26:         1.00*   27:         1.10*
    *   28:         1.20*   29:         1.30*   30:         1.50*
    *   31:         1.60*   32:         1.90*   33:         2.20*
    *   34:         3.20*   35:         5.40*   36:        15.60*
    *   37:         2.60*   38:         1.70*   39:         1.40*
    *   40:         1.10*   41:         1.00*   42:         0.90*
    *   43:         0.80*   44:         0.70*   45:         0.70*
    *   46:         0.60*   47:         0.60*   48:         0.60*
    *   49:         0.50*   50:         0.50*   51:         0.50*
    *   52:         0.50*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.147      0.057*
    *      2.000      0.312      0.305**      3.000      0.494      1.515*
    *      4.000      0.700     26.050**
**************************************************************************
```

```
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.14673     0.14727
          3      0.31053     0.31347
          4      0.48670     0.50130
          5      0.57441     0.82559
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.      4.      8.     12.     16.
       0.12     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.23     0.50     0.00       0.005 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.03]
       0.35     0.50     0.00       0.010 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.07]
       0.47     0.50     0.01       0.014 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.10]
       0.58     0.50     0.01       0.019 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.13]
       0.70     0.50     0.01       0.024 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.82     0.50     0.01       0.029 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       0.93     0.50     0.01       0.033 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.23]
       1.05     0.50     0.01       0.038 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.26]
       1.17     0.60     0.02       0.044 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.30]
       1.28     0.60     0.02       0.049 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.33]
       1.40     0.60     0.02       0.055 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.37]
       1.52     0.60     0.02       0.060 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.41]
       1.63     0.60     0.03       0.066 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.45]
       1.75     0.60     0.03       0.071 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.49]
       1.87     0.70     0.03       0.078 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.53]
       1.98     0.70     0.03       0.084 OI      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    0.57]
2.10     0.70     0.04       0.091 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.62]
2.22     0.70     0.04       0.097 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.66]
2.33     0.80     0.04       0.105 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.71]
2.45     0.80     0.04       0.112 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.76]
2.57     0.80     0.05       0.119 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.81]
2.68     0.90     0.05       0.127 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.87]
2.80     0.90     0.05       0.136 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.92]
2.92     1.00     0.06       0.145 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.98]
3.03     1.00     0.07       0.154 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.04]
3.15     1.10     0.08       0.164 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.10]
3.27     1.20     0.10       0.174 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.17]
3.38     1.30     0.12       0.186 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.24]
3.50     1.50     0.14       0.199 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.32]
3.62     1.60     0.16       0.213 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.40]
3.73     1.90     0.18       0.230 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.50]
3.85     2.20     0.21       0.249 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.62]
3.97     3.20     0.25       0.278 O     I .       .       .       .
  [BASIN DEPTH(FEET) =    1.79]
4.08     5.40     0.40       0.327 O       .  I    .       .       .
  [BASIN DEPTH(FEET) =    2.08]
4.20    15.60     1.35       0.469 . O     .       .       .      I.
  [BASIN DEPTH(FEET) =    2.86]
4.32     2.60     1.42       0.480 . O  I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.92]
4.43     1.70     1.44       0.483 . OI    .       .       .       .
  [BASIN DEPTH(FEET) =    2.94]
4.55     1.40     1.44       0.483 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.94]
4.67     1.10     1.42       0.479 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.92]
4.78     1.00     1.39       0.475 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.90]
4.90     0.90     1.36       0.471 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.87]
5.02     0.80     1.33       0.466 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.84]
5.13     0.70     1.29       0.460 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
5.25     0.70     1.25       0.454 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.78]
5.37     0.60     1.21       0.448 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.75]
5.48     0.60     1.17       0.442 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.72]
5.60     0.60     1.14       0.437 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.69]
```

```
5.72     0.50     1.10       0.431 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.65]
5.83     0.50     1.06       0.426 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.62]
5.95     0.50     1.03       0.420 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.60]
6.07     0.50     0.99       0.415 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.57]
6.18     0.00     0.93       0.406 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
6.30     0.00     0.87       0.397 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.47]
6.42     0.00     0.82       0.389 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.42]
6.53     0.00     0.77       0.382 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.38]
6.65     0.00     0.72       0.374 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
6.77     0.00     0.68       0.368 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.31]
6.88     0.00     0.63       0.361 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.27]
7.00     0.00     0.59       0.356 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
7.12     0.00     0.56       0.350 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
7.23     0.00     0.52       0.345 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.18]
7.35     0.00     0.49       0.340 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.15]
7.47     0.00     0.46       0.335 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.13]
7.58     0.00     0.43       0.331 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.10]
7.70     0.00     0.40       0.327 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.08]
7.82     0.00     0.38       0.323 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.06]
7.93     0.00     0.36       0.320 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.04]
8.05     0.00     0.33       0.316 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
8.17     0.00     0.31       0.313 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.01]
8.28     0.00     0.30       0.310 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.99]
8.40     0.00     0.30       0.307 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.97]
8.52     0.00     0.29       0.304 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.95]
8.63     0.00     0.29       0.302 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.94]
8.75     0.00     0.29       0.299 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.92]
8.87     0.00     0.28       0.296 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.90]
8.98     0.00     0.28       0.293 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.89]
9.10     0.00     0.27       0.291 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.87]
9.22     0.00     0.27       0.288 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.86]
9.33     0.00     0.27       0.286 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    1.84]
 9.45     0.00     0.26       0.283 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
 9.57     0.00     0.26       0.281 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.81]
 9.68     0.00     0.25       0.278 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.79]
 9.80     0.00     0.25       0.276 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.78]
 9.92     0.00     0.25       0.273 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.77]
10.03     0.00     0.24       0.271 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.75]
10.15     0.00     0.24       0.269 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.74]
10.27     0.00     0.24       0.266 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
10.38     0.00     0.23       0.264 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.71]
10.50     0.00     0.23       0.262 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.70]
10.62     0.00     0.23       0.260 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.68]
10.73     0.00     0.22       0.257 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.67]
10.85     0.00     0.22       0.255 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.66]
10.97     0.00     0.22       0.253 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.64]
11.08     0.00     0.21       0.251 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.63]
11.20     0.00     0.21       0.249 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.62]
11.32     0.00     0.21       0.247 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.61]
11.43     0.00     0.20       0.245 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.59]
11.55     0.00     0.20       0.243 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.58]
11.67     0.00     0.20       0.241 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.57]
```

BASIN 2B
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 6 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 5.8 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 27.6 CFS

62 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 6 DISCHARGE (CFS) = 0.8
TIME (MIN) = 12 DISCHARGE (CFS) = 0.8
TIME (MIN) = 18 DISCHARGE (CFS) = 0.8
TIME (MIN) = 24 DISCHARGE (CFS) = 0.8
TIME (MIN) = 30 DISCHARGE (CFS) = 0.8
TIME (MIN) = 36 DISCHARGE (CFS) = 0.9
TIME (MIN) = 42 DISCHARGE (CFS) = 0.9
TIME (MIN) = 48 DISCHARGE (CFS) = 0.9
TIME (MIN) = 54 DISCHARGE (CFS) = 0.9
TIME (MIN) = 60 DISCHARGE (CFS) = 0.9
TIME (MIN) = 66 DISCHARGE (CFS) = 0.9
TIME (MIN) = 72 DISCHARGE (CFS) = 1
TIME (MIN) = 78 DISCHARGE (CFS) = 1
TIME (MIN) = 84 DISCHARGE (CFS) = 1
TIME (MIN) = 90 DISCHARGE (CFS) = 1
TIME (MIN) = 96 DISCHARGE (CFS) = 1.1
TIME (MIN) = 102 DISCHARGE (CFS) = 1.1
TIME (MIN) = 108 DISCHARGE (CFS) = 1.1
TIME (MIN) = 114 DISCHARGE (CFS) = 1.2
TIME (MIN) = 120 DISCHARGE (CFS) = 1.2
TIME (MIN) = 126 DISCHARGE (CFS) = 1.2
TIME (MIN) = 132 DISCHARGE (CFS) = 1.3
TIME (MIN) = 138 DISCHARGE (CFS) = 1.3
TIME (MIN) = 144 DISCHARGE (CFS) = 1.4
TIME (MIN) = 150 DISCHARGE (CFS) = 1.4
TIME (MIN) = 156 DISCHARGE (CFS) = 1.5
TIME (MIN) = 162 DISCHARGE (CFS) = 1.6
TIME (MIN) = 168 DISCHARGE (CFS) = 1.6
TIME (MIN) = 174 DISCHARGE (CFS) = 1.7
TIME (MIN) = 180 DISCHARGE (CFS) = 1.8
TIME (MIN) = 186 DISCHARGE (CFS) = 2

TIME (MIN) = 192 DISCHARGE (CFS) = 2
TIME (MIN) = 198 DISCHARGE (CFS) = 2.3
TIME (MIN) = 204 DISCHARGE (CFS) = 2.4
TIME (MIN) = 210 DISCHARGE (CFS) = 2.8
TIME (MIN) = 216 DISCHARGE (CFS) = 3
TIME (MIN) = 222 DISCHARGE (CFS) = 3.7
TIME (MIN) = 228 DISCHARGE (CFS) = 4.2
TIME (MIN) = 234 DISCHARGE (CFS) = 6.1
TIME (MIN) = 240 DISCHARGE (CFS) = 11.9
TIME (MIN) = 246 DISCHARGE (CFS) = 27.6
TIME (MIN) = 252 DISCHARGE (CFS) = 4.9
TIME (MIN) = 258 DISCHARGE (CFS) = 3.3
TIME (MIN) = 264 DISCHARGE (CFS) = 2.6
TIME (MIN) = 270 DISCHARGE (CFS) = 2.1
TIME (MIN) = 276 DISCHARGE (CFS) = 1.9
TIME (MIN) = 282 DISCHARGE (CFS) = 1.7
TIME (MIN) = 288 DISCHARGE (CFS) = 1.5
TIME (MIN) = 294 DISCHARGE (CFS) = 1.4
TIME (MIN) = 300 DISCHARGE (CFS) = 1.3
TIME (MIN) = 306 DISCHARGE (CFS) = 1.2
TIME (MIN) = 312 DISCHARGE (CFS) = 1.1
TIME (MIN) = 318 DISCHARGE (CFS) = 1.1
TIME (MIN) = 324 DISCHARGE (CFS) = 1
TIME (MIN) = 330 DISCHARGE (CFS) = 1
TIME (MIN) = 336 DISCHARGE (CFS) = 0.9
TIME (MIN) = 342 DISCHARGE (CFS) = 0.9
TIME (MIN) = 348 DISCHARGE (CFS) = 0.9
TIME (MIN) = 354 DISCHARGE (CFS) = 0.8
TIME (MIN) = 360 DISCHARGE (CFS) = 0.8
TIME (MIN) = 366 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 2B AT NODE 295                                         *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN2B.DAT
    TIME/DATE OF STUDY: 14:16 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   62
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    6.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.80*    3:         0.80*
    *    4:         0.80*    5:         0.80*    6:         0.80*
    *    7:         0.90*    8:         0.90*    9:         0.90*
    *   10:         0.90*   11:         0.90*   12:         0.90*
    *   13:         1.00*   14:         1.00*   15:         1.00*
    *   16:         1.00*   17:         1.10*   18:         1.10*
    *   19:         1.10*   20:         1.20*   21:         1.20*
    *   22:         1.20*   23:         1.30*   24:         1.30*
    *   25:         1.40*   26:         1.40*   27:         1.50*
    *   28:         1.60*   29:         1.60*   30:         1.70*
    *   31:         1.80*   32:         2.00*   33:         2.00*
    *   34:         2.30*   35:         2.40*   36:         2.80*
    *   37:         3.00*   38:         3.70*   39:         4.20*
    *   40:         6.10*   41:        11.90*   42:        27.60*
    *   43:         4.90*   44:         3.30*   45:         2.60*
    *   46:         2.10*   47:         1.90*   48:         1.70*
    *   49:         1.50*   50:         1.40*   51:         1.30*
    *   52:         1.20*   53:         1.10*   54:         1.10*
    *   55:         1.00*   56:         1.00*   57:         0.90*
    *   58:         0.90*   59:         0.90*   60:         0.80*
    *   61:         0.80*   62:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.139      0.100*
```

```
    *      2.000      0.297      0.145**      3.000      0.477      1.703*
    *      4.000      0.677      8.888**      5.000      0.899     12.060*
*************************************************************************
-------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------
-------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.13859     0.13941
          3      0.29640     0.29760
          4      0.46996     0.48404
          5      0.64027     0.71373
          6      0.84917     0.94883
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------
```

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 7. 14. 21. 28.
0.10	0.00	0.00	0.000	O
[BASIN DEPTH(FEET) =	0.00]			
0.20	0.80	0.00	0.007	O
[BASIN DEPTH(FEET) =	0.05]			
0.30	0.80	0.01	0.013	O
[BASIN DEPTH(FEET) =	0.09]			
0.40	0.80	0.01	0.020	O
[BASIN DEPTH(FEET) =	0.14]			
0.50	0.80	0.02	0.026	O
[BASIN DEPTH(FEET) =	0.19]			
0.60	0.80	0.02	0.033	O
[BASIN DEPTH(FEET) =	0.23]			
0.70	0.90	0.03	0.040	OI
[BASIN DEPTH(FEET) =	0.29]			
0.80	0.90	0.03	0.047	OI
[BASIN DEPTH(FEET) =	0.34]			
0.90	0.90	0.04	0.054	OI
[BASIN DEPTH(FEET) =	0.39]			
1.00	0.90	0.04	0.061	OI
[BASIN DEPTH(FEET) =	0.44]			
1.10	0.90	0.05	0.068	OI
[BASIN DEPTH(FEET) =	0.49]			
1.20	0.90	0.05	0.075	OI
[BASIN DEPTH(FEET) =	0.54]			
1.30	1.00	0.06	0.083	OI
[BASIN DEPTH(FEET) =	0.60]			
1.40	1.00	0.07	0.091	OI
[BASIN DEPTH(FEET) =	0.65]			
1.50	1.00	0.07	0.099	OI

```
  [BASIN DEPTH(FEET) =    0.71]
1.60     1.00     0.08       0.106 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.76]
1.70     1.10     0.08       0.115 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.82]
1.80     1.10     0.09       0.123 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.88]
1.90     1.10     0.09       0.131 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.94]
2.00     1.20     0.10       0.140 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.01]
2.10     1.20     0.10       0.150 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.07]
2.20     1.20     0.11       0.159 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.12]
2.30     1.30     0.11       0.168 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.19]
2.40     1.30     0.11       0.178 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.25]
2.50     1.40     0.11       0.189 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.32]
2.60     1.40     0.12       0.200 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.38]
2.70     1.50     0.12       0.211 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.46]
2.80     1.60     0.12       0.223 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.53]
2.90     1.60     0.13       0.235 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.61]
3.00     1.70     0.13       0.248 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.69]
3.10     1.80     0.14       0.262 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.78]
3.20     2.00     0.14       0.277 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.88]
3.30     2.00     0.14       0.293 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.97]
3.40     2.30     0.26       0.310 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
3.50     2.40     0.41       0.327 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.17]
3.60     2.80     0.57       0.346 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.27]
3.70     3.00     0.74       0.366 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.38]
3.80     3.70     0.94       0.389 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.51]
3.90     4.20     1.17       0.415 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.66]
4.00     6.10     1.51       0.455 .O     I.       .       .       .
  [BASIN DEPTH(FEET) =    2.88]
4.10    11.90     3.67       0.532 .   O   .    I  .       .       .
  [BASIN DEPTH(FEET) =    3.27]
4.20    27.60     9.30       0.706 .       . O     .       .       I
  [BASIN DEPTH(FEET) =    4.13]
4.30     4.90     8.71       0.672 .    I  . O     .       .       .
  [BASIN DEPTH(FEET) =    3.98]
4.40     3.30     7.31       0.633 .  I    O       .       .       .
  [BASIN DEPTH(FEET) =    3.78]
4.50     2.60     6.10       0.599 .  I   O.       .       .       .
  [BASIN DEPTH(FEET) =    3.61]
4.60     2.10     5.06       0.571 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.47]
```

```
4.70     1.90     4.25       0.548 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.35]
4.80     1.70     3.59       0.529 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.26]
4.90     1.50     3.05       0.514 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.19]
5.00     1.40     2.62       0.503 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.13]
5.10     1.30     2.28       0.493 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.08]
5.20     1.20     2.00       0.485 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.04]
5.30     1.10     1.77       0.479 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.01]
5.40     1.10     1.67       0.474 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.98]
5.50     1.00     1.63       0.468 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.95]
5.60     1.00     1.58       0.463 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.92]
5.70     0.90     1.54       0.458 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.89]
5.80     0.90     1.49       0.453 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.87]
5.90     0.90     1.45       0.448 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.84]
6.00     0.80     1.41       0.443 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
6.10     0.80     1.37       0.438 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.78]
6.20     0.00     1.27       0.427 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.72]
6.30     0.00     1.18       0.417 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.67]
6.40     0.00     1.10       0.407 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.61]
6.50     0.00     1.03       0.399 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.57]
6.60     0.00     0.95       0.391 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
6.70     0.00     0.89       0.383 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.48]
6.80     0.00     0.83       0.376 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.44]
6.90     0.00     0.77       0.369 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.40]
7.00     0.00     0.72       0.363 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.37]
7.10     0.00     0.67       0.357 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
7.20     0.00     0.62       0.352 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.31]
7.30     0.00     0.58       0.347 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
7.40     0.00     0.54       0.342 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.25]
7.50     0.00     0.50       0.338 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.23]
7.60     0.00     0.47       0.334 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
7.70     0.00     0.43       0.330 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
7.80     0.00     0.40       0.327 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    2.17]
 7.90     0.00     0.38       0.324 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.15]
 8.00     0.00     0.35       0.321 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.13]
 8.10     0.00     0.33       0.318 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.12]
 8.20     0.00     0.30       0.315 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.10]
 8.30     0.00     0.28       0.313 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.09]
 8.40     0.00     0.26       0.311 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.08]
 8.50     0.00     0.25       0.309 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.06]
 8.60     0.00     0.23       0.307 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.05]
 8.70     0.00     0.21       0.305 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.04]
 8.80     0.00     0.20       0.303 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
 8.90     0.00     0.18       0.302 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
 9.00     0.00     0.17       0.300 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.02]
 9.10     0.00     0.16       0.299 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.01]
 9.20     0.00     0.15       0.297 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
 9.30     0.00     0.14       0.296 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
 9.40     0.00     0.14       0.295 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
 9.50     0.00     0.14       0.294 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
 9.60     0.00     0.14       0.293 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
 9.70     0.00     0.14       0.291 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
 9.80     0.00     0.14       0.290 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
 9.90     0.00     0.14       0.289 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.95]
10.00     0.00     0.14       0.288 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
```

BASIN 2C
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 12 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 55.15 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 1.6
TIME (MIN) = 14 DISCHARGE (CFS) = 1.7
TIME (MIN) = 21 DISCHARGE (CFS) = 1.7
TIME (MIN) = 28 DISCHARGE (CFS) = 1.7
TIME (MIN) = 35 DISCHARGE (CFS) = 1.8
TIME (MIN) = 42 DISCHARGE (CFS) = 1.8
TIME (MIN) = 49 DISCHARGE (CFS) = 1.9
TIME (MIN) = 56 DISCHARGE (CFS) = 1.9
TIME (MIN) = 63 DISCHARGE (CFS) = 1.9
TIME (MIN) = 70 DISCHARGE (CFS) = 2
TIME (MIN) = 77 DISCHARGE (CFS) = 2.1
TIME (MIN) = 84 DISCHARGE (CFS) = 2.1
TIME (MIN) = 91 DISCHARGE (CFS) = 2.2
TIME (MIN) = 98 DISCHARGE (CFS) = 2.2
TIME (MIN) = 105 DISCHARGE (CFS) = 2.3
TIME (MIN) = 112 DISCHARGE (CFS) = 2.4
TIME (MIN) = 119 DISCHARGE (CFS) = 2.5
TIME (MIN) = 126 DISCHARGE (CFS) = 2.5
TIME (MIN) = 133 DISCHARGE (CFS) = 2.7
TIME (MIN) = 140 DISCHARGE (CFS) = 2.8
TIME (MIN) = 147 DISCHARGE (CFS) = 2.9
TIME (MIN) = 154 DISCHARGE (CFS) = 3
TIME (MIN) = 161 DISCHARGE (CFS) = 3.2
TIME (MIN) = 168 DISCHARGE (CFS) = 3.4
TIME (MIN) = 175 DISCHARGE (CFS) = 3.7
TIME (MIN) = 182 DISCHARGE (CFS) = 3.8
TIME (MIN) = 189 DISCHARGE (CFS) = 4.2
TIME (MIN) = 196 DISCHARGE (CFS) = 4.5
TIME (MIN) = 203 DISCHARGE (CFS) = 5.2
TIME (MIN) = 210 DISCHARGE (CFS) = 5.6
TIME (MIN) = 217 DISCHARGE (CFS) = 6.8

