LAKE VIEW APARTMENTS
TENTATIVE TRACT 18005
City of Victorville, CA

PRELIMINARY HYDROLOGY REPORT

Prepared For:

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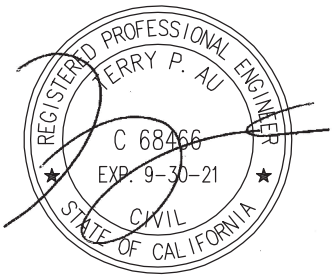

URBAN RESOURCE
CONSULTING CIVIL ENGINEERS

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INTRODUCTION

The following site, Tract 18005, is located in the City of Victorville, west of Ridgecrest Road and south of future Green Tree Blvd, in the County of San Bernardino. The project is a proposed apartment development, with a total of 272 units. The total site gross acreage is approximately 22.3 acres, and the approximate study area in this study is approximately 21 acres, which is the proposed area within the limits of work captured and conveyed by proposed storm drain. The existing condition study utilizes the same drainage boundary for the purpose of comparing peak flow rates for the same drainage area.

The existing condition is a barren dessert vacant lot with scattered desert weeds and brush cover on the surface. Few scattered Joshua trees are also present. Topography onsite is hilly, ranging from relatively flat in the eastern and central portions to relatively steep in the western portion. Existing slopes in the eastern and central portions range from approximately 5% to 30%. Existing slopes in the western portion range from 15% to 50%. Approximately 5.5 acres drains easterly and approximately 15.5 acres drains westerly.

The proposed condition will maintain similar drainage patterns. Approximately 16.1 acres drains westerly and approximately 4.9 acres drains easterly. Soil cover will consist primarily of shrubs, grass, and trees. Onsite streets will be graded relatively flat with most slopes at approximately 1%. The steepest parts of the site will be along the northerly, westerly, southerly, and easterly edges of the project where 2:1 down slopes are proposed.

Offsite run-on is anticipated at the northeast corner of the tract and is depicted as Subarea E in the proposed condition map in Appendix E. Flows will be captured via a proposed v-ditch and routed separately to the existing storm drain in Ridgecrest Road to prevent stormwater comingling with developed area storm flows.

The general map location can be shown in the Project Location Map provided herewith.

This study is prepared to determine the 10 year and 100 year runoff for existing and proposed conditions, and to evaluate the need for onsite detention systems in the ultimate condition.

METHODOLOGY

The existing and proposed condition rational method peak flows were analyzed using the AES package for San Bernardino County (Ref. 2). Criteria for the rational method hydrology analysis for the existing and proposed condition are listed below:

1) Soil Type C
2) AMC III (Existing and Proposed Condition)
3) Precipitation Data Per Desert Isohyetal Maps (10 year and 100 year, 1 hour duration)
4) Slope of Intensity Duration Curve = 0.70 (Desert Area per Hydrology Manual)

5) Land Use – Desert Barren (Existing Condition)
6) Land Use – Apartments (Proposed Condition)

Intensities, log-log slope, and additional parameters are based on the County of San Bernardino Hydrology Manual.

The drainage patterns of the proposed condition have been modeled to match similar to the existing condition. In the existing condition, approximately 15.5 acres of the site drains westerly, and approximately 5.5 acres of the site drains easterly. In the proposed condition, approximately 12.9 acres of the site drains westerly, and approximately 8.1 acres of the site drains easterly. Note that the proposed condition tributary drainage areas draining westerly and easterly may be modified in the Final Hydrology Report.

The Unit Hydrograph Method software by CivilDesign has been utilized to analyze the site for stormwater detention. Criteria for the unit hydrograph analysis are listed below. The time of concentration resulting from the rational method analysis was used for each run.

1. 10 year 24 hour duration
2. 100 year 24 hour duration

CONCLUSION/RECOMMENDATIONS

The preliminary hydrology analysis of Tract 18005 indicates an increase in peak flowrate draining easterly and westerly due to the proposed development. The increase in peak flow rate is not considered significant and can be mitigated with onsite detention systems (ie. surface basin, underground detention/storage, etc).

Detention in the form of a detention basin or underground detention storage vaults (or similar) is recommended for mitigation of peak flowrates for the 10-year and 100-year 24-hour storm events. Sizing of proposed detention systems, including outflow control, will be provided in the Final Hydrology Report in conjunction with the project's construction drawings for the project storm drain system.

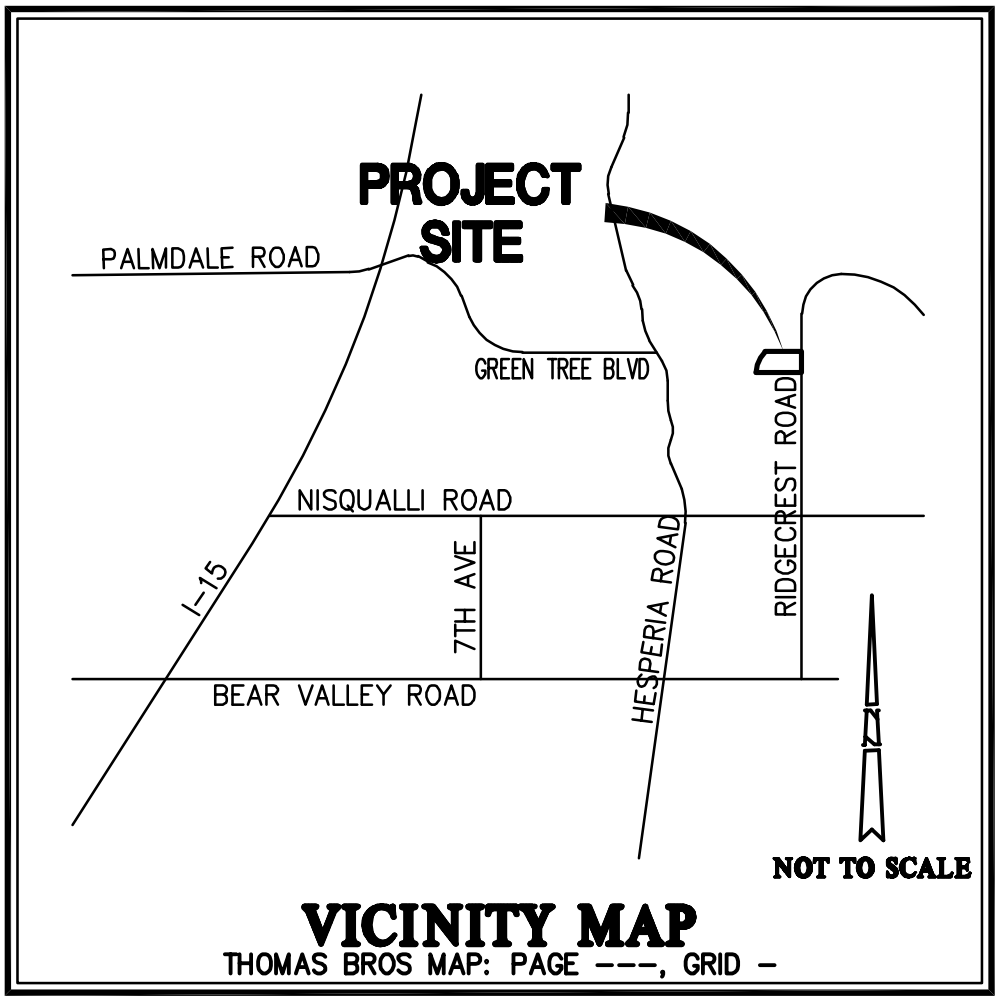
A summary of the rational method analysis for the existing and proposed condition can be found in following Table 1. Also refer to the hydrology maps provided herewith for additional information. A summary of the unit hydrograph analysis for the existing and proposed condition can be found in Appendix C. Stormwater volumes in the proposed condition will decrease per Unit Hydrograph analysis.

Tributary drainage areas draining east and west are preliminary and will be finalized during final engineering in conjunction with construction drawings.

A small amount of offsite runoff of Q100=2.53cfs from Subarea E in the proposed condition Hydrology map is anticipated at the northeast corner of the project and will be collected via a proposed v-ditch and inlet.

Table 1 – Summary of Rational Method Analysis

Existing Condition			Proposed Condition		
Node	**Q100 (cfs)**	**Q10 (cfs)**	**Node**	**Q100 (cfs)**	**Q10 (cfs)**
19 (Westerly)	49.40	31.91	23 (Westerly)	51.01	30.55
7 (Easterly)	15.55	10.04	31 (Easterly)	8.43	5.36
			39 (Easterly)	12.42	7.99
Total:	64.95	41.95	**Total:**	71.86	43.90



VICINITY MAP

THOMAS BROS MAP: PAGE ---, GRID –

II. REFERENCES

1. Hydrology Manual, County of San Bernardino, August 1986.
2. RATSCx, Advanced Engineering Software (AES), 2011.

APPENDIX A – EXISTING RATIONAL METHOD HYDROLOGY
10, 100 YEAR STORM EVENT

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******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
         (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
        (c) Copyright 1983-2011 Advanced Engineering Software (aes)
            Ver. 18.0  Release Date: 07/01/2011  License ID 1585

                          Analysis prepared by:

                        Urban Resource Corporation
                          23 Mauchly, Suite 110
                             Irvine, CA 92618


 ************************ DESCRIPTION OF STUDY *************************
* LAKE VIEW APARTMENTS                                                 *
* EXISTING CONDITION HYDROLOGY                                         *
* 10 YEAR STORM EVENT                                                  *
 **********************************************************************

  FILE NAME: 091EX10.10
  TIME/DATE OF STUDY: 14:12 11/21/2019
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.7000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.7500

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      3.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   560.00
  ELEVATION DATA: UPSTREAM(FEET) =   2947.10  DOWNSTREAM(FEET) =   2909.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.343
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.407
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        2.60      0.06     1.000    98   11.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.49
  TOTAL AREA(ACRES) =      2.60   PEAK FLOW RATE(CFS) =      5.49

******************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      7.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
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```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2909.80  DOWNSTREAM(FEET) =   2889.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   348.00   CHANNEL SLOPE =  0.0580
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.151
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   C        0.01      0.06     1.000    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.93
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   1.98
  Tc(MIN.) =   13.32
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.02
  EFFECTIVE AREA(ACRES) =      2.61     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.6         PEAK FLOW RATE(CFS) =       5.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.19   FLOW VELOCITY(FEET/SEC.) =   2.93
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =     908.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 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.) =   13.32
  RAINFALL INTENSITY(INCH/HR) =   2.15
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =       2.61
  TOTAL STREAM AREA(ACRES) =       2.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.49

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      7.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   586.00
  ELEVATION DATA: UPSTREAM(FEET) =   2939.50  DOWNSTREAM(FEET) =   2889.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.997
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.460
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        2.89      0.06     1.000    98   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.24
  TOTAL AREA(ACRES) =      2.89   PEAK FLOW RATE(CFS) =      6.24

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 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.) =   11.00
  RAINFALL INTENSITY(INCH/HR) =   2.46
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06
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 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =       2.89
 TOTAL STREAM AREA(ACRES) =       2.89
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.24

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1        5.49   13.32    2.151  0.06( 0.06) 1.00       2.6       1.00
     2        6.24   11.00    2.460  0.06( 0.06) 1.00       2.9       5.00

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

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1       11.44   11.00    2.460  0.06( 0.06) 1.00       5.0       5.00
     2       10.92   13.32    2.151  0.06( 0.06) 1.00       5.5       1.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.44    Tc(MIN.) =    11.00
 EFFECTIVE AREA(ACRES) =       5.04   AREA-AVERAGED Fm(INCH/HR) =  0.06
 AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =        5.5
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =     908.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      9.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
 ELEVATION DATA: UPSTREAM(FEET) =   2947.10  DOWNSTREAM(FEET) =   2876.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.737
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.350
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL POOR COVER
 "BARREN"                    C        6.21      0.06     1.000    98   11.74
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     12.79
 TOTAL AREA(ACRES) =      6.21   PEAK FLOW RATE(CFS) =     12.79

****************************************************************************
 FLOW PROCESS FROM NODE     11.00 TO NODE     19.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2876.00  DOWNSTREAM(FEET) =   2823.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   571.00   CHANNEL SLOPE =  0.0919
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.087
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                    C        0.01      0.06     1.000    98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.80
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.40
 AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   2.16
 Tc(MIN.) =   13.90
 SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.02
 EFFECTIVE AREA(ACRES) =      6.22     AREA-AVERAGED Fm(INCH/HR) =   0.06
 AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        6.2         PEAK FLOW RATE(CFS) =      12.79
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
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```
  DEPTH(FEET) =  0.24   FLOW VELOCITY(FEET/SEC.) =   4.39
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     15.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   306.00
  ELEVATION DATA: UPSTREAM(FEET) =   2917.00  DOWNSTREAM(FEET) =   2848.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.979
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.381
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        0.77      0.06     1.000    98    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.30
  TOTAL AREA(ACRES) =      0.77   PEAK FLOW RATE(CFS) =      2.30

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     19.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2848.00  DOWNSTREAM(FEET) =   2823.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0891
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.928
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   C        0.01      0.06     1.000    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.88
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =    8.57
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.03
  EFFECTIVE AREA(ACRES) =      0.78     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        0.8         PEAK FLOW RATE(CFS) =       2.30
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   2.86
  LONGEST FLOWPATH FROM NODE     13.00 TO NODE     19.00 =     581.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        2.30    8.57    2.928  0.06( 0.06) 1.00       0.8      13.00
  LONGEST FLOWPATH FROM NODE     13.00 TO NODE     19.00 =     581.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
```

```
     1       12.79   13.90    2.087  0.06( 0.06) 1.00       6.2       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       13.46    8.57    2.928  0.06( 0.06) 1.00       4.6      13.00
      2       14.41   13.90    2.087  0.06( 0.06) 1.00       7.0       9.00
    TOTAL AREA(ACRES) =         7.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       14.41  Tc(MIN.) =   13.902
  EFFECTIVE AREA(ACRES) =      7.00  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =        7.0
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   834.00
  ELEVATION DATA: UPSTREAM(FEET) =   2944.00  DOWNSTREAM(FEET) =   2823.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.394
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.399
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                    C        8.53      0.06     1.000    98   11.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     17.94
  TOTAL AREA(ACRES) =      8.53   PEAK FLOW RATE(CFS) =     17.94

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       17.94   11.39    2.399  0.06( 0.06) 1.00       8.5      17.00
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     19.00 =     834.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       13.46    8.57    2.928  0.06( 0.06) 1.00       4.6      13.00
      2       14.41   13.90    2.087  0.06( 0.06) 1.00       7.0       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       30.01    8.57    2.928  0.06( 0.06) 1.00      11.0      13.00
      2       31.91   11.39    2.399  0.06( 0.06) 1.00      14.4      17.00
      3       29.96   13.90    2.087  0.06( 0.06) 1.00      15.5       9.00
    TOTAL AREA(ACRES) =        15.5
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       31.91  Tc(MIN.) =   11.394
  EFFECTIVE AREA(ACRES) =     14.41  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       15.5
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       15.5  TC(MIN.) =     11.39
  EFFECTIVE AREA(ACRES) =     14.41  AREA-AVERAGED Fm(INCH/HR)=  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      31.91

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       30.01    8.57    2.928  0.06( 0.06) 1.00      11.0      13.00
      2       31.91   11.39    2.399  0.06( 0.06) 1.00      14.4      17.00
      3       29.96   13.90    2.087  0.06( 0.06) 1.00      15.5       9.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

                        Urban Resource Corporation
                          23 Mauchly, Suite 110
                             Irvine, CA 92618


 ************************ DESCRIPTION OF STUDY *************************
* LAKE VIEW APARTMENTS                                                   *
* EXISTING CONDITION HYDROLOGY                                           *
* 100 YEAR STORM EVENT                                                   *
 **************************************************************************

  FILE NAME: 091EX100.100
  TIME/DATE OF STUDY: 14:09 11/21/2019
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.7000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.1500

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      3.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   560.00
  ELEVATION DATA: UPSTREAM(FEET) =   2947.10  DOWNSTREAM(FEET) =   2909.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.343
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.691
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        2.60      0.06     1.000    98   11.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.49
  TOTAL AREA(ACRES) =      2.60   PEAK FLOW RATE(CFS) =      8.49

**************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      7.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2909.80  DOWNSTREAM(FEET) =   2889.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   348.00   CHANNEL SLOPE =  0.0580
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.339
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   C        0.01      0.06     1.000    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.33
  AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   1.74
  Tc(MIN.) =   13.08
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.03
  EFFECTIVE AREA(ACRES) =      2.61     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.6         PEAK FLOW RATE(CFS) =       8.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   3.32
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =     908.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 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.) =   13.08
  RAINFALL INTENSITY(INCH/HR) =   3.34
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =       2.61
  TOTAL STREAM AREA(ACRES) =       2.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.49

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      7.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   586.00
  ELEVATION DATA: UPSTREAM(FEET) =   2939.50  DOWNSTREAM(FEET) =   2889.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.997
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.771
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        2.89      0.06     1.000    98   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.65
  TOTAL AREA(ACRES) =      2.89   PEAK FLOW RATE(CFS) =      9.65

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 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.) =   11.00
  RAINFALL INTENSITY(INCH/HR) =   3.77
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06
```

```
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =       2.89
 TOTAL STREAM AREA(ACRES) =       2.89
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       9.65

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1        8.49   13.08    3.339  0.06( 0.06) 1.00       2.6       1.00
     2        9.65   11.00    3.771  0.06( 0.06) 1.00       2.9       5.00

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

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1       17.73   11.00    3.771  0.06( 0.06) 1.00       5.1       5.00
     2       17.02   13.08    3.339  0.06( 0.06) 1.00       5.5       1.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      17.73    Tc(MIN.) =    11.00
 EFFECTIVE AREA(ACRES) =       5.08   AREA-AVERAGED Fm(INCH/HR) =  0.06
 AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =        5.5
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =     908.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      9.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
 ELEVATION DATA: UPSTREAM(FEET) =   2947.10  DOWNSTREAM(FEET) =   2876.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.737
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.603
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL POOR COVER
 "BARREN"                    C        6.21      0.06     1.000    98   11.74
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     19.79
 TOTAL AREA(ACRES) =      6.21   PEAK FLOW RATE(CFS) =     19.79

****************************************************************************
 FLOW PROCESS FROM NODE     11.00 TO NODE     19.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2876.00  DOWNSTREAM(FEET) =   2823.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   571.00   CHANNEL SLOPE =  0.0919
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.235
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                    C        0.01      0.06     1.000    98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.81
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.87
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.95
 Tc(MIN.) =   13.69
 SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.03
 EFFECTIVE AREA(ACRES) =      6.22     AREA-AVERAGED Fm(INCH/HR) =   0.06
 AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        6.2         PEAK FLOW RATE(CFS) =      19.79
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   4.87
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     15.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   306.00
  ELEVATION DATA: UPSTREAM(FEET) =   2917.00  DOWNSTREAM(FEET) =   2848.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.979
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.185
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        0.77      0.06     1.000    98    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.55
  TOTAL AREA(ACRES) =      0.77   PEAK FLOW RATE(CFS) =      3.55

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     19.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2848.00  DOWNSTREAM(FEET) =   2823.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0891
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.025   MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.547
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   C        0.01      0.06     1.000    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.19
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =    8.42
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.04
  EFFECTIVE AREA(ACRES) =      0.78     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        0.8         PEAK FLOW RATE(CFS) =       3.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   3.17
  LONGEST FLOWPATH FROM NODE     13.00 TO NODE     19.00 =     581.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        3.55    8.42    4.547  0.06( 0.06) 1.00       0.8      13.00
  LONGEST FLOWPATH FROM NODE     13.00 TO NODE     19.00 =     581.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
```

```
     1       19.79   13.69    3.235  0.06( 0.06) 1.00       6.2       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       20.75    8.42    4.547  0.06( 0.06) 1.00       4.6      13.00
      2       22.30   13.69    3.235  0.06( 0.06) 1.00       7.0       9.00
    TOTAL AREA(ACRES) =         7.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       22.30  Tc(MIN.) =   13.690
  EFFECTIVE AREA(ACRES) =      7.00  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =        7.0
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   834.00
  ELEVATION DATA: UPSTREAM(FEET) =   2944.00  DOWNSTREAM(FEET) =   2823.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.394
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.679
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                    C        8.53      0.06     1.000    98   11.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     27.77
  TOTAL AREA(ACRES) =      8.53   PEAK FLOW RATE(CFS) =     27.77

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       27.77   11.39    3.679  0.06( 0.06) 1.00       8.5      17.00
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     19.00 =     834.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       20.75    8.42    4.547  0.06( 0.06) 1.00       4.6      13.00
      2       22.30   13.69    3.235  0.06( 0.06) 1.00       7.0       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       46.19    8.42    4.547  0.06( 0.06) 1.00      10.9      13.00
      2       49.40   11.39    3.679  0.06( 0.06) 1.00      14.5      17.00
      3       46.67   13.69    3.235  0.06( 0.06) 1.00      15.5       9.00
    TOTAL AREA(ACRES) =        15.5
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       49.40  Tc(MIN.) =   11.394
  EFFECTIVE AREA(ACRES) =     14.49  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       15.5
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     19.00 =    1306.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       15.5  TC(MIN.) =     11.39
  EFFECTIVE AREA(ACRES) =     14.49  AREA-AVERAGED Fm(INCH/HR)=  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      49.40

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       46.19    8.42    4.547  0.06( 0.06) 1.00      10.9      13.00
      2       49.40   11.39    3.679  0.06( 0.06) 1.00      14.5      17.00
      3       46.67   13.69    3.235  0.06( 0.06) 1.00      15.5       9.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX B – PROPOSED RATIONAL METHOD HYDROLOGY
10 YR, 100 YR STORM EVENT