TIME (MIN) = 224 DISCHARGE (CFS) = 7.8
TIME (MIN) = 231 DISCHARGE (CFS) = 11.4
TIME (MIN) = 238 DISCHARGE (CFS) = 18.8
TIME (MIN) = 245 DISCHARGE (CFS) = 55.15
TIME (MIN) = 252 DISCHARGE (CFS) = 9.2
TIME (MIN) = 259 DISCHARGE (CFS) = 6.1
TIME (MIN) = 266 DISCHARGE (CFS) = 4.8
TIME (MIN) = 273 DISCHARGE (CFS) = 4
TIME (MIN) = 280 DISCHARGE (CFS) = 3.5
TIME (MIN) = 287 DISCHARGE (CFS) = 3.1
TIME (MIN) = 294 DISCHARGE (CFS) = 2.8
TIME (MIN) = 301 DISCHARGE (CFS) = 2.6
TIME (MIN) = 308 DISCHARGE (CFS) = 2.4
TIME (MIN) = 315 DISCHARGE (CFS) = 2.3
TIME (MIN) = 322 DISCHARGE (CFS) = 2.1
TIME (MIN) = 329 DISCHARGE (CFS) = 2
TIME (MIN) = 336 DISCHARGE (CFS) = 1.9
TIME (MIN) = 343 DISCHARGE (CFS) = 1.8
TIME (MIN) = 350 DISCHARGE (CFS) = 1.7
TIME (MIN) = 357 DISCHARGE (CFS) = 1.7
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 2C AT NODE 229                                         *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN2C.DAT
    TIME/DATE OF STUDY: 14:52 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         1.60*    3:         1.70*
    *    4:         1.70*    5:         1.70*    6:         1.80*
    *    7:         1.80*    8:         1.90*    9:         1.90*
    *   10:         1.90*   11:         2.00*   12:         2.10*
    *   13:         2.10*   14:         2.20*   15:         2.20*
    *   16:         2.30*   17:         2.40*   18:         2.50*
    *   19:         2.50*   20:         2.70*   21:         2.80*
    *   22:         2.90*   23:         3.00*   24:         3.20*
    *   25:         3.40*   26:         3.70*   27:         3.80*
    *   28:         4.20*   29:         4.50*   30:         5.20*
    *   31:         5.60*   32:         6.80*   33:         7.80*
    *   34:        11.40*   35:        18.80*   36:        55.15*
    *   37:         9.20*   38:         6.10*   39:         4.80*
    *   40:         4.00*   41:         3.50*   42:         3.10*
    *   43:         2.80*   44:         2.60*   45:         2.40*
    *   46:         2.30*   47:         2.10*   48:         2.00*
    *   49:         1.90*   50:         1.80*   51:         1.70*
    *   52:         1.70*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.093      0.220*
    *      2.000      0.388      0.462**      3.000      0.713      3.047*
    *      4.000      1.070     10.840**      5.000      1.459     14.400*
**************************************************************************
```

```
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.09194     0.09406
          3      0.38577     0.39023
          4      0.69831     0.72769
          5      1.01774     1.12226
          6      1.38958     1.52842
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     14.     28.     41.     55.
       0.12     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.23     1.60     0.04       0.015 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.35     1.70     0.07       0.031 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.33]
       0.47     1.70     0.11       0.047 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.50]
       0.58     1.70     0.15       0.062 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.66]
       0.70     1.80     0.18       0.078 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.83]
       0.82     1.80     0.22       0.093 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.00]
       0.93     1.90     0.23       0.109 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.05]
       1.05     1.90     0.25       0.125 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.11]
       1.17     1.90     0.26       0.141 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.16]
       1.28     2.00     0.27       0.158 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.22]
       1.40     2.10     0.29       0.175 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.28]
       1.52     2.10     0.30       0.193 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.34]
       1.63     2.20     0.32       0.211 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.40]
       1.75     2.20     0.33       0.229 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.46]
       1.87     2.30     0.35       0.248 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    1.52]
```

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1.98     2.40     0.36       0.268 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.59]
2.10     2.50     0.38       0.288 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.66]
2.22     2.50     0.40       0.308 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.73]
2.33     2.70     0.41       0.331 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.81]
2.45     2.80     0.43       0.353 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.88]
2.57     2.90     0.45       0.377 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.96]
2.68     3.00     0.57       0.401 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    2.04]
2.80     3.20     0.76       0.426 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    2.12]
2.92     3.40     0.96       0.450 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
3.03     3.70     1.16       0.476 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.27]
3.15     3.80     1.35       0.500 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.35]
3.27     4.20     1.56       0.527 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.43]
3.38     4.50     1.78       0.554 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    2.51]
3.50     5.20     2.03       0.586 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.61]
3.62     5.60     2.30       0.619 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.71]
3.73     6.80     2.63       0.661 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.84]
3.85     7.80     3.01       0.709 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
3.97    11.40     4.55       0.782 . O   I .       .       .       .
  [BASIN DEPTH(FEET) =    3.19]
4.08    18.80     7.27       0.906 .   O   . I     .       .       .
  [BASIN DEPTH(FEET) =    3.54]
4.20    55.15    13.30       1.339 .      O.       .       .       I
  [BASIN DEPTH(FEET) =    4.69]
4.32     9.20    12.95       1.301 .    I O.       .       .       .
  [BASIN DEPTH(FEET) =    4.59]
4.43     6.10    12.37       1.238 .  I   O.       .       .       .
  [BASIN DEPTH(FEET) =    4.43]
4.55     4.80    11.73       1.168 . I   O .       .       .       .
  [BASIN DEPTH(FEET) =    4.25]
4.67     4.00    11.08       1.096 . I   O .       .       .       .
  [BASIN DEPTH(FEET) =    4.07]
4.78     3.50     9.94       1.029 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.88]
4.90     3.10     8.64       0.969 .I   O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.72]
5.02     2.80     7.53       0.918 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.57]
5.13     2.60     6.59       0.875 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.45]
5.25     2.40     5.79       0.839 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.35]
5.37     2.30     5.13       0.808 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.27]
5.48     2.10     4.55       0.782 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.19]
5.60     2.00     4.06       0.760 .IO     .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    3.13]
5.72     1.90     3.65       0.741 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.08]
5.83     1.80     3.30       0.725 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.03]
5.95     1.70     3.03       0.710 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
6.07     1.70     2.93       0.698 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.95]
6.18     0.00     2.71       0.671 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.87]
6.30     0.00     2.51       0.646 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.79]
6.42     0.00     2.33       0.622 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.72]
6.53     0.00     2.15       0.601 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.65]
6.65     0.00     2.00       0.581 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.59]
6.77     0.00     1.85       0.562 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
6.88     0.00     1.71       0.545 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.48]
7.00     0.00     1.59       0.529 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.43]
7.12     0.00     1.47       0.514 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.39]
7.23     0.00     1.36       0.501 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.35]
7.35     0.00     1.26       0.488 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.31]
7.47     0.00     1.17       0.477 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.27]
7.58     0.00     1.08       0.466 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
7.70     0.00     1.00       0.456 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
7.82     0.00     0.93       0.446 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.18]
7.93     0.00     0.86       0.438 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.15]
8.05     0.00     0.79       0.430 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.13]
8.17     0.00     0.74       0.422 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.11]
8.28     0.00     0.68       0.416 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.08]
8.40     0.00     0.63       0.409 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
8.52     0.00     0.58       0.403 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
8.63     0.00     0.54       0.398 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.03]
8.75     0.00     0.50       0.393 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
8.87     0.00     0.46       0.388 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
8.98     0.00     0.46       0.384 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.99]
9.10     0.00     0.45       0.379 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.97]
9.22     0.00     0.45       0.375 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.96]
```

```
 9.33     0.00     0.45       0.371 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
 9.45     0.00     0.44       0.366 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
 9.57     0.00     0.44       0.362 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
 9.68     0.00     0.44       0.358 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
 9.80     0.00     0.43       0.354 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
 9.92     0.00     0.43       0.350 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.87]
10.03     0.00     0.43       0.345 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
10.15     0.00     0.42       0.341 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.84]
10.27     0.00     0.42       0.337 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
10.38     0.00     0.42       0.333 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.81]
10.50     0.00     0.41       0.329 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
10.62     0.00     0.41       0.325 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.79]
10.73     0.00     0.41       0.321 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.77]
10.85     0.00     0.40       0.317 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.76]
10.97     0.00     0.40       0.314 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.75]
11.08     0.00     0.40       0.310 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.73]
11.20     0.00     0.39       0.306 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
11.32     0.00     0.39       0.302 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.71]
11.43     0.00     0.39       0.298 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.70]
11.55     0.00     0.39       0.295 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.68]
11.67     0.00     0.38       0.291 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.67]
```

BASIN 2D
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 1.8 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 8.91 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 0.2
TIME (MIN) = 14 DISCHARGE (CFS) = 0.2
TIME (MIN) = 21 DISCHARGE (CFS) = 0.3
TIME (MIN) = 28 DISCHARGE (CFS) = 0.3
TIME (MIN) = 35 DISCHARGE (CFS) = 0.3
TIME (MIN) = 42 DISCHARGE (CFS) = 0.3
TIME (MIN) = 49 DISCHARGE (CFS) = 0.3
TIME (MIN) = 56 DISCHARGE (CFS) = 0.3
TIME (MIN) = 63 DISCHARGE (CFS) = 0.3
TIME (MIN) = 70 DISCHARGE (CFS) = 0.3
TIME (MIN) = 77 DISCHARGE (CFS) = 0.3
TIME (MIN) = 84 DISCHARGE (CFS) = 0.3
TIME (MIN) = 91 DISCHARGE (CFS) = 0.3
TIME (MIN) = 98 DISCHARGE (CFS) = 0.3
TIME (MIN) = 105 DISCHARGE (CFS) = 0.3
TIME (MIN) = 112 DISCHARGE (CFS) = 0.4
TIME (MIN) = 119 DISCHARGE (CFS) = 0.4
TIME (MIN) = 126 DISCHARGE (CFS) = 0.4
TIME (MIN) = 133 DISCHARGE (CFS) = 0.4
TIME (MIN) = 140 DISCHARGE (CFS) = 0.4
TIME (MIN) = 147 DISCHARGE (CFS) = 0.4
TIME (MIN) = 154 DISCHARGE (CFS) = 0.5
TIME (MIN) = 161 DISCHARGE (CFS) = 0.5
TIME (MIN) = 168 DISCHARGE (CFS) = 0.5
TIME (MIN) = 175 DISCHARGE (CFS) = 0.5
TIME (MIN) = 182 DISCHARGE (CFS) = 0.6
TIME (MIN) = 189 DISCHARGE (CFS) = 0.6
TIME (MIN) = 196 DISCHARGE (CFS) = 0.7
TIME (MIN) = 203 DISCHARGE (CFS) = 0.8
TIME (MIN) = 210 DISCHARGE (CFS) = 0.8
TIME (MIN) = 217 DISCHARGE (CFS) = 1

TIME (MIN) = 224 DISCHARGE (CFS) = 1.2
TIME (MIN) = 231 DISCHARGE (CFS) = 1.7
TIME (MIN) = 238 DISCHARGE (CFS) = 2.2
TIME (MIN) = 245 DISCHARGE (CFS) = 8.91
TIME (MIN) = 252 DISCHARGE (CFS) = 1.4
TIME (MIN) = 259 DISCHARGE (CFS) = 0.9
TIME (MIN) = 266 DISCHARGE (CFS) = 0.7
TIME (MIN) = 273 DISCHARGE (CFS) = 0.6
TIME (MIN) = 280 DISCHARGE (CFS) = 0.5
TIME (MIN) = 287 DISCHARGE (CFS) = 0.5
TIME (MIN) = 294 DISCHARGE (CFS) = 0.4
TIME (MIN) = 301 DISCHARGE (CFS) = 0.4
TIME (MIN) = 308 DISCHARGE (CFS) = 0.4
TIME (MIN) = 315 DISCHARGE (CFS) = 0.3
TIME (MIN) = 322 DISCHARGE (CFS) = 0.3
TIME (MIN) = 329 DISCHARGE (CFS) = 0.3
TIME (MIN) = 336 DISCHARGE (CFS) = 0.3
TIME (MIN) = 343 DISCHARGE (CFS) = 0.3
TIME (MIN) = 350 DISCHARGE (CFS) = 0.3
TIME (MIN) = 357 DISCHARGE (CFS) = 0.3
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 2D AT NODE 253.2                                       *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN2D.DAT
    TIME/DATE OF STUDY: 15:24 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.20*    3:         0.20*
    *    4:         0.30*    5:         0.30*    6:         0.30*
    *    7:         0.30*    8:         0.30*    9:         0.30*
    *   10:         0.30*   11:         0.30*   12:         0.30*
    *   13:         0.30*   14:         0.30*   15:         0.30*
    *   16:         0.30*   17:         0.40*   18:         0.40*
    *   19:         0.40*   20:         0.40*   21:         0.40*
    *   22:         0.40*   23:         0.50*   24:         0.50*
    *   25:         0.50*   26:         0.50*   27:         0.60*
    *   28:         0.60*   29:         0.70*   30:         0.80*
    *   31:         0.80*   32:         1.00*   33:         1.20*
    *   34:         1.70*   35:         2.20*   36:         8.91*
    *   37:         1.40*   38:         0.90*   39:         0.70*
    *   40:         0.60*   41:         0.50*   42:         0.50*
    *   43:         0.40*   44:         0.40*   45:         0.40*
    *   46:         0.30*   47:         0.30*   48:         0.30*
    *   49:         0.30*   50:         0.30*   51:         0.30*
    *   52:         0.30*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.101      0.026*
    *      2.000      0.216      1.120**      3.000      0.346     17.270*
    *      4.000      0.492     18.820**
**************************************************************************
```

```
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
```

```
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.10087     0.10113
          3      0.21060     0.22140
          4      0.26274     0.42926
          5      0.40127     0.58273
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
```

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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
```

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 2. 4. 7. 9.
0.12	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.23	0.20	0.00	0.002	O . . . .
[BASIN DEPTH(FEET) = 0.02]				
0.35	0.20	0.00	0.004	O . . . .
[BASIN DEPTH(FEET) = 0.04]				
0.47	0.30	0.00	0.007	OI . . . .
[BASIN DEPTH(FEET) = 0.07]				
0.58	0.30	0.00	0.010	OI . . . .
[BASIN DEPTH(FEET) = 0.10]				
0.70	0.30	0.00	0.012	OI . . . .
[BASIN DEPTH(FEET) = 0.12]				
0.82	0.30	0.00	0.015	OI . . . .
[BASIN DEPTH(FEET) = 0.15]				
0.93	0.30	0.00	0.018	OI . . . .
[BASIN DEPTH(FEET) = 0.18]				
1.05	0.30	0.01	0.021	OI . . . .
[BASIN DEPTH(FEET) = 0.21]				
1.17	0.30	0.01	0.024	OI . . . .
[BASIN DEPTH(FEET) = 0.24]				
1.28	0.30	0.01	0.027	OI . . . .
[BASIN DEPTH(FEET) = 0.26]				
1.40	0.30	0.01	0.030	OI . . . .
[BASIN DEPTH(FEET) = 0.29]				
1.52	0.30	0.01	0.032	OI . . . .
[BASIN DEPTH(FEET) = 0.32]				
1.63	0.30	0.01	0.035	OI . . . .
[BASIN DEPTH(FEET) = 0.35]				
1.75	0.30	0.01	0.038	OI . . . .
[BASIN DEPTH(FEET) = 0.38]				
1.87	0.30	0.01	0.041	OI . . . .
[BASIN DEPTH(FEET) = 0.40]				
1.98	0.40	0.01	0.044	OI . . . .

```
  [BASIN DEPTH(FEET) =    0.44]
2.10     0.40     0.01       0.048 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.48]
2.22     0.40     0.01       0.052 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.51]
2.33     0.40     0.01       0.056 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.55]
2.45     0.40     0.02       0.059 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.59]
2.57     0.40     0.02       0.063 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.62]
2.68     0.50     0.02       0.068 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.67]
2.80     0.50     0.02       0.072 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.72]
2.92     0.50     0.02       0.077 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.76]
3.03     0.50     0.02       0.082 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.81]
3.15     0.60     0.02       0.087 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.86]
3.27     0.60     0.02       0.093 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.92]
3.38     0.70     0.03       0.099 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.98]
3.50     0.80     0.08       0.107 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.05]
3.62     0.80     0.14       0.113 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.11]
3.73     1.00     0.22       0.121 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.17]
3.85     1.20     0.30       0.130 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.25]
3.97     1.70     0.43       0.143 .O    I .       .       .       .
  [BASIN DEPTH(FEET) =    1.37]
4.08     2.20     0.58       0.159 . O    I.       .       .       .
  [BASIN DEPTH(FEET) =    1.51]
4.20     8.91     2.76       0.229 .       .O      .       .       I
  [BASIN DEPTH(FEET) =    2.10]
4.32     1.40     1.74       0.221 .    IO .       .       .       .
  [BASIN DEPTH(FEET) =    2.04]
4.43     0.90     1.12       0.216 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
4.55     0.70     1.08       0.212 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    1.97]
4.67     0.60     1.04       0.208 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    1.93]
4.78     0.50     0.99       0.203 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.88]
4.90     0.50     0.95       0.198 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.84]
5.02     0.40     0.90       0.193 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.80]
5.13     0.40     0.86       0.188 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.76]
5.25     0.40     0.82       0.184 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.72]
5.37     0.30     0.77       0.179 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.68]
5.48     0.30     0.73       0.175 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.64]
5.60     0.30     0.69       0.171 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.61]
```

```
5.72     0.30     0.66       0.167 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.58]
5.83     0.30     0.63       0.164 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.55]
5.95     0.30     0.60       0.161 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.52]
6.07     0.30     0.57       0.158 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.50]
6.18     0.00     0.52       0.153 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.45]
6.30     0.00     0.48       0.148 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.41]
6.42     0.00     0.43       0.144 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.37]
6.53     0.00     0.40       0.140 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.34]
6.65     0.00     0.36       0.136 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.31]
6.77     0.00     0.33       0.133 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.28]
6.88     0.00     0.30       0.130 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.25]
7.00     0.00     0.27       0.127 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.23]
7.12     0.00     0.25       0.125 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.21]
7.23     0.00     0.23       0.122 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.19]
7.35     0.00     0.21       0.120 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.17]
7.47     0.00     0.19       0.118 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.15]
7.58     0.00     0.17       0.116 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.13]
7.70     0.00     0.16       0.115 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.12]
7.82     0.00     0.14       0.113 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.11]
7.93     0.00     0.13       0.112 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.10]
8.05     0.00     0.12       0.111 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.09]
8.17     0.00     0.11       0.110 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
8.28     0.00     0.10       0.109 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.07]
8.40     0.00     0.09       0.108 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.06]
8.52     0.00     0.08       0.107 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.05]
8.63     0.00     0.08       0.106 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.05]
8.75     0.00     0.07       0.106 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.04]
8.87     0.00     0.06       0.105 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.03]
8.98     0.00     0.06       0.104 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.03]
9.10     0.00     0.05       0.104 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
9.22     0.00     0.05       0.103 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
9.33     0.00     0.04       0.103 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    1.02]
 9.45     0.00     0.04       0.102 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.01]
 9.57     0.00     0.04       0.102 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.01]
 9.68     0.00     0.03       0.102 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.01]
 9.80     0.00     0.03       0.101 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.00]
 9.92     0.00     0.03       0.101 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.00]
10.03     0.00     0.03       0.101 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.00]
10.15     0.00     0.03       0.101 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.00]
10.27     0.00     0.03       0.100 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
10.38     0.00     0.03       0.100 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
10.50     0.00     0.03       0.100 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
10.62     0.00     0.03       0.100 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
10.73     0.00     0.03       0.099 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
10.85     0.00     0.03       0.099 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
10.97     0.00     0.03       0.099 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
11.08     0.00     0.03       0.099 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
11.20     0.00     0.03       0.098 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
11.32     0.00     0.03       0.098 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
11.43     0.00     0.03       0.098 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
11.55     0.00     0.03       0.098 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
11.67     0.00     0.03       0.097 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
```

BASIN 2E
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 6.5 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 29.1 CFS