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
         (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
        (c) Copyright 1983-2011 Advanced Engineering Software (aes)
            Ver. 18.0  Release Date: 07/01/2011  License ID 1585

                          Analysis prepared by:

                        Urban Resource Corporation
                          23 Mauchly, Suite 110
                             Irvine, CA 92618


 ************************ DESCRIPTION OF STUDY *************************
* LAKE VIEW APARTMENTS                                                   *
* PROPOSED CONDITION HYDROLOGY                                           *
* 10 YEAR STORM EVENT                                                    *
 ************************************************************************

  FILE NAME: 091PR10.10
  TIME/DATE OF STUDY: 14:54 06/17/2021
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.7000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.7500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   26.0     13.0    0.019/0.019/ ---    0.33    2.00 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  ELEVATION DATA: UPSTREAM(FEET) =   2913.70  DOWNSTREAM(FEET) =   2910.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.890
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.855
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        0.65      0.57     0.200    69    8.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      1.60
  TOTAL AREA(ACRES) =      0.65   PEAK FLOW RATE(CFS) =      1.60

**************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2907.70  DOWNSTREAM(FEET) =  2904.70
  FLOW LENGTH(FEET) =   509.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.60
  PIPE TRAVEL TIME(MIN.) =   2.44    Tc(MIN.) =   11.33
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =     869.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.46      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.46      SUBAREA RUNOFF(CFS) =    0.80
  EFFECTIVE AREA(ACRES) =      1.11   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =        1.1       PEAK FLOW RATE(CFS) =       2.14

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        1.12      0.57     0.200    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.12      SUBAREA RUNOFF(CFS) =    2.31
  EFFECTIVE AREA(ACRES) =      2.23   AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.52  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =        2.2       PEAK FLOW RATE(CFS) =       4.45

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2904.70  DOWNSTREAM(FEET) =  2902.60
  FLOW LENGTH(FEET) =   413.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.45
  PIPE TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =   12.95
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =    1282.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   12.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.194
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        1.69      0.57     0.200    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    3.16
  EFFECTIVE AREA(ACRES) =      3.92   AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.53  AREA-AVERAGED Ap =  0.29
```

```
  TOTAL AREA(ACRES) =        3.9       PEAK FLOW RATE(CFS) =       7.19

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.60  DOWNSTREAM(FEET) =  2901.30
  FLOW LENGTH(FEET) =   263.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.72
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.19
  PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =   13.88
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =    1545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   13.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.090
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.72      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.72      SUBAREA RUNOFF(CFS) =    1.04
  EFFECTIVE AREA(ACRES) =      4.64   AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.52  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =        4.6       PEAK FLOW RATE(CFS) =       7.86

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      7.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2903.80  DOWNSTREAM(FEET) =  2833.00
  FLOW LENGTH(FEET) =   321.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.16
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.86
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   14.14
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =    1866.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.063
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.74      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.74      SUBAREA RUNOFF(CFS) =    1.05
  EFFECTIVE AREA(ACRES) =      5.38   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =        5.4       PEAK FLOW RATE(CFS) =       8.80

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2833.00  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0135
```

```
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.827
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                   C        0.01      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.23
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   16.82
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.01
  EFFECTIVE AREA(ACRES) =      5.39     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.51  AREA-AVERAGED Ap =   0.49
  TOTAL AREA(ACRES) =        5.4         PEAK FLOW RATE(CFS) =       8.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   3.23
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   310.00
  ELEVATION DATA: UPSTREAM(FEET) =   2909.50  DOWNSTREAM(FEET) =   2905.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.712
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.153
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                C        0.99      0.57     0.200    69    7.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      2.71
  TOTAL AREA(ACRES) =      0.99   PEAK FLOW RATE(CFS) =      2.71

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     13.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.60  DOWNSTREAM(FEET) =  2902.10
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.71
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.71
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    7.90
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     13.00 =     362.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    7.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.102
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                C        1.87      0.57     0.200    69
  APARTMENTS                C        0.99      0.57     0.200    69
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    2.86      SUBAREA RUNOFF(CFS) =    7.69
  EFFECTIVE AREA(ACRES) =      3.85   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        3.9       PEAK FLOW RATE(CFS) =      10.35

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     15.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.10  DOWNSTREAM(FEET) =  2828.00
  FLOW LENGTH(FEET) =   325.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.81
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.35
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    8.14
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     15.00 =     687.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     15.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.035
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.98      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.98      SUBAREA RUNOFF(CFS) =    2.25
  EFFECTIVE AREA(ACRES) =      4.83   AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.52  AREA-AVERAGED Ap =  0.36
  TOTAL AREA(ACRES) =        4.8       PEAK FLOW RATE(CFS) =      12.37

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2828.00  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   211.00   CHANNEL SLOPE =  0.0095
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.770
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.01      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.09
  AVERAGE FLOW DEPTH(FEET) =   0.64   TRAVEL TIME(MIN.) =   1.14
  Tc(MIN.) =    9.28
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.02
  EFFECTIVE AREA(ACRES) =      4.84     AREA-AVERAGED Fm(INCH/HR) =   0.19
  AREA-AVERAGED Fp(INCH/HR) =   0.52  AREA-AVERAGED Ap =   0.36
  TOTAL AREA(ACRES) =        4.8         PEAK FLOW RATE(CFS) =      12.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   3.09
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     23.00 =     898.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       12.37    9.28    2.770  0.52( 0.19) 0.36       4.8       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     23.00 =     898.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        8.80   16.82    1.827  0.51( 0.25) 0.49       5.4       1.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       20.12    9.28    2.770  0.51( 0.21) 0.41       7.8       9.00
      2       16.65   16.82    1.827  0.51( 0.22) 0.43      10.2       1.00
    TOTAL AREA(ACRES) =        10.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       20.12  Tc(MIN.) =    9.281
  EFFECTIVE AREA(ACRES) =      7.81  AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =       10.2
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   430.00
  ELEVATION DATA: UPSTREAM(FEET) =   2908.70  DOWNSTREAM(FEET) =   2904.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.291
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        2.73      0.57     0.200    69    9.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      6.52
  TOTAL AREA(ACRES) =      2.73   PEAK FLOW RATE(CFS) =      6.52

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     21.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2901.60  DOWNSTREAM(FEET) =  2826.20
  FLOW LENGTH(FEET) =   346.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.73
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.52
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    9.60
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     21.00 =     776.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     21.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    9.60
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.705
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                     C        2.09      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.09      SUBAREA RUNOFF(CFS) =    4.17
  EFFECTIVE AREA(ACRES) =      4.82   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =        4.8       PEAK FLOW RATE(CFS) =      10.54

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2826.20  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    26.00   CHANNEL SLOPE =  0.0077
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.674
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                     C        0.01      0.49     1.000    74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
  AVERAGE FLOW DEPTH(FEET) =   0.62   TRAVEL TIME(MIN.) =   0.16
  Tc(MIN.) =    9.76
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.02
  EFFECTIVE AREA(ACRES) =      4.83     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   0.55
  TOTAL AREA(ACRES) =        4.8         PEAK FLOW RATE(CFS) =      10.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.62   FLOW VELOCITY(FEET/SEC.) =   2.72
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     23.00 =     802.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       10.54    9.76    2.674  0.50( 0.28) 0.55       4.8      17.00
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     23.00 =     802.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       20.12    9.28    2.770  0.51( 0.21) 0.41       7.8       9.00
      2       16.65   16.82    1.827  0.51( 0.22) 0.43      10.2       1.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       30.55    9.28    2.770  0.51( 0.23) 0.46      12.4       9.00
      2       30.45    9.76    2.674  0.51( 0.24) 0.46      12.8      17.00
      3       23.46   16.82    1.827  0.51( 0.24) 0.47      15.1       1.00
    TOTAL AREA(ACRES) =        15.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       30.55  Tc(MIN.) =    9.281
  EFFECTIVE AREA(ACRES) =     12.41  AREA-AVERAGED Fm(INCH/HR) =  0.23
```

```
 AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =       15.1
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    9.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.770
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL GOOD COVER
 "GRASS"                    C        1.07      0.49     1.000    74
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    2.20
 EFFECTIVE AREA(ACRES) =     13.48   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =       16.1       PEAK FLOW RATE(CFS) =      30.55
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE     25.00 TO NODE     27.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   2914.00  DOWNSTREAM(FEET) =   2908.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.844
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.428
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 APARTMENTS                 C        1.21      0.57     0.200    69    6.84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
 SUBAREA RUNOFF(CFS) =      3.61
 TOTAL AREA(ACRES) =      1.21   PEAK FLOW RATE(CFS) =      3.61

****************************************************************************
 FLOW PROCESS FROM NODE     27.00 TO NODE     29.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  2905.20  DOWNSTREAM(FEET) =  2902.00
 FLOW LENGTH(FEET) =    87.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.47
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.61
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    7.01
 LONGEST FLOWPATH FROM NODE     25.00 TO NODE     29.00 =     377.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    7.01
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.369
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 APARTMENTS                 C        0.62      0.57     0.200    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    0.62      SUBAREA RUNOFF(CFS) =    1.82
  EFFECTIVE AREA(ACRES) =      1.83   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        1.8       PEAK FLOW RATE(CFS) =       5.36

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     31.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.00  DOWNSTREAM(FEET) =  2893.00
  FLOW LENGTH(FEET) =   113.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.49
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.36
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    7.17
  LONGEST FLOWPATH FROM NODE     25.00 TO NODE     31.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     35.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  ELEVATION DATA: UPSTREAM(FEET) =   2909.00  DOWNSTREAM(FEET) =   2904.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.886
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.104
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        0.87      0.57     0.200    69    7.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      2.34
  TOTAL AREA(ACRES) =      0.87   PEAK FLOW RATE(CFS) =      2.34

****************************************************************************
  FLOW PROCESS FROM NODE     35.00 TO NODE     37.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2901.40  DOWNSTREAM(FEET) =  2900.00
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.46
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.34
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    8.17
  LONGEST FLOWPATH FROM NODE     33.00 TO NODE     37.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     37.00 TO NODE     37.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.029
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        1.68      0.57     0.200    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.68      SUBAREA RUNOFF(CFS) =    4.41
  EFFECTIVE AREA(ACRES) =      2.55   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        2.5       PEAK FLOW RATE(CFS) =       6.69

****************************************************************************
  FLOW PROCESS FROM NODE     37.00 TO NODE     39.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2900.00  DOWNSTREAM(FEET) =  2878.00
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.03
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.69
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE     33.00 TO NODE     39.00 =     597.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                C        0.51      0.57     0.850    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  SUBAREA AREA(ACRES) =    0.51      SUBAREA RUNOFF(CFS) =    1.15
  EFFECTIVE AREA(ACRES) =      3.06   AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =        3.1       PEAK FLOW RATE(CFS) =       7.74

****************************************************************************
  FLOW PROCESS FROM NODE     41.00 TO NODE     43.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  ELEVATION DATA: UPSTREAM(FEET) =   2923.00  DOWNSTREAM(FEET) =   2906.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.664
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.692
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        0.69      0.18     1.000    91    9.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.18
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.56
  TOTAL AREA(ACRES) =      0.69   PEAK FLOW RATE(CFS) =      1.56
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.7  TC(MIN.) =      9.66
  EFFECTIVE AREA(ACRES) =      0.69  AREA-AVERAGED Fm(INCH/HR)=  0.18
  AREA-AVERAGED Fp(INCH/HR) =  0.18  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =       1.56
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

                        Urban Resource Corporation
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                             Irvine, CA 92618


 ************************ DESCRIPTION OF STUDY *************************
* LAKE VIEW APARTMENTS                                                 *
* PROPOSED CONDITION HYDROLOGY                                         *
* 100 YEAR STORM EVENT                                                 *
 **********************************************************************

  FILE NAME: 091PR100.100
  TIME/DATE OF STUDY: 14:53 06/17/2021
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.7000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.1500

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   26.0     13.0    0.019/0.019/ ---    0.33    2.00 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  ELEVATION DATA: UPSTREAM(FEET) =   2913.70  DOWNSTREAM(FEET) =   2910.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.890
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.377
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        0.65      0.27     0.200    86    8.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      2.53
  TOTAL AREA(ACRES) =      0.65   PEAK FLOW RATE(CFS) =      2.53

******************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2907.70  DOWNSTREAM(FEET) =  2904.70
  FLOW LENGTH(FEET) =   509.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.76
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.53
  PIPE TRAVEL TIME(MIN.) =   2.26    Tc(MIN.) =   11.15
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =     869.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.736
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.46      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.46      SUBAREA RUNOFF(CFS) =    1.46
  EFFECTIVE AREA(ACRES) =      1.11   AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =        1.1       PEAK FLOW RATE(CFS) =       3.61

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.736
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        1.12      0.27     0.200    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.12      SUBAREA RUNOFF(CFS) =    3.71
  EFFECTIVE AREA(ACRES) =      2.23   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =        2.2       PEAK FLOW RATE(CFS) =       7.32

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2904.70  DOWNSTREAM(FEET) =  2902.60
  FLOW LENGTH(FEET) =   413.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.80
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.32
  PIPE TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =   12.58
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =    1282.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   12.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.432
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        1.69      0.27     0.200    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    5.14
  EFFECTIVE AREA(ACRES) =      3.92   AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.29
```

```
  TOTAL AREA(ACRES) =        3.9       PEAK FLOW RATE(CFS) =      11.85

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.60  DOWNSTREAM(FEET) =  2901.30
  FLOW LENGTH(FEET) =   263.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.32
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.85
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =   13.41
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =    1545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   13.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.283
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.72      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.72      SUBAREA RUNOFF(CFS) =    1.98
  EFFECTIVE AREA(ACRES) =      4.64   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =        4.6       PEAK FLOW RATE(CFS) =      13.31

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      7.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2903.80  DOWNSTREAM(FEET) =  2833.00
  FLOW LENGTH(FEET) =   321.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.64
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.31
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   13.64
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =    1866.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   13.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.243
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.74      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.74      SUBAREA RUNOFF(CFS) =    2.01
  EFFECTIVE AREA(ACRES) =      5.38   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =        5.4       PEAK FLOW RATE(CFS) =      15.15

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2833.00  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0135
```

```
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.912
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                   C        0.01      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.82
  AVERAGE FLOW DEPTH(FEET) =   0.73   TRAVEL TIME(MIN.) =   2.27
  Tc(MIN.) =   15.91
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.02
  EFFECTIVE AREA(ACRES) =      5.39     AREA-AVERAGED Fm(INCH/HR) =   0.11
  AREA-AVERAGED Fp(INCH/HR) =   0.23  AREA-AVERAGED Ap =   0.49
  TOTAL AREA(ACRES) =        5.4         PEAK FLOW RATE(CFS) =      15.15
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   3.82
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   310.00
  ELEVATION DATA: UPSTREAM(FEET) =   2909.50  DOWNSTREAM(FEET) =   2905.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.712
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.835
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                C        0.99      0.27     0.200    86    7.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      4.26
  TOTAL AREA(ACRES) =      0.99   PEAK FLOW RATE(CFS) =      4.26

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     13.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.60  DOWNSTREAM(FEET) =  2902.10
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.31
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.26
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    7.87
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     13.00 =     362.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    7.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.765
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                C        1.87      0.27     0.200    86
  APARTMENTS                C        0.99      0.27     0.200    86
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    2.86      SUBAREA RUNOFF(CFS) =   12.12
  EFFECTIVE AREA(ACRES) =      3.85   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        3.9       PEAK FLOW RATE(CFS) =      16.32

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     15.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.10  DOWNSTREAM(FEET) =  2828.00
  FLOW LENGTH(FEET) =   325.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.49
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.32
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =    8.10
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     15.00 =     687.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     15.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.673
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.98      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.98      SUBAREA RUNOFF(CFS) =    3.93
  EFFECTIVE AREA(ACRES) =      4.83   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.36
  TOTAL AREA(ACRES) =        4.8       PEAK FLOW RATE(CFS) =      19.93

****************************************************************************
  FLOW PROCESS FROM NODE     15.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2828.00  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   211.00   CHANNEL SLOPE =  0.0095
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.313
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.01      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.57
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   0.98
  Tc(MIN.) =    9.08
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.04
  EFFECTIVE AREA(ACRES) =      4.84     AREA-AVERAGED Fm(INCH/HR) =   0.09
  AREA-AVERAGED Fp(INCH/HR) =   0.24  AREA-AVERAGED Ap =   0.36
  TOTAL AREA(ACRES) =        4.8         PEAK FLOW RATE(CFS) =      19.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.84   FLOW VELOCITY(FEET/SEC.) =   3.57
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     23.00 =     898.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       19.93    9.08    4.313  0.24( 0.09) 0.36       4.8       9.00
  LONGEST FLOWPATH FROM NODE      9.00 TO NODE     23.00 =     898.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       15.15   15.91    2.912  0.23( 0.11) 0.49       5.4       1.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       32.91    9.08    4.313  0.24( 0.10) 0.41       7.9       9.00
      2       28.48   15.91    2.912  0.24( 0.10) 0.43      10.2       1.00
    TOTAL AREA(ACRES) =        10.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       32.91  Tc(MIN.) =    9.080
  EFFECTIVE AREA(ACRES) =      7.92  AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =       10.2
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   430.00
  ELEVATION DATA: UPSTREAM(FEET) =   2908.70  DOWNSTREAM(FEET) =   2904.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.291
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.244
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        2.73      0.27     0.200    86    9.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =     10.29
  TOTAL AREA(ACRES) =      2.73   PEAK FLOW RATE(CFS) =     10.29

****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     21.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2901.60  DOWNSTREAM(FEET) =  2826.20
  FLOW LENGTH(FEET) =   346.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.40
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.29
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =    9.56
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     21.00 =     776.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     21.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    9.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.160
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        2.09      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.09      SUBAREA RUNOFF(CFS) =    7.41
  EFFECTIVE AREA(ACRES) =      4.82   AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =        4.8       PEAK FLOW RATE(CFS) =      17.50

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     23.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2826.20  DOWNSTREAM(FEET) =   2826.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    26.00   CHANNEL SLOPE =  0.0077
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.119
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        0.01      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.18
  AVERAGE FLOW DEPTH(FEET) =   0.83   TRAVEL TIME(MIN.) =   0.14
  Tc(MIN.) =    9.70
  SUBAREA AREA(ACRES) =     0.01       SUBAREA RUNOFF(CFS) =    0.04
  EFFECTIVE AREA(ACRES) =      4.83     AREA-AVERAGED Fm(INCH/HR) =   0.13
  AREA-AVERAGED Fp(INCH/HR) =   0.23  AREA-AVERAGED Ap =   0.55
  TOTAL AREA(ACRES) =        4.8         PEAK FLOW RATE(CFS) =      17.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.82   FLOW VELOCITY(FEET/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     23.00 =     802.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       17.50    9.70    4.119  0.23( 0.13) 0.55       4.8      17.00
  LONGEST FLOWPATH FROM NODE     17.00 TO NODE     23.00 =     802.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       32.91    9.08    4.313  0.24( 0.10) 0.41       7.9       9.00
      2       28.48   15.91    2.912  0.24( 0.10) 0.43      10.2       1.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       50.09    9.08    4.313  0.24( 0.11) 0.46      12.4       9.00
      2       50.00    9.70    4.119  0.24( 0.11) 0.46      13.0      17.00
      3       40.69   15.91    2.912  0.23( 0.11) 0.47      15.1       1.00
    TOTAL AREA(ACRES) =        15.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       50.09  Tc(MIN.) =    9.080
  EFFECTIVE AREA(ACRES) =     12.44  AREA-AVERAGED Fm(INCH/HR) =  0.11
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  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =       15.1
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     23.00 =    2386.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    9.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.313
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL GOOD COVER
  "GRASS"                    C        1.07      0.22     1.000    90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    3.94
  EFFECTIVE AREA(ACRES) =     13.51   AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =       16.1       PEAK FLOW RATE(CFS) =      51.01

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     27.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
  ELEVATION DATA: UPSTREAM(FEET) =   2914.00  DOWNSTREAM(FEET) =   2908.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.844
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.256
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                 C        1.21      0.27     0.200    86    6.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      5.67
  TOTAL AREA(ACRES) =      1.21   PEAK FLOW RATE(CFS) =      5.67