42 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 9 DISCHARGE (CFS) = 0.2
TIME (MIN) = 18 DISCHARGE (CFS) = 0.9
TIME (MIN) = 27 DISCHARGE (CFS) = 0.9
TIME (MIN) = 36 DISCHARGE (CFS) = 0.9
TIME (MIN) = 45 DISCHARGE (CFS) = 1
TIME (MIN) = 54 DISCHARGE (CFS) = 1
TIME (MIN) = 63 DISCHARGE (CFS) = 1
TIME (MIN) = 72 DISCHARGE (CFS) = 1.1
TIME (MIN) = 81 DISCHARGE (CFS) = 1.1
TIME (MIN) = 90 DISCHARGE (CFS) = 1.1
TIME (MIN) = 99 DISCHARGE (CFS) = 1.2
TIME (MIN) = 108 DISCHARGE (CFS) = 1.2
TIME (MIN) = 117 DISCHARGE (CFS) = 1.3
TIME (MIN) = 126 DISCHARGE (CFS) = 1.3
TIME (MIN) = 135 DISCHARGE (CFS) = 1.4
TIME (MIN) = 144 DISCHARGE (CFS) = 1.5
TIME (MIN) = 153 DISCHARGE (CFS) = 1.6
TIME (MIN) = 162 DISCHARGE (CFS) = 1.7
TIME (MIN) = 171 DISCHARGE (CFS) = 1.8
TIME (MIN) = 180 DISCHARGE (CFS) = 2
TIME (MIN) = 189 DISCHARGE (CFS) = 2.1
TIME (MIN) = 198 DISCHARGE (CFS) = 2.4
TIME (MIN) = 207 DISCHARGE (CFS) = 2.6
TIME (MIN) = 216 DISCHARGE (CFS) = 3.2
TIME (MIN) = 225 DISCHARGE (CFS) = 3.6
TIME (MIN) = 234 DISCHARGE (CFS) = 5.3
TIME (MIN) = 243 DISCHARGE (CFS) = 5
TIME (MIN) = 252 DISCHARGE (CFS) = 29.1
TIME (MIN) = 261 DISCHARGE (CFS) = 4.2
TIME (MIN) = 270 DISCHARGE (CFS) = 2.8
TIME (MIN) = 279 DISCHARGE (CFS) = 2.2

TIME (MIN) = 288 DISCHARGE (CFS) = 1.9
TIME (MIN) = 297 DISCHARGE (CFS) = 1.6
TIME (MIN) = 306 DISCHARGE (CFS) = 1.4
TIME (MIN) = 315 DISCHARGE (CFS) = 1.3
TIME (MIN) = 324 DISCHARGE (CFS) = 1.2
TIME (MIN) = 333 DISCHARGE (CFS) = 1.1
TIME (MIN) = 342 DISCHARGE (CFS) = 1
TIME (MIN) = 351 DISCHARGE (CFS) = 1
TIME (MIN) = 360 DISCHARGE (CFS) = 0.9
TIME (MIN) = 369 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 2E AT NODE 2029                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN2E.DAT
    TIME/DATE OF STUDY: 13:59 10/24/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   42
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    9.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.20*    3:         0.90*
    *    4:         0.90*    5:         0.90*    6:         1.00*
    *    7:         1.00*    8:         1.00*    9:         1.10*
    *   10:         1.10*   11:         1.10*   12:         1.20*
    *   13:         1.20*   14:         1.30*   15:         1.30*
    *   16:         1.40*   17:         1.50*   18:         1.60*
    *   19:         1.70*   20:         1.80*   21:         2.00*
    *   22:         2.10*   23:         2.40*   24:         2.60*
    *   25:         3.20*   26:         3.60*   27:         5.30*
    *   28:         5.00*   29:        29.10*   30:         4.20*
    *   31:         2.80*   32:         2.20*   33:         1.90*
    *   34:         1.60*   35:         1.40*   36:         1.30*
    *   37:         1.20*   38:         1.10*   39:         1.00*
    *   40:         1.00*   41:         0.90*   42:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.168      0.100*
    *      2.000      0.353      0.145**      3.000      0.556      1.553*
    *      4.000      0.778      4.153**      5.000      1.018     28.750*
**************************************************************************
--------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
```

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.16738	0.16862
3	0.35210	0.35390
4	0.54637	0.56563
5	0.75226	0.80374
6	0.83980	1.19620

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 7. 15. 22. 29.
0.15	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.30	0.20	0.00	0.002	O . . . .
[BASIN DEPTH(FEET) = 0.01]				
0.45	0.90	0.01	0.014	O . . . .
[BASIN DEPTH(FEET) = 0.08]				
0.60	0.90	0.01	0.025	O . . . .
[BASIN DEPTH(FEET) = 0.15]				
0.75	0.90	0.02	0.036	O . . . .
[BASIN DEPTH(FEET) = 0.21]				
0.90	1.00	0.03	0.048	OI . . . .
[BASIN DEPTH(FEET) = 0.28]				
1.05	1.00	0.04	0.060	OI . . . .
[BASIN DEPTH(FEET) = 0.35]				
1.20	1.00	0.04	0.072	OI . . . .
[BASIN DEPTH(FEET) = 0.43]				
1.35	1.10	0.05	0.085	OI . . . .
[BASIN DEPTH(FEET) = 0.50]				
1.50	1.10	0.06	0.098	OI . . . .
[BASIN DEPTH(FEET) = 0.58]				
1.65	1.10	0.07	0.110	OI . . . .
[BASIN DEPTH(FEET) = 0.66]				
1.80	1.20	0.07	0.124	OI . . . .
[BASIN DEPTH(FEET) = 0.74]				
1.95	1.20	0.08	0.138	OI . . . .
[BASIN DEPTH(FEET) = 0.82]				
2.10	1.30	0.09	0.153	OI . . . .
[BASIN DEPTH(FEET) = 0.91]				
2.25	1.30	0.10	0.168	OI . . . .
[BASIN DEPTH(FEET) = 1.00]				
2.40	1.40	0.10	0.184	OI . . . .
[BASIN DEPTH(FEET) = 1.09]				
2.55	1.50	0.11	0.202	OI . . . .
[BASIN DEPTH(FEET) = 1.18]				
2.70	1.60	0.11	0.220	OI . . . .
[BASIN DEPTH(FEET) = 1.28]				

```
2.85     1.70     0.12       0.240 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.39]
3.00     1.80     0.12       0.261 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.50]
3.15     2.00     0.13       0.284 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.63]
3.30     2.10     0.13       0.308 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.76]
3.45     2.40     0.14       0.336 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
3.60     2.60     0.24       0.366 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
3.75     3.20     0.48       0.401 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
3.90     3.60     0.74       0.438 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.42]
4.05     5.30     1.11       0.493 .O   I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.69]
4.20     5.00     1.43       0.539 .O   I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.92]
4.35    29.10     9.61       0.831 .       . O     .       .       I
  [BASIN DEPTH(FEET) =    4.22]
4.50     4.20     5.41       0.790 .   IO  .       .       .       .
  [BASIN DEPTH(FEET) =    4.05]
4.65     2.80     4.02       0.767 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    3.95]
4.80     2.20     3.77       0.746 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.85]
4.95     1.90     3.52       0.724 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    3.76]
5.10     1.60     3.26       0.702 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.66]
5.25     1.40     3.01       0.680 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.56]
5.40     1.30     2.78       0.660 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.47]
5.55     1.20     2.56       0.642 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.39]
5.70     1.10     2.36       0.625 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.31]
5.85     1.00     2.18       0.610 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.24]
6.00     1.00     2.02       0.596 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.18]
6.15     0.90     1.87       0.583 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.12]
6.30     0.00     1.62       0.561 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
6.45     0.00     1.46       0.542 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.93]
6.60     0.00     1.34       0.525 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.85]
6.75     0.00     1.23       0.509 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.77]
6.90     0.00     1.13       0.494 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.70]
7.05     0.00     1.03       0.481 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.63]
7.20     0.00     0.95       0.469 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.57]
7.35     0.00     0.87       0.458 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
7.50     0.00     0.80       0.447 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    2.46]
 7.65     0.00     0.73       0.438 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.42]
 7.80     0.00     0.67       0.429 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.37]
 7.95     0.00     0.62       0.421 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.34]
 8.10     0.00     0.57       0.414 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.30]
 8.25     0.00     0.52       0.407 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.27]
 8.40     0.00     0.48       0.401 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.24]
 8.55     0.00     0.44       0.395 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.21]
 8.70     0.00     0.40       0.390 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.18]
 8.85     0.00     0.37       0.385 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.16]
 9.00     0.00     0.34       0.381 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.14]
 9.15     0.00     0.31       0.377 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.12]
 9.30     0.00     0.28       0.373 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.10]
 9.45     0.00     0.26       0.370 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.08]
 9.60     0.00     0.24       0.367 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.07]
 9.75     0.00     0.22       0.364 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.05]
 9.90     0.00     0.20       0.361 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.04]
10.05     0.00     0.18       0.359 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
10.20     0.00     0.17       0.357 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.02]
10.35     0.00     0.16       0.355 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.01]
10.50     0.00     0.14       0.353 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
10.65     0.00     0.14       0.351 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
10.80     0.00     0.14       0.349 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
10.95     0.00     0.14       0.347 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
11.10     0.00     0.14       0.346 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
11.25     0.00     0.14       0.344 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.95]
11.40     0.00     0.14       0.342 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
11.55     0.00     0.14       0.340 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
11.70     0.00     0.14       0.338 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.92]
11.85     0.00     0.14       0.337 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
12.00     0.00     0.14       0.335 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
12.15     0.00     0.14       0.333 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.89]
```

```
12.30     0.00     0.14       0.332 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
12.45     0.00     0.14       0.330 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.87]
12.60     0.00     0.14       0.328 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.87]
12.75     0.00     0.14       0.326 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
12.90     0.00     0.14       0.325 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.85]
13.05     0.00     0.14       0.323 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.84]
13.20     0.00     0.14       0.321 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
13.35     0.00     0.14       0.320 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
13.50     0.00     0.14       0.318 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.81]
13.65     0.00     0.14       0.316 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
13.80     0.00     0.14       0.314 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.79]
13.95     0.00     0.14       0.313 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.78]
14.10     0.00     0.13       0.311 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.77]
14.25     0.00     0.13       0.309 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.76]
14.40     0.00     0.13       0.308 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.76]
14.55     0.00     0.13       0.306 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.75]
14.70     0.00     0.13       0.304 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.74]
14.85     0.00     0.13       0.303 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.73]
15.00     0.00     0.13       0.301 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
```

BASIN 3A
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/22/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 3.9 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 18.98 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 0.5
TIME (MIN) = 14 DISCHARGE (CFS) = 0.5
TIME (MIN) = 21 DISCHARGE (CFS) = 0.6
TIME (MIN) = 28 DISCHARGE (CFS) = 0.6
TIME (MIN) = 35 DISCHARGE (CFS) = 0.6
TIME (MIN) = 42 DISCHARGE (CFS) = 0.6
TIME (MIN) = 49 DISCHARGE (CFS) = 0.6
TIME (MIN) = 56 DISCHARGE (CFS) = 0.6
TIME (MIN) = 63 DISCHARGE (CFS) = 0.6
TIME (MIN) = 70 DISCHARGE (CFS) = 0.6
TIME (MIN) = 77 DISCHARGE (CFS) = 0.7
TIME (MIN) = 84 DISCHARGE (CFS) = 0.7
TIME (MIN) = 91 DISCHARGE (CFS) = 0.7
TIME (MIN) = 98 DISCHARGE (CFS) = 0.7
TIME (MIN) = 105 DISCHARGE (CFS) = 0.8
TIME (MIN) = 112 DISCHARGE (CFS) = 0.8
TIME (MIN) = 119 DISCHARGE (CFS) = 0.8
TIME (MIN) = 126 DISCHARGE (CFS) = 0.8
TIME (MIN) = 133 DISCHARGE (CFS) = 0.9
TIME (MIN) = 140 DISCHARGE (CFS) = 0.9
TIME (MIN) = 147 DISCHARGE (CFS) = 1
TIME (MIN) = 154 DISCHARGE (CFS) = 1
TIME (MIN) = 161 DISCHARGE (CFS) = 1.1
TIME (MIN) = 168 DISCHARGE (CFS) = 1.1
TIME (MIN) = 175 DISCHARGE (CFS) = 1.2
TIME (MIN) = 182 DISCHARGE (CFS) = 1.2
TIME (MIN) = 189 DISCHARGE (CFS) = 1.4
TIME (MIN) = 196 DISCHARGE (CFS) = 1.5
TIME (MIN) = 203 DISCHARGE (CFS) = 1.7
TIME (MIN) = 210 DISCHARGE (CFS) = 1.8
TIME (MIN) = 217 DISCHARGE (CFS) = 2.2

TIME (MIN) = 224 DISCHARGE (CFS) = 2.5
TIME (MIN) = 231 DISCHARGE (CFS) = 3.7
TIME (MIN) = 238 DISCHARGE (CFS) = 5.1
TIME (MIN) = 245 DISCHARGE (CFS) = 18.98
TIME (MIN) = 252 DISCHARGE (CFS) = 3
TIME (MIN) = 259 DISCHARGE (CFS) = 2
TIME (MIN) = 266 DISCHARGE (CFS) = 1.6
TIME (MIN) = 273 DISCHARGE (CFS) = 1.3
TIME (MIN) = 280 DISCHARGE (CFS) = 1.1
TIME (MIN) = 287 DISCHARGE (CFS) = 1
TIME (MIN) = 294 DISCHARGE (CFS) = 0.9
TIME (MIN) = 301 DISCHARGE (CFS) = 0.8
TIME (MIN) = 308 DISCHARGE (CFS) = 0.8
TIME (MIN) = 315 DISCHARGE (CFS) = 0.7
TIME (MIN) = 322 DISCHARGE (CFS) = 0.7
TIME (MIN) = 329 DISCHARGE (CFS) = 0.7
TIME (MIN) = 336 DISCHARGE (CFS) = 0.6
TIME (MIN) = 343 DISCHARGE (CFS) = 0.6
TIME (MIN) = 350 DISCHARGE (CFS) = 0.6
TIME (MIN) = 357 DISCHARGE (CFS) = 0.5
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* BASIN 3A AT NODE 337                                                   *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN3A.DAT
    TIME/DATE OF STUDY: 17:07 10/22/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.50*    3:         0.50*
    *    4:         0.60*    5:         0.60*    6:         0.60*
    *    7:         0.60*    8:         0.60*    9:         0.60*
    *   10:         0.60*   11:         0.60*   12:         0.70*
    *   13:         0.70*   14:         0.70*   15:         0.70*
    *   16:         0.80*   17:         0.80*   18:         0.80*
    *   19:         0.80*   20:         0.90*   21:         0.90*
    *   22:         1.00*   23:         1.00*   24:         1.10*
    *   25:         1.10*   26:         1.20*   27:         1.20*
    *   28:         1.40*   29:         1.50*   30:         1.70*
    *   31:         1.80*   32:         2.20*   33:         2.50*
    *   34:         3.70*   35:         5.10*   36:        18.98*
    *   37:         3.00*   38:         2.00*   39:         1.60*
    *   40:         1.30*   41:         1.10*   42:         1.00*
    *   43:         0.90*   44:         0.80*   45:         0.80*
    *   46:         0.70*   47:         0.70*   48:         0.70*
    *   49:         0.60*   50:         0.60*   51:         0.60*
    *   52:         0.50*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.161      0.100*
    *      2.000      0.341      1.627**      3.000      0.541     19.160*
**************************************************************************
--------------------------------------------------------------------------
```

INITIAL BASIN DEPTH(FEET) = 0.00
INITIAL BASIN STORAGE(ACRE-FEET) = 0.00
INITIAL BASIN OUTFLOW(CFS) = 0.00

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.16052	0.16148
3	0.33316	0.34884
4	0.44863	0.63337

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 5. 9. 14. 19.
0.12	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.23	0.50	0.00	0.005	O . . . .
[BASIN DEPTH(FEET) = 0.03]				
0.35	0.50	0.01	0.010	O . . . .
[BASIN DEPTH(FEET) = 0.06]				
0.47	0.60	0.01	0.015	OI . . . .
[BASIN DEPTH(FEET) = 0.10]				
0.58	0.60	0.01	0.021	OI . . . .
[BASIN DEPTH(FEET) = 0.13]				
0.70	0.60	0.02	0.027	OI . . . .
[BASIN DEPTH(FEET) = 0.17]				
0.82	0.60	0.02	0.032	OI . . . .
[BASIN DEPTH(FEET) = 0.20]				
0.93	0.60	0.02	0.038	OI . . . .
[BASIN DEPTH(FEET) = 0.23]				
1.05	0.60	0.03	0.043	OI . . . .
[BASIN DEPTH(FEET) = 0.27]				
1.17	0.60	0.03	0.049	OI . . . .
[BASIN DEPTH(FEET) = 0.30]				
1.28	0.60	0.03	0.054	OI . . . .
[BASIN DEPTH(FEET) = 0.34]				
1.40	0.70	0.04	0.061	OI . . . .
[BASIN DEPTH(FEET) = 0.38]				
1.52	0.70	0.04	0.067	OI . . . .
[BASIN DEPTH(FEET) = 0.42]				
1.63	0.70	0.05	0.073	OI . . . .
[BASIN DEPTH(FEET) = 0.46]				
1.75	0.70	0.05	0.080	OI . . . .
[BASIN DEPTH(FEET) = 0.50]				
1.87	0.80	0.05	0.087	OI . . . .
[BASIN DEPTH(FEET) = 0.54]				
1.98	0.80	0.06	0.094	OI . . . .
[BASIN DEPTH(FEET) = 0.58]				
2.10	0.80	0.06	0.101	OI . . . .

```
  [BASIN DEPTH(FEET) =    0.63]
2.22     0.80     0.07       0.108 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.67]
2.33     0.90     0.07       0.116 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.72]
2.45     0.90     0.08       0.124 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.77]
2.57     1.00     0.08       0.133 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.83]
2.68     1.00     0.09       0.142 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.88]
2.80     1.10     0.09       0.152 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.94]
2.92     1.10     0.10       0.161 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.00]
3.03     1.20     0.19       0.172 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.06]
3.15     1.20     0.27       0.181 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.11]
3.27     1.40     0.36       0.191 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.17]
3.38     1.50     0.45       0.202 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.23]
3.50     1.70     0.55       0.214 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.29]
3.62     1.80     0.64       0.225 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.36]
3.73     2.20     0.77       0.240 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.44]
3.85     2.50     0.90       0.256 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.53]
3.97     3.70     1.12       0.282 .O    I .       .       .       .
  [BASIN DEPTH(FEET) =    1.67]
4.08     5.10     1.44       0.318 . O     I       .       .       .
  [BASIN DEPTH(FEET) =    1.87]
4.20    18.98    10.60       0.443 .       .       .O      .       I
  [BASIN DEPTH(FEET) =    2.51]
4.32     3.00     6.08       0.392 .    I  . O     .       .       .
  [BASIN DEPTH(FEET) =    2.25]
4.43     2.00     3.66       0.364 .  I  O .       .       .       .
  [BASIN DEPTH(FEET) =    2.12]
4.55     1.60     2.44       0.350 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
4.67     1.30     1.76       0.343 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.01]
4.78     1.10     1.59       0.337 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.98]
4.90     1.00     1.55       0.331 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.95]
5.02     0.90     1.50       0.325 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
5.13     0.80     1.44       0.319 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.88]
5.25     0.80     1.39       0.313 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.85]
5.37     0.70     1.34       0.307 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.81]
5.48     0.70     1.29       0.301 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.78]
5.60     0.70     1.24       0.295 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.75]
5.72     0.60     1.19       0.289 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.71]
```

```
5.83     0.60     1.14       0.284 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    1.68]
5.95     0.60     1.10       0.279 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    1.66]
6.07     0.50     1.05       0.273 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.62]
6.18     0.00     0.97       0.264 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.57]
6.30     0.00     0.89       0.255 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.52]
6.42     0.00     0.82       0.246 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.47]
6.53     0.00     0.76       0.239 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.43]
6.65     0.00     0.70       0.232 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.39]
6.77     0.00     0.64       0.225 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.36]
6.88     0.00     0.59       0.219 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.32]
7.00     0.00     0.55       0.214 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.29]
7.12     0.00     0.50       0.209 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.26]
7.23     0.00     0.46       0.204 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.24]
7.35     0.00     0.43       0.200 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.21]
7.47     0.00     0.39       0.196 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.19]
7.58     0.00     0.36       0.192 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.17]
7.70     0.00     0.34       0.189 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.15]
7.82     0.00     0.31       0.186 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.14]
7.93     0.00     0.28       0.183 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.12]
8.05     0.00     0.26       0.180 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.11]
8.17     0.00     0.24       0.178 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.09]
8.28     0.00     0.22       0.175 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
8.40     0.00     0.21       0.173 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.07]
8.52     0.00     0.19       0.171 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.06]
8.63     0.00     0.17       0.170 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.05]
8.75     0.00     0.16       0.168 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.04]
8.87     0.00     0.15       0.167 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.03]
8.98     0.00     0.14       0.165 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
9.10     0.00     0.13       0.164 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
9.22     0.00     0.12       0.163 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.01]
9.33     0.00     0.11       0.162 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.00]
9.45     0.00     0.10       0.161 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    1.00]
 9.57     0.00     0.10       0.160 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
 9.68     0.00     0.10       0.159 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.99]
 9.80     0.00     0.10       0.158 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
 9.92     0.00     0.10       0.157 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
10.03     0.00     0.10       0.156 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.97]
10.15     0.00     0.10       0.155 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.96]
10.27     0.00     0.10       0.154 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.96]
10.38     0.00     0.10       0.153 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.95]
10.50     0.00     0.09       0.152 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.95]
10.62     0.00     0.09       0.151 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.94]
10.73     0.00     0.09       0.151 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.93]
10.85     0.00     0.09       0.150 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.93]
10.97     0.00     0.09       0.149 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.92]
11.08     0.00     0.09       0.148 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.92]
11.20     0.00     0.09       0.147 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.91]
11.32     0.00     0.09       0.146 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.91]
11.43     0.00     0.09       0.145 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.90]
11.55     0.00     0.09       0.144 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.90]
11.67     0.00     0.09       0.143 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.89]
```

DETENTION BASIN 3B
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 10.9 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 45.02 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 1.5
TIME (MIN) = 14 DISCHARGE (CFS) = 1.5
TIME (MIN) = 21 DISCHARGE (CFS) = 1.5
TIME (MIN) = 28 DISCHARGE (CFS) = 1.6
TIME (MIN) = 35 DISCHARGE (CFS) = 1.6
TIME (MIN) = 42 DISCHARGE (CFS) = 1.6
TIME (MIN) = 49 DISCHARGE (CFS) = 1.7
TIME (MIN) = 56 DISCHARGE (CFS) = 1.7
TIME (MIN) = 63 DISCHARGE (CFS) = 1.8
TIME (MIN) = 70 DISCHARGE (CFS) = 1.8
TIME (MIN) = 77 DISCHARGE (CFS) = 1.9
TIME (MIN) = 84 DISCHARGE (CFS) = 1.9
TIME (MIN) = 91 DISCHARGE (CFS) = 2
TIME (MIN) = 98 DISCHARGE (CFS) = 2
TIME (MIN) = 105 DISCHARGE (CFS) = 2.1
TIME (MIN) = 112 DISCHARGE (CFS) = 2.1
TIME (MIN) = 119 DISCHARGE (CFS) = 2.3
TIME (MIN) = 126 DISCHARGE (CFS) = 2.3
TIME (MIN) = 133 DISCHARGE (CFS) = 2.4
TIME (MIN) = 140 DISCHARGE (CFS) = 2.5
TIME (MIN) = 147 DISCHARGE (CFS) = 2.7
TIME (MIN) = 154 DISCHARGE (CFS) = 2.7
TIME (MIN) = 161 DISCHARGE (CFS) = 2.9
TIME (MIN) = 168 DISCHARGE (CFS) = 3.1
TIME (MIN) = 175 DISCHARGE (CFS) = 3.3
TIME (MIN) = 182 DISCHARGE (CFS) = 3.5
TIME (MIN) = 189 DISCHARGE (CFS) = 3.9
TIME (MIN) = 196 DISCHARGE (CFS) = 4.1
TIME (MIN) = 203 DISCHARGE (CFS) = 4.7
TIME (MIN) = 210 DISCHARGE (CFS) = 5.1
TIME (MIN) = 217 DISCHARGE (CFS) = 6.2

TIME (MIN) = 224 DISCHARGE (CFS) = 7.1
TIME (MIN) = 231 DISCHARGE (CFS) = 10.4
TIME (MIN) = 238 DISCHARGE (CFS) = 22.2
TIME (MIN) = 245 DISCHARGE (CFS) = 45.02
TIME (MIN) = 252 DISCHARGE (CFS) = 8.3
TIME (MIN) = 259 DISCHARGE (CFS) = 5.6
TIME (MIN) = 266 DISCHARGE (CFS) = 4.4
TIME (MIN) = 273 DISCHARGE (CFS) = 3.7
TIME (MIN) = 280 DISCHARGE (CFS) = 3.2
TIME (MIN) = 287 DISCHARGE (CFS) = 2.8
TIME (MIN) = 294 DISCHARGE (CFS) = 2.6
TIME (MIN) = 301 DISCHARGE (CFS) = 2.4
TIME (MIN) = 308 DISCHARGE (CFS) = 2.2
TIME (MIN) = 315 DISCHARGE (CFS) = 2.1
TIME (MIN) = 322 DISCHARGE (CFS) = 1.9
TIME (MIN) = 329 DISCHARGE (CFS) = 1.8
TIME (MIN) = 336 DISCHARGE (CFS) = 1.7
TIME (MIN) = 343 DISCHARGE (CFS) = 1.7
TIME (MIN) = 350 DISCHARGE (CFS) = 1.6
TIME (MIN) = 357 DISCHARGE (CFS) = 1.5
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 3B AT NODE 305.5                                       *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN3B.DAT
    TIME/DATE OF STUDY: 09:20 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         1.50*    3:         1.50*
    *    4:         1.50*    5:         1.60*    6:         1.60*
    *    7:         1.60*    8:         1.70*    9:         1.70*
    *   10:         1.80*   11:         1.80*   12:         1.90*
    *   13:         1.90*   14:         2.00*   15:         2.00*
    *   16:         2.10*   17:         2.10*   18:         2.30*
    *   19:         2.30*   20:         2.40*   21:         2.50*
    *   22:         2.70*   23:         2.70*   24:         2.90*
    *   25:         3.10*   26:         3.30*   27:         3.50*
    *   28:         3.90*   29:         4.10*   30:         4.70*
    *   31:         5.10*   32:         6.20*   33:         7.10*
    *   34:        10.40*   35:        22.20*   36:        45.02*
    *   37:         8.30*   38:         5.60*   39:         4.40*
    *   40:         3.70*   41:         3.20*   42:         2.80*
    *   43:         2.60*   44:         2.40*   45:         2.20*
    *   46:         2.10*   47:         1.90*   48:         1.80*
    *   49:         1.70*   50:         1.70*   51:         1.60*
    *   52:         1.50*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   7
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.180      0.220*
    *      2.000      0.383      0.744**      3.000      0.611      4.546*
    *      4.000      0.862     13.930**      5.000      1.140     18.140*
    *      6.000      1.430     21.520**
```

****

INITIAL BASIN DEPTH(FEET) = 0.00
INITIAL BASIN STORAGE(ACRE-FEET) = 0.00
INITIAL BASIN OUTFLOW(CFS) = 0.00

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.17894	0.18106
3	0.37941	0.38659
4	0.58908	0.63292
5	0.79484	0.92916
6	1.05255	1.22745
7	1.32625	1.53375

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 11. 23. 34. 45.
0.12	0.00	0.00	0.000	O . . . .
	[BASIN DEPTH(FEET) = 0.00]			
0.23	1.50	0.02	0.014	OI . . . .
	[BASIN DEPTH(FEET) = 0.08]			
0.35	1.50	0.03	0.029	OI . . . .
	[BASIN DEPTH(FEET) = 0.16]			
0.47	1.50	0.05	0.043	OI . . . .
	[BASIN DEPTH(FEET) = 0.24]			
0.58	1.60	0.07	0.057	OI . . . .
	[BASIN DEPTH(FEET) = 0.32]			
0.70	1.60	0.09	0.072	OI . . . .
	[BASIN DEPTH(FEET) = 0.40]			
0.82	1.60	0.11	0.087	OI . . . .
	[BASIN DEPTH(FEET) = 0.48]			
0.93	1.70	0.12	0.102	OI . . . .
	[BASIN DEPTH(FEET) = 0.57]			
1.05	1.70	0.14	0.117	OI . . . .
	[BASIN DEPTH(FEET) = 0.65]			
1.17	1.80	0.16	0.133	OI . . . .
	[BASIN DEPTH(FEET) = 0.74]			
1.28	1.80	0.18	0.149	OI . . . .
	[BASIN DEPTH(FEET) = 0.83]			
1.40	1.90	0.20	0.165	OI . . . .
	[BASIN DEPTH(FEET) = 0.92]			
1.52	1.90	0.22	0.181	OI . . . .
	[BASIN DEPTH(FEET) = 1.01]			
1.63	2.00	0.27	0.198	OI . . . .
	[BASIN DEPTH(FEET) = 1.09]			
1.75	2.00	0.31	0.215	OI . . . .
	[BASIN DEPTH(FEET) = 1.17]			

```
1.87     2.10     0.35       0.232 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.26]
1.98     2.10     0.40       0.248 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.34]
2.10     2.30     0.44       0.267 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.43]
2.22     2.30     0.49       0.284 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.51]
2.33     2.40     0.54       0.302 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.60]
2.45     2.50     0.58       0.321 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.70]
2.57     2.70     0.64       0.341 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.79]
2.68     2.70     0.69       0.361 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.89]
2.80     2.90     0.74       0.382 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
2.92     3.10     1.08       0.403 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.09]
3.03     3.30     1.41       0.423 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    2.18]
3.15     3.50     1.72       0.442 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    2.26]
3.27     3.90     2.05       0.461 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
3.38     4.10     2.35       0.479 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    2.42]
3.50     4.70     2.70       0.500 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.51]
3.62     5.10     3.06       0.522 . OI    .       .       .       .
  [BASIN DEPTH(FEET) =    2.61]
3.73     6.20     3.53       0.550 . O I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.73]
3.85     7.10     4.06       0.582 . O  I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.87]
3.97    10.40     5.48       0.636 .  O   I.       .       .       .
  [BASIN DEPTH(FEET) =    3.10]
4.08    22.20    10.59       0.773 .      O.      I.      .       .
  [BASIN DEPTH(FEET) =    3.64]
4.20    45.02    17.13       1.073 .       .   O   .       .       I
  [BASIN DEPTH(FEET) =    4.76]
4.32     8.30    15.93       0.994 .    I  .  O    .       .       .
  [BASIN DEPTH(FEET) =    4.47]
4.43     5.60    14.52       0.901 .  I    . O     .       .       .
  [BASIN DEPTH(FEET) =    4.14]
4.55     4.40    12.16       0.815 .  I    O       .       .       .
  [BASIN DEPTH(FEET) =    3.81]
4.67     3.70     9.58       0.746 . I   O .      .       .       .
  [BASIN DEPTH(FEET) =    3.54]
4.78     3.20     7.63       0.693 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.33]
4.90     2.80     6.16       0.654 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.17]
5.02     2.60     5.07       0.625 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.06]
5.13     2.40     4.40       0.602 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.96]
5.25     2.20     4.08       0.583 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.88]
5.37     2.10     3.78       0.565 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.80]
5.48     1.90     3.50       0.548 .IO     .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    2.73]
5.60     1.80     3.25       0.533 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.66]
5.72     1.70     3.02       0.519 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.60]
5.83     1.70     2.82       0.508 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.55]
5.95     1.60     2.64       0.497 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.50]
6.07     1.50     2.47       0.487 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.45]
6.18     0.00     2.10       0.464 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.36]
6.30     0.00     1.79       0.446 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
6.42     0.00     1.52       0.430 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
6.53     0.00     1.30       0.416 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.15]
6.65     0.00     1.10       0.405 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.09]
6.77     0.00     0.94       0.395 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
6.88     0.00     0.80       0.386 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.01]
7.00     0.00     0.73       0.379 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.98]
7.12     0.00     0.72       0.372 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.95]
7.23     0.00     0.70       0.365 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
7.35     0.00     0.68       0.359 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.88]
7.47     0.00     0.66       0.352 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.85]
7.58     0.00     0.65       0.346 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.82]
7.70     0.00     0.63       0.340 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.79]
7.82     0.00     0.62       0.334 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.76]
7.93     0.00     0.60       0.328 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.73]
8.05     0.00     0.59       0.322 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.70]
8.17     0.00     0.57       0.316 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.67]
8.28     0.00     0.56       0.311 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.64]
8.40     0.00     0.54       0.306 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.62]
8.52     0.00     0.53       0.300 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.59]
8.63     0.00     0.52       0.295 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.57]
8.75     0.00     0.50       0.290 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.54]
8.87     0.00     0.49       0.286 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.52]
8.98     0.00     0.48       0.281 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.50]
9.10     0.00     0.47       0.276 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.47]
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```
 9.22     0.00     0.46       0.272 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.45]
 9.33     0.00     0.45       0.268 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.43]
 9.45     0.00     0.43       0.263 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.41]
 9.57     0.00     0.42       0.259 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.39]
 9.68     0.00     0.41       0.255 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.37]
 9.80     0.00     0.40       0.251 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.35]
 9.92     0.00     0.39       0.247 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.33]
10.03     0.00     0.38       0.244 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.31]
10.15     0.00     0.37       0.240 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.30]
10.27     0.00     0.37       0.236 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.28]
10.38     0.00     0.36       0.233 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.26]
10.50     0.00     0.35       0.229 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.24]
10.62     0.00     0.34       0.226 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.23]
10.73     0.00     0.33       0.223 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.21]
10.85     0.00     0.32       0.220 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.20]
10.97     0.00     0.31       0.217 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.18]
11.08     0.00     0.31       0.214 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.17]
11.20     0.00     0.30       0.211 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.15]
11.32     0.00     0.29       0.208 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.14]
11.43     0.00     0.28       0.205 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.12]
11.55     0.00     0.28       0.202 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.11]
11.67     0.00     0.27       0.200 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.10]
```

BASIN 3C
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 6 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 7.4 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 40.41 CFS

62 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 6 DISCHARGE (CFS) = 1
TIME (MIN) = 12 DISCHARGE (CFS) = 1
TIME (MIN) = 18 DISCHARGE (CFS) = 1
TIME (MIN) = 24 DISCHARGE (CFS) = 1
TIME (MIN) = 30 DISCHARGE (CFS) = 1.1
TIME (MIN) = 36 DISCHARGE (CFS) = 1.1
TIME (MIN) = 42 DISCHARGE (CFS) = 1.1
TIME (MIN) = 48 DISCHARGE (CFS) = 1.1
TIME (MIN) = 54 DISCHARGE (CFS) = 1.2
TIME (MIN) = 60 DISCHARGE (CFS) = 1.2
TIME (MIN) = 66 DISCHARGE (CFS) = 1.2
TIME (MIN) = 72 DISCHARGE (CFS) = 1.2
TIME (MIN) = 78 DISCHARGE (CFS) = 1.3
TIME (MIN) = 84 DISCHARGE (CFS) = 1.3
TIME (MIN) = 90 DISCHARGE (CFS) = 1.3
TIME (MIN) = 96 DISCHARGE (CFS) = 1.3
TIME (MIN) = 102 DISCHARGE (CFS) = 1.4
TIME (MIN) = 108 DISCHARGE (CFS) = 1.4
TIME (MIN) = 114 DISCHARGE (CFS) = 1.5
TIME (MIN) = 120 DISCHARGE (CFS) = 1.5
TIME (MIN) = 126 DISCHARGE (CFS) = 1.6
TIME (MIN) = 132 DISCHARGE (CFS) = 1.6
TIME (MIN) = 138 DISCHARGE (CFS) = 1.7
TIME (MIN) = 144 DISCHARGE (CFS) = 1.7
TIME (MIN) = 150 DISCHARGE (CFS) = 1.8
TIME (MIN) = 156 DISCHARGE (CFS) = 1.9
TIME (MIN) = 162 DISCHARGE (CFS) = 2
TIME (MIN) = 168 DISCHARGE (CFS) = 2.1
TIME (MIN) = 174 DISCHARGE (CFS) = 2.2
TIME (MIN) = 180 DISCHARGE (CFS) = 2.3
TIME (MIN) = 186 DISCHARGE (CFS) = 2.5

TIME (MIN) = 192 DISCHARGE (CFS) = 2.6
TIME (MIN) = 198 DISCHARGE (CFS) = 2.9
TIME (MIN) = 204 DISCHARGE (CFS) = 3.1
TIME (MIN) = 210 DISCHARGE (CFS) = 3.5
TIME (MIN) = 216 DISCHARGE (CFS) = 3.8
TIME (MIN) = 222 DISCHARGE (CFS) = 4.7
TIME (MIN) = 228 DISCHARGE (CFS) = 5.3
TIME (MIN) = 234 DISCHARGE (CFS) = 7.8
TIME (MIN) = 240 DISCHARGE (CFS) = 10
TIME (MIN) = 246 DISCHARGE (CFS) = 40.41
TIME (MIN) = 252 DISCHARGE (CFS) = 6.3
TIME (MIN) = 258 DISCHARGE (CFS) = 4.2
TIME (MIN) = 264 DISCHARGE (CFS) = 3.3
TIME (MIN) = 270 DISCHARGE (CFS) = 2.7
TIME (MIN) = 276 DISCHARGE (CFS) = 2.4
TIME (MIN) = 282 DISCHARGE (CFS) = 2.1
TIME (MIN) = 288 DISCHARGE (CFS) = 1.9
TIME (MIN) = 294 DISCHARGE (CFS) = 1.8
TIME (MIN) = 300 DISCHARGE (CFS) = 1.6
TIME (MIN) = 306 DISCHARGE (CFS) = 1.5
TIME (MIN) = 312 DISCHARGE (CFS) = 1.5
TIME (MIN) = 318 DISCHARGE (CFS) = 1.4
TIME (MIN) = 324 DISCHARGE (CFS) = 1.3
TIME (MIN) = 330 DISCHARGE (CFS) = 1.2
TIME (MIN) = 336 DISCHARGE (CFS) = 1.2
TIME (MIN) = 342 DISCHARGE (CFS) = 1.1
TIME (MIN) = 348 DISCHARGE (CFS) = 1.1
TIME (MIN) = 354 DISCHARGE (CFS) = 1.1
TIME (MIN) = 360 DISCHARGE (CFS) = 1
TIME (MIN) = 366 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 3C AT NODE 382                                         *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN3C.DAT
    TIME/DATE OF STUDY: 15:05 10/24/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   62
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    6.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         1.00*    3:         1.00*
    *    4:         1.00*    5:         1.00*    6:         1.10*
    *    7:         1.10*    8:         1.10*    9:         1.10*
    *   10:         1.20*   11:         1.20*   12:         1.20*
    *   13:         1.20*   14:         1.30*   15:         1.30*
    *   16:         1.30*   17:         1.30*   18:         1.40*
    *   19:         1.40*   20:         1.50*   21:         1.50*
    *   22:         1.60*   23:         1.60*   24:         1.70*
    *   25:         1.70*   26:         1.80*   27:         1.90*
    *   28:         2.00*   29:         2.10*   30:         2.20*
    *   31:         2.30*   32:         2.50*   33:         2.60*
    *   34:         2.90*   35:         3.10*   36:         3.50*
    *   37:         3.80*   38:         4.70*   39:         5.30*
    *   40:         7.80*   41:        10.00*   42:        40.41*
    *   43:         6.30*   44:         4.20*   45:         3.30*
    *   46:         2.70*   47:         2.40*   48:         2.10*
    *   49:         1.90*   50:         1.80*   51:         1.60*
    *   52:         1.50*   53:         1.50*   54:         1.40*
    *   55:         1.30*   56:         1.20*   57:         1.20*
    *   58:         1.10*   59:         1.10*   60:         1.10*
    *   61:         1.00*   62:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.175      0.154*
```

```
    *      2.000      0.369      0.586**      3.000      0.583      3.952*
    *      4.000      0.817      5.671**      5.000      1.073     42.210*
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.17436     0.17564
          3      0.36658     0.37142
          4      0.56667     0.59933
          5      0.79357     0.84043
          6      0.89858     1.24742
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     10.     20.     30.     40.
       0.10     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.20     1.00     0.01       0.008 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.05]
       0.30     1.00     0.01       0.016 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.09]
       0.40     1.00     0.02       0.025 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.14]
       0.50     1.00     0.03       0.033 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       0.60     1.10     0.04       0.041 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.24]
       0.70     1.10     0.04       0.050 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.29]
       0.80     1.10     0.05       0.059 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.34]
       0.90     1.10     0.06       0.067 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.39]
       1.00     1.20     0.07       0.077 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.44]
       1.10     1.20     0.08       0.086 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.49]
       1.20     1.20     0.08       0.095 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.55]
       1.30     1.20     0.09       0.105 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.60]
       1.40     1.30     0.10       0.115 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.65]
       1.50     1.30     0.11       0.124 OI      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    0.71]
1.60     1.30     0.12       0.134 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.77]
1.70     1.30     0.13       0.144 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.82]
1.80     1.40     0.14       0.154 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.88]
1.90     1.40     0.15       0.165 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.94]
2.00     1.50     0.16       0.176 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.01]
2.10     1.50     0.18       0.187 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.06]
2.20     1.60     0.21       0.199 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.12]
2.30     1.60     0.23       0.210 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.18]
2.40     1.70     0.26       0.222 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.24]
2.50     1.70     0.29       0.234 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.30]
2.60     1.80     0.31       0.246 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.37]
2.70     1.90     0.34       0.259 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.43]
2.80     2.00     0.37       0.273 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.50]
2.90     2.10     0.40       0.287 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.58]
3.00     2.20     0.44       0.302 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.65]
3.10     2.30     0.47       0.317 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.73]
3.20     2.50     0.51       0.334 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.82]
3.30     2.60     0.55       0.351 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
3.40     2.90     0.60       0.370 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
3.50     3.10     0.91       0.389 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.10]
3.60     3.50     1.22       0.410 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
3.70     3.80     1.54       0.430 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
3.80     4.70     1.92       0.454 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.40]
3.90     5.30     2.34       0.480 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
4.00     7.80     3.00       0.523 . O   I .       .       .       .
  [BASIN DEPTH(FEET) =    2.72]
4.10    10.00     3.86       0.577 .  O   I.       .       .       .
  [BASIN DEPTH(FEET) =    2.97]
4.20    40.41    10.57       0.851 .       O       .       .      I.
  [BASIN DEPTH(FEET) =    4.13]
4.30     6.30     7.40       0.829 .   IO  .       .       .       .
  [BASIN DEPTH(FEET) =    4.05]
4.40     4.20     5.62       0.810 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    3.97]
4.50     3.30     5.48       0.791 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.89]
4.60     2.70     5.32       0.769 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.80]
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4.70     2.40     5.15       0.746 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.70]
4.80     2.10     4.97       0.721 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.59]
4.90     1.90     4.79       0.697 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.49]
5.00     1.80     4.61       0.673 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.38]
5.10     1.60     4.43       0.649 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.28]
5.20     1.50     4.26       0.625 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.18]
5.30     1.50     4.10       0.603 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.08]
5.40     1.40     3.92       0.581 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
5.50     1.30     3.60       0.561 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.90]
5.60     1.20     3.31       0.542 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
5.70     1.20     3.05       0.526 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.73]
5.80     1.10     2.81       0.511 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.66]
5.90     1.10     2.61       0.497 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    2.60]
6.00     1.10     2.42       0.486 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.55]
6.10     1.00     2.25       0.475 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.49]
6.20     0.00     1.97       0.457 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.41]
6.30     0.00     1.73       0.442 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
6.40     0.00     1.52       0.428 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
6.50     0.00     1.34       0.417 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.22]
6.60     0.00     1.17       0.406 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.17]
6.70     0.00     1.03       0.397 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.13]
6.80     0.00     0.90       0.389 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.09]
6.90     0.00     0.79       0.382 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.06]
7.00     0.00     0.70       0.376 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.03]
7.10     0.00     0.61       0.371 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.01]
7.20     0.00     0.58       0.366 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.98]
7.30     0.00     0.57       0.361 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.96]
7.40     0.00     0.56       0.356 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.93]
7.50     0.00     0.55       0.352 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
7.60     0.00     0.54       0.347 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.89]
7.70     0.00     0.53       0.343 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.87]
7.80     0.00     0.52       0.339 O       .       .       .       .
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   [BASIN DEPTH(FEET) =    1.84]
 7.90     0.00     0.51       0.334 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
 8.00     0.00     0.50       0.330 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
 8.10     0.00     0.49       0.326 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.78]
 8.20     0.00     0.48       0.322 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.76]
 8.30     0.00     0.47       0.318 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.74]
 8.40     0.00     0.46       0.314 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
 8.50     0.00     0.46       0.310 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.70]
 8.60     0.00     0.45       0.307 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.68]
 8.70     0.00     0.44       0.303 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.66]
 8.80     0.00     0.43       0.299 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.64]
 8.90     0.00     0.42       0.296 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.62]
 9.00     0.00     0.42       0.292 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.61]
 9.10     0.00     0.41       0.289 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.59]
 9.20     0.00     0.40       0.286 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.57]
 9.30     0.00     0.39       0.282 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.55]
 9.40     0.00     0.39       0.279 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.54]
 9.50     0.00     0.38       0.276 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.52]
 9.60     0.00     0.37       0.273 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.50]
 9.70     0.00     0.37       0.270 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.49]
 9.80     0.00     0.36       0.267 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.47]
 9.90     0.00     0.35       0.264 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.46]
10.00     0.00     0.35       0.261 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.44]
```