****************************************************************************
  FLOW PROCESS FROM NODE     27.00 TO NODE     29.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2905.20  DOWNSTREAM(FEET) =  2902.00
  FLOW LENGTH(FEET) =    87.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.31
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.67
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    7.00
  LONGEST FLOWPATH FROM NODE     25.00 TO NODE     29.00 =     377.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    7.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.174
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 C        0.62      0.27     0.200    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
```

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  SUBAREA AREA(ACRES) =    0.62      SUBAREA RUNOFF(CFS) =    2.86
  EFFECTIVE AREA(ACRES) =      1.83   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        1.8       PEAK FLOW RATE(CFS) =       8.43

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     31.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.00  DOWNSTREAM(FEET) =  2893.00
  FLOW LENGTH(FEET) =   113.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.72
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.43
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    7.14
  LONGEST FLOWPATH FROM NODE     25.00 TO NODE     31.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     35.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  ELEVATION DATA: UPSTREAM(FEET) =   2909.00  DOWNSTREAM(FEET) =   2904.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.886
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.760
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  APARTMENTS                  C        0.87      0.27     0.200    86    7.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA RUNOFF(CFS) =      3.68
  TOTAL AREA(ACRES) =      0.87   PEAK FLOW RATE(CFS) =      3.68

****************************************************************************
  FLOW PROCESS FROM NODE     35.00 TO NODE     37.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2901.40  DOWNSTREAM(FEET) =  2900.00
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.99
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.68
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =    8.14
  LONGEST FLOWPATH FROM NODE     33.00 TO NODE     37.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     37.00 TO NODE     37.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.655
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                  C        1.68      0.27     0.200    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.200
  SUBAREA AREA(ACRES) =    1.68      SUBAREA RUNOFF(CFS) =    6.96
  EFFECTIVE AREA(ACRES) =      2.55   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =        2.5       PEAK FLOW RATE(CFS) =      10.56

****************************************************************************
  FLOW PROCESS FROM NODE     37.00 TO NODE     39.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2900.00  DOWNSTREAM(FEET) =  2878.00
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.66
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.56
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    8.30
  LONGEST FLOWPATH FROM NODE     33.00 TO NODE     39.00 =     597.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    8.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.593
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                C        0.51      0.27     0.850    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  SUBAREA AREA(ACRES) =    0.51      SUBAREA RUNOFF(CFS) =    2.00
  EFFECTIVE AREA(ACRES) =      3.06   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =        3.1       PEAK FLOW RATE(CFS) =      12.42

****************************************************************************
  FLOW PROCESS FROM NODE     41.00 TO NODE     43.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  ELEVATION DATA: UPSTREAM(FEET) =   2923.00  DOWNSTREAM(FEET) =   2906.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.664
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.128
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   C        0.69      0.06     1.000    98    9.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.53
  TOTAL AREA(ACRES) =      0.69   PEAK FLOW RATE(CFS) =      2.53
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.7  TC(MIN.) =      9.66
  EFFECTIVE AREA(ACRES) =      0.69  AREA-AVERAGED Fm(INCH/HR)=  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.06  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =       2.53
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
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APPENDIX C – PRELIMINARY UNIT HYDROGRAPH ANALYSIS (10 YEAR 24 HOUR AND 100 YEAR 24 HOUR EVENT)

LAKE VIEW APARTMENTS
PRELIMINARY UNIT HYDROGRAPH ANALYSIS
10 YEAR 24 HOUR STORM EVENT AND 100 YEAR 24 HOUR STORM EVENT
METHOD: SYNTHETIC UNIT HYDROGRAPH (COUNTY OF SAN BERNARDINO HYDROLOGY MANUAL)

EXISTING CONDITION:
***Approximately 15.5 acres draining West, and approximately 5.5 acres drainage East**

Drainage to West

A=15.5 ac.
CN=90 (Barren, AMC II)
A_p=1.0
V_{west} (10 yr 24 hr) = 92,837 cu-ft
V_{west} (100 yr 24 hr) = 158,667 cu-ft
Q_{west} (10 yr 24 hr) = 32.07 cfs
Q_{west} (100 yr 24 hr) = 49.50 cfs

Drainage to East

A=5.5 ac.
CN=90 (Barren, AMC II)
A_p=1.0
V_{east} (10 yr 24 hr) = 32,942 cu-ft
V_{east} (100 yr 24 hr) = 56,301 cu-ft
Q_{east} (10 yr 24 hr) = 11.49 cfs
Q_{east} (100 yr 24 hr) = 17.74 cfs

$\sum V_{Total\text{-}Existing}$ (10 yr 24 hr) = 92,837+32,942 = 125,779 cu-ft
$\sum V_{Total\text{-}Existing}$ (100 yr 24 hr) = 158,667+56,301 = 214,968 cu-ft

PROPOSED CONDITION:
***Approximately 16.1 acres draining West, and approximately 4.9 acres draining East. Drainage management areas may be adjusted during final engineering.**

Drainage to West

A=16.1 ac.
CN=69 (Residential or Commercial Landscaping, Type C Soil) and 98 (Impervious Surface)
A_p=0.50
V_{west} (10 yr 24 hr) = 77,145 cu-ft
V_{west} (100 yr 24 hr) = 140,263 cu-ft
Q_{west} (10 yr 24 hr) = 33.28 cfs
Q_{west} (100 yr 24 hr) = 52.13 cfs

Drainage to East

A=4.9 ac.
CN=69 (Residential or Commercial Landscaping, Type C Soil) and 98 (Impervious Surface)
A_p=0.30
V_{east} (10 yr 24 hr) = 25,969 cu-ft
V_{east} (100 yr 24 hr) = 45,890 cu-ft
Q_{east} (10 yr 24 hr) = 11.76 cfs
Q_{east} (100 yr 24 hr) = 18.24 cfs

$\sum V_{Total\text{-}Proposed}$ (10 yr 24 hr) = 77,145+25,969 = 103,114 cu-ft
$\sum V_{Total\text{-}Proposed}$ (100 yr 24 hr) = 140,263+45,890 = 186,153 cu-ft

PRELIMINARY UNIT HYDROGRAPH ANALYSIS INDICATES A DECREASE IN STORMWATER VOLUMES IN THE DEVELOPED CONDITION. THEREFORE, HYDROMODIFICATION IS NOT APPLICABLE FOR THIS PROJECT.

STORMWATER PEAK FLOW RATES IN THE RATIONAL METHOD ANALYSIS AND UNIT HYDROGRAPH ANALYSIS INDICATE AN INCREASE DRAINING EASTERLY AND WESTERLY, AND STORMWATER DETENTION WILL BE PROVIDED AS REQUIRED TO MITIGATE INCREASES.

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
100 YEAR 24 HOUR EVENT
PROPOSED CONDITION - DRAINING TO WEST BASIN

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
16.10	1	0.75
Rainfall data for year 2		
16.10	6	0.70
Rainfall data for year 2		
16.10	24	1.00
Rainfall data for year 100		
16.10	1	1.15
Rainfall data for year 100		
16.10	6	1.80
Rainfall data for year 100		
16.10	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	16.10	1.000	0.262	0.500	0.131

Area-averaged adjusted loss rate Fm (In/Hr) = 0.131

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
8.05	0.500	69.0	86.2	1.60	0.559
8.05	0.500	98.0	98.0	0.20	0.923

Area-averaged catchment yield fraction, Y = 0.741
Area-averaged low loss fraction, Yb = 0.259

User entry of time of concentration = 0.153 (hours)

++

Watershed area = 16.10(Ac.)
Catchment Lag time = 0.122 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 68.0828
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.131(In/Hr)
Average low loss rate fraction (Yb) = 0.259 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.546(In)
Computed peak 30-minute rainfall = 0.934(In)
Specified peak 1-hour rainfall = 1.150(In)
Computed peak 3-hour rainfall = 1.514(In)
Specified peak 6-hour rainfall = 1.800(In)
Specified peak 24-hour rainfall = 3.000(In)

Rainfall depth area reduction factors:
Using a total area of 16.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.545(In)
30-minute factor = 0.999 Adjusted rainfall = 0.933(In)
1-hour factor = 0.999 Adjusted rainfall = 1.149(In)
3-hour factor = 1.000 Adjusted rainfall = 1.513(In)
6-hour factor = 1.000 Adjusted rainfall = 1.800(In)
24-hour factor = 1.000 Adjusted rainfall = 3.000(In)

U n i t H y d r o g r a p h

++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 194.71 (CFS))	
1	7.324	14.260
2	48.924	81.001
3	72.631	46.160
4	82.915	20.024
5	88.962	11.773
6	92.730	7.337
7	95.305	5.013
8	97.059	3.416
9	98.088	2.003
10	98.861	1.506
11	99.577	1.394
12	100.000	0.823

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5453	0.5453
2	0.6713	0.1260
3	0.7581	0.0868
4	0.8265	0.0683
5	0.8837	0.0572
6	0.9334	0.0497
7	0.9776	0.0442
8	1.0175	0.0400
9	1.0541	0.0366
10	1.0880	0.0339
11	1.1195	0.0316
12	1.1491	0.0296
13	1.1724	0.0233
14	1.1944	0.0220
15	1.2152	0.0208
16	1.2351	0.0198
17	1.2540	0.0189
18	1.2721	0.0181
19	1.2894	0.0174
20	1.3061	0.0167
21	1.3222	0.0161
22	1.3377	0.0155
23	1.3527	0.0150
24	1.3672	0.0145
25	1.3812	0.0141
26	1.3949	0.0136
27	1.4081	0.0133

28	1.4210	0.0129
29	1.4336	0.0126
30	1.4458	0.0122
31	1.4577	0.0119
32	1.4694	0.0116
33	1.4808	0.0114
34	1.4919	0.0111
35	1.5028	0.0109
36	1.5134	0.0106
37	1.5238	0.0104
38	1.5340	0.0102
39	1.5440	0.0100
40	1.5538	0.0098
41	1.5635	0.0096
42	1.5729	0.0095
43	1.5822	0.0093
44	1.5913	0.0091
45	1.6003	0.0090
46	1.6091	0.0088
47	1.6178	0.0087
48	1.6263	0.0085
49	1.6347	0.0084
50	1.6430	0.0083
51	1.6512	0.0082
52	1.6592	0.0080
53	1.6671	0.0079
54	1.6750	0.0078
55	1.6827	0.0077
56	1.6903	0.0076
57	1.6978	0.0075
58	1.7052	0.0074
59	1.7125	0.0073
60	1.7197	0.0072
61	1.7268	0.0071
62	1.7338	0.0070
63	1.7408	0.0070
64	1.7477	0.0069
65	1.7544	0.0068
66	1.7612	0.0067
67	1.7678	0.0066
68	1.7744	0.0066
69	1.7809	0.0065
70	1.7873	0.0064
71	1.7936	0.0064
72	1.7999	0.0063
73	1.8091	0.0092
74	1.8182	0.0091
75	1.8272	0.0090
76	1.8361	0.0089
77	1.8450	0.0089
78	1.8538	0.0088
79	1.8625	0.0087
80	1.8712	0.0087
81	1.8798	0.0086
82	1.8883	0.0085
83	1.8967	0.0085
84	1.9051	0.0084
85	1.9134	0.0083
86	1.9217	0.0083
87	1.9299	0.0082
88	1.9381	0.0081
89	1.9461	0.0081
90	1.9542	0.0080
91	1.9621	0.0080
92	1.9701	0.0079
93	1.9779	0.0079
94	1.9857	0.0078
95	1.9935	0.0078
96	2.0012	0.0077
97	2.0089	0.0077
98	2.0165	0.0076
99	2.0240	0.0076
100	2.0315	0.0075
101	2.0390	0.0075
102	2.0464	0.0074
103	2.0538	0.0074
104	2.0611	0.0073
105	2.0684	0.0073

106	2.0756	0.0072
107	2.0828	0.0072
108	2.0900	0.0072
109	2.0971	0.0071
110	2.1042	0.0071
111	2.1112	0.0070
112	2.1182	0.0070
113	2.1251	0.0069
114	2.1320	0.0069
115	2.1389	0.0069
116	2.1457	0.0068
117	2.1525	0.0068
118	2.1593	0.0068
119	2.1660	0.0067
120	2.1727	0.0067
121	2.1794	0.0067
122	2.1860	0.0066
123	2.1926	0.0066
124	2.1991	0.0066
125	2.2056	0.0065
126	2.2121	0.0065
127	2.2186	0.0065
128	2.2250	0.0064
129	2.2314	0.0064
130	2.2378	0.0064
131	2.2441	0.0063
132	2.2504	0.0063
133	2.2566	0.0063
134	2.2629	0.0062
135	2.2691	0.0062
136	2.2753	0.0062
137	2.2814	0.0062
138	2.2875	0.0061
139	2.2936	0.0061
140	2.2997	0.0061
141	2.3057	0.0060
142	2.3118	0.0060
143	2.3177	0.0060
144	2.3237	0.0060
145	2.3296	0.0059
146	2.3355	0.0059
147	2.3414	0.0059
148	2.3473	0.0059
149	2.3531	0.0058
150	2.3589	0.0058
151	2.3647	0.0058
152	2.3705	0.0058
153	2.3762	0.0057
154	2.3819	0.0057
155	2.3876	0.0057
156	2.3933	0.0057
157	2.3989	0.0056
158	2.4045	0.0056
159	2.4101	0.0056
160	2.4157	0.0056
161	2.4213	0.0056
162	2.4268	0.0055
163	2.4323	0.0055
164	2.4378	0.0055
165	2.4433	0.0055
166	2.4487	0.0054
167	2.4541	0.0054
168	2.4595	0.0054
169	2.4649	0.0054
170	2.4703	0.0054
171	2.4756	0.0053
172	2.4809	0.0053
173	2.4863	0.0053
174	2.4915	0.0053
175	2.4968	0.0053
176	2.5021	0.0052
177	2.5073	0.0052
178	2.5125	0.0052
179	2.5177	0.0052
180	2.5229	0.0052
181	2.5280	0.0052
182	2.5332	0.0051
183	2.5383	0.0051

184	2.5434	0.0051
185	2.5485	0.0051
186	2.5535	0.0051
187	2.5586	0.0051
188	2.5636	0.0050
189	2.5686	0.0050
190	2.5736	0.0050
191	2.5786	0.0050
192	2.5836	0.0050
193	2.5885	0.0050
194	2.5935	0.0049
195	2.5984	0.0049
196	2.6033	0.0049
197	2.6082	0.0049
198	2.6130	0.0049
199	2.6179	0.0049
200	2.6227	0.0048
201	2.6276	0.0048
202	2.6324	0.0048
203	2.6372	0.0048
204	2.6419	0.0048
205	2.6467	0.0048
206	2.6515	0.0048
207	2.6562	0.0047
208	2.6609	0.0047
209	2.6656	0.0047
210	2.6703	0.0047
211	2.6750	0.0047
212	2.6797	0.0047
213	2.6843	0.0047
214	2.6890	0.0046
215	2.6936	0.0046
216	2.6982	0.0046
217	2.7028	0.0046
218	2.7074	0.0046
219	2.7119	0.0046
220	2.7165	0.0046
221	2.7210	0.0045
222	2.7256	0.0045
223	2.7301	0.0045
224	2.7346	0.0045
225	2.7391	0.0045
226	2.7436	0.0045
227	2.7480	0.0045
228	2.7525	0.0045
229	2.7569	0.0044
230	2.7614	0.0044
231	2.7658	0.0044
232	2.7702	0.0044
233	2.7746	0.0044
234	2.7790	0.0044
235	2.7833	0.0044
236	2.7877	0.0044
237	2.7920	0.0043
238	2.7964	0.0043
239	2.8007	0.0043
240	2.8050	0.0043
241	2.8093	0.0043
242	2.8136	0.0043
243	2.8179	0.0043
244	2.8221	0.0043
245	2.8264	0.0043
246	2.8306	0.0042
247	2.8349	0.0042
248	2.8391	0.0042
249	2.8433	0.0042
250	2.8475	0.0042
251	2.8517	0.0042
252	2.8559	0.0042
253	2.8601	0.0042
254	2.8642	0.0042
255	2.8684	0.0042
256	2.8725	0.0041
257	2.8766	0.0041
258	2.8808	0.0041
259	2.8849	0.0041
260	2.8890	0.0041
261	2.8931	0.0041

262	2.8971	0.0041
263	2.9012	0.0041
264	2.9053	0.0041
265	2.9093	0.0041
266	2.9134	0.0040
267	2.9174	0.0040
268	2.9214	0.0040
269	2.9254	0.0040
270	2.9294	0.0040
271	2.9334	0.0040
272	2.9374	0.0040
273	2.9414	0.0040
274	2.9454	0.0040
275	2.9493	0.0040
276	2.9533	0.0039
277	2.9572	0.0039
278	2.9611	0.0039
279	2.9650	0.0039
280	2.9690	0.0039
281	2.9729	0.0039
282	2.9768	0.0039
283	2.9806	0.0039
284	2.9845	0.0039
285	2.9884	0.0039
286	2.9922	0.0039
287	2.9961	0.0039
288	2.9999	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0010	0.0028
2	0.0039	0.0010	0.0029
3	0.0039	0.0010	0.0029
4	0.0039	0.0010	0.0029
5	0.0039	0.0010	0.0029
6	0.0039	0.0010	0.0029
7	0.0039	0.0010	0.0029
8	0.0039	0.0010	0.0029
9	0.0039	0.0010	0.0029
10	0.0040	0.0010	0.0029
11	0.0040	0.0010	0.0029
12	0.0040	0.0010	0.0030
13	0.0040	0.0010	0.0030
14	0.0040	0.0010	0.0030
15	0.0040	0.0010	0.0030
16	0.0040	0.0010	0.0030
17	0.0041	0.0011	0.0030
18	0.0041	0.0011	0.0030
19	0.0041	0.0011	0.0030
20	0.0041	0.0011	0.0030
21	0.0041	0.0011	0.0031
22	0.0041	0.0011	0.0031
23	0.0042	0.0011	0.0031
24	0.0042	0.0011	0.0031
25	0.0042	0.0011	0.0031
26	0.0042	0.0011	0.0031
27	0.0042	0.0011	0.0031
28	0.0042	0.0011	0.0031
29	0.0042	0.0011	0.0031
30	0.0043	0.0011	0.0032
31	0.0043	0.0011	0.0032
32	0.0043	0.0011	0.0032
33	0.0043	0.0011	0.0032
34	0.0043	0.0011	0.0032
35	0.0043	0.0011	0.0032
36	0.0044	0.0011	0.0032
37	0.0044	0.0011	0.0032
38	0.0044	0.0011	0.0033
39	0.0044	0.0011	0.0033
40	0.0044	0.0011	0.0033
41	0.0045	0.0012	0.0033
42	0.0045	0.0012	0.0033
43	0.0045	0.0012	0.0033
44	0.0045	0.0012	0.0033
45	0.0045	0.0012	0.0034
46	0.0045	0.0012	0.0034

47	0.0046	0.0012	0.0034
48	0.0046	0.0012	0.0034
49	0.0046	0.0012	0.0034
50	0.0046	0.0012	0.0034
51	0.0047	0.0012	0.0034
52	0.0047	0.0012	0.0035
53	0.0047	0.0012	0.0035
54	0.0047	0.0012	0.0035
55	0.0047	0.0012	0.0035
56	0.0048	0.0012	0.0035
57	0.0048	0.0012	0.0035
58	0.0048	0.0012	0.0036
59	0.0048	0.0012	0.0036
60	0.0048	0.0013	0.0036
61	0.0049	0.0013	0.0036
62	0.0049	0.0013	0.0036
63	0.0049	0.0013	0.0036
64	0.0049	0.0013	0.0037
65	0.0050	0.0013	0.0037
66	0.0050	0.0013	0.0037
67	0.0050	0.0013	0.0037
68	0.0050	0.0013	0.0037
69	0.0051	0.0013	0.0038
70	0.0051	0.0013	0.0038
71	0.0051	0.0013	0.0038
72	0.0051	0.0013	0.0038
73	0.0052	0.0013	0.0038
74	0.0052	0.0013	0.0038
75	0.0052	0.0014	0.0039
76	0.0052	0.0014	0.0039
77	0.0053	0.0014	0.0039
78	0.0053	0.0014	0.0039
79	0.0053	0.0014	0.0040
80	0.0054	0.0014	0.0040
81	0.0054	0.0014	0.0040
82	0.0054	0.0014	0.0040
83	0.0055	0.0014	0.0041
84	0.0055	0.0014	0.0041
85	0.0055	0.0014	0.0041
86	0.0056	0.0014	0.0041
87	0.0056	0.0014	0.0041
88	0.0056	0.0015	0.0042
89	0.0057	0.0015	0.0042
90	0.0057	0.0015	0.0042
91	0.0057	0.0015	0.0042
92	0.0058	0.0015	0.0043
93	0.0058	0.0015	0.0043
94	0.0058	0.0015	0.0043
95	0.0059	0.0015	0.0044
96	0.0059	0.0015	0.0044
97	0.0060	0.0015	0.0044
98	0.0060	0.0016	0.0044
99	0.0060	0.0016	0.0045
100	0.0061	0.0016	0.0045
101	0.0061	0.0016	0.0045
102	0.0062	0.0016	0.0046
103	0.0062	0.0016	0.0046
104	0.0062	0.0016	0.0046
105	0.0063	0.0016	0.0047
106	0.0063	0.0016	0.0047
107	0.0064	0.0017	0.0047
108	0.0064	0.0017	0.0048
109	0.0065	0.0017	0.0048
110	0.0065	0.0017	0.0048
111	0.0066	0.0017	0.0049
112	0.0066	0.0017	0.0049
113	0.0067	0.0017	0.0050
114	0.0067	0.0017	0.0050