BASIN 3D
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 11.8 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 56.42 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 1.6
TIME (MIN) = 14 DISCHARGE (CFS) = 1.6
TIME (MIN) = 21 DISCHARGE (CFS) = 1.7
TIME (MIN) = 28 DISCHARGE (CFS) = 1.7
TIME (MIN) = 35 DISCHARGE (CFS) = 1.7
TIME (MIN) = 42 DISCHARGE (CFS) = 1.8
TIME (MIN) = 49 DISCHARGE (CFS) = 1.8
TIME (MIN) = 56 DISCHARGE (CFS) = 1.9
TIME (MIN) = 63 DISCHARGE (CFS) = 1.9
TIME (MIN) = 70 DISCHARGE (CFS) = 1.9
TIME (MIN) = 77 DISCHARGE (CFS) = 2
TIME (MIN) = 84 DISCHARGE (CFS) = 2.1
TIME (MIN) = 91 DISCHARGE (CFS) = 2.1
TIME (MIN) = 98 DISCHARGE (CFS) = 2.2
TIME (MIN) = 105 DISCHARGE (CFS) = 2.3
TIME (MIN) = 112 DISCHARGE (CFS) = 2.3
TIME (MIN) = 119 DISCHARGE (CFS) = 2.4
TIME (MIN) = 126 DISCHARGE (CFS) = 2.5
TIME (MIN) = 133 DISCHARGE (CFS) = 2.6
TIME (MIN) = 140 DISCHARGE (CFS) = 2.7
TIME (MIN) = 147 DISCHARGE (CFS) = 2.9
TIME (MIN) = 154 DISCHARGE (CFS) = 3
TIME (MIN) = 161 DISCHARGE (CFS) = 3.2
TIME (MIN) = 168 DISCHARGE (CFS) = 3.3
TIME (MIN) = 175 DISCHARGE (CFS) = 3.6
TIME (MIN) = 182 DISCHARGE (CFS) = 3.8
TIME (MIN) = 189 DISCHARGE (CFS) = 4.2
TIME (MIN) = 196 DISCHARGE (CFS) = 4.4
TIME (MIN) = 203 DISCHARGE (CFS) = 5.1
TIME (MIN) = 210 DISCHARGE (CFS) = 5.5
TIME (MIN) = 217 DISCHARGE (CFS) = 6.7

TIME (MIN) = 224 DISCHARGE (CFS) = 7.7
TIME (MIN) = 231 DISCHARGE (CFS) = 11.3
TIME (MIN) = 238 DISCHARGE (CFS) = 16.3
TIME (MIN) = 245 DISCHARGE (CFS) = 56.42
TIME (MIN) = 252 DISCHARGE (CFS) = 9
TIME (MIN) = 259 DISCHARGE (CFS) = 6
TIME (MIN) = 266 DISCHARGE (CFS) = 4.7
TIME (MIN) = 273 DISCHARGE (CFS) = 4
TIME (MIN) = 280 DISCHARGE (CFS) = 3.4
TIME (MIN) = 287 DISCHARGE (CFS) = 3.1
TIME (MIN) = 294 DISCHARGE (CFS) = 2.8
TIME (MIN) = 301 DISCHARGE (CFS) = 2.6
TIME (MIN) = 308 DISCHARGE (CFS) = 2.4
TIME (MIN) = 315 DISCHARGE (CFS) = 2.2
TIME (MIN) = 322 DISCHARGE (CFS) = 2.1
TIME (MIN) = 329 DISCHARGE (CFS) = 2
TIME (MIN) = 336 DISCHARGE (CFS) = 1.9
TIME (MIN) = 343 DISCHARGE (CFS) = 1.8
TIME (MIN) = 350 DISCHARGE (CFS) = 1.7
TIME (MIN) = 357 DISCHARGE (CFS) = 1.7
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 3D AT NODE 3005                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN3D.DAT
    TIME/DATE OF STUDY: 10:59 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         1.60*    3:         1.60*
    *    4:         1.70*    5:         1.70*    6:         1.70*
    *    7:         1.80*    8:         1.80*    9:         1.90*
    *   10:         1.90*   11:         1.90*   12:         2.00*
    *   13:         2.10*   14:         2.10*   15:         2.20*
    *   16:         2.30*   17:         2.30*   18:         2.40*
    *   19:         2.50*   20:         2.60*   21:         2.70*
    *   22:         2.90*   23:         3.00*   24:         3.20*
    *   25:         3.30*   26:         3.60*   27:         3.80*
    *   28:         4.20*   29:         4.40*   30:         5.10*
    *   31:         5.50*   32:         6.70*   33:         7.70*
    *   34:        11.30*   35:        16.30*   36:        56.42*
    *   37:         9.00*   38:         6.00*   39:         4.70*
    *   40:         4.00*   41:         3.40*   42:         3.10*
    *   43:         2.80*   44:         2.60*   45:         2.40*
    *   46:         2.20*   47:         2.10*   48:         2.00*
    *   49:         1.90*   50:         1.80*   51:         1.70*
    *   52:         1.70*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.522      0.154*
    *      2.000      1.078      0.225**      3.000      1.669      1.803*
    *      4.000      2.297     38.930**      5.000      2.964     57.980*
**************************************************************************
```

```
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.52126     0.52274
          3      1.07692     1.07908
          4      1.66031     1.67769
          5      2.10932     2.48468
          6      2.68448     3.24352
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------
```

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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     14.     28.     42.     56.
       0.12     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.23     1.60     0.00       0.015 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.03]
       0.35     1.60     0.01       0.031 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.06]
       0.47     1.70     0.01       0.047 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.09]
       0.58     1.70     0.02       0.063 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.12]
       0.70     1.70     0.02       0.079 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.82     1.80     0.03       0.097 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       0.93     1.80     0.03       0.114 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.22]
       1.05     1.90     0.04       0.132 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.25]
       1.17     1.90     0.04       0.150 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.29]
       1.28     1.90     0.05       0.167 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.32]
       1.40     2.00     0.05       0.186 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.36]
       1.52     2.10     0.06       0.206 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.39]
       1.63     2.10     0.07       0.225 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.43]
       1.75     2.20     0.07       0.246 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.47]
       1.87     2.30     0.08       0.267 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.51]
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1.98     2.30     0.09       0.289 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.55]
2.10     2.40     0.09       0.311 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.60]
2.22     2.50     0.10       0.334 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.64]
2.33     2.60     0.11       0.358 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.69]
2.45     2.70     0.11       0.383 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.73]
2.57     2.90     0.12       0.410 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.79]
2.68     3.00     0.13       0.438 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.84]
2.80     3.20     0.14       0.468 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.90]
2.92     3.30     0.15       0.498 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.95]
3.03     3.60     0.16       0.531 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
3.15     3.80     0.16       0.566 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
3.27     4.20     0.16       0.605 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.15]
3.38     4.40     0.17       0.646 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.22]
3.50     5.10     0.18       0.694 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.31]
3.62     5.50     0.18       0.745 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.40]
3.73     6.70     0.19       0.808 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.51]
3.85     7.70     0.20       0.880 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.64]
3.97    11.30     0.21       0.987 O     I .       .       .       .
  [BASIN DEPTH(FEET) =    1.84]
4.08    16.30     0.39       1.141 O       .I      .       .       .
  [BASIN DEPTH(FEET) =    2.11]
4.20    56.42     2.06       1.673 .O      .       .       .       I
  [BASIN DEPTH(FEET) =    3.01]
4.32     9.00     5.14       1.725 . O  I  .       .       .       .
  [BASIN DEPTH(FEET) =    3.09]
4.43     6.00     5.52       1.732 .  O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.10]
4.55     4.70     5.16       1.726 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.09]
4.67     4.00     4.64       1.717 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.08]
4.78     3.40     4.09       1.708 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.06]
4.90     3.10     3.65       1.700 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.05]
5.02     2.80     3.27       1.694 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.04]
5.13     2.60     2.98       1.689 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.03]
5.25     2.40     2.72       1.685 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
5.37     2.20     2.49       1.681 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
5.48     2.10     2.32       1.678 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.01]
5.60     2.00     2.18       1.675 .O      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    3.01]
5.72     1.90     2.05       1.673 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.01]
5.83     1.80     1.94       1.671 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.95     1.70     1.83       1.670 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
6.07     1.70     1.80       1.668 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
6.18     0.00     1.76       1.651 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.97]
6.30     0.00     1.71       1.635 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.94]
6.42     0.00     1.67       1.618 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.91]
6.53     0.00     1.63       1.602 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.89]
6.65     0.00     1.58       1.587 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.86]
6.77     0.00     1.54       1.572 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.84]
6.88     0.00     1.50       1.557 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
7.00     0.00     1.47       1.543 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.79]
7.12     0.00     1.43       1.529 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.76]
7.23     0.00     1.39       1.515 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.74]
7.35     0.00     1.36       1.502 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.72]
7.47     0.00     1.32       1.489 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.70]
7.58     0.00     1.29       1.476 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.67]
7.70     0.00     1.26       1.464 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.65]
7.82     0.00     1.22       1.452 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.63]
7.93     0.00     1.19       1.441 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.61]
8.05     0.00     1.16       1.429 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.59]
8.17     0.00     1.13       1.418 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.58]
8.28     0.00     1.10       1.407 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.56]
8.40     0.00     1.08       1.397 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
8.52     0.00     1.05       1.387 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
8.63     0.00     1.02       1.377 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.51]
8.75     0.00     1.00       1.367 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.49]
8.87     0.00     0.97       1.357 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.47]
8.98     0.00     0.95       1.348 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.46]
9.10     0.00     0.92       1.339 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.44]
9.22     0.00     0.90       1.330 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.43]
```

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 9.33     0.00     0.88       1.322 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.41]
 9.45     0.00     0.85       1.313 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.40]
 9.57     0.00     0.83       1.305 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.38]
 9.68     0.00     0.81       1.297 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.37]
 9.80     0.00     0.79       1.290 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.36]
 9.92     0.00     0.77       1.282 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.35]
10.03     0.00     0.75       1.275 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.33]
10.15     0.00     0.73       1.268 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.32]
10.27     0.00     0.71       1.261 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.31]
10.38     0.00     0.69       1.254 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.30]
10.50     0.00     0.68       1.247 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.29]
10.62     0.00     0.66       1.241 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.28]
10.73     0.00     0.64       1.235 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.27]
10.85     0.00     0.63       1.229 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.25]
10.97     0.00     0.61       1.223 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.24]
11.08     0.00     0.60       1.217 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.23]
11.20     0.00     0.58       1.211 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.23]
11.32     0.00     0.57       1.206 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.22]
11.43     0.00     0.55       1.200 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.21]
11.55     0.00     0.54       1.195 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.20]
11.67     0.00     0.52       1.190 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.19]
```

DETENTION BASIN 4A
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 8 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 6.2 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 30.14 CFS

47 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 8 DISCHARGE (CFS) = 0.8
TIME (MIN) = 16 DISCHARGE (CFS) = 0.9
TIME (MIN) = 24 DISCHARGE (CFS) = 0.9
TIME (MIN) = 32 DISCHARGE (CFS) = 0.9
TIME (MIN) = 40 DISCHARGE (CFS) = 0.9
TIME (MIN) = 48 DISCHARGE (CFS) = 0.9
TIME (MIN) = 56 DISCHARGE (CFS) = 1
TIME (MIN) = 64 DISCHARGE (CFS) = 1
TIME (MIN) = 72 DISCHARGE (CFS) = 1
TIME (MIN) = 80 DISCHARGE (CFS) = 1.1
TIME (MIN) = 88 DISCHARGE (CFS) = 1.1
TIME (MIN) = 96 DISCHARGE (CFS) = 1.1
TIME (MIN) = 104 DISCHARGE (CFS) = 1.2
TIME (MIN) = 112 DISCHARGE (CFS) = 1.2
TIME (MIN) = 120 DISCHARGE (CFS) = 1.3
TIME (MIN) = 128 DISCHARGE (CFS) = 1.3
TIME (MIN) = 136 DISCHARGE (CFS) = 1.4
TIME (MIN) = 144 DISCHARGE (CFS) = 1.4
TIME (MIN) = 152 DISCHARGE (CFS) = 1.5
TIME (MIN) = 160 DISCHARGE (CFS) = 1.6
TIME (MIN) = 168 DISCHARGE (CFS) = 1.7
TIME (MIN) = 176 DISCHARGE (CFS) = 1.8
TIME (MIN) = 184 DISCHARGE (CFS) = 2
TIME (MIN) = 192 DISCHARGE (CFS) = 2.1
TIME (MIN) = 200 DISCHARGE (CFS) = 2.4
TIME (MIN) = 208 DISCHARGE (CFS) = 2.7
TIME (MIN) = 216 DISCHARGE (CFS) = 3.2
TIME (MIN) = 224 DISCHARGE (CFS) = 3.7
TIME (MIN) = 232 DISCHARGE (CFS) = 5.4
TIME (MIN) = 240 DISCHARGE (CFS) = 4.9
TIME (MIN) = 248 DISCHARGE (CFS) = 30.14

TIME (MIN) = 256 DISCHARGE (CFS) = 4.4
TIME (MIN) = 264 DISCHARGE (CFS) = 2.9
TIME (MIN) = 272 DISCHARGE (CFS) = 2.3
TIME (MIN) = 280 DISCHARGE (CFS) = 1.9
TIME (MIN) = 288 DISCHARGE (CFS) = 1.7
TIME (MIN) = 296 DISCHARGE (CFS) = 1.5
TIME (MIN) = 304 DISCHARGE (CFS) = 1.3
TIME (MIN) = 312 DISCHARGE (CFS) = 1.2
TIME (MIN) = 320 DISCHARGE (CFS) = 1.1
TIME (MIN) = 328 DISCHARGE (CFS) = 1.1
TIME (MIN) = 336 DISCHARGE (CFS) = 1
TIME (MIN) = 344 DISCHARGE (CFS) = 1
TIME (MIN) = 352 DISCHARGE (CFS) = 0.9
TIME (MIN) = 360 DISCHARGE (CFS) = 0.9
TIME (MIN) = 368 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 4A AT NODE 416                                         *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN4A.DAT
    TIME/DATE OF STUDY: 11:41 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   47
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    8.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.80*    3:         0.90*
    *    4:         0.90*    5:         0.90*    6:         0.90*
    *    7:         0.90*    8:         1.00*    9:         1.00*
    *   10:         1.00*   11:         1.10*   12:         1.10*
    *   13:         1.10*   14:         1.20*   15:         1.20*
    *   16:         1.30*   17:         1.30*   18:         1.40*
    *   19:         1.40*   20:         1.50*   21:         1.60*
    *   22:         1.70*   23:         1.80*   24:         2.00*
    *   25:         2.10*   26:         2.40*   27:         2.70*
    *   28:         3.20*   29:         3.70*   30:         5.40*
    *   31:         4.90*   32:        30.14*   33:         4.40*
    *   34:         2.90*   35:         2.30*   36:         1.90*
    *   37:         1.70*   38:         1.50*   39:         1.30*
    *   40:         1.20*   41:         1.10*   42:         1.10*
    *   43:         1.00*   44:         1.00*   45:         0.90*
    *   46:         0.90*   47:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.149      0.100*
    *      2.000      0.316      0.278**      3.000      0.499      2.720*
    *      4.000      0.701      7.485**      5.000      0.922      9.818*
**************************************************************************
--------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
```

INITIAL BASIN STORAGE(ACRE-FEET) = 0.00
INITIAL BASIN OUTFLOW(CFS) = 0.00

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.14845	0.14955
3	0.31447	0.31753
4	0.48401	0.51399
5	0.65976	0.74224
6	0.86791	0.97609