115	0.0068	0.0018	0.0050
116	0.0068	0.0018	0.0051
117	0.0069	0.0018	0.0051
118	0.0069	0.0018	0.0051
119	0.0070	0.0018	0.0052
120	0.0071	0.0018	0.0052
121	0.0072	0.0019	0.0053
122	0.0072	0.0019	0.0053
123	0.0073	0.0019	0.0054
124	0.0073	0.0019	0.0054

125	0.0074	0.0019	0.0055
126	0.0075	0.0019	0.0055
127	0.0076	0.0020	0.0056
128	0.0076	0.0020	0.0056
129	0.0077	0.0020	0.0057
130	0.0078	0.0020	0.0057
131	0.0079	0.0020	0.0058
132	0.0079	0.0021	0.0059
133	0.0080	0.0021	0.0059
134	0.0081	0.0021	0.0060
135	0.0082	0.0021	0.0061
136	0.0083	0.0021	0.0061
137	0.0084	0.0022	0.0062
138	0.0085	0.0022	0.0063
139	0.0086	0.0022	0.0064
140	0.0087	0.0022	0.0064
141	0.0088	0.0023	0.0065
142	0.0089	0.0023	0.0066
143	0.0090	0.0023	0.0067
144	0.0091	0.0024	0.0067
145	0.0063	0.0016	0.0047
146	0.0064	0.0016	0.0047
147	0.0065	0.0017	0.0048
148	0.0066	0.0017	0.0049
149	0.0067	0.0017	0.0050
150	0.0068	0.0018	0.0050
151	0.0070	0.0018	0.0052
152	0.0070	0.0018	0.0052
153	0.0072	0.0019	0.0053
154	0.0073	0.0019	0.0054
155	0.0075	0.0019	0.0056
156	0.0076	0.0020	0.0056
157	0.0078	0.0020	0.0058
158	0.0079	0.0021	0.0059
159	0.0082	0.0021	0.0060
160	0.0083	0.0021	0.0061
161	0.0085	0.0022	0.0063
162	0.0087	0.0022	0.0064
163	0.0090	0.0023	0.0066
164	0.0091	0.0024	0.0068
165	0.0095	0.0024	0.0070
166	0.0096	0.0025	0.0071
167	0.0100	0.0026	0.0074
168	0.0102	0.0026	0.0076
169	0.0106	0.0028	0.0079
170	0.0109	0.0028	0.0081
171	0.0114	0.0029	0.0084
172	0.0116	0.0030	0.0086
173	0.0122	0.0032	0.0091
174	0.0126	0.0033	0.0093
175	0.0133	0.0034	0.0098
176	0.0136	0.0035	0.0101
177	0.0145	0.0038	0.0107
178	0.0150	0.0039	0.0111
179	0.0161	0.0042	0.0119
180	0.0167	0.0043	0.0124
181	0.0181	0.0047	0.0134
182	0.0189	0.0049	0.0140
183	0.0208	0.0054	0.0154
184	0.0220	0.0057	0.0163
185	0.0296	0.0077	0.0219
186	0.0316	0.0082	0.0234
187	0.0366	0.0095	0.0271
188	0.0400	0.0103	0.0296
189	0.0497	0.0109	0.0388
190	0.0572	0.0109	0.0463
191	0.0868	0.0109	0.0759
192	0.1260	0.0109	0.1151
193	0.5453	0.0109	0.5344
194	0.0683	0.0109	0.0574
195	0.0442	0.0109	0.0333
196	0.0339	0.0088	0.0251
197	0.0233	0.0060	0.0173
198	0.0198	0.0051	0.0147
199	0.0174	0.0045	0.0129
200	0.0155	0.0040	0.0115
201	0.0141	0.0036	0.0104
202	0.0129	0.0033	0.0096

203	0.0119	0.0031	0.0088
204	0.0111	0.0029	0.0082
205	0.0104	0.0027	0.0077
206	0.0098	0.0025	0.0073
207	0.0093	0.0024	0.0069
208	0.0088	0.0023	0.0065
209	0.0084	0.0022	0.0062
210	0.0080	0.0021	0.0060
211	0.0077	0.0020	0.0057
212	0.0074	0.0019	0.0055
213	0.0071	0.0018	0.0053
214	0.0069	0.0018	0.0051
215	0.0066	0.0017	0.0049
216	0.0064	0.0017	0.0048
217	0.0092	0.0024	0.0068
218	0.0089	0.0023	0.0066
219	0.0087	0.0023	0.0065
220	0.0085	0.0022	0.0063
221	0.0083	0.0022	0.0062
222	0.0081	0.0021	0.0060
223	0.0080	0.0021	0.0059
224	0.0078	0.0020	0.0058
225	0.0077	0.0020	0.0057
226	0.0075	0.0019	0.0056
227	0.0074	0.0019	0.0055
228	0.0072	0.0019	0.0054
229	0.0071	0.0018	0.0053
230	0.0070	0.0018	0.0052
231	0.0069	0.0018	0.0051
232	0.0068	0.0018	0.0050
233	0.0067	0.0017	0.0049
234	0.0066	0.0017	0.0049
235	0.0065	0.0017	0.0048
236	0.0064	0.0016	0.0047
237	0.0063	0.0016	0.0046
238	0.0062	0.0016	0.0046
239	0.0061	0.0016	0.0045
240	0.0060	0.0016	0.0045
241	0.0059	0.0015	0.0044
242	0.0059	0.0015	0.0043
243	0.0058	0.0015	0.0043
244	0.0057	0.0015	0.0042
245	0.0056	0.0015	0.0042
246	0.0056	0.0014	0.0041
247	0.0055	0.0014	0.0041
248	0.0054	0.0014	0.0040
249	0.0054	0.0014	0.0040
250	0.0053	0.0014	0.0039
251	0.0053	0.0014	0.0039
252	0.0052	0.0013	0.0039
253	0.0052	0.0013	0.0038
254	0.0051	0.0013	0.0038
255	0.0051	0.0013	0.0037
256	0.0050	0.0013	0.0037
257	0.0050	0.0013	0.0037
258	0.0049	0.0013	0.0036
259	0.0049	0.0013	0.0036
260	0.0048	0.0012	0.0036
261	0.0048	0.0012	0.0035
262	0.0047	0.0012	0.0035
263	0.0047	0.0012	0.0035
264	0.0046	0.0012	0.0034
265	0.0046	0.0012	0.0034
266	0.0046	0.0012	0.0034
267	0.0045	0.0012	0.0033
268	0.0045	0.0012	0.0033
269	0.0044	0.0012	0.0033
270	0.0044	0.0011	0.0033
271	0.0044	0.0011	0.0032
272	0.0043	0.0011	0.0032
273	0.0043	0.0011	0.0032
274	0.0043	0.0011	0.0032
275	0.0042	0.0011	0.0031
276	0.0042	0.0011	0.0031
277	0.0042	0.0011	0.0031
278	0.0041	0.0011	0.0031
279	0.0041	0.0011	0.0030
280	0.0041	0.0011	0.0030

281	0.0041	0.0010	0.0030
282	0.0040	0.0010	0.0030
283	0.0040	0.0010	0.0030
284	0.0040	0.0010	0.0029
285	0.0039	0.0010	0.0029
286	0.0039	0.0010	0.0029
287	0.0039	0.0010	0.0029
288	0.0039	0.0010	0.0029

Total soil rain loss = 0.60(In)
Total effective rainfall = 2.40(In)
Peak flow rate in flood hydrograph = 52.13(CFS)

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0003	0.04	Q				
0+10	0.0021	0.27	Q				
0+15	0.0049	0.40	Q				
0+20	0.0081	0.46	Q				
0+25	0.0115	0.50	Q				
0+30	0.0151	0.52	Q				
0+35	0.0188	0.54	Q				
0+40	0.0226	0.55	Q				
0+45	0.0264	0.55	Q				
0+50	0.0302	0.56	Q				
0+55	0.0341	0.57	Q				
1+ 0	0.0381	0.57	Q				
1+ 5	0.0420	0.57	Q				
1+10	0.0460	0.57	Q				
1+15	0.0500	0.58	Q				
1+20	0.0539	0.58	Q				
1+25	0.0579	0.58	Q				
1+30	0.0620	0.58	Q				
1+35	0.0660	0.59	Q				
1+40	0.0700	0.59	Q				
1+45	0.0741	0.59	Q				
1+50	0.0782	0.59	Q				
1+55	0.0822	0.59	QV				
2+ 0	0.0864	0.60	QV				
2+ 5	0.0905	0.60	QV				
2+10	0.0946	0.60	QV				
2+15	0.0988	0.60	QV				
2+20	0.1029	0.60	QV				
2+25	0.1071	0.61	QV				
2+30	0.1113	0.61	QV				
2+35	0.1155	0.61	QV				
2+40	0.1197	0.61	QV				
2+45	0.1240	0.62	QV				
2+50	0.1283	0.62	QV				
2+55	0.1325	0.62	QV				
3+ 0	0.1368	0.62	QV				
3+ 5	0.1411	0.63	QV				
3+10	0.1455	0.63	QV				
3+15	0.1498	0.63	QV				
3+20	0.1542	0.63	QV				
3+25	0.1586	0.64	QV				
3+30	0.1630	0.64	Q V				
3+35	0.1674	0.64	Q V				
3+40	0.1718	0.64	Q V				
3+45	0.1763	0.65	Q V				
3+50	0.1808	0.65	Q V				
3+55	0.1853	0.65	Q V				
4+ 0	0.1898	0.66	Q V				
4+ 5	0.1943	0.66	Q V				
4+10	0.1989	0.66	Q V				
4+15	0.2034	0.66	Q V				
4+20	0.2080	0.67	Q V				
4+25	0.2127	0.67	Q V				
4+30	0.2173	0.67	Q V				
4+35	0.2219	0.68	Q V				

4+40	0.2266	0.68	Q	V			
4+45	0.2313	0.68	Q	V			
4+50	0.2360	0.69	Q	V			
4+55	0.2408	0.69	Q	V			
5+ 0	0.2455	0.69	Q	V			
5+ 5	0.2503	0.69	Q	V			
5+10	0.2551	0.70	Q	V			
5+15	0.2600	0.70	Q	V			
5+20	0.2648	0.71	Q	V			
5+25	0.2697	0.71	Q	V			
5+30	0.2746	0.71	Q	V			
5+35	0.2795	0.72	Q	V			
5+40	0.2845	0.72	Q	V			
5+45	0.2895	0.72	Q	V			
5+50	0.2945	0.73	Q	V			
5+55	0.2995	0.73	Q	V			
6+ 0	0.3046	0.73	Q	V			
6+ 5	0.3096	0.74	Q	V			
6+10	0.3147	0.74	Q	V			
6+15	0.3199	0.75	Q	V			
6+20	0.3250	0.75	Q	V			
6+25	0.3302	0.75	Q	V			
6+30	0.3354	0.76	Q	V			
6+35	0.3407	0.76	Q	V			
6+40	0.3459	0.77	Q	V			
6+45	0.3512	0.77	Q	V			
6+50	0.3566	0.77	Q	V			
6+55	0.3619	0.78	Q	V			
7+ 0	0.3673	0.78	Q	V			
7+ 5	0.3728	0.79	Q	V			
7+10	0.3782	0.79	Q	V			
7+15	0.3837	0.80	Q	V			
7+20	0.3892	0.80	Q	V			
7+25	0.3948	0.81	Q	V			
7+30	0.4003	0.81	Q	V			
7+35	0.4060	0.82	Q	V			
7+40	0.4116	0.82	Q	V			
7+45	0.4173	0.83	Q	V			
7+50	0.4230	0.83	Q	V			
7+55	0.4288	0.84	Q	V			
8+ 0	0.4346	0.84	Q	V			
8+ 5	0.4404	0.85	Q	V			
8+10	0.4463	0.85	Q	V			
8+15	0.4522	0.86	Q	V			
8+20	0.4581	0.86	Q	V			
8+25	0.4641	0.87	Q	V			
8+30	0.4702	0.88	Q	V			
8+35	0.4762	0.88	Q	V			
8+40	0.4823	0.89	Q	V			
8+45	0.4885	0.89	Q	V			
8+50	0.4947	0.90	Q	V			
8+55	0.5009	0.91	Q	V			
9+ 0	0.5072	0.91	Q	V			
9+ 5	0.5136	0.92	Q	V			
9+10	0.5200	0.93	Q	V			
9+15	0.5264	0.93	Q	V			
9+20	0.5329	0.94	Q	V			
9+25	0.5394	0.95	Q	V			
9+30	0.5460	0.96	Q	V			
9+35	0.5526	0.96	Q	V			
9+40	0.5593	0.97	Q	V			
9+45	0.5660	0.98	Q	V			
9+50	0.5728	0.99	Q	V			
9+55	0.5797	0.99	Q	V			
10+ 0	0.5866	1.00	Q	V			
10+ 5	0.5935	1.01	Q	V			
10+10	0.6006	1.02	Q	V			
10+15	0.6076	1.03	Q	V			
10+20	0.6148	1.04	Q	V			
10+25	0.6220	1.05	Q	V			
10+30	0.6293	1.06	Q	V			
10+35	0.6366	1.07	Q	V			
10+40	0.6441	1.08	Q	V			
10+45	0.6516	1.09	Q	V			
10+50	0.6591	1.10	Q	V			
10+55	0.6667	1.11	Q	V			
11+ 0	0.6745	1.12	Q	V			
11+ 5	0.6822	1.13	Q	V			

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11+10       0.6901      1.14  Q       V |         |          |          |
11+15       0.6981      1.15  Q       V |         |          |          |
11+20       0.7061      1.17  Q       V |         |          |          |
11+25       0.7142      1.18  Q       V |         |          |          |
11+30       0.7225      1.19  Q       V |         |          |          |
11+35       0.7308      1.21  Q        V|         |          |          |
11+40       0.7392      1.22  Q        V|         |          |          |
11+45       0.7477      1.23  Q        V|         |          |          |
11+50       0.7563      1.25  Q        V|         |          |          |
11+55       0.7650      1.26  Q        V|         |          |          |
12+ 0       0.7738      1.28  Q        V|         |          |          |
12+ 5       0.7825      1.26  Q        V|         |          |          |
12+10       0.7901      1.10  Q        V|         |          |          |
12+15       0.7971      1.02  Q        V|         |          |          |
12+20       0.8039      0.99  Q        V|         |          |          |
12+25       0.8107      0.98  Q         V         |          |          |
12+30       0.8174      0.98  Q         V         |          |          |
12+35       0.8242      0.98  Q         V         |          |          |
12+40       0.8310      0.99  Q         V         |          |          |
12+45       0.8379      1.01  Q         V         |          |          |
12+50       0.8450      1.02  Q         V         |          |          |
12+55       0.8521      1.04  Q         V         |          |          |
13+ 0       0.8594      1.06  Q         V         |          |          |
13+ 5       0.8668      1.08  Q         V         |          |          |
13+10       0.8744      1.10  Q         V         |          |          |
13+15       0.8821      1.12  Q         V         |          |          |
13+20       0.8900      1.15  Q         |V        |          |          |
13+25       0.8980      1.17  Q         |V        |          |          |
13+30       0.9063      1.20  Q         |V        |          |          |
13+35       0.9147      1.22  Q         |V        |          |          |
13+40       0.9234      1.26  Q         |V        |          |          |
13+45       0.9322      1.29  Q         |V        |          |          |
13+50       0.9413      1.32  Q         |V        |          |          |
13+55       0.9506      1.35  Q         |V        |          |          |
14+ 0       0.9602      1.39  Q         |V        |          |          |
14+ 5       0.9701      1.43  Q         | V       |          |          |
14+10       0.9803      1.48  Q         | V       |          |          |
14+15       0.9908      1.52  |Q        | V       |          |          |
14+20       1.0016      1.58  |Q        | V       |          |          |
14+25       1.0128      1.63  |Q        | V       |          |          |
14+30       1.0245      1.69  |Q        | V       |          |          |
14+35       1.0365      1.75  |Q        | V       |          |          |
14+40       1.0491      1.82  |Q        |  V      |          |          |
14+45       1.0621      1.90  |Q        |  V      |          |          |
14+50       1.0758      1.99  |Q        |  V      |          |          |
14+55       1.0901      2.07  |Q        |  V      |          |          |
15+ 0       1.1051      2.19  |Q        |  V      |          |          |
15+ 5       1.1209      2.30  |Q        |  V      |          |          |
15+10       1.1377      2.44  |Q        |   V     |          |          |
15+15       1.1556      2.59  |Q        |   V     |          |          |
15+20       1.1747      2.78  |Q        |   V     |          |          |
15+25       1.1956      3.03  | Q       |   V     |          |          |
15+30       1.2203      3.60  | Q       |    V    |          |          |
15+35       1.2484      4.08  | Q       |    V    |          |          |
15+40       1.2803      4.63  |  Q      |    V    |          |          |
15+45       1.3164      5.25  |  Q      |     V   |          |          |
15+50       1.3602      6.36  |   Q     |     V   |          |          |
15+55       1.4150      7.96  |    Q    |      V  |          |          |
16+ 0       1.4944     11.53  |      Q  |       V |          |          |
16+ 5       1.6485     22.37  |         |   Q     V          |          |
16+10       2.0075     52.13  |         |         |   V      |   Q      |
16+15       2.2400     33.76  |         |         | Q    V   |          |
16+20       2.3697     18.83  |         | Q       |        V|          |
16+25       2.4580     12.82  |       Q |         |         V          |
16+30       2.5205      9.08  |     Q   |         |         |V         |
16+35       2.5677      6.86  |   Q     |         |         |V         |
16+40       2.6044      5.32  |  Q      |         |         | V        |
16+45       2.6327      4.11  | Q       |         |         | V        |
16+50       2.6564      3.45  | Q       |         |         |  V       |
16+55       2.6773      3.04  | Q       |         |         |  V       |
17+ 0       2.6943      2.47  |Q        |         |         |  V       |
17+ 5       2.7072      1.86  |Q        |         |         |  V       |
17+10       2.7188      1.69  |Q        |         |         |  V       |
17+15       2.7296      1.57  |Q        |         |         |  V       |
17+20       2.7397      1.46  Q         |         |         |   V      |
17+25       2.7492      1.38  Q         |         |         |   V      |
17+30       2.7582      1.30  Q         |         |         |   V      |
17+35       2.7667      1.24  Q         |         |         |   V      |
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17+40	2.7748	1.18	Q	|	|	|	V |
17+45	2.7826	1.13	Q	|	|	|	V |
17+50	2.7901	1.08	Q	|	|	|	V |
17+55	2.7973	1.04	Q	|	|	|	V |
18+ 0	2.8042	1.00	Q	|	|	|	V |
18+ 5	2.8111	1.00	Q	|	|	|	V |
18+10	2.8190	1.14	Q	|	|	|	V |
18+15	2.8273	1.21	Q	|	|	|	V |
18+20	2.8358	1.22	Q	|	|	|	V |
18+25	2.8441	1.22	Q	|	|	|	V |
18+30	2.8525	1.21	Q	|	|	|	V |
18+35	2.8606	1.19	Q	|	|	|	V |
18+40	2.8687	1.17	Q	|	|	|	V |
18+45	2.8766	1.15	Q	|	|	|	V |
18+50	2.8844	1.13	Q	|	|	|	V |
18+55	2.8920	1.11	Q	|	|	|	V |
19+ 0	2.8995	1.09	Q	|	|	|	V |
19+ 5	2.9069	1.07	Q	|	|	|	V |
19+10	2.9141	1.05	Q	|	|	|	V |
19+15	2.9212	1.03	Q	|	|	|	V |
19+20	2.9282	1.01	Q	|	|	|	V |
19+25	2.9350	1.00	Q	|	|	|	V |
19+30	2.9418	0.98	Q	|	|	|	V |
19+35	2.9484	0.96	Q	|	|	|	V |
19+40	2.9550	0.95	Q	|	|	|	V |
19+45	2.9614	0.93	Q	|	|	|	V |
19+50	2.9677	0.92	Q	|	|	|	V |
19+55	2.9740	0.91	Q	|	|	|	V |
20+ 0	2.9802	0.89	Q	|	|	|	V |
20+ 5	2.9862	0.88	Q	|	|	|	V |
20+10	2.9922	0.87	Q	|	|	|	V |
20+15	2.9981	0.86	Q	|	|	|	V |
20+20	3.0040	0.85	Q	|	|	|	V |
20+25	3.0097	0.84	Q	|	|	|	V |
20+30	3.0154	0.83	Q	|	|	|	V |
20+35	3.0211	0.82	Q	|	|	|	V |
20+40	3.0266	0.81	Q	|	|	|	V |
20+45	3.0321	0.80	Q	|	|	|	V |
20+50	3.0375	0.79	Q	|	|	|	V |
20+55	3.0429	0.78	Q	|	|	|	V |
21+ 0	3.0482	0.77	Q	|	|	|	V |
21+ 5	3.0534	0.76	Q	|	|	|	V |
21+10	3.0586	0.75	Q	|	|	|	V |
21+15	3.0638	0.75	Q	|	|	|	V |
21+20	3.0689	0.74	Q	|	|	|	V |
21+25	3.0739	0.73	Q	|	|	|	V |
21+30	3.0789	0.72	Q	|	|	|	V |
21+35	3.0838	0.72	Q	|	|	|	V |
21+40	3.0887	0.71	Q	|	|	|	V |
21+45	3.0935	0.70	Q	|	|	|	V |
21+50	3.0983	0.70	Q	|	|	|	V |
21+55	3.1030	0.69	Q	|	|	|	V |
22+ 0	3.1077	0.68	Q	|	|	|	V |
22+ 5	3.1124	0.68	Q	|	|	|	V |
22+10	3.1170	0.67	Q	|	|	|	V |
22+15	3.1216	0.66	Q	|	|	|	V |
22+20	3.1261	0.66	Q	|	|	|	V |
22+25	3.1306	0.65	Q	|	|	|	V |
22+30	3.1351	0.65	Q	|	|	|	V |
22+35	3.1395	0.64	Q	|	|	|	V|
22+40	3.1439	0.64	Q	|	|	|	V|
22+45	3.1482	0.63	Q	|	|	|	V|
22+50	3.1526	0.63	Q	|	|	|	V|
22+55	3.1568	0.62	Q	|	|	|	V|
23+ 0	3.1611	0.62	Q	|	|	|	V|
23+ 5	3.1653	0.61	Q	|	|	|	V|
23+10	3.1695	0.61	Q	|	|	|	V|
23+15	3.1736	0.60	Q	|	|	|	V|
23+20	3.1778	0.60	Q	|	|	|	V|
23+25	3.1819	0.59	Q	|	|	|	V|
23+30	3.1859	0.59	Q	|	|	|	V|
23+35	3.1899	0.59	Q	|	|	|	V|
23+40	3.1939	0.58	Q	|	|	|	V|
23+45	3.1979	0.58	Q	|	|	|	V|
23+50	3.2019	0.57	Q	|	|	|	V|
23+55	3.2058	0.57	Q	|	|	|	V|
24+ 0	3.2097	0.57	Q	|	|	|	V|
24+ 5	3.2133	0.52	Q	|	|	|	V|

24+10	3.2152	0.29	Q	|	|	|	V|
24+15	3.2163	0.15	Q	|	|	|	V|
24+20	3.2170	0.10	Q	|	|	|	V|
24+25	3.2174	0.06	Q	|	|	|	V|
24+30	3.2177	0.04	Q	|	|	|	V|
24+35	3.2179	0.03	Q	|	|	|	V|
24+40	3.2180	0.02	Q	|	|	|	V|
24+45	3.2180	0.01	Q	|	|	|	V|
24+50	3.2181	0.01	Q	|	|	|	V|
24+55	3.2181	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
10 YEAR 24 HOUR EVENT
PROPOSED CONDITION - DRAINING TO WEST BASIN

Storm Event Year = 10

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	16.10	1	0.75
Rainfall data for year 2	16.10	6	0.70
Rainfall data for year 2	16.10	24	1.00
Rainfall data for year 100	16.10	1	1.15
Rainfall data for year 100	16.10	6	1.80
Rainfall data for year 100	16.10	24	3.00

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******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	16.10	1.000	0.262	0.500	0.131

Area-averaged adjusted loss rate Fm (In/Hr) = 0.131

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
8.05	0.500	69.0	86.2	1.60	0.399
8.05	0.500	98.0	98.0	0.20	0.877

Area-averaged catchment yield fraction, Y = 0.638
Area-averaged low loss fraction, Yb = 0.362