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 8. 15. 23. 30.
0.13	0.00	0.00	0.000	O
[BASIN DEPTH(FEET) = 0.00]				
0.27	0.80	0.01	0.009	O
[BASIN DEPTH(FEET) = 0.06]				
0.40	0.90	0.01	0.019	O
[BASIN DEPTH(FEET) = 0.12]				
0.53	0.90	0.02	0.028	O
[BASIN DEPTH(FEET) = 0.19]				
0.67	0.90	0.03	0.038	O
[BASIN DEPTH(FEET) = 0.26]				
0.80	0.90	0.03	0.048	O
[BASIN DEPTH(FEET) = 0.32]				
0.93	0.90	0.04	0.057	O
[BASIN DEPTH(FEET) = 0.38]				
1.07	1.00	0.05	0.068	OI
[BASIN DEPTH(FEET) = 0.45]				
1.20	1.00	0.05	0.078	OI
[BASIN DEPTH(FEET) = 0.52]				
1.33	1.00	0.06	0.089	OI
[BASIN DEPTH(FEET) = 0.59]				
1.47	1.10	0.07	0.100	OI
[BASIN DEPTH(FEET) = 0.67]				
1.60	1.10	0.07	0.111	OI
[BASIN DEPTH(FEET) = 0.75]				
1.73	1.10	0.08	0.123	OI
[BASIN DEPTH(FEET) = 0.82]				
1.87	1.20	0.09	0.135	OI
[BASIN DEPTH(FEET) = 0.91]				
2.00	1.20	0.10	0.147	OI
[BASIN DEPTH(FEET) = 0.99]				
2.13	1.30	0.11	0.160	OI
[BASIN DEPTH(FEET) = 1.07]				
2.27	1.30	0.13	0.173	OI
[BASIN DEPTH(FEET) = 1.15]				

```
2.40     1.40     0.14       0.187 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.23]
2.53     1.40     0.16       0.201 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.31]
2.67     1.50     0.17       0.216 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.40]
2.80     1.60     0.19       0.231 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.49]
2.93     1.70     0.21       0.248 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.59]
3.07     1.80     0.22       0.265 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.70]
3.20     2.00     0.24       0.285 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.81]
3.33     2.10     0.27       0.305 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.94]
3.47     2.40     0.44       0.328 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.06]
3.60     2.70     0.75       0.351 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
3.73     3.20     1.08       0.376 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.33]
3.87     3.70     1.44       0.403 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.48]
4.00     5.40     1.98       0.444 . O  I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.70]
4.13     4.90     2.38       0.474 . O  I  .       .       .       .
  [BASIN DEPTH(FEET) =    2.86]
4.27    30.14     7.99       0.749 .       O       .       .       I
  [BASIN DEPTH(FEET) =    4.22]
4.40     4.40     7.59       0.711 .   I   O       .       .       .
  [BASIN DEPTH(FEET) =    4.05]
4.53     2.90     6.63       0.665 .  I   O.      .       .       .
  [BASIN DEPTH(FEET) =    3.82]
4.67     2.30     5.64       0.623 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.61]
4.80     1.90     4.78       0.586 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.43]
4.93     1.70     4.07       0.556 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.28]
5.07     1.50     3.48       0.531 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.16]
5.20     1.30     2.98       0.510 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.05]
5.33     1.20     2.63       0.492 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.96]
5.47     1.10     2.42       0.477 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.88]
5.60     1.10     2.24       0.463 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.80]
5.73     1.00     2.07       0.450 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.73]
5.87     1.00     1.92       0.439 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.67]
6.00     0.90     1.78       0.429 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.62]
6.13     0.90     1.66       0.420 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.57]
6.27     0.00     1.43       0.403 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.47]
6.40     0.00     1.24       0.388 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.39]
6.53     0.00     1.07       0.375 IO      .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    2.32]
 6.67     0.00     0.92       0.364 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.26]
 6.80     0.00     0.80       0.355 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.21]
 6.93     0.00     0.69       0.347 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.17]
 7.07     0.00     0.59       0.340 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.13]
 7.20     0.00     0.51       0.333 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.10]
 7.33     0.00     0.44       0.328 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.07]
 7.47     0.00     0.38       0.324 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.04]
 7.60     0.00     0.33       0.320 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.02]
 7.73     0.00     0.28       0.316 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
 7.87     0.00     0.28       0.313 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
 8.00     0.00     0.27       0.310 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
 8.13     0.00     0.27       0.307 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.95]
 8.27     0.00     0.27       0.304 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
 8.40     0.00     0.26       0.302 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
 8.53     0.00     0.26       0.299 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
 8.67     0.00     0.26       0.296 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
 8.80     0.00     0.25       0.293 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
 8.93     0.00     0.25       0.290 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.85]
 9.07     0.00     0.25       0.287 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
 9.20     0.00     0.24       0.285 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.81]
 9.33     0.00     0.24       0.282 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
 9.47     0.00     0.24       0.279 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.78]
 9.60     0.00     0.24       0.277 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.77]
 9.73     0.00     0.23       0.274 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.75]
 9.87     0.00     0.23       0.272 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.73]
10.00     0.00     0.23       0.269 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
10.13     0.00     0.23       0.267 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.70]
10.27     0.00     0.22       0.264 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.69]
10.40     0.00     0.22       0.262 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.67]
10.53     0.00     0.22       0.259 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.66]
10.67     0.00     0.22       0.257 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.65]
```

```
10.80     0.00     0.21       0.255 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.63]
10.93     0.00     0.21       0.252 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.62]
11.07     0.00     0.21       0.250 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.60]
11.20     0.00     0.21       0.248 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.59]
11.33     0.00     0.20       0.245 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.58]
11.47     0.00     0.20       0.243 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.56]
11.60     0.00     0.20       0.241 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.55]
11.73     0.00     0.20       0.239 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.54]
11.87     0.00     0.19       0.237 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.53]
12.00     0.00     0.19       0.235 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.51]
12.13     0.00     0.19       0.232 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.50]
12.27     0.00     0.19       0.230 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.49]
12.40     0.00     0.18       0.228 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.48]
12.53     0.00     0.18       0.226 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.46]
12.67     0.00     0.18       0.224 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.45]
12.80     0.00     0.18       0.222 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.44]
12.93     0.00     0.18       0.220 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.43]
13.07     0.00     0.17       0.218 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.42]
13.20     0.00     0.17       0.217 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.40]
13.33     0.00     0.17       0.215 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.39]
```

BASIN 4B
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 8 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 2.9 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 13.18 CFS

47 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 8 DISCHARGE (CFS) = 0.4
TIME (MIN) = 16 DISCHARGE (CFS) = 0.4
TIME (MIN) = 24 DISCHARGE (CFS) = 0.4
TIME (MIN) = 32 DISCHARGE (CFS) = 0.4
TIME (MIN) = 40 DISCHARGE (CFS) = 0.4
TIME (MIN) = 48 DISCHARGE (CFS) = 0.4
TIME (MIN) = 56 DISCHARGE (CFS) = 0.5
TIME (MIN) = 64 DISCHARGE (CFS) = 0.5
TIME (MIN) = 72 DISCHARGE (CFS) = 0.5
TIME (MIN) = 80 DISCHARGE (CFS) = 0.5
TIME (MIN) = 88 DISCHARGE (CFS) = 0.5
TIME (MIN) = 96 DISCHARGE (CFS) = 0.5
TIME (MIN) = 104 DISCHARGE (CFS) = 0.5
TIME (MIN) = 112 DISCHARGE (CFS) = 0.6
TIME (MIN) = 120 DISCHARGE (CFS) = 0.6
TIME (MIN) = 128 DISCHARGE (CFS) = 0.6
TIME (MIN) = 136 DISCHARGE (CFS) = 0.6
TIME (MIN) = 144 DISCHARGE (CFS) = 0.7
TIME (MIN) = 152 DISCHARGE (CFS) = 0.7
TIME (MIN) = 160 DISCHARGE (CFS) = 0.7
TIME (MIN) = 168 DISCHARGE (CFS) = 0.8
TIME (MIN) = 176 DISCHARGE (CFS) = 0.8
TIME (MIN) = 184 DISCHARGE (CFS) = 0.9
TIME (MIN) = 192 DISCHARGE (CFS) = 1
TIME (MIN) = 200 DISCHARGE (CFS) = 1.1
TIME (MIN) = 208 DISCHARGE (CFS) = 1.2
TIME (MIN) = 216 DISCHARGE (CFS) = 1.5
TIME (MIN) = 224 DISCHARGE (CFS) = 1.7
TIME (MIN) = 232 DISCHARGE (CFS) = 2.5
TIME (MIN) = 240 DISCHARGE (CFS) = 3.2
TIME (MIN) = 248 DISCHARGE (CFS) = 13.18

TIME (MIN) = 256 DISCHARGE (CFS) = 2
TIME (MIN) = 264 DISCHARGE (CFS) = 1.4
TIME (MIN) = 272 DISCHARGE (CFS) = 1.1
TIME (MIN) = 280 DISCHARGE (CFS) = 0.9
TIME (MIN) = 288 DISCHARGE (CFS) = 0.8
TIME (MIN) = 296 DISCHARGE (CFS) = 0.7
TIME (MIN) = 304 DISCHARGE (CFS) = 0.6
TIME (MIN) = 312 DISCHARGE (CFS) = 0.6
TIME (MIN) = 320 DISCHARGE (CFS) = 0.5
TIME (MIN) = 328 DISCHARGE (CFS) = 0.5
TIME (MIN) = 336 DISCHARGE (CFS) = 0.5
TIME (MIN) = 344 DISCHARGE (CFS) = 0.4
TIME (MIN) = 352 DISCHARGE (CFS) = 0.4
TIME (MIN) = 360 DISCHARGE (CFS) = 0.4
TIME (MIN) = 368 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 4B AT NODE 431                                         *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN4B.DAT
    TIME/DATE OF STUDY: 13:45 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   47
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    8.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.40*    3:         0.40*
    *    4:         0.40*    5:         0.40*    6:         0.40*
    *    7:         0.40*    8:         0.50*    9:         0.50*
    *   10:         0.50*   11:         0.50*   12:         0.50*
    *   13:         0.50*   14:         0.50*   15:         0.60*
    *   16:         0.60*   17:         0.60*   18:         0.60*
    *   19:         0.70*   20:         0.70*   21:         0.70*
    *   22:         0.80*   23:         0.80*   24:         0.90*
    *   25:         1.00*   26:         1.10*   27:         1.20*
    *   28:         1.50*   29:         1.70*   30:         2.50*
    *   31:         3.20*   32:        13.18*   33:         2.00*
    *   34:         1.40*   35:         1.10*   36:         0.90*
    *   37:         0.80*   38:         0.70*   39:         0.60*
    *   40:         0.60*   41:         0.50*   42:         0.50*
    *   43:         0.50*   44:         0.40*   45:         0.40*
    *   46:         0.40*   47:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.197      0.387*
    *      2.000      0.414      3.745**      3.000      0.651      5.181*
**************************************************************************
--------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
```

INITIAL BASIN OUTFLOW(CFS) = 0.00

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.19487	0.19913
3	0.39337	0.43463
4	0.62245	0.67955

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 3. 7. 10. 13.
0.13	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.27	0.40	0.01	0.004	O . . . .
[BASIN DEPTH(FEET) = 0.02]				
0.40	0.40	0.02	0.009	O . . . .
[BASIN DEPTH(FEET) = 0.04]				
0.53	0.40	0.03	0.013	O . . . .
[BASIN DEPTH(FEET) = 0.06]				
0.67	0.40	0.03	0.017	O . . . .
[BASIN DEPTH(FEET) = 0.09]				
0.80	0.40	0.04	0.021	O . . . .
[BASIN DEPTH(FEET) = 0.11]				
0.93	0.40	0.05	0.025	O . . . .
[BASIN DEPTH(FEET) = 0.13]				
1.07	0.50	0.06	0.030	OI . . . .
[BASIN DEPTH(FEET) = 0.15]				
1.20	0.50	0.07	0.035	OI . . . .
[BASIN DEPTH(FEET) = 0.18]				
1.33	0.50	0.08	0.039	OI . . . .
[BASIN DEPTH(FEET) = 0.20]				
1.47	0.50	0.09	0.044	OI . . . .
[BASIN DEPTH(FEET) = 0.22]				
1.60	0.50	0.10	0.048	OI . . . .
[BASIN DEPTH(FEET) = 0.25]				
1.73	0.50	0.10	0.053	OI . . . .
[BASIN DEPTH(FEET) = 0.27]				
1.87	0.50	0.11	0.057	OI . . . .
[BASIN DEPTH(FEET) = 0.29]				
2.00	0.60	0.12	0.062	OI . . . .
[BASIN DEPTH(FEET) = 0.32]				
2.13	0.60	0.13	0.068	OI . . . .
[BASIN DEPTH(FEET) = 0.34]				
2.27	0.60	0.14	0.073	OI . . . .
[BASIN DEPTH(FEET) = 0.37]				
2.40	0.60	0.15	0.078	OI . . . .
[BASIN DEPTH(FEET) = 0.39]				
2.53	0.70	0.16	0.084	OI . . . .

```
  [BASIN DEPTH(FEET) =    0.42]
2.67     0.70     0.18       0.090 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.45]
2.80     0.70     0.19       0.095 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.48]
2.93     0.80     0.20       0.102 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.52]
3.07     0.80     0.21       0.108 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.55]
3.20     0.90     0.23       0.116 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.59]
3.33     1.00     0.24       0.124 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.63]
3.47     1.10     0.26       0.134 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.68]
3.60     1.20     0.28       0.144 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.73]
3.73     1.50     0.31       0.157 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    0.80]
3.87     1.70     0.34       0.172 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    0.87]
4.00     2.50     0.38       0.196 O     I .       .       .       .
  [BASIN DEPTH(FEET) =    0.99]
4.13     3.20     0.81       0.225 .O     I.       .       .       .
  [BASIN DEPTH(FEET) =    1.13]
4.27    13.18     2.76       0.350 .     O .       .       .       I
  [BASIN DEPTH(FEET) =    1.71]
4.40     2.00     2.64       0.342 .   I O .       .       .       .
  [BASIN DEPTH(FEET) =    1.67]
4.53     1.40     2.44       0.330 .  I O  .       .       .       .
  [BASIN DEPTH(FEET) =    1.61]
4.67     1.10     2.23       0.316 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    1.55]
4.80     0.90     2.02       0.303 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    1.49]
4.93     0.80     1.83       0.290 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    1.43]
5.07     0.70     1.65       0.279 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    1.38]
5.20     0.60     1.49       0.268 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.33]
5.33     0.60     1.35       0.259 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    1.29]
5.47     0.50     1.21       0.250 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.25]
5.60     0.50     1.10       0.243 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.21]
5.73     0.50     1.01       0.237 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    1.18]
5.87     0.40     0.91       0.231 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.16]
6.00     0.40     0.83       0.226 I O     .       .       .       .
  [BASIN DEPTH(FEET) =    1.13]
6.13     0.40     0.76       0.221 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.11]
6.27     0.00     0.64       0.214 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
6.40     0.00     0.54       0.207 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.05]
6.53     0.00     0.46       0.202 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
6.67     0.00     0.39       0.197 O       .       .       .       .
  [BASIN DEPTH(FEET) =    1.00]
```

```
 6.80     0.00     0.38       0.193 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.98]
 6.93     0.00     0.37       0.189 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.96]
 7.07     0.00     0.36       0.185 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.94]
 7.20     0.00     0.35       0.181 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.92]
 7.33     0.00     0.35       0.177 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.90]
 7.47     0.00     0.34       0.173 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.88]
 7.60     0.00     0.33       0.169 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.86]
 7.73     0.00     0.33       0.166 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.84]
 7.87     0.00     0.32       0.162 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.82]
 8.00     0.00     0.31       0.159 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.80]
 8.13     0.00     0.30       0.155 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.79]
 8.27     0.00     0.30       0.152 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.77]
 8.40     0.00     0.29       0.149 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.75]
 8.53     0.00     0.29       0.145 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.74]
 8.67     0.00     0.28       0.142 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.72]
 8.80     0.00     0.27       0.139 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.71]
 8.93     0.00     0.27       0.136 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.69]
 9.07     0.00     0.26       0.133 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.68]
 9.20     0.00     0.26       0.131 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.66]
 9.33     0.00     0.25       0.128 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.65]
 9.47     0.00     0.25       0.125 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.63]
 9.60     0.00     0.24       0.122 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.62]
 9.73     0.00     0.24       0.120 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.61]
 9.87     0.00     0.23       0.117 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.59]
10.00     0.00     0.23       0.115 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.58]
10.13     0.00     0.22       0.112 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.57]
10.27     0.00     0.22       0.110 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.56]
10.40     0.00     0.21       0.107 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.55]
10.53     0.00     0.21       0.105 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.53]
10.67     0.00     0.20       0.103 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.52]
10.80     0.00     0.20       0.101 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.51]
10.93     0.00     0.19       0.098 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    0.50]
11.07     0.00     0.19       0.096 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.49]
11.20     0.00     0.19       0.094 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.48]
11.33     0.00     0.18       0.092 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.47]
11.47     0.00     0.18       0.090 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.46]
11.60     0.00     0.17       0.088 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.45]
11.73     0.00     0.17       0.086 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.44]
11.87     0.00     0.17       0.085 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.43]
12.00     0.00     0.16       0.083 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.42]
12.13     0.00     0.16       0.081 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.41]
12.27     0.00     0.16       0.079 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.40]
12.40     0.00     0.15       0.078 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.39]
12.53     0.00     0.15       0.076 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.39]
12.67     0.00     0.15       0.074 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.38]
12.80     0.00     0.14       0.073 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.37]
12.93     0.00     0.14       0.071 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.36]
13.07     0.00     0.14       0.070 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.35]
13.20     0.00     0.13       0.068 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.35]
13.33     0.00     0.13       0.067 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.34]
```

DETENTION BASIN 5A
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 10.2 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 42.5 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 1.4
TIME (MIN) = 14 DISCHARGE (CFS) = 1.4
TIME (MIN) = 21 DISCHARGE (CFS) = 1.4
TIME (MIN) = 28 DISCHARGE (CFS) = 1.5
TIME (MIN) = 35 DISCHARGE (CFS) = 1.5
TIME (MIN) = 42 DISCHARGE (CFS) = 1.5
TIME (MIN) = 49 DISCHARGE (CFS) = 1.6
TIME (MIN) = 56 DISCHARGE (CFS) = 1.6
TIME (MIN) = 63 DISCHARGE (CFS) = 1.7
TIME (MIN) = 70 DISCHARGE (CFS) = 1.7
TIME (MIN) = 77 DISCHARGE (CFS) = 1.7
TIME (MIN) = 84 DISCHARGE (CFS) = 1.8
TIME (MIN) = 91 DISCHARGE (CFS) = 1.8
TIME (MIN) = 98 DISCHARGE (CFS) = 1.9
TIME (MIN) = 105 DISCHARGE (CFS) = 2
TIME (MIN) = 112 DISCHARGE (CFS) = 2
TIME (MIN) = 119 DISCHARGE (CFS) = 2.1
TIME (MIN) = 126 DISCHARGE (CFS) = 2.2
TIME (MIN) = 133 DISCHARGE (CFS) = 2.3
TIME (MIN) = 140 DISCHARGE (CFS) = 2.3
TIME (MIN) = 147 DISCHARGE (CFS) = 2.5
TIME (MIN) = 154 DISCHARGE (CFS) = 2.6
TIME (MIN) = 161 DISCHARGE (CFS) = 2.8
TIME (MIN) = 168 DISCHARGE (CFS) = 2.9
TIME (MIN) = 175 DISCHARGE (CFS) = 3.1
TIME (MIN) = 182 DISCHARGE (CFS) = 3.3
TIME (MIN) = 189 DISCHARGE (CFS) = 3.6
TIME (MIN) = 196 DISCHARGE (CFS) = 3.8
TIME (MIN) = 203 DISCHARGE (CFS) = 4.4
TIME (MIN) = 210 DISCHARGE (CFS) = 4.8
TIME (MIN) = 217 DISCHARGE (CFS) = 5.8

TIME (MIN) = 224 DISCHARGE (CFS) = 6.6
TIME (MIN) = 231 DISCHARGE (CFS) = 9.7
TIME (MIN) = 238 DISCHARGE (CFS) = 20.4
TIME (MIN) = 245 DISCHARGE (CFS) = 42.5
TIME (MIN) = 252 DISCHARGE (CFS) = 7.8
TIME (MIN) = 259 DISCHARGE (CFS) = 5.2
TIME (MIN) = 266 DISCHARGE (CFS) = 4.1
TIME (MIN) = 273 DISCHARGE (CFS) = 3.4
TIME (MIN) = 280 DISCHARGE (CFS) = 3
TIME (MIN) = 287 DISCHARGE (CFS) = 2.7
TIME (MIN) = 294 DISCHARGE (CFS) = 2.4
TIME (MIN) = 301 DISCHARGE (CFS) = 2.2
TIME (MIN) = 308 DISCHARGE (CFS) = 2.1
TIME (MIN) = 315 DISCHARGE (CFS) = 1.9
TIME (MIN) = 322 DISCHARGE (CFS) = 1.8
TIME (MIN) = 329 DISCHARGE (CFS) = 1.7
TIME (MIN) = 336 DISCHARGE (CFS) = 1.6
TIME (MIN) = 343 DISCHARGE (CFS) = 1.6
TIME (MIN) = 350 DISCHARGE (CFS) = 1.5
TIME (MIN) = 357 DISCHARGE (CFS) = 1.4
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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                          Analysis prepared by:

                            Fuscoe Engineering
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                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 5A AT NODE 2100                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN5A.DAT
    TIME/DATE OF STUDY: 14:40 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         1.40*    3:         1.40*
    *    4:         1.40*    5:         1.50*    6:         1.50*
    *    7:         1.50*    8:         1.60*    9:         1.60*
    *   10:         1.70*   11:         1.70*   12:         1.70*
    *   13:         1.80*   14:         1.80*   15:         1.90*
    *   16:         2.00*   17:         2.00*   18:         2.10*
    *   19:         2.20*   20:         2.30*   21:         2.30*
    *   22:         2.50*   23:         2.60*   24:         2.80*
    *   25:         2.90*   26:         3.10*   27:         3.30*
    *   28:         3.60*   29:         3.80*   30:         4.40*
    *   31:         4.80*   32:         5.80*   33:         6.60*
    *   34:         9.70*   35:        20.40*   36:        42.50*
    *   37:         7.80*   38:         5.20*   39:         4.10*
    *   40:         3.40*   41:         3.00*   42:         2.70*
    *   43:         2.40*   44:         2.20*   45:         2.10*
    *   46:         1.90*   47:         1.80*   48:         1.70*
    *   49:         1.60*   50:         1.60*   51:         1.50*
    *   52:         1.40*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.427      0.100*
    *      2.000      0.891      0.432**      3.000      1.392      2.435*
    *      4.000      1.933     37.680**      5.000      2.513     43.650*
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-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.42652     0.42748
          3      0.88892     0.89308
          4      1.38026     1.40374
          5      1.75135     2.11465
          6      2.30257     2.72343
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     11.     21.     32.     42.
       0.12     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.23     1.40     0.00       0.013 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.03]
       0.35     1.40     0.01       0.027 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.06]
       0.47     1.40     0.01       0.040 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.09]
       0.58     1.50     0.01       0.055 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.13]
       0.70     1.50     0.02       0.069 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.82     1.50     0.02       0.083 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.20]
       0.93     1.60     0.02       0.099 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.23]
       1.05     1.60     0.03       0.114 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.27]
       1.17     1.70     0.03       0.130 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.30]
       1.28     1.70     0.03       0.146 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.34]
       1.40     1.70     0.04       0.162 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.38]
       1.52     1.80     0.04       0.179 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.42]
       1.63     1.80     0.05       0.196 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.46]
       1.75     1.90     0.05       0.214 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.50]
       1.87     2.00     0.05       0.233 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.54]
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1.98     2.00     0.06       0.251 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.59]
2.10     2.10     0.06       0.271 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.63]
2.22     2.20     0.07       0.291 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.68]
2.33     2.30     0.07       0.313 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.73]
2.45     2.30     0.08       0.334 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.78]
2.57     2.50     0.08       0.358 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.84]
2.68     2.60     0.09       0.382 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.89]
2.80     2.80     0.10       0.408 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.96]
2.92     2.90     0.11       0.435 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
3.03     3.10     0.13       0.464 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
3.15     3.30     0.15       0.494 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.15]
3.27     3.60     0.17       0.528 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.22]
3.38     3.80     0.20       0.562 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.29]
3.50     4.40     0.23       0.603 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.38]
3.62     4.80     0.26       0.647 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.47]
3.73     5.80     0.30       0.700 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.59]
3.85     6.60     0.34       0.761 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.72]
3.97     9.70     0.40       0.851 O      I.       .       .       .
  [BASIN DEPTH(FEET) =    1.91]
4.08    20.40     1.03       1.040 O       .      I.       .       .
  [BASIN DEPTH(FEET) =    2.30]
4.20    42.50     4.49       1.423 .  O    .       .       .       I
  [BASIN DEPTH(FEET) =    3.06]
4.32     7.80     6.07       1.448 .   OI  .       .       .       .
  [BASIN DEPTH(FEET) =    3.10]
4.43     5.20     5.65       1.441 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    3.09]
4.55     4.10     4.91       1.430 .  O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.07]
4.67     3.40     4.19       1.419 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    3.05]
4.78     3.00     3.62       1.410 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.03]
4.90     2.70     3.18       1.403 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
5.02     2.40     2.81       1.398 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.01]
5.13     2.20     2.52       1.393 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.25     2.10     2.43       1.390 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.37     1.90     2.41       1.385 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
5.48     1.80     2.38       1.379 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.97]
5.60     1.70     2.36       1.373 .O      .       .       .       .
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  [BASIN DEPTH(FEET) =    2.96]
5.72     1.60     2.33       1.365 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.95]
5.83     1.60     2.30       1.358 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.93]
5.95     1.50     2.27       1.351 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.92]
6.07     1.40     2.24       1.343 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.90]
6.18     0.00     2.15       1.321 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.86]
6.30     0.00     2.07       1.301 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.82]
6.42     0.00     1.99       1.282 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.78]
6.53     0.00     1.92       1.263 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.74]
6.65     0.00     1.85       1.245 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.71]
6.77     0.00     1.78       1.227 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.67]
6.88     0.00     1.71       1.210 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.64]
7.00     0.00     1.64       1.194 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.61]
7.12     0.00     1.58       1.179 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.57]
7.23     0.00     1.52       1.164 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
7.35     0.00     1.46       1.149 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.52]
7.47     0.00     1.41       1.135 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.49]
7.58     0.00     1.36       1.122 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.46]
7.70     0.00     1.30       1.109 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.44]
7.82     0.00     1.26       1.097 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.41]
7.93     0.00     1.21       1.085 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.39]
8.05     0.00     1.16       1.074 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.36]
8.17     0.00     1.12       1.063 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
8.28     0.00     1.08       1.052 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.32]
8.40     0.00     1.03       1.042 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.30]
8.52     0.00     1.00       1.032 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.28]
8.63     0.00     0.96       1.023 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.26]
8.75     0.00     0.92       1.014 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
8.87     0.00     0.89       1.005 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.23]
8.98     0.00     0.85       0.996 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
9.10     0.00     0.82       0.988 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
9.22     0.00     0.79       0.981 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.18]
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 9.33     0.00     0.76       0.973 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.16]
 9.45     0.00     0.73       0.966 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.15]
 9.57     0.00     0.70       0.959 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.14]
 9.68     0.00     0.68       0.952 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.12]
 9.80     0.00     0.65       0.946 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.11]
 9.92     0.00     0.63       0.940 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.10]
10.03     0.00     0.60       0.934 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.09]
10.15     0.00     0.58       0.928 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.07]
10.27     0.00     0.56       0.923 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.06]
10.38     0.00     0.54       0.917 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.05]
10.50     0.00     0.52       0.912 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.04]
10.62     0.00     0.50       0.907 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
10.73     0.00     0.48       0.903 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.02]
10.85     0.00     0.46       0.898 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.01]
10.97     0.00     0.44       0.894 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.01]
11.08     0.00     0.43       0.890 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
11.20     0.00     0.43       0.885 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
11.32     0.00     0.43       0.881 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
11.43     0.00     0.42       0.877 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
11.55     0.00     0.42       0.873 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
11.67     0.00     0.42       0.869 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.95]
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BASIN 5B
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 5.3 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 24.49 CFS

53 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 7 DISCHARGE (CFS) = 0.7
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TIME (MIN) = 91 DISCHARGE (CFS) = 1
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TIME (MIN) = 133 DISCHARGE (CFS) = 1.2
TIME (MIN) = 140 DISCHARGE (CFS) = 1.2
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TIME (MIN) = 287 DISCHARGE (CFS) = 1.4
TIME (MIN) = 294 DISCHARGE (CFS) = 1.3
TIME (MIN) = 301 DISCHARGE (CFS) = 1.2
TIME (MIN) = 308 DISCHARGE (CFS) = 1.1
TIME (MIN) = 315 DISCHARGE (CFS) = 1
TIME (MIN) = 322 DISCHARGE (CFS) = 0.9
TIME (MIN) = 329 DISCHARGE (CFS) = 0.9
TIME (MIN) = 336 DISCHARGE (CFS) = 0.8
TIME (MIN) = 343 DISCHARGE (CFS) = 0.8
TIME (MIN) = 350 DISCHARGE (CFS) = 0.8
TIME (MIN) = 357 DISCHARGE (CFS) = 0.7
TIME (MIN) = 364 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 5B AT NODE 2117                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN5B.DAT
    TIME/DATE OF STUDY: 15:13 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   53
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    7.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.70*    3:         0.70*
    *    4:         0.80*    5:         0.80*    6:         0.80*
    *    7:         0.80*    8:         0.80*    9:         0.80*
    *   10:         0.90*   11:         0.90*   12:         0.90*
    *   13:         0.90*   14:         1.00*   15:         1.00*
    *   16:         1.00*   17:         1.00*   18:         1.10*
    *   19:         1.10*   20:         1.20*   21:         1.20*
    *   22:         1.30*   23:         1.30*   24:         1.40*
    *   25:         1.50*   26:         1.60*   27:         1.70*
    *   28:         1.90*   29:         2.00*   30:         2.30*
    *   31:         2.50*   32:         3.00*   33:         3.40*
    *   34:         5.10*   35:         8.20*   36:        24.49*
    *   37:         4.10*   38:         2.70*   39:         2.10*
    *   40:         1.80*   41:         1.50*   42:         1.40*
    *   43:         1.30*   44:         1.20*   45:         1.10*
    *   46:         1.00*   47:         0.90*   48:         0.90*
    *   49:         0.80*   50:         0.80*   51:         0.80*
    *   52:         0.70*   53:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.133      0.100*
    *      2.000      0.290      0.145**      3.000      0.472      1.661*
    *      4.000      0.678      8.296**      5.000      0.911     11.280*
**************************************************************************
```

```
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.13252     0.13348
          3      0.28930     0.29070
          4      0.46399     0.48001
          5      0.63801     0.71799
          6      0.85662     0.96538
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-------------------------------------------------------------------------------



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

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-------------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.      6.     12.     18.     24.
       0.12     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.23     0.70     0.01       0.007 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.05]
       0.35     0.70     0.01       0.013 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.10]
       0.47     0.80     0.02       0.021 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.58     0.80     0.02       0.029 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.21]
       0.70     0.80     0.03       0.036 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.27]
       0.82     0.80     0.03       0.043 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.33]
       0.93     0.80     0.04       0.051 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.38]
       1.05     0.80     0.04       0.058 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.44]
       1.17     0.90     0.05       0.066 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.50]
       1.28     0.90     0.06       0.075 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.56]
       1.40     0.90     0.06       0.083 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.62]
       1.52     0.90     0.07       0.091 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.68]
       1.63     1.00     0.07       0.100 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.75]
       1.75     1.00     0.08       0.109 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.82]
       1.87     1.00     0.09       0.117 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.88]
```

```
1.98     1.00     0.09       0.126 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.95]
2.10     1.10     0.10       0.136 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.02]
2.22     1.10     0.10       0.145 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.08]
2.33     1.20     0.11       0.156 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.15]
2.45     1.20     0.11       0.166 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.21]
2.57     1.30     0.11       0.178 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.29]
2.68     1.30     0.12       0.189 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.36]
2.80     1.40     0.12       0.202 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.44]
2.92     1.50     0.12       0.215 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    1.52]
3.03     1.60     0.13       0.229 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.61]
3.15     1.70     0.13       0.244 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.71]
3.27     1.90     0.14       0.261 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.82]
3.38     2.00     0.14       0.279 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.93]
3.50     2.30     0.23       0.300 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
3.62     2.50     0.40       0.321 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.17]
3.73     3.00     0.60       0.345 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.30]
3.85     3.40     0.82       0.371 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.44]
3.97     5.10     1.15       0.411 .O    I .       .       .       .
  [BASIN DEPTH(FEET) =    2.66]
4.08     8.20     1.77       0.475 . O     . I     .       .       .
  [BASIN DEPTH(FEET) =    3.02]
4.20    24.49     7.88       0.665 .       . O     .       .       I
  [BASIN DEPTH(FEET) =    3.94]
4.32     4.10     6.86       0.634 .    I  O       .       .       .
  [BASIN DEPTH(FEET) =    3.78]
4.43     2.70     5.74       0.599 .  I   O.       .       .       .
  [BASIN DEPTH(FEET) =    3.62]
4.55     2.10     4.76       0.568 . I   O .       .       .       .
  [BASIN DEPTH(FEET) =    3.47]
4.67     1.80     3.97       0.544 . I  O  .       .       .       .
  [BASIN DEPTH(FEET) =    3.35]
4.78     1.50     3.30       0.523 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =    3.25]
4.90     1.40     2.79       0.507 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.17]
5.02     1.30     2.39       0.495 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =    3.11]
5.13     1.20     2.07       0.485 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.06]
5.25     1.10     1.81       0.477 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
5.37     1.00     1.64       0.470 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
5.48     0.90     1.58       0.463 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.95]
5.60     0.90     1.53       0.456 .IO     .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    2.91]
5.72     0.80     1.47       0.450 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.88]
5.83     0.80     1.42       0.443 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.84]
5.95     0.80     1.37       0.438 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
6.07     0.70     1.32       0.431 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.78]
6.18     0.00     1.22       0.419 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.71]
6.30     0.00     1.13       0.408 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.65]
6.42     0.00     1.04       0.397 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.59]
6.53     0.00     0.96       0.388 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
6.65     0.00     0.88       0.379 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.49]
6.77     0.00     0.82       0.371 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.44]
6.88     0.00     0.75       0.363 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.40]
7.00     0.00     0.70       0.356 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.36]
7.12     0.00     0.64       0.350 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.33]
7.23     0.00     0.59       0.344 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.29]
7.35     0.00     0.55       0.338 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.26]
7.47     0.00     0.50       0.333 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
7.58     0.00     0.47       0.328 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.21]
7.70     0.00     0.43       0.324 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.19]
7.82     0.00     0.40       0.320 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.17]
7.93     0.00     0.37       0.316 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.15]
8.05     0.00     0.34       0.313 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.13]
8.17     0.00     0.31       0.310 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.11]
8.28     0.00     0.29       0.307 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.09]
8.40     0.00     0.27       0.304 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.08]
8.52     0.00     0.24       0.302 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
8.63     0.00     0.23       0.300 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
8.75     0.00     0.21       0.298 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.04]
8.87     0.00     0.19       0.296 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.03]
8.98     0.00     0.18       0.294 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
9.10     0.00     0.16       0.292 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.01]
9.22     0.00     0.15       0.291 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
```

```
 9.33     0.00     0.14       0.289 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
 9.45     0.00     0.14       0.288 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
 9.57     0.00     0.14       0.287 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
 9.68     0.00     0.14       0.285 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
 9.80     0.00     0.14       0.284 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
 9.92     0.00     0.14       0.282 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.95]
10.03     0.00     0.14       0.281 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
10.15     0.00     0.14       0.280 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
10.27     0.00     0.14       0.278 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
10.38     0.00     0.14       0.277 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.92]
10.50     0.00     0.14       0.276 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
10.62     0.00     0.14       0.274 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
10.73     0.00     0.14       0.273 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.89]
10.85     0.00     0.14       0.271 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
10.97     0.00     0.14       0.270 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.87]
11.08     0.00     0.14       0.269 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
11.20     0.00     0.14       0.267 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
11.32     0.00     0.14       0.266 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.85]
11.43     0.00     0.14       0.265 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.84]
11.55     0.00     0.14       0.263 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
11.67     0.00     0.14       0.262 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
```

BASIN 5C
PROPOSED HYDROLOGY

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 8 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 4.5 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 20.6 CFS

47 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 8 DISCHARGE (CFS) = 0.6
TIME (MIN) = 16 DISCHARGE (CFS) = 0.6
TIME (MIN) = 24 DISCHARGE (CFS) = 0.6
TIME (MIN) = 32 DISCHARGE (CFS) = 0.6
TIME (MIN) = 40 DISCHARGE (CFS) = 0.7
TIME (MIN) = 48 DISCHARGE (CFS) = 0.7
TIME (MIN) = 56 DISCHARGE (CFS) = 0.7
TIME (MIN) = 64 DISCHARGE (CFS) = 0.7
TIME (MIN) = 72 DISCHARGE (CFS) = 0.7
TIME (MIN) = 80 DISCHARGE (CFS) = 0.8
TIME (MIN) = 88 DISCHARGE (CFS) = 0.8
TIME (MIN) = 96 DISCHARGE (CFS) = 0.8
TIME (MIN) = 104 DISCHARGE (CFS) = 0.9
TIME (MIN) = 112 DISCHARGE (CFS) = 0.9
TIME (MIN) = 120 DISCHARGE (CFS) = 0.9
TIME (MIN) = 128 DISCHARGE (CFS) = 0.9
TIME (MIN) = 136 DISCHARGE (CFS) = 1
TIME (MIN) = 144 DISCHARGE (CFS) = 1
TIME (MIN) = 152 DISCHARGE (CFS) = 1.1
TIME (MIN) = 160 DISCHARGE (CFS) = 1.2
TIME (MIN) = 168 DISCHARGE (CFS) = 1.3
TIME (MIN) = 176 DISCHARGE (CFS) = 1.3
TIME (MIN) = 184 DISCHARGE (CFS) = 1.5
TIME (MIN) = 192 DISCHARGE (CFS) = 1.6
TIME (MIN) = 200 DISCHARGE (CFS) = 1.8
TIME (MIN) = 208 DISCHARGE (CFS) = 1.9
TIME (MIN) = 216 DISCHARGE (CFS) = 2.4
TIME (MIN) = 224 DISCHARGE (CFS) = 2.7
TIME (MIN) = 232 DISCHARGE (CFS) = 3.9
TIME (MIN) = 240 DISCHARGE (CFS) = 4.8
TIME (MIN) = 248 DISCHARGE (CFS) = 20.6

TIME (MIN) = 256 DISCHARGE (CFS) = 3.2
TIME (MIN) = 264 DISCHARGE (CFS) = 2.1
TIME (MIN) = 272 DISCHARGE (CFS) = 1.7
TIME (MIN) = 280 DISCHARGE (CFS) = 1.4
TIME (MIN) = 288 DISCHARGE (CFS) = 1.2
TIME (MIN) = 296 DISCHARGE (CFS) = 1.1
TIME (MIN) = 304 DISCHARGE (CFS) = 1
TIME (MIN) = 312 DISCHARGE (CFS) = 0.9
TIME (MIN) = 320 DISCHARGE (CFS) = 0.8
TIME (MIN) = 328 DISCHARGE (CFS) = 0.8
TIME (MIN) = 336 DISCHARGE (CFS) = 0.7
TIME (MIN) = 344 DISCHARGE (CFS) = 0.7
TIME (MIN) = 352 DISCHARGE (CFS) = 0.7
TIME (MIN) = 360 DISCHARGE (CFS) = 0.6
TIME (MIN) = 368 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 5C AT NODE 2083                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN5C.DAT
    TIME/DATE OF STUDY: 16:00 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   47
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    8.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.60*    3:         0.60*
    *    4:         0.60*    5:         0.60*    6:         0.70*
    *    7:         0.70*    8:         0.70*    9:         0.70*
    *   10:         0.70*   11:         0.80*   12:         0.80*
    *   13:         0.80*   14:         0.90*   15:         0.90*
    *   16:         0.90*   17:         0.90*   18:         1.00*
    *   19:         1.00*   20:         1.10*   21:         1.20*
    *   22:         1.30*   23:         1.30*   24:         1.50*
    *   25:         1.60*   26:         1.80*   27:         1.90*
    *   28:         2.40*   29:         2.70*   30:         3.90*
    *   31:         4.80*   32:        20.60*   33:         3.20*
    *   34:         2.10*   35:         1.70*   36:         1.40*
    *   37:         1.20*   38:         1.10*   39:         1.00*
    *   40:         0.90*   41:         0.80*   42:         0.80*
    *   43:         0.70*   44:         0.70*   45:         0.70*
    *   46:         0.60*   47:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   7
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.228      0.057*
    *      2.000      0.476      0.396**      3.000      0.746     15.310*
    *      4.000      1.039     37.110**      5.000      1.356     41.600*
    *      6.000      1.684     45.340**
**************************************************************************
--------------------------------------------------------------------------
```

INITIAL BASIN DEPTH(FEET) = 0.00
INITIAL BASIN STORAGE(ACRE-FEET) = 0.00
INITIAL BASIN OUTFLOW(CFS) = 0.00

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.22769	0.22831
3	0.47382	0.47818
4	0.66165	0.83035
5	0.83454	1.24346
6	1.12680	1.58520
7	1.43419	1.93381

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 5. 10. 15. 21.
0.13	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.27	0.60	0.00	0.007	O . . . .
[BASIN DEPTH(FEET) = 0.03]				
0.40	0.60	0.00	0.013	O . . . .
[BASIN DEPTH(FEET) = 0.06]				
0.53	0.60	0.00	0.020	O . . . .
[BASIN DEPTH(FEET) = 0.09]				
0.67	0.60	0.01	0.026	O . . . .
[BASIN DEPTH(FEET) = 0.12]				
0.80	0.70	0.01	0.034	OI . . . .
[BASIN DEPTH(FEET) = 0.15]				
0.93	0.70	0.01	0.042	OI . . . .
[BASIN DEPTH(FEET) = 0.18]				
1.07	0.70	0.01	0.049	OI . . . .
[BASIN DEPTH(FEET) = 0.22]				
1.20	0.70	0.01	0.057	OI . . . .
[BASIN DEPTH(FEET) = 0.25]				
1.33	0.70	0.02	0.064	OI . . . .
[BASIN DEPTH(FEET) = 0.28]				
1.47	0.80	0.02	0.073	OI . . . .
[BASIN DEPTH(FEET) = 0.32]				
1.60	0.80	0.02	0.081	OI . . . .
[BASIN DEPTH(FEET) = 0.36]				
1.73	0.80	0.02	0.090	OI . . . .
[BASIN DEPTH(FEET) = 0.39]				
1.87	0.90	0.02	0.100	OI . . . .
[BASIN DEPTH(FEET) = 0.44]				
2.00	0.90	0.03	0.109	OI . . . .
[BASIN DEPTH(FEET) = 0.48]				
2.13	0.90	0.03	0.119	OI . . . .
[BASIN DEPTH(FEET) = 0.52]				