User entry of time of concentration = 0.153 (hours)

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Watershed area = 16.10(Ac.)
Catchment Lag time = 0.122 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 68.0828
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.131(In/Hr)
Average low loss rate fraction (Yb) = 0.362 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.356(In)
Computed peak 30-minute rainfall = 0.609(In)
Specified peak 1-hour rainfall = 0.750(In)
Computed peak 3-hour rainfall = 0.976(In)
Specified peak 6-hour rainfall = 1.153(In)
Specified peak 24-hour rainfall = 1.823(In)

Rainfall depth area reduction factors:
Using a total area of 16.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.356(In)
30-minute factor = 0.999 Adjusted rainfall = 0.609(In)
1-hour factor = 0.999 Adjusted rainfall = 0.749(In)
3-hour factor = 1.000 Adjusted rainfall = 0.976(In)
6-hour factor = 1.000 Adjusted rainfall = 1.152(In)
24-hour factor = 1.000 Adjusted rainfall = 1.823(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 194.71 (CFS))	
1	7.324	14.260
2	48.924	81.001
3	72.631	46.160
4	82.915	20.024
5	88.962	11.773
6	92.730	7.337
7	95.305	5.013
8	97.059	3.416
9	98.088	2.003
10	98.861	1.506
11	99.577	1.394
12	100.000	0.823

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3556	0.3556
2	0.4378	0.0822
3	0.4944	0.0566
4	0.5390	0.0446
5	0.5763	0.0373
6	0.6087	0.0324
7	0.6375	0.0288
8	0.6636	0.0261
9	0.6875	0.0239
10	0.7095	0.0221
11	0.7301	0.0206
12	0.7494	0.0193
13	0.7640	0.0146
14	0.7777	0.0137
15	0.7907	0.0130
16	0.8031	0.0124
17	0.8149	0.0118
18	0.8262	0.0113
19	0.8370	0.0108
20	0.8474	0.0104
21	0.8574	0.0100
22	0.8670	0.0096
23	0.8763	0.0093
24	0.8853	0.0090
25	0.8941	0.0087
26	0.9025	0.0085
27	0.9107	0.0082

28	0.9187	0.0080
29	0.9265	0.0078
30	0.9341	0.0076
31	0.9415	0.0074
32	0.9487	0.0072
33	0.9558	0.0070
34	0.9626	0.0069
35	0.9694	0.0067
36	0.9760	0.0066
37	0.9824	0.0064
38	0.9887	0.0063
39	0.9949	0.0062
40	1.0009	0.0061
41	1.0069	0.0059
42	1.0127	0.0058
43	1.0185	0.0057
44	1.0241	0.0056
45	1.0296	0.0055
46	1.0351	0.0054
47	1.0404	0.0054
48	1.0457	0.0053
49	1.0509	0.0052
50	1.0560	0.0051
51	1.0610	0.0050
52	1.0660	0.0050
53	1.0708	0.0049
54	1.0756	0.0048
55	1.0804	0.0047
56	1.0851	0.0047
57	1.0897	0.0046
58	1.0942	0.0046
59	1.0987	0.0045
60	1.1032	0.0044
61	1.1076	0.0044
62	1.1119	0.0043
63	1.1162	0.0043
64	1.1204	0.0042
65	1.1246	0.0042
66	1.1287	0.0041
67	1.1328	0.0041
68	1.1368	0.0040
69	1.1408	0.0040
70	1.1447	0.0039
71	1.1486	0.0039
72	1.1525	0.0039
73	1.1578	0.0053
74	1.1630	0.0052
75	1.1682	0.0052
76	1.1733	0.0051
77	1.1784	0.0051
78	1.1834	0.0050
79	1.1884	0.0050
80	1.1934	0.0050
81	1.1983	0.0049
82	1.2031	0.0049
83	1.2080	0.0048
84	1.2128	0.0048
85	1.2175	0.0048
86	1.2222	0.0047
87	1.2269	0.0047
88	1.2316	0.0046
89	1.2362	0.0046
90	1.2408	0.0046
91	1.2453	0.0045
92	1.2498	0.0045
93	1.2543	0.0045
94	1.2587	0.0044
95	1.2631	0.0044
96	1.2675	0.0044
97	1.2719	0.0044
98	1.2762	0.0043
99	1.2805	0.0043
100	1.2847	0.0043
101	1.2890	0.0042
102	1.2932	0.0042
103	1.2974	0.0042
104	1.3015	0.0042
105	1.3056	0.0041

106	1.3097	0.0041
107	1.3138	0.0041
108	1.3179	0.0040
109	1.3219	0.0040
110	1.3259	0.0040
111	1.3299	0.0040
112	1.3338	0.0040
113	1.3377	0.0039
114	1.3416	0.0039
115	1.3455	0.0039
116	1.3494	0.0039
117	1.3532	0.0038
118	1.3570	0.0038
119	1.3608	0.0038
120	1.3646	0.0038
121	1.3683	0.0038
122	1.3721	0.0037
123	1.3758	0.0037
124	1.3795	0.0037
125	1.3831	0.0037
126	1.3868	0.0036
127	1.3904	0.0036
128	1.3940	0.0036
129	1.3976	0.0036
130	1.4012	0.0036
131	1.4047	0.0036
132	1.4083	0.0035
133	1.4118	0.0035
134	1.4153	0.0035
135	1.4188	0.0035
136	1.4223	0.0035
137	1.4257	0.0034
138	1.4291	0.0034
139	1.4326	0.0034
140	1.4360	0.0034
141	1.4393	0.0034
142	1.4427	0.0034
143	1.4461	0.0034
144	1.4494	0.0033
145	1.4527	0.0033
146	1.4560	0.0033
147	1.4593	0.0033
148	1.4626	0.0033
149	1.4658	0.0033
150	1.4691	0.0032
151	1.4723	0.0032
152	1.4755	0.0032
153	1.4787	0.0032
154	1.4819	0.0032
155	1.4851	0.0032
156	1.4883	0.0032
157	1.4914	0.0031
158	1.4946	0.0031
159	1.4977	0.0031
160	1.5008	0.0031
161	1.5039	0.0031
162	1.5070	0.0031
163	1.5100	0.0031
164	1.5131	0.0031
165	1.5161	0.0030
166	1.5192	0.0030
167	1.5222	0.0030
168	1.5252	0.0030
169	1.5282	0.0030
170	1.5312	0.0030
171	1.5341	0.0030
172	1.5371	0.0030
173	1.5401	0.0029
174	1.5430	0.0029
175	1.5459	0.0029
176	1.5488	0.0029
177	1.5517	0.0029
178	1.5546	0.0029
179	1.5575	0.0029
180	1.5604	0.0029
181	1.5633	0.0029
182	1.5661	0.0029
183	1.5689	0.0028

184	1.5718	0.0028
185	1.5746	0.0028
186	1.5774	0.0028
187	1.5802	0.0028
188	1.5830	0.0028
189	1.5858	0.0028
190	1.5885	0.0028
191	1.5913	0.0028
192	1.5941	0.0028
193	1.5968	0.0027
194	1.5995	0.0027
195	1.6022	0.0027
196	1.6050	0.0027
197	1.6077	0.0027
198	1.6104	0.0027
199	1.6130	0.0027
200	1.6157	0.0027
201	1.6184	0.0027
202	1.6210	0.0027
203	1.6237	0.0026
204	1.6263	0.0026
205	1.6290	0.0026
206	1.6316	0.0026
207	1.6342	0.0026
208	1.6368	0.0026
209	1.6394	0.0026
210	1.6420	0.0026
211	1.6446	0.0026
212	1.6472	0.0026
213	1.6497	0.0026
214	1.6523	0.0026
215	1.6548	0.0025
216	1.6574	0.0025
217	1.6599	0.0025
218	1.6624	0.0025
219	1.6649	0.0025
220	1.6675	0.0025
221	1.6700	0.0025
222	1.6724	0.0025
223	1.6749	0.0025
224	1.6774	0.0025
225	1.6799	0.0025
226	1.6824	0.0025
227	1.6848	0.0025
228	1.6873	0.0025
229	1.6897	0.0024
230	1.6921	0.0024
231	1.6946	0.0024
232	1.6970	0.0024
233	1.6994	0.0024
234	1.7018	0.0024
235	1.7042	0.0024
236	1.7066	0.0024
237	1.7090	0.0024
238	1.7114	0.0024
239	1.7138	0.0024
240	1.7161	0.0024
241	1.7185	0.0024
242	1.7208	0.0024
243	1.7232	0.0023
244	1.7255	0.0023
245	1.7279	0.0023
246	1.7302	0.0023
247	1.7325	0.0023
248	1.7348	0.0023
249	1.7371	0.0023
250	1.7395	0.0023
251	1.7417	0.0023
252	1.7440	0.0023
253	1.7463	0.0023
254	1.7486	0.0023
255	1.7509	0.0023
256	1.7531	0.0023
257	1.7554	0.0023
258	1.7577	0.0023
259	1.7599	0.0022
260	1.7622	0.0022
261	1.7644	0.0022

262	1.7666	0.0022
263	1.7689	0.0022
264	1.7711	0.0022
265	1.7733	0.0022
266	1.7755	0.0022
267	1.7777	0.0022
268	1.7799	0.0022
269	1.7821	0.0022
270	1.7843	0.0022
271	1.7865	0.0022
272	1.7886	0.0022
273	1.7908	0.0022
274	1.7930	0.0022
275	1.7951	0.0022
276	1.7973	0.0022
277	1.7995	0.0022
278	1.8016	0.0021
279	1.8037	0.0021
280	1.8059	0.0021
281	1.8080	0.0021
282	1.8101	0.0021
283	1.8123	0.0021
284	1.8144	0.0021
285	1.8165	0.0021
286	1.8186	0.0021
287	1.8207	0.0021
288	1.8228	0.0021

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0021	0.0008	0.0013
2	0.0021	0.0008	0.0013
3	0.0021	0.0008	0.0013
4	0.0021	0.0008	0.0013
5	0.0021	0.0008	0.0014
6	0.0021	0.0008	0.0014
7	0.0021	0.0008	0.0014
8	0.0021	0.0008	0.0014
9	0.0022	0.0008	0.0014
10	0.0022	0.0008	0.0014
11	0.0022	0.0008	0.0014
12	0.0022	0.0008	0.0014
13	0.0022	0.0008	0.0014
14	0.0022	0.0008	0.0014
15	0.0022	0.0008	0.0014
16	0.0022	0.0008	0.0014
17	0.0022	0.0008	0.0014
18	0.0022	0.0008	0.0014
19	0.0022	0.0008	0.0014
20	0.0022	0.0008	0.0014
21	0.0023	0.0008	0.0014
22	0.0023	0.0008	0.0014
23	0.0023	0.0008	0.0015
24	0.0023	0.0008	0.0015
25	0.0023	0.0008	0.0015
26	0.0023	0.0008	0.0015
27	0.0023	0.0008	0.0015
28	0.0023	0.0008	0.0015
29	0.0023	0.0008	0.0015
30	0.0023	0.0008	0.0015
31	0.0023	0.0008	0.0015
32	0.0024	0.0009	0.0015
33	0.0024	0.0009	0.0015
34	0.0024	0.0009	0.0015
35	0.0024	0.0009	0.0015
36	0.0024	0.0009	0.0015
37	0.0024	0.0009	0.0015
38	0.0024	0.0009	0.0015
39	0.0024	0.0009	0.0016
40	0.0024	0.0009	0.0016
41	0.0025	0.0009	0.0016
42	0.0025	0.0009	0.0016
43	0.0025	0.0009	0.0016
44	0.0025	0.0009	0.0016
45	0.0025	0.0009	0.0016
46	0.0025	0.0009	0.0016

47	0.0025	0.0009	0.0016
48	0.0025	0.0009	0.0016
49	0.0025	0.0009	0.0016
50	0.0025	0.0009	0.0016
51	0.0026	0.0009	0.0016
52	0.0026	0.0009	0.0016
53	0.0026	0.0009	0.0017
54	0.0026	0.0009	0.0017
55	0.0026	0.0009	0.0017
56	0.0026	0.0009	0.0017
57	0.0026	0.0010	0.0017
58	0.0026	0.0010	0.0017
59	0.0027	0.0010	0.0017
60	0.0027	0.0010	0.0017
61	0.0027	0.0010	0.0017
62	0.0027	0.0010	0.0017
63	0.0027	0.0010	0.0017
64	0.0027	0.0010	0.0017
65	0.0028	0.0010	0.0018
66	0.0028	0.0010	0.0018
67	0.0028	0.0010	0.0018
68	0.0028	0.0010	0.0018
69	0.0028	0.0010	0.0018
70	0.0028	0.0010	0.0018
71	0.0028	0.0010	0.0018
72	0.0029	0.0010	0.0018
73	0.0029	0.0010	0.0018
74	0.0029	0.0010	0.0018
75	0.0029	0.0011	0.0019
76	0.0029	0.0011	0.0019
77	0.0029	0.0011	0.0019
78	0.0029	0.0011	0.0019
79	0.0030	0.0011	0.0019
80	0.0030	0.0011	0.0019
81	0.0030	0.0011	0.0019
82	0.0030	0.0011	0.0019
83	0.0030	0.0011	0.0019
84	0.0031	0.0011	0.0020
85	0.0031	0.0011	0.0020
86	0.0031	0.0011	0.0020
87	0.0031	0.0011	0.0020
88	0.0031	0.0011	0.0020
89	0.0032	0.0011	0.0020
90	0.0032	0.0011	0.0020
91	0.0032	0.0012	0.0020
92	0.0032	0.0012	0.0021
93	0.0032	0.0012	0.0021
94	0.0033	0.0012	0.0021
95	0.0033	0.0012	0.0021
96	0.0033	0.0012	0.0021
97	0.0033	0.0012	0.0021
98	0.0034	0.0012	0.0021
99	0.0034	0.0012	0.0022
100	0.0034	0.0012	0.0022
101	0.0034	0.0012	0.0022
102	0.0034	0.0012	0.0022
103	0.0035	0.0013	0.0022
104	0.0035	0.0013	0.0022
105	0.0035	0.0013	0.0023
106	0.0036	0.0013	0.0023
107	0.0036	0.0013	0.0023
108	0.0036	0.0013	0.0023
109	0.0036	0.0013	0.0023
110	0.0037	0.0013	0.0023
111	0.0037	0.0013	0.0024
112	0.0037	0.0013	0.0024
113	0.0038	0.0014	0.0024
114	0.0038	0.0014	0.0024
115	0.0038	0.0014	0.0024
116	0.0039	0.0014	0.0025
117	0.0039	0.0014	0.0025
118	0.0039	0.0014	0.0025
119	0.0040	0.0014	0.0025
120	0.0040	0.0014	0.0026
121	0.0040	0.0015	0.0026
122	0.0041	0.0015	0.0026
123	0.0041	0.0015	0.0026
124	0.0042	0.0015	0.0026

125	0.0042	0.0015	0.0027
126	0.0042	0.0015	0.0027
127	0.0043	0.0016	0.0027
128	0.0043	0.0016	0.0028
129	0.0044	0.0016	0.0028
130	0.0044	0.0016	0.0028
131	0.0045	0.0016	0.0029
132	0.0045	0.0016	0.0029
133	0.0046	0.0017	0.0029
134	0.0046	0.0017	0.0029
135	0.0047	0.0017	0.0030
136	0.0047	0.0017	0.0030
137	0.0048	0.0017	0.0031
138	0.0048	0.0017	0.0031
139	0.0049	0.0018	0.0031
140	0.0050	0.0018	0.0032
141	0.0050	0.0018	0.0032
142	0.0051	0.0018	0.0032
143	0.0052	0.0019	0.0033
144	0.0052	0.0019	0.0033
145	0.0039	0.0014	0.0025
146	0.0039	0.0014	0.0025
147	0.0040	0.0014	0.0025
148	0.0040	0.0015	0.0026
149	0.0041	0.0015	0.0026
150	0.0042	0.0015	0.0027
151	0.0043	0.0015	0.0027
152	0.0043	0.0016	0.0028
153	0.0044	0.0016	0.0028
154	0.0045	0.0016	0.0029
155	0.0046	0.0017	0.0029
156	0.0047	0.0017	0.0030
157	0.0048	0.0017	0.0031
158	0.0049	0.0018	0.0031
159	0.0050	0.0018	0.0032
160	0.0051	0.0018	0.0033
161	0.0053	0.0019	0.0034
162	0.0054	0.0019	0.0034
163	0.0055	0.0020	0.0035
164	0.0056	0.0020	0.0036
165	0.0058	0.0021	0.0037
166	0.0059	0.0022	0.0038
167	0.0062	0.0022	0.0039
168	0.0063	0.0023	0.0040
169	0.0066	0.0024	0.0042
170	0.0067	0.0024	0.0043
171	0.0070	0.0025	0.0045
172	0.0072	0.0026	0.0046
173	0.0076	0.0027	0.0048
174	0.0078	0.0028	0.0050
175	0.0082	0.0030	0.0052
176	0.0085	0.0031	0.0054
177	0.0090	0.0033	0.0058
178	0.0093	0.0034	0.0059
179	0.0100	0.0036	0.0064
180	0.0104	0.0038	0.0066
181	0.0113	0.0041	0.0072
182	0.0118	0.0043	0.0075
183	0.0130	0.0047	0.0083
184	0.0137	0.0050	0.0088
185	0.0193	0.0070	0.0123
186	0.0206	0.0074	0.0131
187	0.0239	0.0086	0.0152
188	0.0261	0.0094	0.0166
189	0.0324	0.0109	0.0215
190	0.0373	0.0109	0.0264
191	0.0566	0.0109	0.0457
192	0.0822	0.0109	0.0713
193	0.3556	0.0109	0.3447
194	0.0446	0.0109	0.0337
195	0.0288	0.0104	0.0184
196	0.0221	0.0080	0.0141
197	0.0146	0.0053	0.0093
198	0.0124	0.0045	0.0079
199	0.0108	0.0039	0.0069
200	0.0096	0.0035	0.0062
201	0.0087	0.0032	0.0056
202	0.0080	0.0029	0.0051

203	0.0074	0.0027	0.0047
204	0.0069	0.0025	0.0044
205	0.0064	0.0023	0.0041
206	0.0061	0.0022	0.0039
207	0.0057	0.0021	0.0037
208	0.0054	0.0020	0.0035
209	0.0052	0.0019	0.0033
210	0.0050	0.0018	0.0032
211	0.0047	0.0017	0.0030
212	0.0046	0.0016	0.0029
213	0.0044	0.0016	0.0028
214	0.0042	0.0015	0.0027
215	0.0041	0.0015	0.0026
216	0.0039	0.0014	0.0025
217	0.0053	0.0019	0.0034
218	0.0051	0.0019	0.0033
219	0.0050	0.0018	0.0032
220	0.0049	0.0018	0.0031
221	0.0048	0.0017	0.0030
222	0.0046	0.0017	0.0030
223	0.0045	0.0016	0.0029
224	0.0044	0.0016	0.0028
225	0.0044	0.0016	0.0028
226	0.0043	0.0015	0.0027
227	0.0042	0.0015	0.0027
228	0.0041	0.0015	0.0026
229	0.0040	0.0015	0.0026
230	0.0040	0.0014	0.0025
231	0.0039	0.0014	0.0025
232	0.0038	0.0014	0.0024
233	0.0038	0.0014	0.0024
234	0.0037	0.0013	0.0024
235	0.0036	0.0013	0.0023
236	0.0036	0.0013	0.0023
237	0.0035	0.0013	0.0022
238	0.0035	0.0013	0.0022
239	0.0034	0.0012	0.0022
240	0.0034	0.0012	0.0021
241	0.0033	0.0012	0.0021
242	0.0033	0.0012	0.0021
243	0.0032	0.0012	0.0021
244	0.0032	0.0012	0.0020
245	0.0031	0.0011	0.0020
246	0.0031	0.0011	0.0020
247	0.0031	0.0011	0.0020
248	0.0030	0.0011	0.0019
249	0.0030	0.0011	0.0019
250	0.0030	0.0011	0.0019
251	0.0029	0.0011	0.0019
252	0.0029	0.0010	0.0018
253	0.0029	0.0010	0.0018
254	0.0028	0.0010	0.0018
255	0.0028	0.0010	0.0018
256	0.0028	0.0010	0.0018
257	0.0027	0.0010	0.0017
258	0.0027	0.0010	0.0017
259	0.0027	0.0010	0.0017
260	0.0027	0.0010	0.0017
261	0.0026	0.0010	0.0017
262	0.0026	0.0009	0.0017
263	0.0026	0.0009	0.0016
264	0.0026	0.0009	0.0016
265	0.0025	0.0009	0.0016
266	0.0025	0.0009	0.0016
267	0.0025	0.0009	0.0016
268	0.0025	0.0009	0.0016
269	0.0024	0.0009	0.0016
270	0.0024	0.0009	0.0015
271	0.0024	0.0009	0.0015
272	0.0024	0.0009	0.0015
273	0.0024	0.0009	0.0015
274	0.0023	0.0008	0.0015
275	0.0023	0.0008	0.0015
276	0.0023	0.0008	0.0015
277	0.0023	0.0008	0.0015
278	0.0023	0.0008	0.0014
279	0.0022	0.0008	0.0014
280	0.0022	0.0008	0.0014

281	0.0022	0.0008	0.0014
282	0.0022	0.0008	0.0014
283	0.0022	0.0008	0.0014
284	0.0022	0.0008	0.0014
285	0.0022	0.0008	0.0014
286	0.0021	0.0008	0.0014
287	0.0021	0.0008	0.0014
288	0.0021	0.0008	0.0013

Total soil rain loss = 0.50(In)
Total effective rainfall = 1.32(In)
Peak flow rate in flood hydrograph = 33.28(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0001	0.02	Q				
0+10	0.0010	0.13	Q				
0+15	0.0023	0.19	Q				
0+20	0.0038	0.22	Q				
0+25	0.0054	0.23	Q				
0+30	0.0071	0.24	Q				
0+35	0.0088	0.25	Q				
0+40	0.0106	0.26	Q				
0+45	0.0124	0.26	Q				
0+50	0.0142	0.26	Q				
0+55	0.0160	0.27	Q				
1+ 0	0.0179	0.27	Q				
1+ 5	0.0198	0.27	Q				
1+10	0.0216	0.27	Q				
1+15	0.0235	0.27	Q				
1+20	0.0254	0.27	Q				
1+25	0.0272	0.27	Q				
1+30	0.0291	0.27	Q				
1+35	0.0310	0.28	Q				
1+40	0.0329	0.28	Q				
1+45	0.0349	0.28	Q				
1+50	0.0368	0.28	Q				
1+55	0.0387	0.28	Q				
2+ 0	0.0406	0.28	Q				
2+ 5	0.0426	0.28	Q				
2+10	0.0445	0.28	QV				
2+15	0.0465	0.28	QV				
2+20	0.0485	0.29	QV				
2+25	0.0504	0.29	QV				
2+30	0.0524	0.29	QV				
2+35	0.0544	0.29	QV				
2+40	0.0564	0.29	QV				
2+45	0.0584	0.29	QV				
2+50	0.0604	0.29	QV				
2+55	0.0624	0.29	QV				
3+ 0	0.0645	0.30	QV				
3+ 5	0.0665	0.30	QV				
3+10	0.0686	0.30	QV				
3+15	0.0706	0.30	QV				
3+20	0.0727	0.30	QV				
3+25	0.0748	0.30	QV				
3+30	0.0769	0.30	QV				
3+35	0.0790	0.30	QV				
3+40	0.0811	0.31	QV				
3+45	0.0832	0.31	QV				
3+50	0.0853	0.31	QV				
3+55	0.0874	0.31	QV				
4+ 0	0.0896	0.31	Q V				
4+ 5	0.0917	0.31	Q V				
4+10	0.0939	0.31	Q V				
4+15	0.0960	0.32	Q V				
4+20	0.0982	0.32	Q V				
4+25	0.1004	0.32	Q V				
4+30	0.1026	0.32	Q V				
4+35	0.1048	0.32	Q V				

4+40	0.1071	0.32	Q	V			
4+45	0.1093	0.32	Q	V			
4+50	0.1115	0.33	Q	V			
4+55	0.1138	0.33	Q	V			
5+ 0	0.1161	0.33	Q	V			
5+ 5	0.1183	0.33	Q	V			
5+10	0.1206	0.33	Q	V			
5+15	0.1229	0.33	Q	V			
5+20	0.1252	0.34	Q	V			
5+25	0.1276	0.34	Q	V			
5+30	0.1299	0.34	Q	V			
5+35	0.1323	0.34	Q	V			
5+40	0.1346	0.34	Q	V			
5+45	0.1370	0.34	Q	V			
5+50	0.1394	0.35	Q	V			
5+55	0.1418	0.35	Q	V			
6+ 0	0.1442	0.35	Q	V			
6+ 5	0.1466	0.35	Q	V			
6+10	0.1491	0.35	Q	V			
6+15	0.1515	0.36	Q	V			
6+20	0.1540	0.36	Q	V			
6+25	0.1565	0.36	Q	V			
6+30	0.1590	0.36	Q	V			
6+35	0.1615	0.36	Q	V			
6+40	0.1640	0.37	Q	V			
6+45	0.1665	0.37	Q	V			
6+50	0.1691	0.37	Q	V			
6+55	0.1717	0.37	Q	V			
7+ 0	0.1742	0.38	Q	V			
7+ 5	0.1768	0.38	Q	V			
7+10	0.1795	0.38	Q	V			
7+15	0.1821	0.38	Q	V			
7+20	0.1847	0.38	Q	V			
7+25	0.1874	0.39	Q	V			
7+30	0.1901	0.39	Q	V			
7+35	0.1928	0.39	Q	V			
7+40	0.1955	0.39	Q	V			
7+45	0.1982	0.40	Q	V			
7+50	0.2010	0.40	Q	V			
7+55	0.2038	0.40	Q	V			
8+ 0	0.2066	0.41	Q	V			
8+ 5	0.2094	0.41	Q	V			
8+10	0.2122	0.41	Q	V			
8+15	0.2150	0.41	Q	V			
8+20	0.2179	0.42	Q	V			
8+25	0.2208	0.42	Q	V			
8+30	0.2237	0.42	Q	V			
8+35	0.2266	0.43	Q	V			
8+40	0.2296	0.43	Q	V			
8+45	0.2326	0.43	Q	V			
8+50	0.2356	0.44	Q	V			
8+55	0.2386	0.44	Q	V			
9+ 0	0.2416	0.44	Q	V			
9+ 5	0.2447	0.45	Q	V			
9+10	0.2478	0.45	Q	V			
9+15	0.2509	0.45	Q	V			
9+20	0.2540	0.46	Q	V			
9+25	0.2572	0.46	Q	V			
9+30	0.2604	0.46	Q	V			
9+35	0.2636	0.47	Q	V			
9+40	0.2669	0.47	Q	V			
9+45	0.2701	0.48	Q	V			
9+50	0.2734	0.48	Q	V			
9+55	0.2768	0.48	Q	V			
10+ 0	0.2801	0.49	Q	V			
10+ 5	0.2835	0.49	Q	V			
10+10	0.2869	0.50	Q	V			
10+15	0.2904	0.50	Q	V			
10+20	0.2939	0.51	Q	V			
10+25	0.2974	0.51	Q	V			
10+30	0.3010	0.52	Q	V			
10+35	0.3045	0.52	Q	V			
10+40	0.3082	0.53	Q	V			
10+45	0.3118	0.53	Q	V			
10+50	0.3155	0.54	Q	V			
10+55	0.3193	0.54	Q	V			
11+ 0	0.3231	0.55	Q	V			
11+ 5	0.3269	0.55	Q	V			

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11+10       0.3307      0.56  Q      V  |         |          |         |
11+15       0.3346      0.57  Q      V  |         |          |         |
11+20       0.3386      0.57  Q      V  |         |          |         |
11+25       0.3426      0.58  Q      V  |         |          |         |
11+30       0.3466      0.59  Q      V  |         |          |         |
11+35       0.3507      0.59  Q      V  |         |          |         |
11+40       0.3548      0.60  Q       V |         |          |         |
11+45       0.3590      0.61  Q       V |         |          |         |
11+50       0.3633      0.62  Q       V |         |          |         |
11+55       0.3676      0.62  Q       V |         |          |         |
12+ 0       0.3719      0.63  Q       V |         |          |         |
12+ 5       0.3762      0.63  Q       V |         |          |         |
12+10       0.3801      0.56  Q       V |         |          |         |
12+15       0.3837      0.53  Q       V |         |          |         |
12+20       0.3873      0.52  Q       V |         |          |         |
12+25       0.3908      0.51  Q       V |         |          |         |
12+30       0.3943      0.51  Q       V |         |          |         |
12+35       0.3979      0.52  Q        V|         |          |         |
12+40       0.4015      0.52  Q        V|         |          |         |
12+45       0.4052      0.53  Q        V|         |          |         |
12+50       0.4089      0.54  Q        V|         |          |         |
12+55       0.4127      0.55  Q        V|         |          |         |
13+ 0       0.4165      0.56  Q        V|         |          |         |
13+ 5       0.4205      0.57  Q        V|         |          |         |
13+10       0.4245      0.58  Q        V|         |          |         |
13+15       0.4286      0.59  Q        V|         |          |         |
13+20       0.4328      0.61  Q        V|         |          |         |
13+25       0.4370      0.62  Q        V|         |          |         |
13+30       0.4414      0.64  Q        V|         |          |         |
13+35       0.4459      0.65  Q         V         |          |         |
13+40       0.4505      0.67  Q         V         |          |         |
13+45       0.4552      0.68  Q         V         |          |         |
13+50       0.4600      0.70  Q         V         |          |         |
13+55       0.4650      0.72  Q         V         |          |         |
14+ 0       0.4701      0.74  Q         V         |          |         |
14+ 5       0.4753      0.76  Q         V         |          |         |
14+10       0.4808      0.79  Q         V         |          |         |
14+15       0.4864      0.81  Q         |V        |          |         |
14+20       0.4921      0.84  Q         |V        |          |         |
14+25       0.4981      0.87  Q         |V        |          |         |
14+30       0.5043      0.90  Q         |V        |          |         |
14+35       0.5108      0.93  Q         |V        |          |         |
14+40       0.5175      0.97  Q         |V        |          |         |
14+45       0.5244      1.01  |Q        |V        |          |         |
14+50       0.5317      1.06  |Q        | V       |          |         |
14+55       0.5394      1.11  |Q        | V       |          |         |
15+ 0       0.5474      1.17  |Q        | V       |          |         |
15+ 5       0.5559      1.23  |Q        | V       |          |         |
15+10       0.5649      1.31  |Q        | V       |          |         |
15+15       0.5745      1.39  |Q        |  V      |          |         |
15+20       0.5848      1.49  |Q        |  V      |          |         |
15+25       0.5960      1.64  |Q        |  V      |          |         |
15+30       0.6097      1.98  |Q        |  V      |          |         |
15+35       0.6253      2.27  | Q       |   V     |          |         |
15+40       0.6431      2.59  | Q       |   V     |          |         |
15+45       0.6634      2.93  | Q       |    V    |          |         |
15+50       0.6878      3.55  |  Q      |    V    |          |         |
15+55       0.7190      4.53  |   Q     |     V   |          |         |
16+ 0       0.7660      6.83  |     Q   |      V  |          |         |
16+ 5       0.8617     13.88  |         |  Q     V|          |         |
16+10       1.0908     33.28  |         |         |   V      |  Q      |
16+15       1.2375     21.30  |         |         |Q      V  |         |
16+20       1.3175     11.61  |         |Q        |        V|         |
16+25       1.3712      7.80  |      Q  |         |         |V        |
16+30       1.4087      5.44  |    Q    |         |         |V        |
16+35       1.4367      4.06  |   Q     |         |         | V       |
16+40       1.4581      3.11  |  Q      |         |         | V       |
16+45       1.4743      2.36  | Q       |         |         |  V      |
16+50       1.4879      1.96  |Q        |         |         |  V      |
16+55       1.4997      1.72  |Q        |         |         |  V      |
17+ 0       1.5092      1.37  |Q        |         |         |   V     |
17+ 5       1.5160      1.00  Q         |         |         |   V     |
17+10       1.5223      0.90  Q         |         |         |   V     |
17+15       1.5280      0.84  Q         |         |         |   V     |
17+20       1.5334      0.78  Q         |         |         |   V     |
17+25       1.5384      0.73  Q         |         |         |   V     |
17+30       1.5432      0.69  Q         |         |         |   V     |
17+35       1.5478      0.66  Q         |         |         |    V    |
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17+40	1.5521	0.63	Q	|	|	|	V |
17+45	1.5562	0.60	Q	|	|	|	V |
17+50	1.5602	0.58	Q	|	|	|	V |
17+55	1.5640	0.55	Q	|	|	|	V |
18+ 0	1.5676	0.53	Q	|	|	|	V |
18+ 5	1.5713	0.53	Q	|	|	|	V |
18+10	1.5753	0.58	Q	|	|	|	V |
18+15	1.5795	0.61	Q	|	|	|	V |
18+20	1.5837	0.61	Q	|	|	|	V |
18+25	1.5878	0.60	Q	|	|	|	V |
18+30	1.5920	0.60	Q	|	|	|	V |
18+35	1.5960	0.59	Q	|	|	|	V |
18+40	1.6000	0.58	Q	|	|	|	V |
18+45	1.6038	0.56	Q	|	|	|	V |
18+50	1.6077	0.55	Q	|	|	|	V |
18+55	1.6114	0.54	Q	|	|	|	V |
19+ 0	1.6151	0.53	Q	|	|	|	V |
19+ 5	1.6187	0.52	Q	|	|	|	V |
19+10	1.6222	0.51	Q	|	|	|	V |
19+15	1.6256	0.50	Q	|	|	|	V |
19+20	1.6290	0.49	Q	|	|	|	V |
19+25	1.6324	0.48	Q	|	|	|	V |
19+30	1.6357	0.48	Q	|	|	|	V |
19+35	1.6389	0.47	Q	|	|	|	V |
19+40	1.6421	0.46	Q	|	|	|	V |
19+45	1.6452	0.45	Q	|	|	|	V |
19+50	1.6482	0.45	Q	|	|	|	V |
19+55	1.6513	0.44	Q	|	|	|	V |
20+ 0	1.6542	0.43	Q	|	|	|	V |
20+ 5	1.6572	0.43	Q	|	|	|	V |
20+10	1.6601	0.42	Q	|	|	|	V |
20+15	1.6629	0.41	Q	|	|	|	V |
20+20	1.6657	0.41	Q	|	|	|	V |
20+25	1.6685	0.40	Q	|	|	|	V |
20+30	1.6712	0.40	Q	|	|	|	V |
20+35	1.6739	0.39	Q	|	|	|	V |
20+40	1.6766	0.39	Q	|	|	|	V |
20+45	1.6792	0.38	Q	|	|	|	V |
20+50	1.6818	0.38	Q	|	|	|	V |
20+55	1.6844	0.37	Q	|	|	|	V |
21+ 0	1.6870	0.37	Q	|	|	|	V |
21+ 5	1.6895	0.36	Q	|	|	|	V |
21+10	1.6920	0.36	Q	|	|	|	V |
21+15	1.6944	0.36	Q	|	|	|	V |
21+20	1.6968	0.35	Q	|	|	|	V |
21+25	1.6992	0.35	Q	|	|	|	V |
21+30	1.7016	0.34	Q	|	|	|	V |
21+35	1.7040	0.34	Q	|	|	|	V |
21+40	1.7063	0.34	Q	|	|	|	V |
21+45	1.7086	0.33	Q	|	|	|	V |
21+50	1.7109	0.33	Q	|	|	|	V |
21+55	1.7131	0.33	Q	|	|	|	V |
22+ 0	1.7154	0.32	Q	|	|	|	V |
22+ 5	1.7176	0.32	Q	|	|	|	V |
22+10	1.7198	0.32	Q	|	|	|	V |
22+15	1.7219	0.32	Q	|	|	|	V |
22+20	1.7241	0.31	Q	|	|	|	V|
22+25	1.7262	0.31	Q	|	|	|	V|
22+30	1.7283	0.31	Q	|	|	|	V|
22+35	1.7304	0.30	Q	|	|	|	V|
22+40	1.7325	0.30	Q	|	|	|	V|
22+45	1.7346	0.30	Q	|	|	|	V|
22+50	1.7366	0.30	Q	|	|	|	V|
22+55	1.7386	0.29	Q	|	|	|	V|
23+ 0	1.7407	0.29	Q	|	|	|	V|
23+ 5	1.7426	0.29	Q	|	|	|	V|
23+10	1.7446	0.29	Q	|	|	|	V|
23+15	1.7466	0.28	Q	|	|	|	V|
23+20	1.7485	0.28	Q	|	|	|	V|
23+25	1.7504	0.28	Q	|	|	|	V|
23+30	1.7524	0.28	Q	|	|	|	V|
23+35	1.7543	0.28	Q	|	|	|	V|
23+40	1.7561	0.27	Q	|	|	|	V|
23+45	1.7580	0.27	Q	|	|	|	V|
23+50	1.7599	0.27	Q	|	|	|	V|
23+55	1.7617	0.27	Q	|	|	|	V|
24+ 0	1.7635	0.27	Q	|	|	|	V|
24+ 5	1.7652	0.24	Q	|	|	|	V|

24+10	1.7662	0.14	Q	|	|	|	V|
24+15	1.7667	0.07	Q	|	|	|	V|
24+20	1.7670	0.05	Q	|	|	|	V|
24+25	1.7672	0.03	Q	|	|	|	V|
24+30	1.7673	0.02	Q	|	|	|	V|
24+35	1.7674	0.01	Q	|	|	|	V|
24+40	1.7674	0.01	Q	|	|	|	V|
24+45	1.7675	0.01	Q	|	|	|	V|
24+50	1.7675	0.00	Q	|	|	|	V|
24+55	1.7675	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
100 YEAR 24 HOUR EVENT
PROPOSED CONDITION - DRAINING TO THE EAST

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
4.90	1	0.75
Rainfall data for year 2		
4.90	6	0.70
Rainfall data for year 2		
4.90	24	1.00
Rainfall data for year 100		
4.90	1	1.15
Rainfall data for year 100		
4.90	6	1.80
Rainfall data for year 100		
4.90	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	4.90	1.000	0.262	0.300	0.078

Area-averaged adjusted loss rate Fm (In/Hr) = 0.078

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
1.47	0.300	69.0	86.2	1.60	0.559
3.43	0.700	98.0	98.0	0.20	0.923

Area-averaged catchment yield fraction, Y = 0.814
Area-averaged low loss fraction, Yb = 0.186

User entry of time of concentration = 0.110 (hours)

++

Watershed area = 4.90(Ac.)
Catchment Lag time = 0.088 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.078(In/Hr)
Average low loss rate fraction (Yb) = 0.186 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.546(In)
Computed peak 30-minute rainfall = 0.934(In)
Specified peak 1-hour rainfall = 1.150(In)
Computed peak 3-hour rainfall = 1.514(In)
Specified peak 6-hour rainfall = 1.800(In)
Specified peak 24-hour rainfall = 3.000(In)

Rainfall depth area reduction factors:
Using a total area of 4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.546(In)
30-minute factor = 1.000 Adjusted rainfall = 0.934(In)
1-hour factor = 1.000 Adjusted rainfall = 1.150(In)
3-hour factor = 1.000 Adjusted rainfall = 1.514(In)
6-hour factor = 1.000 Adjusted rainfall = 1.800(In)
24-hour factor = 1.000 Adjusted rainfall = 3.000(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 59.26 (CFS))	
1	15.498	9.184
2	64.965	29.314
3	82.606	10.453
4	90.463	4.656
5	94.742	2.535
6	97.231	1.475
7	98.497	0.750
8	99.522	0.607
9	100.000	0.283

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5456	0.5456
2	0.6717	0.1261
3	0.7585	0.0869
4	0.8269	0.0684
5	0.8842	0.0573
6	0.9339	0.0497
7	0.9781	0.0442
8	1.0181	0.0400
9	1.0547	0.0366
10	1.0885	0.0339
11	1.1201	0.0316
12	1.1497	0.0296
13	1.1730	0.0233
14	1.1950	0.0220
15	1.2158	0.0208
16	1.2356	0.0198
17	1.2544	0.0189
18	1.2725	0.0181
19	1.2898	0.0173
20	1.3065	0.0167
21	1.3226	0.0160
22	1.3380	0.0155
23	1.3530	0.0150
24	1.3675	0.0145
25	1.3815	0.0140
26	1.3952	0.0136
27	1.4084	0.0132
28	1.4213	0.0129
29	1.4338	0.0125
30	1.4460	0.0122

31	1.4579	0.0119
32	1.4696	0.0116
33	1.4809	0.0114
34	1.4920	0.0111
35	1.5029	0.0109
36	1.5135	0.0106
37	1.5239	0.0104
38	1.5341	0.0102
39	1.5441	0.0100
40	1.5539	0.0098
41	1.5636	0.0096
42	1.5730	0.0095
43	1.5823	0.0093
44	1.5914	0.0091
45	1.6004	0.0090
46	1.6092	0.0088
47	1.6179	0.0087
48	1.6264	0.0085
49	1.6348	0.0084
50	1.6431	0.0083
51	1.6513	0.0082
52	1.6593	0.0080
53	1.6672	0.0079
54	1.6750	0.0078
55	1.6827	0.0077
56	1.6903	0.0076
57	1.6978	0.0075
58	1.7052	0.0074
59	1.7125	0.0073
60	1.7197	0.0072
61	1.7269	0.0071
62	1.7339	0.0070
63	1.7409	0.0070
64	1.7477	0.0069
65	1.7545	0.0068
66	1.7612	0.0067
67	1.7679	0.0066
68	1.7744	0.0066
69	1.7809	0.0065
70	1.7873	0.0064
71	1.7937	0.0064
72	1.8000	0.0063
73	1.8091	0.0092
74	1.8182	0.0091
75	1.8273	0.0090
76	1.8362	0.0089
77	1.8451	0.0089
78	1.8539	0.0088
79	1.8626	0.0087
80	1.8712	0.0087
81	1.8798	0.0086
82	1.8883	0.0085
83	1.8968	0.0085
84	1.9052	0.0084
85	1.9135	0.0083
86	1.9218	0.0083
87	1.9300	0.0082
88	1.9381	0.0081
89	1.9462	0.0081
90	1.9542	0.0080
91	1.9622	0.0080
92	1.9701	0.0079
93	1.9780	0.0079
94	1.9858	0.0078
95	1.9936	0.0078
96	2.0013	0.0077
97	2.0089	0.0077
98	2.0165	0.0076
99	2.0241	0.0076
100	2.0316	0.0075
101	2.0391	0.0075
102	2.0465	0.0074
103	2.0538	0.0074
104	2.0612	0.0073
105	2.0685	0.0073
106	2.0757	0.0072
107	2.0829	0.0072
108	2.0900	0.0072

109	2.0971	0.0071
110	2.1042	0.0071
111	2.1112	0.0070
112	2.1182	0.0070
113	2.1252	0.0069
114	2.1321	0.0069
115	2.1390	0.0069
116	2.1458	0.0068
117	2.1526	0.0068
118	2.1594	0.0068
119	2.1661	0.0067
120	2.1728	0.0067
121	2.1794	0.0067
122	2.1860	0.0066
123	2.1926	0.0066
124	2.1992	0.0066
125	2.2057	0.0065
126	2.2122	0.0065
127	2.2186	0.0065
128	2.2251	0.0064
129	2.2315	0.0064
130	2.2378	0.0064
131	2.2441	0.0063
132	2.2504	0.0063
133	2.2567	0.0063
134	2.2629	0.0062
135	2.2692	0.0062
136	2.2753	0.0062
137	2.2815	0.0062
138	2.2876	0.0061
139	2.2937	0.0061
140	2.2998	0.0061
141	2.3058	0.0060
142	2.3118	0.0060
143	2.3178	0.0060
144	2.3238	0.0060
145	2.3297	0.0059
146	2.3356	0.0059
147	2.3415	0.0059
148	2.3473	0.0059
149	2.3532	0.0058
150	2.3590	0.0058
151	2.3648	0.0058
152	2.3705	0.0058
153	2.3763	0.0057
154	2.3820	0.0057
155	2.3877	0.0057
156	2.3933	0.0057
157	2.3990	0.0056
158	2.4046	0.0056
159	2.4102	0.0056
160	2.4158	0.0056
161	2.4213	0.0056
162	2.4268	0.0055
163	2.4324	0.0055
164	2.4378	0.0055
165	2.4433	0.0055
166	2.4488	0.0054
167	2.4542	0.0054
168	2.4596	0.0054
169	2.4650	0.0054
170	2.4703	0.0054
171	2.4757	0.0053
172	2.4810	0.0053
173	2.4863	0.0053
174	2.4916	0.0053
175	2.4969	0.0053
176	2.5021	0.0052
177	2.5073	0.0052
178	2.5125	0.0052
179	2.5177	0.0052
180	2.5229	0.0052
181	2.5281	0.0052
182	2.5332	0.0051
183	2.5383	0.0051
184	2.5434	0.0051
185	2.5485	0.0051
186	2.5536	0.0051

187	2.5586	0.0051
188	2.5637	0.0050
189	2.5687	0.0050
190	2.5737	0.0050
191	2.5787	0.0050
192	2.5836	0.0050
193	2.5886	0.0050
194	2.5935	0.0049
195	2.5984	0.0049
196	2.6033	0.0049
197	2.6082	0.0049
198	2.6131	0.0049
199	2.6180	0.0049
200	2.6228	0.0048
201	2.6276	0.0048
202	2.6324	0.0048
203	2.6372	0.0048
204	2.6420	0.0048
205	2.6468	0.0048
206	2.6515	0.0048
207	2.6563	0.0047
208	2.6610	0.0047
209	2.6657	0.0047
210	2.6704	0.0047
211	2.6751	0.0047
212	2.6797	0.0047
213	2.6844	0.0047
214	2.6890	0.0046
215	2.6936	0.0046
216	2.6982	0.0046
217	2.7028	0.0046
218	2.7074	0.0046
219	2.7120	0.0046
220	2.7165	0.0046
221	2.7211	0.0045
222	2.7256	0.0045
223	2.7301	0.0045
224	2.7346	0.0045
225	2.7391	0.0045
226	2.7436	0.0045
227	2.7481	0.0045
228	2.7525	0.0045
229	2.7570	0.0044
230	2.7614	0.0044
231	2.7658	0.0044
232	2.7702	0.0044
233	2.7746	0.0044
234	2.7790	0.0044
235	2.7834	0.0044
236	2.7877	0.0044
237	2.7921	0.0043
238	2.7964	0.0043
239	2.8007	0.0043
240	2.8051	0.0043
241	2.8094	0.0043
242	2.8136	0.0043
243	2.8179	0.0043
244	2.8222	0.0043
245	2.8264	0.0043
246	2.8307	0.0042
247	2.8349	0.0042
248	2.8392	0.0042
249	2.8434	0.0042
250	2.8476	0.0042
251	2.8518	0.0042
252	2.8559	0.0042
253	2.8601	0.0042
254	2.8643	0.0042
255	2.8684	0.0042
256	2.8726	0.0041
257	2.8767	0.0041
258	2.8808	0.0041
259	2.8849	0.0041
260	2.8890	0.0041
261	2.8931	0.0041
262	2.8972	0.0041
263	2.9013	0.0041
264	2.9053	0.0041

265	2.9094	0.0041
266	2.9134	0.0040
267	2.9174	0.0040
268	2.9215	0.0040
269	2.9255	0.0040
270	2.9295	0.0040
271	2.9335	0.0040
272	2.9375	0.0040
273	2.9414	0.0040
274	2.9454	0.0040
275	2.9494	0.0040
276	2.9533	0.0039
277	2.9572	0.0039
278	2.9612	0.0039
279	2.9651	0.0039
280	2.9690	0.0039
281	2.9729	0.0039
282	2.9768	0.0039
283	2.9807	0.0039
284	2.9846	0.0039
285	2.9884	0.0039
286	2.9923	0.0039
287	2.9961	0.0039
288	3.0000	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0007	0.0031
2	0.0039	0.0007	0.0031
3	0.0039	0.0007	0.0031
4	0.0039	0.0007	0.0032
5	0.0039	0.0007	0.0032
6	0.0039	0.0007	0.0032
7	0.0039	0.0007	0.0032
8	0.0039	0.0007	0.0032
9	0.0039	0.0007	0.0032
10	0.0040	0.0007	0.0032
11	0.0040	0.0007	0.0032
12	0.0040	0.0007	0.0032
13	0.0040	0.0007	0.0033
14	0.0040	0.0007	0.0033
15	0.0040	0.0008	0.0033
16	0.0040	0.0008	0.0033
17	0.0041	0.0008	0.0033
18	0.0041	0.0008	0.0033
19	0.0041	0.0008	0.0033
20	0.0041	0.0008	0.0033
21	0.0041	0.0008	0.0034
22	0.0041	0.0008	0.0034
23	0.0042	0.0008	0.0034
24	0.0042	0.0008	0.0034
25	0.0042	0.0008	0.0034
26	0.0042	0.0008	0.0034
27	0.0042	0.0008	0.0034
28	0.0042	0.0008	0.0034
29	0.0042	0.0008	0.0035
30	0.0043	0.0008	0.0035
31	0.0043	0.0008	0.0035
32	0.0043	0.0008	0.0035
33	0.0043	0.0008	0.0035
34	0.0043	0.0008	0.0035
35	0.0043	0.0008	0.0035
36	0.0044	0.0008	0.0035
37	0.0044	0.0008	0.0036
38	0.0044	0.0008	0.0036
39	0.0044	0.0008	0.0036
40	0.0044	0.0008	0.0036
41	0.0045	0.0008	0.0036
42	0.0045	0.0008	0.0036
43	0.0045	0.0008	0.0037
44	0.0045	0.0008	0.0037
45	0.0045	0.0008	0.0037
46	0.0045	0.0008	0.0037
47	0.0046	0.0009	0.0037
48	0.0046	0.0009	0.0037
49	0.0046	0.0009	0.0038

50	0.0046	0.0009	0.0038
51	0.0047	0.0009	0.0038
52	0.0047	0.0009	0.0038
53	0.0047	0.0009	0.0038
54	0.0047	0.0009	0.0038
55	0.0047	0.0009	0.0039
56	0.0048	0.0009	0.0039
57	0.0048	0.0009	0.0039
58	0.0048	0.0009	0.0039
59	0.0048	0.0009	0.0039
60	0.0048	0.0009	0.0039
61	0.0049	0.0009	0.0040
62	0.0049	0.0009	0.0040
63	0.0049	0.0009	0.0040
64	0.0049	0.0009	0.0040
65	0.0050	0.0009	0.0040
66	0.0050	0.0009	0.0041
67	0.0050	0.0009	0.0041
68	0.0050	0.0009	0.0041
69	0.0051	0.0009	0.0041
70	0.0051	0.0009	0.0041
71	0.0051	0.0010	0.0042
72	0.0051	0.0010	0.0042
73	0.0052	0.0010	0.0042
74	0.0052	0.0010	0.0042
75	0.0052	0.0010	0.0043