```
2.27     0.90     0.03       0.129 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.56]
2.40     1.00     0.03       0.139 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.61]
2.53     1.00     0.04       0.150 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.66]
2.67     1.10     0.04       0.161 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.71]
2.80     1.20     0.04       0.174 OI      .       .       .       .
  [BASIN DEPTH(FEET) =    0.76]
2.93     1.30     0.05       0.188 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.82]
3.07     1.30     0.05       0.202 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.89]
3.20     1.50     0.05       0.218 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    0.96]
3.33     1.60     0.07       0.235 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.03]
3.47     1.80     0.09       0.254 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.10]
3.60     1.90     0.12       0.274 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.18]
3.73     2.40     0.15       0.298 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    1.28]
3.87     2.70     0.19       0.326 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    1.40]
4.00     3.90     0.25       0.367 O     I .       .       .       .
  [BASIN DEPTH(FEET) =    1.56]
4.13     4.80     0.31       0.417 O      I.       .       .       .
  [BASIN DEPTH(FEET) =    1.76]
4.27    20.60     7.33       0.602 .       .  O    .       .       I
  [BASIN DEPTH(FEET) =    2.46]
4.40     3.20     5.40       0.567 .   I   O       .       .       .
  [BASIN DEPTH(FEET) =    2.34]
4.53     2.10     3.86       0.539 .  I O  .       .       .       .
  [BASIN DEPTH(FEET) =    2.23]
4.67     1.70     2.85       0.520 . I O   .       .       .       .
  [BASIN DEPTH(FEET) =    2.16]
4.80     1.40     2.17       0.508 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    2.12]
4.93     1.20     1.72       0.500 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.09]
5.07     1.10     1.43       0.495 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =    2.07]
5.20     1.00     1.23       0.491 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.06]
5.33     0.90     1.08       0.488 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.05]
5.47     0.80     0.95       0.486 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.04]
5.60     0.80     0.88       0.485 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.03]
5.73     0.70     0.80       0.483 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.03]
5.87     0.70     0.75       0.482 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
6.00     0.70     0.73       0.482 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
6.13     0.60     0.67       0.481 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.02]
6.27     0.00     0.39       0.475 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.00]
6.40     0.00     0.39       0.471 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    1.98]
 6.53     0.00     0.38       0.466 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
 6.67     0.00     0.38       0.462 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
 6.80     0.00     0.37       0.458 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
 6.93     0.00     0.37       0.454 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
 7.07     0.00     0.36       0.450 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
 7.20     0.00     0.36       0.446 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
 7.33     0.00     0.35       0.442 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
 7.47     0.00     0.34       0.438 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.85]
 7.60     0.00     0.34       0.435 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
 7.73     0.00     0.33       0.431 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
 7.87     0.00     0.33       0.427 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
 8.00     0.00     0.32       0.424 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.79]
 8.13     0.00     0.32       0.420 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.77]
 8.27     0.00     0.31       0.417 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.76]
 8.40     0.00     0.31       0.413 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.75]
 8.53     0.00     0.31       0.410 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.73]
 8.67     0.00     0.30       0.406 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.72]
 8.80     0.00     0.30       0.403 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.71]
 8.93     0.00     0.29       0.400 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.69]
 9.07     0.00     0.29       0.397 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.68]
 9.20     0.00     0.28       0.394 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.67]
 9.33     0.00     0.28       0.391 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.66]
 9.47     0.00     0.27       0.387 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.64]
 9.60     0.00     0.27       0.384 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.63]
 9.73     0.00     0.27       0.381 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.62]
 9.87     0.00     0.26       0.379 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.61]
10.00     0.00     0.26       0.376 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.60]
10.13     0.00     0.26       0.373 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.58]
10.27     0.00     0.25       0.370 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.57]
10.40     0.00     0.25       0.367 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.56]
10.53     0.00     0.24       0.365 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.55]
```

```
10.67     0.00     0.24       0.362 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.54]
10.80     0.00     0.24       0.359 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.53]
10.93     0.00     0.23       0.357 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.52]
11.07     0.00     0.23       0.354 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.51]
11.20     0.00     0.23       0.352 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.50]
11.33     0.00     0.22       0.349 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.49]
11.47     0.00     0.22       0.347 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.48]
11.60     0.00     0.22       0.344 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.47]
11.73     0.00     0.21       0.342 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.46]
11.87     0.00     0.21       0.340 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.45]
12.00     0.00     0.21       0.337 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.44]
12.13     0.00     0.20       0.335 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.43]
12.27     0.00     0.20       0.333 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.42]
12.40     0.00     0.20       0.331 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.41]
12.53     0.00     0.19       0.329 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.41]
12.67     0.00     0.19       0.326 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.40]
12.80     0.00     0.19       0.324 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.39]
12.93     0.00     0.19       0.322 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.38]
13.07     0.00     0.18       0.320 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.37]
13.20     0.00     0.18       0.318 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.36]
13.33     0.00     0.18       0.316 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.36]
```

PROPOSED HYDROLOGY
BASIN 5D

RATIONAL METHOD HYDROGRAPH PROGRAM

RUN DATE 10/23/2014

TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.2 INCHES
BASIN AREA 4.6 ACRES
RUNOFF COEFFICIENT 0.71
PEAK DISCHARGE 18.63 CFS

42 INTERVALS
TIME (MIN) = 0 DISCHARGE (CFS) = 0
TIME (MIN) = 9 DISCHARGE (CFS) = 0.6
TIME (MIN) = 18 DISCHARGE (CFS) = 0.6
TIME (MIN) = 27 DISCHARGE (CFS) = 0.6
TIME (MIN) = 36 DISCHARGE (CFS) = 0.7
TIME (MIN) = 45 DISCHARGE (CFS) = 0.7
TIME (MIN) = 54 DISCHARGE (CFS) = 0.7
TIME (MIN) = 63 DISCHARGE (CFS) = 0.7
TIME (MIN) = 72 DISCHARGE (CFS) = 0.8
TIME (MIN) = 81 DISCHARGE (CFS) = 0.8
TIME (MIN) = 90 DISCHARGE (CFS) = 0.8
TIME (MIN) = 99 DISCHARGE (CFS) = 0.8
TIME (MIN) = 108 DISCHARGE (CFS) = 0.9
TIME (MIN) = 117 DISCHARGE (CFS) = 0.9
TIME (MIN) = 126 DISCHARGE (CFS) = 1
TIME (MIN) = 135 DISCHARGE (CFS) = 1
TIME (MIN) = 144 DISCHARGE (CFS) = 1.1
TIME (MIN) = 153 DISCHARGE (CFS) = 1.1
TIME (MIN) = 162 DISCHARGE (CFS) = 1.2
TIME (MIN) = 171 DISCHARGE (CFS) = 1.2
TIME (MIN) = 180 DISCHARGE (CFS) = 1.4
TIME (MIN) = 189 DISCHARGE (CFS) = 1.5
TIME (MIN) = 198 DISCHARGE (CFS) = 1.7
TIME (MIN) = 207 DISCHARGE (CFS) = 1.8
TIME (MIN) = 216 DISCHARGE (CFS) = 2.2
TIME (MIN) = 225 DISCHARGE (CFS) = 2.5
TIME (MIN) = 234 DISCHARGE (CFS) = 3.7
TIME (MIN) = 243 DISCHARGE (CFS) = 5.5
TIME (MIN) = 252 DISCHARGE (CFS) = 18.63
TIME (MIN) = 261 DISCHARGE (CFS) = 3
TIME (MIN) = 270 DISCHARGE (CFS) = 2
TIME (MIN) = 279 DISCHARGE (CFS) = 1.6

TIME (MIN) = 288 DISCHARGE (CFS) = 1.3
TIME (MIN) = 297 DISCHARGE (CFS) = 1.1
TIME (MIN) = 306 DISCHARGE (CFS) = 1
TIME (MIN) = 315 DISCHARGE (CFS) = 0.9
TIME (MIN) = 324 DISCHARGE (CFS) = 0.9
TIME (MIN) = 333 DISCHARGE (CFS) = 0.8
TIME (MIN) = 342 DISCHARGE (CFS) = 0.7
TIME (MIN) = 351 DISCHARGE (CFS) = 0.7
TIME (MIN) = 360 DISCHARGE (CFS) = 0.7
TIME (MIN) = 369 DISCHARGE (CFS) = 0

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

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
**************************************************************************
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering
                            6390 Greenwich Dr.
                                Suite 170
                           San Diego, CA 92122

 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED HYDROLOGY                                                     *
* DETENTION BASIN 5D AT NODE 2135                                        *
* OCTOBER 2014                                                           *
 ************************************************************************

    FILE NAME: BASIN5D.DAT
    TIME/DATE OF STUDY: 17:03 10/23/2014
==========================================================================
    ENTERED INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   42
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    9.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
--------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:         0.00*    2:         0.60*    3:         0.60*
    *    4:         0.60*    5:         0.70*    6:         0.70*
    *    7:         0.70*    8:         0.70*    9:         0.80*
    *   10:         0.80*   11:         0.80*   12:         0.80*
    *   13:         0.90*   14:         0.90*   15:         1.00*
    *   16:         1.00*   17:         1.10*   18:         1.10*
    *   19:         1.20*   20:         1.20*   21:         1.40*
    *   22:         1.50*   23:         1.70*   24:         1.80*
    *   25:         2.20*   26:         2.50*   27:         3.70*
    *   28:         5.50*   29:        18.63*   30:         3.00*
    *   31:         2.00*   32:         1.60*   33:         1.30*
    *   34:         1.10*   35:         1.00*   36:         0.90*
    *   37:         0.90*   38:         0.80*   39:         0.70*
    *   40:         0.70*   41:         0.70*   42:         0.00*
==========================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
--------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
--------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      1.000      0.120      0.057*
    *      2.000      0.255      0.082**      3.000      0.406      0.920*
    *      4.000      0.574     21.910**
**************************************************************************
--------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
```

BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:

INTERVAL NUMBER	{S-O*DT/2} (ACRE-FEET)	{S+O*DT/2} (ACRE-FEET)
1	0.00000	0.00000
2	0.11965	0.12035
3	0.25449	0.25551
4	0.40030	0.41170
5	0.43819	0.70981

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

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

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

TIME (HOURS)	INFLOW (CFS)	OUTFLOW (CFS)	STORAGE (ACRE-FT)	0. 5. 9. 14. 19.
0.15	0.00	0.00	0.000	O . . . .
[BASIN DEPTH(FEET) = 0.00]				
0.30	0.60	0.00	0.007	OI . . . .
[BASIN DEPTH(FEET) = 0.06]				
0.45	0.60	0.01	0.015	OI . . . .
[BASIN DEPTH(FEET) = 0.12]				
0.60	0.60	0.01	0.022	OI . . . .
[BASIN DEPTH(FEET) = 0.18]				
0.75	0.70	0.01	0.031	OI . . . .
[BASIN DEPTH(FEET) = 0.26]				
0.90	0.70	0.02	0.039	OI . . . .
[BASIN DEPTH(FEET) = 0.33]				
1.05	0.70	0.02	0.048	OI . . . .
[BASIN DEPTH(FEET) = 0.40]				
1.20	0.70	0.03	0.056	OI . . . .
[BASIN DEPTH(FEET) = 0.47]				
1.35	0.80	0.03	0.065	OI . . . .
[BASIN DEPTH(FEET) = 0.55]				
1.50	0.80	0.04	0.075	OI . . . .
[BASIN DEPTH(FEET) = 0.62]				
1.65	0.80	0.04	0.084	OI . . . .
[BASIN DEPTH(FEET) = 0.70]				
1.80	0.80	0.04	0.094	OI . . . .
[BASIN DEPTH(FEET) = 0.78]				
1.95	0.90	0.05	0.104	OI . . . .
[BASIN DEPTH(FEET) = 0.87]				
2.10	0.90	0.05	0.115	OI . . . .
[BASIN DEPTH(FEET) = 0.96]				
2.25	1.00	0.06	0.127	OI . . . .
[BASIN DEPTH(FEET) = 1.05]				
2.40	1.00	0.06	0.138	OI . . . .
[BASIN DEPTH(FEET) = 1.14]				
2.55	1.10	0.06	0.151	OI . . . .
[BASIN DEPTH(FEET) = 1.23]				
2.70	1.10	0.07	0.164	OI . . . .
[BASIN DEPTH(FEET) = 1.33]				
2.85	1.20	0.07	0.178	O I . . . .

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  [BASIN DEPTH(FEET) =    1.43]
3.00     1.20     0.07       0.192 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.53]
3.15     1.40     0.07       0.209 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.66]
3.30     1.50     0.08       0.226 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.79]
3.45     1.70     0.08       0.246 O I     .       .       .       .
  [BASIN DEPTH(FEET) =    1.94]
3.60     1.80     0.15       0.267 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.08]
3.75     2.20     0.29       0.292 O  I    .       .       .       .
  [BASIN DEPTH(FEET) =    2.24]
3.90     2.50     0.43       0.318 O   I   .       .       .       .
  [BASIN DEPTH(FEET) =    2.42]
4.05     3.70     0.65       0.357 .O    I .       .       .       .
  [BASIN DEPTH(FEET) =    2.68]
4.20     5.50     1.62       0.412 . O     .I      .       .       .
  [BASIN DEPTH(FEET) =    3.03]
4.35    18.63    16.47       0.530 .       .       .       .   O  I.
  [BASIN DEPTH(FEET) =    3.74]
4.50     3.00     4.71       0.436 .    I  O       .       .       .
  [BASIN DEPTH(FEET) =    3.18]
4.65     2.00     2.34       0.417 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    3.07]
4.80     1.60     1.69       0.412 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.04]
4.95     1.30     1.35       0.409 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    3.02]
5.10     1.10     1.13       0.408 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.01]
5.25     1.00     1.02       0.407 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.40     0.90     0.92       0.406 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.55     0.90     0.92       0.406 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    3.00]
5.70     0.80     0.91       0.404 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.99]
5.85     0.70     0.90       0.402 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.97]
6.00     0.70     0.88       0.399 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.96]
6.15     0.70     0.87       0.397 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    2.94]
6.30     0.00     0.81       0.387 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.87]
6.45     0.00     0.76       0.377 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.81]
6.60     0.00     0.71       0.368 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.75]
6.75     0.00     0.66       0.359 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.69]
6.90     0.00     0.62       0.351 IO      .       .       .       .
  [BASIN DEPTH(FEET) =    2.64]
7.05     0.00     0.58       0.344 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.59]
7.20     0.00     0.54       0.337 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.54]
7.35     0.00     0.50       0.331 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.50]
7.50     0.00     0.47       0.325 O       .       .       .       .
  [BASIN DEPTH(FEET) =    2.46]
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 7.65     0.00     0.44       0.319 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.42]
 7.80     0.00     0.41       0.314 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.39]
 7.95     0.00     0.38       0.309 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.36]
 8.10     0.00     0.36       0.304 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.33]
 8.25     0.00     0.33       0.300 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.30]
 8.40     0.00     0.31       0.296 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.27]
 8.55     0.00     0.29       0.292 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.25]
 8.70     0.00     0.27       0.289 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.22]
 8.85     0.00     0.25       0.286 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.20]
 9.00     0.00     0.24       0.283 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.18]
 9.15     0.00     0.22       0.280 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.16]
 9.30     0.00     0.21       0.277 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.15]
 9.45     0.00     0.19       0.275 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.13]
 9.60     0.00     0.18       0.272 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.12]
 9.75     0.00     0.17       0.270 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.10]
 9.90     0.00     0.16       0.268 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.09]
10.05     0.00     0.15       0.266 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.08]
10.20     0.00     0.14       0.265 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.06]
10.35     0.00     0.13       0.263 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.05]
10.50     0.00     0.12       0.262 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.04]
10.65     0.00     0.11       0.260 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
10.80     0.00     0.10       0.259 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.03]
10.95     0.00     0.10       0.258 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.02]
11.10     0.00     0.09       0.256 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.01]
11.25     0.00     0.08       0.255 O       .       .       .       .
   [BASIN DEPTH(FEET) =    2.00]
11.40     0.00     0.08       0.254 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
11.55     0.00     0.08       0.253 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.99]
11.70     0.00     0.08       0.252 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.98]
11.85     0.00     0.08       0.251 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
12.00     0.00     0.08       0.250 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.97]
12.15     0.00     0.08       0.249 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.96]
12.30     0.00     0.08       0.248 O       .       .       .       .
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   [BASIN DEPTH(FEET) =    1.95]
12.45     0.00     0.08       0.247 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
12.60     0.00     0.08       0.246 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.94]
12.75     0.00     0.08       0.245 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.93]
12.90     0.00     0.08       0.244 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.92]
13.05     0.00     0.08       0.243 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
13.20     0.00     0.08       0.242 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.91]
13.35     0.00     0.08       0.241 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.90]
13.50     0.00     0.08       0.240 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.89]
13.65     0.00     0.08       0.239 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
13.80     0.00     0.08       0.238 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.88]
13.95     0.00     0.08       0.237 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.87]
14.10     0.00     0.08       0.236 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
14.25     0.00     0.08       0.235 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.86]
14.40     0.00     0.08       0.234 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.85]
14.55     0.00     0.08       0.234 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.84]
14.70     0.00     0.08       0.233 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
14.85     0.00     0.08       0.232 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.83]
15.00     0.00     0.08       0.231 O       .       .       .       .
   [BASIN DEPTH(FEET) =    1.82]
```

Appendix F

HEC RAS Analysis

Excerpts from Drainage Study for Harmony Grove Village

Valiano Neighborhood 5 100 Year Storm Inundation Exhibit

Background For Mannings Coefficient Selection

Neighborhood 5 Existing Conditions Results

Neighborhood 5 Existing Conditions Cross Sections

Neighborhood 5 Proposed Conditions Results

Neighborhood 5 Proposed Conditions Cross Sections

Valiano Neighborhood 3 100 Year Storm Inundation Exhibit

Neighborhood 3 Proposed Conditions Results

Neighborhood 3 Proposed Conditions Cross Sections

HEC-RAS Files

FINAL DESIGN ONSITE DRAINAGE STUDY FOR HARMONY GROVE VILLAGE

(PHASE 1, VTM 5365)

Job Number 16412-W

October 13, 2011
Revised: January 30, 2012
Revised: April 30, 2012
Revised: August 1, 2012
Revised: August 23, 2012
Revised: September 20, 2012

RICK
ENGINEERING COMPANY

FINAL DESIGN ONSITE DRAINAGE STUDY

FOR HARMONY GROVE VILLAGE

October 13, 2011
Revised: January 30, 2012
Revised: April 30, 2012
Revised: August 1, 2012
Revised: August 23, 2012
Revised: September 20, 2012

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(619) 291-0707
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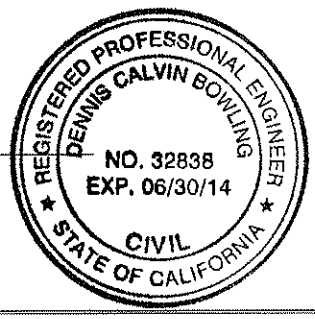
DECLARATION OF RESPONSIBLE CHARGE

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of this drainage report as defined in Section 6703 of the Business and Professionals Code, and opine that the design is consistent with current standards.

I understand that the check of the drainage report by the County of San Diego is confined to a review only and does not relieve me, as the engineer of work, of any responsibilities for the project design.



Dennis C. Bowling, M.S.
RCE # 32838, Exp. 06/14
Principal

Job Number 16412-W

Table 3: Summary of HEC-1 Results for the 2-, 10-, and 100-Year Pre- and Post-Project Peak Discharge Rates For Harmony Grove Village/Eden Valley Creek

Watersheds North of Escondido Creek

Drainage Basin	Drainage Basin Area (sq mi)	2-Year Storm Event (cfs) [1]	10-Year Storm Event (cfs)	100-Year Storm Event (cfs)	100-year Storage Volume (ac-ft)
Pre-Project North [2]	1.27	390	749	1636	- -
Post-Project North (Detained)	1.3	347	672	1383	20.0
Pre-Project West [3]	0.56	312	541	1056	- -
Post-Project West (Detained)	0.56	301	510	901	5.4
Pre-Project Total [4]	2.92	1047	1906	3918	- -
Post-Project Total (Detained)	2.92	1006	1741	3404	- -

Watershed South of Escondido Creek

Drainage Basin	Drainage Basin Area (sq mi)	2-Year Storm Event (cfs) [1]	10-Year Storm Event (cfs)	100-Year Storm Event (cfs)	100-year Storage Volume (ac-ft)
Pre-Project South	0.01	6.8	9.8	16.0	- -
Post-Project South (Detained)	0.01	4.4	6.4	10.5	0.434

HEC-1 Workmaps