76	0.0052	0.0010	0.0043
77	0.0053	0.0010	0.0043
78	0.0053	0.0010	0.0043
79	0.0053	0.0010	0.0043
80	0.0054	0.0010	0.0044
81	0.0054	0.0010	0.0044
82	0.0054	0.0010	0.0044
83	0.0055	0.0010	0.0044
84	0.0055	0.0010	0.0045
85	0.0055	0.0010	0.0045
86	0.0056	0.0010	0.0045
87	0.0056	0.0010	0.0046
88	0.0056	0.0010	0.0046
89	0.0057	0.0011	0.0046
90	0.0057	0.0011	0.0046
91	0.0057	0.0011	0.0047
92	0.0058	0.0011	0.0047
93	0.0058	0.0011	0.0047
94	0.0058	0.0011	0.0047
95	0.0059	0.0011	0.0048
96	0.0059	0.0011	0.0048
97	0.0060	0.0011	0.0048
98	0.0060	0.0011	0.0049
99	0.0060	0.0011	0.0049
100	0.0061	0.0011	0.0049
101	0.0061	0.0011	0.0050
102	0.0062	0.0011	0.0050
103	0.0062	0.0012	0.0051
104	0.0062	0.0012	0.0051
105	0.0063	0.0012	0.0051
106	0.0063	0.0012	0.0051
107	0.0064	0.0012	0.0052
108	0.0064	0.0012	0.0052
109	0.0065	0.0012	0.0053
110	0.0065	0.0012	0.0053
111	0.0066	0.0012	0.0054
112	0.0066	0.0012	0.0054
113	0.0067	0.0012	0.0054
114	0.0067	0.0013	0.0055
115	0.0068	0.0013	0.0055
116	0.0068	0.0013	0.0056
117	0.0069	0.0013	0.0056
118	0.0069	0.0013	0.0057
119	0.0070	0.0013	0.0057
120	0.0071	0.0013	0.0058
121	0.0072	0.0013	0.0058
122	0.0072	0.0013	0.0059
123	0.0073	0.0014	0.0059
124	0.0073	0.0014	0.0060
125	0.0074	0.0014	0.0060
126	0.0075	0.0014	0.0061
127	0.0076	0.0014	0.0061

128	0.0076	0.0014	0.0062
129	0.0077	0.0014	0.0063
130	0.0078	0.0014	0.0063
131	0.0079	0.0015	0.0064
132	0.0079	0.0015	0.0064
133	0.0080	0.0015	0.0065
134	0.0081	0.0015	0.0066
135	0.0082	0.0015	0.0067
136	0.0083	0.0015	0.0067
137	0.0084	0.0016	0.0068
138	0.0085	0.0016	0.0069
139	0.0086	0.0016	0.0070
140	0.0087	0.0016	0.0070
141	0.0088	0.0016	0.0072
142	0.0089	0.0017	0.0072
143	0.0090	0.0017	0.0073
144	0.0091	0.0017	0.0074
145	0.0063	0.0012	0.0051
146	0.0064	0.0012	0.0052
147	0.0065	0.0012	0.0053
148	0.0066	0.0012	0.0053
149	0.0067	0.0013	0.0055
150	0.0068	0.0013	0.0055
151	0.0070	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0059
154	0.0073	0.0014	0.0059
155	0.0075	0.0014	0.0061
156	0.0076	0.0014	0.0062
157	0.0078	0.0015	0.0064
158	0.0079	0.0015	0.0064
159	0.0082	0.0015	0.0066
160	0.0083	0.0015	0.0067
161	0.0085	0.0016	0.0069
162	0.0087	0.0016	0.0071
163	0.0090	0.0017	0.0073
164	0.0091	0.0017	0.0074
165	0.0095	0.0018	0.0077
166	0.0096	0.0018	0.0078
167	0.0100	0.0019	0.0081
168	0.0102	0.0019	0.0083
169	0.0106	0.0020	0.0087
170	0.0109	0.0020	0.0088
171	0.0114	0.0021	0.0092
172	0.0116	0.0022	0.0095
173	0.0122	0.0023	0.0099
174	0.0125	0.0023	0.0102
175	0.0132	0.0025	0.0108
176	0.0136	0.0025	0.0111
177	0.0145	0.0027	0.0118
178	0.0150	0.0028	0.0122
179	0.0160	0.0030	0.0131
180	0.0167	0.0031	0.0136
181	0.0181	0.0034	0.0147
182	0.0189	0.0035	0.0154
183	0.0208	0.0039	0.0169
184	0.0220	0.0041	0.0179
185	0.0296	0.0055	0.0241
186	0.0316	0.0059	0.0257
187	0.0366	0.0065	0.0301
188	0.0400	0.0065	0.0334
189	0.0497	0.0065	0.0432
190	0.0573	0.0065	0.0507
191	0.0869	0.0065	0.0803
192	0.1261	0.0065	0.1196
193	0.5456	0.0065	0.5390
194	0.0684	0.0065	0.0618
195	0.0442	0.0065	0.0377
196	0.0339	0.0063	0.0276
197	0.0233	0.0043	0.0189
198	0.0198	0.0037	0.0161
199	0.0173	0.0032	0.0141
200	0.0155	0.0029	0.0126
201	0.0140	0.0026	0.0114
202	0.0129	0.0024	0.0105
203	0.0119	0.0022	0.0097
204	0.0111	0.0021	0.0090
205	0.0104	0.0019	0.0085

206	0.0098	0.0018	0.0080
207	0.0093	0.0017	0.0076
208	0.0088	0.0016	0.0072
209	0.0084	0.0016	0.0068
210	0.0080	0.0015	0.0065
211	0.0077	0.0014	0.0063
212	0.0074	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0066	0.0012	0.0054
216	0.0064	0.0012	0.0052
217	0.0092	0.0017	0.0075
218	0.0089	0.0017	0.0073
219	0.0087	0.0016	0.0071
220	0.0085	0.0016	0.0069
221	0.0083	0.0016	0.0068
222	0.0081	0.0015	0.0066
223	0.0080	0.0015	0.0065
224	0.0078	0.0015	0.0064
225	0.0077	0.0014	0.0062
226	0.0075	0.0014	0.0061
227	0.0074	0.0014	0.0060
228	0.0072	0.0013	0.0059
229	0.0071	0.0013	0.0058
230	0.0070	0.0013	0.0057
231	0.0069	0.0013	0.0056
232	0.0068	0.0013	0.0055
233	0.0067	0.0012	0.0054
234	0.0066	0.0012	0.0053
235	0.0065	0.0012	0.0053
236	0.0064	0.0012	0.0052
237	0.0063	0.0012	0.0051
238	0.0062	0.0012	0.0050
239	0.0061	0.0011	0.0050
240	0.0060	0.0011	0.0049
241	0.0059	0.0011	0.0048
242	0.0059	0.0011	0.0048
243	0.0058	0.0011	0.0047
244	0.0057	0.0011	0.0046
245	0.0056	0.0011	0.0046
246	0.0056	0.0010	0.0045
247	0.0055	0.0010	0.0045
248	0.0054	0.0010	0.0044
249	0.0054	0.0010	0.0044
250	0.0053	0.0010	0.0043
251	0.0053	0.0010	0.0043
252	0.0052	0.0010	0.0042
253	0.0052	0.0010	0.0042
254	0.0051	0.0010	0.0042
255	0.0051	0.0009	0.0041
256	0.0050	0.0009	0.0041
257	0.0050	0.0009	0.0040
258	0.0049	0.0009	0.0040
259	0.0049	0.0009	0.0040
260	0.0048	0.0009	0.0039
261	0.0048	0.0009	0.0039
262	0.0047	0.0009	0.0038
263	0.0047	0.0009	0.0038
264	0.0046	0.0009	0.0038
265	0.0046	0.0009	0.0037
266	0.0046	0.0008	0.0037
267	0.0045	0.0008	0.0037
268	0.0045	0.0008	0.0036
269	0.0044	0.0008	0.0036
270	0.0044	0.0008	0.0036
271	0.0044	0.0008	0.0036
272	0.0043	0.0008	0.0035
273	0.0043	0.0008	0.0035
274	0.0043	0.0008	0.0035
275	0.0042	0.0008	0.0034
276	0.0042	0.0008	0.0034
277	0.0042	0.0008	0.0034
278	0.0041	0.0008	0.0034
279	0.0041	0.0008	0.0033
280	0.0041	0.0008	0.0033
281	0.0041	0.0008	0.0033
282	0.0040	0.0007	0.0033
283	0.0040	0.0007	0.0032

284	0.0040	0.0007	0.0032
285	0.0039	0.0007	0.0032
286	0.0039	0.0007	0.0032
287	0.0039	0.0007	0.0032
288	0.0039	0.0007	0.0031

Total soil rain loss = 0.42(In)
Total effective rainfall = 2.58(In)
Peak flow rate in flood hydrograph = 18.24(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0002	0.03	Q				
0+10	0.0010	0.12	Q				
0+15	0.0021	0.15	Q				
0+20	0.0032	0.17	Q				
0+25	0.0045	0.18	Q				
0+30	0.0057	0.18	Q				
0+35	0.0070	0.19	Q				
0+40	0.0083	0.19	Q				
0+45	0.0096	0.19	Q				
0+50	0.0109	0.19	Q				
0+55	0.0122	0.19	Q				
1+ 0	0.0135	0.19	Q				
1+ 5	0.0148	0.19	Q				
1+10	0.0162	0.19	Q				
1+15	0.0175	0.19	Q				
1+20	0.0188	0.19	Q				
1+25	0.0202	0.19	Q				
1+30	0.0215	0.20	Q				
1+35	0.0229	0.20	Q				
1+40	0.0242	0.20	Q				
1+45	0.0256	0.20	Q				
1+50	0.0270	0.20	QV				
1+55	0.0283	0.20	QV				
2+ 0	0.0297	0.20	QV				
2+ 5	0.0311	0.20	QV				
2+10	0.0325	0.20	QV				
2+15	0.0339	0.20	QV				
2+20	0.0352	0.20	QV				
2+25	0.0366	0.20	QV				
2+30	0.0381	0.20	QV				
2+35	0.0395	0.20	QV				
2+40	0.0409	0.21	QV				
2+45	0.0423	0.21	QV				
2+50	0.0437	0.21	QV				
2+55	0.0452	0.21	QV				
3+ 0	0.0466	0.21	QV				
3+ 5	0.0480	0.21	QV				
3+10	0.0495	0.21	QV				
3+15	0.0510	0.21	QV				
3+20	0.0524	0.21	QV				
3+25	0.0539	0.21	Q V				
3+30	0.0554	0.21	Q V				
3+35	0.0568	0.22	Q V				
3+40	0.0583	0.22	Q V				
3+45	0.0598	0.22	Q V				
3+50	0.0613	0.22	Q V				
3+55	0.0628	0.22	Q V				
4+ 0	0.0643	0.22	Q V				
4+ 5	0.0659	0.22	Q V				
4+10	0.0674	0.22	Q V				
4+15	0.0689	0.22	Q V				
4+20	0.0705	0.22	Q V				
4+25	0.0720	0.22	Q V				
4+30	0.0736	0.23	Q V				
4+35	0.0751	0.23	Q V				
4+40	0.0767	0.23	Q V				
4+45	0.0783	0.23	Q V				
4+50	0.0798	0.23	Q V				

4+55	0.0814	0.23	Q	V				
5+ 0	0.0830	0.23	Q	V				
5+ 5	0.0846	0.23	Q	V				
5+10	0.0863	0.23	Q	V				
5+15	0.0879	0.24	Q	V				
5+20	0.0895	0.24	Q	V				
5+25	0.0911	0.24	Q	V				
5+30	0.0928	0.24	Q	V				
5+35	0.0944	0.24	Q	V				
5+40	0.0961	0.24	Q	V				
5+45	0.0978	0.24	Q	V				
5+50	0.0994	0.24	Q	V				
5+55	0.1011	0.24	Q	V				
6+ 0	0.1028	0.25	Q	V				
6+ 5	0.1045	0.25	Q	V				
6+10	0.1062	0.25	Q	V				
6+15	0.1079	0.25	Q	V				
6+20	0.1097	0.25	Q	V				
6+25	0.1114	0.25	Q	V				
6+30	0.1132	0.25	Q	V				
6+35	0.1149	0.26	Q	V				
6+40	0.1167	0.26	Q	V				
6+45	0.1185	0.26	Q	V				
6+50	0.1203	0.26	Q	V				
6+55	0.1221	0.26	Q	V				
7+ 0	0.1239	0.26	Q	V				
7+ 5	0.1257	0.26	Q	V				
7+10	0.1275	0.27	Q	V				
7+15	0.1293	0.27	Q	V				
7+20	0.1312	0.27	Q	V				
7+25	0.1331	0.27	Q	V				
7+30	0.1349	0.27	Q	V				
7+35	0.1368	0.27	Q	V				
7+40	0.1387	0.28	Q	V				
7+45	0.1406	0.28	Q	V				
7+50	0.1425	0.28	Q	V				
7+55	0.1445	0.28	Q	V				
8+ 0	0.1464	0.28	Q	V				
8+ 5	0.1484	0.28	Q	V				
8+10	0.1503	0.29	Q	V				
8+15	0.1523	0.29	Q	V				
8+20	0.1543	0.29	Q	V				
8+25	0.1563	0.29	Q	V				
8+30	0.1584	0.29	Q	V				
8+35	0.1604	0.30	Q	V				
8+40	0.1624	0.30	Q	V				
8+45	0.1645	0.30	Q	V				
8+50	0.1666	0.30	Q	V				
8+55	0.1687	0.30	Q	V				
9+ 0	0.1708	0.31	Q	V				
9+ 5	0.1729	0.31	Q	V				
9+10	0.1751	0.31	Q	V				
9+15	0.1772	0.31	Q	V				
9+20	0.1794	0.32	Q	V				
9+25	0.1816	0.32	Q	V				
9+30	0.1838	0.32	Q	V				
9+35	0.1860	0.32	Q	V				
9+40	0.1883	0.33	Q	V				
9+45	0.1905	0.33	Q	V				
9+50	0.1928	0.33	Q	V				
9+55	0.1951	0.33	Q	V				
10+ 0	0.1974	0.34	Q	V				
10+ 5	0.1998	0.34	Q	V				
10+10	0.2021	0.34	Q	V				
10+15	0.2045	0.35	Q	V				
10+20	0.2069	0.35	Q	V				
10+25	0.2093	0.35	Q	V				
10+30	0.2118	0.36	Q	V				
10+35	0.2143	0.36	Q	V				
10+40	0.2168	0.36	Q	V				
10+45	0.2193	0.37	Q	V				
10+50	0.2218	0.37	Q	V				
10+55	0.2244	0.37	Q	V				
11+ 0	0.2270	0.38	Q	V				
11+ 5	0.2296	0.38	Q	V				
11+10	0.2322	0.38	Q	V				
11+15	0.2349	0.39	Q	V				
11+20	0.2376	0.39	Q	V				

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11+25       0.2404      0.40  Q        V|         |          |          |
11+30       0.2431      0.40  Q        V|         |          |          |
11+35       0.2459      0.41  Q        V|         |          |          |
11+40       0.2487      0.41  Q        V|         |          |          |
11+45       0.2516      0.42  Q        V|         |          |          |
11+50       0.2545      0.42  Q        V|         |          |          |
11+55       0.2574      0.43  Q        V|         |          |          |
12+ 0       0.2604      0.43  Q        V|         |          |          |
12+ 5       0.2632      0.41  Q         V         |          |          |
12+10       0.2657      0.35  Q         V         |          |          |
12+15       0.2679      0.33  Q         V         |          |          |
12+20       0.2701      0.32  Q         V         |          |          |
12+25       0.2724      0.32  Q         V         |          |          |
12+30       0.2746      0.32  Q         V         |          |          |
12+35       0.2768      0.33  Q         V         |          |          |
12+40       0.2791      0.33  Q         V         |          |          |
12+45       0.2814      0.34  Q         V         |          |          |
12+50       0.2838      0.34  Q         V         |          |          |
12+55       0.2862      0.35  Q         V         |          |          |
13+ 0       0.2887      0.36  Q         V         |          |          |
13+ 5       0.2912      0.36  Q         |V        |          |          |
13+10       0.2937      0.37  Q         |V        |          |          |
13+15       0.2964      0.38  Q         |V        |          |          |
13+20       0.2990      0.39  Q         |V        |          |          |
13+25       0.3017      0.40  Q         |V        |          |          |
13+30       0.3045      0.41  Q         |V        |          |          |
13+35       0.3074      0.41  Q         |V        |          |          |
13+40       0.3103      0.43  Q         |V        |          |          |
13+45       0.3133      0.44  Q         |V        |          |          |
13+50       0.3164      0.45  Q         | V       |          |          |
13+55       0.3196      0.46  Q         | V       |          |          |
14+ 0       0.3228      0.47  Q         | V       |          |          |
14+ 5       0.3262      0.49  Q         | V       |          |          |
14+10       0.3296      0.50  |Q        | V       |          |          |
14+15       0.3332      0.52  |Q        | V       |          |          |
14+20       0.3369      0.54  |Q        | V       |          |          |
14+25       0.3407      0.55  |Q        | V       |          |          |
14+30       0.3447      0.58  |Q        |  V      |          |          |
14+35       0.3488      0.60  |Q        |  V      |          |          |
14+40       0.3531      0.62  |Q        |  V      |          |          |
14+45       0.3575      0.65  |Q        |  V      |          |          |
14+50       0.3622      0.68  |Q        |  V      |          |          |
14+55       0.3671      0.71  |Q        |  V      |          |          |
15+ 0       0.3723      0.75  |Q        |   V     |          |          |
15+ 5       0.3777      0.79  |Q        |   V     |          |          |
15+10       0.3835      0.84  |Q        |   V     |          |          |
15+15       0.3896      0.89  |Q        |   V     |          |          |
15+20       0.3963      0.96  |Q        |    V    |          |          |
15+25       0.4036      1.07  | Q       |    V    |          |          |
15+30       0.4125      1.29  | Q       |    V    |          |          |
15+35       0.4225      1.45  | Q       |     V   |          |          |
15+40       0.4340      1.66  |  Q      |     V   |          |          |
15+45       0.4473      1.92  |  Q      |     V   |          |          |
15+50       0.4634      2.35  |   Q     |      V  |          |          |
15+55       0.4840      2.98  |    Q    |       V |          |          |
16+ 0       0.5139      4.35  |       Q |        V|          |          |
16+ 5       0.5810      9.74  |         |         Q| V       |          |
16+10       0.7066     18.24  |         |          |     V    |     Q    |
16+15       0.7664      8.69  |         |      Q   |        V|          |
16+20       0.8009      5.01  |         Q          |         V          |
16+25       0.8237      3.31  |     Q   |          |         |V         |
16+30       0.8393      2.27  |   Q     |          |         |V         |
16+35       0.8505      1.61  |  Q      |          |         | V        |
16+40       0.8595      1.32  | Q       |          |         | V        |
16+45       0.8665      1.00  | Q       |          |         | V        |
16+50       0.8717      0.76  |Q        |          |         |  V       |
16+55       0.8763      0.68  |Q        |          |         |  V       |
17+ 0       0.8806      0.61  |Q        |          |         |  V       |
17+ 5       0.8845      0.57  |Q        |          |         |  V       |
17+10       0.8881      0.53  |Q        |          |         |  V       |
17+15       0.8915      0.49  Q         |          |         |  V       |
17+20       0.8947      0.47  Q         |          |         |   V      |
17+25       0.8977      0.44  Q         |          |         |   V      |
17+30       0.9006      0.42  Q         |          |         |   V      |
17+35       0.9034      0.40  Q         |          |         |   V      |
17+40       0.9060      0.38  Q         |          |         |   V      |
17+45       0.9085      0.37  Q         |          |         |   V      |
17+50       0.9110      0.35  Q         |          |         |   V      |
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17+55	0.9133	0.34	Q	|	|	| V	|
18+ 0	0.9155	0.33	Q	|	|	| V	|
18+ 5	0.9179	0.34	Q	|	|	| V	|
18+10	0.9206	0.40	Q	|	|	| V	|
18+15	0.9235	0.41	Q	|	|	| V	|
18+20	0.9263	0.41	Q	|	|	| V	|
18+25	0.9291	0.41	Q	|	|	| V	|
18+30	0.9319	0.40	Q	|	|	| V	|
18+35	0.9346	0.40	Q	|	|	| V	|
18+40	0.9373	0.39	Q	|	|	| V	|
18+45	0.9399	0.38	Q	|	|	| V	|
18+50	0.9425	0.37	Q	|	|	| V	|
18+55	0.9450	0.37	Q	|	|	| V	|
19+ 0	0.9475	0.36	Q	|	|	| V	|
19+ 5	0.9499	0.35	Q	|	|	| V	|
19+10	0.9523	0.35	Q	|	|	| V	|
19+15	0.9547	0.34	Q	|	|	| V	|
19+20	0.9570	0.33	Q	|	|	| V	|
19+25	0.9592	0.33	Q	|	|	| V	|
19+30	0.9615	0.32	Q	|	|	| V	|
19+35	0.9637	0.32	Q	|	|	| V	|
19+40	0.9658	0.31	Q	|	|	| V	|
19+45	0.9680	0.31	Q	|	|	| V	|
19+50	0.9701	0.30	Q	|	|	| V	|
19+55	0.9721	0.30	Q	|	|	| V	|
20+ 0	0.9742	0.30	Q	|	|	| V	|
20+ 5	0.9762	0.29	Q	|	|	| V	|
20+10	0.9782	0.29	Q	|	|	| V	|
20+15	0.9801	0.28	Q	|	|	| V	|
20+20	0.9821	0.28	Q	|	|	| V	|
20+25	0.9840	0.28	Q	|	|	| V	|
20+30	0.9859	0.27	Q	|	|	| V	|
20+35	0.9877	0.27	Q	|	|	| V	|
20+40	0.9896	0.27	Q	|	|	| V	|
20+45	0.9914	0.26	Q	|	|	| V	|
20+50	0.9932	0.26	Q	|	|	| V	|
20+55	0.9950	0.26	Q	|	|	| V	|
21+ 0	0.9967	0.26	Q	|	|	| V	|
21+ 5	0.9985	0.25	Q	|	|	| V	|
21+10	1.0002	0.25	Q	|	|	| V	|
21+15	1.0019	0.25	Q	|	|	| V	|
21+20	1.0036	0.25	Q	|	|	| V	|
21+25	1.0053	0.24	Q	|	|	| V	|
21+30	1.0069	0.24	Q	|	|	| V	|
21+35	1.0086	0.24	Q	|	|	| V	|
21+40	1.0102	0.24	Q	|	|	| V	|
21+45	1.0118	0.23	Q	|	|	| V	|
21+50	1.0134	0.23	Q	|	|	| V	|
21+55	1.0150	0.23	Q	|	|	| V	|
22+ 0	1.0165	0.23	Q	|	|	| V	|
22+ 5	1.0181	0.22	Q	|	|	| V	|
22+10	1.0196	0.22	Q	|	|	| V	|
22+15	1.0211	0.22	Q	|	|	| V	|
22+20	1.0226	0.22	Q	|	|	| V	|
22+25	1.0241	0.22	Q	|	|	| V	|
22+30	1.0256	0.22	Q	|	|	| V	|
22+35	1.0271	0.21	Q	|	|	| V	|
22+40	1.0285	0.21	Q	|	|	| V	|
22+45	1.0300	0.21	Q	|	|	| V	|
22+50	1.0314	0.21	Q	|	|	| V	|
22+55	1.0328	0.21	Q	|	|	| V	|
23+ 0	1.0342	0.21	Q	|	|	| V	|
23+ 5	1.0356	0.20	Q	|	|	| V	|
23+10	1.0370	0.20	Q	|	|	| V	|
23+15	1.0384	0.20	Q	|	|	| V	|
23+20	1.0398	0.20	Q	|	|	| V	|
23+25	1.0412	0.20	Q	|	|	| V	|
23+30	1.0425	0.20	Q	|	|	| V	|
23+35	1.0438	0.19	Q	|	|	| V	|
23+40	1.0452	0.19	Q	|	|	| V	|
23+45	1.0465	0.19	Q	|	|	| V	|
23+50	1.0478	0.19	Q	|	|	| V	|
23+55	1.0491	0.19	Q	|	|	| V	|
24+ 0	1.0504	0.19	Q	|	|	| V	|
24+ 5	1.0515	0.16	Q	|	|	| V	|
24+10	1.0520	0.07	Q	|	|	| V	|
24+15	1.0522	0.03	Q	|	|	| V	|
24+20	1.0523	0.02	Q	|	|	| V	|

```
   24+25       1.0524      0.01  Q         |         |         |        V|
   24+30       1.0524      0.01  Q         |         |         |        V|
   24+35       1.0524      0.00  Q         |         |         |        V|
   24+40       1.0524      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
10 YEAR 24 HOUR EVENT
PROPOSED CONDITION - DRAINING TO THE EAST

Storm Event Year = 10

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
4.90	1	0.75
Rainfall data for year 2		
4.90	6	0.70
Rainfall data for year 2		
4.90	24	1.00
Rainfall data for year 100		
4.90	1	1.15
Rainfall data for year 100		
4.90	6	1.80
Rainfall data for year 100		
4.90	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	4.90	1.000	0.262	0.300	0.078

Area-averaged adjusted loss rate Fm (In/Hr) = 0.078

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
1.47	0.300	69.0	86.2	1.60	0.399
3.43	0.700	98.0	98.0	0.20	0.877

Area-averaged catchment yield fraction, Y = 0.734
Area-averaged low loss fraction, Yb = 0.266

User entry of time of concentration = 0.110 (hours)

++

Watershed area = 4.90(Ac.)
Catchment Lag time = 0.088 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.078(In/Hr)
Average low loss rate fraction (Yb) = 0.266 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.356(In)
Computed peak 30-minute rainfall = 0.609(In)
Specified peak 1-hour rainfall = 0.750(In)
Computed peak 3-hour rainfall = 0.976(In)
Specified peak 6-hour rainfall = 1.153(In)
Specified peak 24-hour rainfall = 1.823(In)

Rainfall depth area reduction factors:
Using a total area of 4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.356(In)
30-minute factor = 1.000 Adjusted rainfall = 0.609(In)
1-hour factor = 1.000 Adjusted rainfall = 0.750(In)
3-hour factor = 1.000 Adjusted rainfall = 0.976(In)
6-hour factor = 1.000 Adjusted rainfall = 1.153(In)
24-hour factor = 1.000 Adjusted rainfall = 1.823(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 59.26 (CFS))	
1	15.498	9.184
2	64.965	29.314
3	82.606	10.453
4	90.463	4.656
5	94.742	2.535
6	97.231	1.475
7	98.497	0.750
8	99.522	0.607
9	100.000	0.283

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3558	0.3558
2	0.4380	0.0822
3	0.4947	0.0567
4	0.5393	0.0446
5	0.5766	0.0373
6	0.6090	0.0324
7	0.6379	0.0288
8	0.6639	0.0261
9	0.6878	0.0239
10	0.7099	0.0221
11	0.7305	0.0206
12	0.7498	0.0193
13	0.7644	0.0145
14	0.7781	0.0137
15	0.7911	0.0130
16	0.8034	0.0123
17	0.8152	0.0118
18	0.8265	0.0113
19	0.8372	0.0108
20	0.8476	0.0104
21	0.8576	0.0100
22	0.8672	0.0096
23	0.8765	0.0093
24	0.8855	0.0090
25	0.8942	0.0087
26	0.9027	0.0085
27	0.9109	0.0082
28	0.9189	0.0080
29	0.9267	0.0078
30	0.9342	0.0076

31	0.9416	0.0074
32	0.9488	0.0072
33	0.9559	0.0070
34	0.9627	0.0069
35	0.9694	0.0067
36	0.9760	0.0066
37	0.9825	0.0064
38	0.9888	0.0063
39	0.9949	0.0062
40	1.0010	0.0061
41	1.0069	0.0059
42	1.0128	0.0058
43	1.0185	0.0057
44	1.0241	0.0056
45	1.0297	0.0055
46	1.0351	0.0054
47	1.0405	0.0054
48	1.0457	0.0053
49	1.0509	0.0052
50	1.0560	0.0051
51	1.0611	0.0050
52	1.0660	0.0050
53	1.0709	0.0049
54	1.0757	0.0048
55	1.0804	0.0047
56	1.0851	0.0047
57	1.0897	0.0046
58	1.0943	0.0046
59	1.0988	0.0045
60	1.1032	0.0044
61	1.1076	0.0044
62	1.1119	0.0043
63	1.1162	0.0043
64	1.1204	0.0042
65	1.1246	0.0042
66	1.1287	0.0041
67	1.1328	0.0041
68	1.1368	0.0040
69	1.1408	0.0040
70	1.1448	0.0039
71	1.1487	0.0039
72	1.1525	0.0039
73	1.1578	0.0053
74	1.1630	0.0052
75	1.1682	0.0052
76	1.1733	0.0051
77	1.1784	0.0051
78	1.1834	0.0050
79	1.1884	0.0050
80	1.1934	0.0050
81	1.1983	0.0049
82	1.2032	0.0049
83	1.2080	0.0048
84	1.2128	0.0048
85	1.2176	0.0048
86	1.2223	0.0047
87	1.2270	0.0047
88	1.2316	0.0046
89	1.2362	0.0046
90	1.2408	0.0046
91	1.2453	0.0045
92	1.2498	0.0045
93	1.2543	0.0045
94	1.2588	0.0044
95	1.2632	0.0044
96	1.2676	0.0044
97	1.2719	0.0044
98	1.2762	0.0043
99	1.2805	0.0043
100	1.2848	0.0043
101	1.2890	0.0042
102	1.2932	0.0042
103	1.2974	0.0042
104	1.3016	0.0042
105	1.3057	0.0041
106	1.3098	0.0041
107	1.3139	0.0041
108	1.3179	0.0040

109	1.3219	0.0040
110	1.3259	0.0040
111	1.3299	0.0040
112	1.3338	0.0039
113	1.3378	0.0039
114	1.3417	0.0039
115	1.3456	0.0039
116	1.3494	0.0039
117	1.3532	0.0038
118	1.3571	0.0038
119	1.3609	0.0038
120	1.3646	0.0038
121	1.3684	0.0037
122	1.3721	0.0037
123	1.3758	0.0037
124	1.3795	0.0037
125	1.3832	0.0037
126	1.3868	0.0036
127	1.3904	0.0036
128	1.3941	0.0036
129	1.3977	0.0036
130	1.4012	0.0036
131	1.4048	0.0036
132	1.4083	0.0035
133	1.4118	0.0035
134	1.4153	0.0035
135	1.4188	0.0035
136	1.4223	0.0035
137	1.4257	0.0034
138	1.4292	0.0034
139	1.4326	0.0034
140	1.4360	0.0034
141	1.4394	0.0034
142	1.4427	0.0034
143	1.4461	0.0034
144	1.4494	0.0033
145	1.4527	0.0033
146	1.4561	0.0033
147	1.4593	0.0033
148	1.4626	0.0033
149	1.4659	0.0033
150	1.4691	0.0032
151	1.4724	0.0032
152	1.4756	0.0032
153	1.4788	0.0032
154	1.4820	0.0032
155	1.4851	0.0032
156	1.4883	0.0032
157	1.4915	0.0031
158	1.4946	0.0031
159	1.4977	0.0031
160	1.5008	0.0031
161	1.5039	0.0031
162	1.5070	0.0031
163	1.5101	0.0031
164	1.5131	0.0031
165	1.5162	0.0030
166	1.5192	0.0030
167	1.5222	0.0030
168	1.5252	0.0030
169	1.5282	0.0030
170	1.5312	0.0030
171	1.5342	0.0030
172	1.5371	0.0030
173	1.5401	0.0029
174	1.5430	0.0029
175	1.5460	0.0029
176	1.5489	0.0029
177	1.5518	0.0029
178	1.5547	0.0029
179	1.5576	0.0029
180	1.5604	0.0029
181	1.5633	0.0029
182	1.5661	0.0029
183	1.5690	0.0028
184	1.5718	0.0028
185	1.5746	0.0028
186	1.5774	0.0028

187	1.5802	0.0028
188	1.5830	0.0028
189	1.5858	0.0028
190	1.5886	0.0028
191	1.5913	0.0028
192	1.5941	0.0028
193	1.5968	0.0027
194	1.5996	0.0027
195	1.6023	0.0027
196	1.6050	0.0027
197	1.6077	0.0027
198	1.6104	0.0027
199	1.6131	0.0027
200	1.6157	0.0027
201	1.6184	0.0027
202	1.6211	0.0027
203	1.6237	0.0026
204	1.6264	0.0026
205	1.6290	0.0026
206	1.6316	0.0026
207	1.6342	0.0026
208	1.6368	0.0026
209	1.6394	0.0026
210	1.6420	0.0026
211	1.6446	0.0026
212	1.6472	0.0026
213	1.6497	0.0026
214	1.6523	0.0026
215	1.6549	0.0025
216	1.6574	0.0025
217	1.6599	0.0025
218	1.6625	0.0025
219	1.6650	0.0025
220	1.6675	0.0025
221	1.6700	0.0025
222	1.6725	0.0025
223	1.6750	0.0025
224	1.6774	0.0025
225	1.6799	0.0025
226	1.6824	0.0025
227	1.6848	0.0025
228	1.6873	0.0025
229	1.6897	0.0024
230	1.6922	0.0024
231	1.6946	0.0024
232	1.6970	0.0024
233	1.6994	0.0024
234	1.7018	0.0024
235	1.7042	0.0024
236	1.7066	0.0024
237	1.7090	0.0024
238	1.7114	0.0024
239	1.7138	0.0024
240	1.7162	0.0024
241	1.7185	0.0024
242	1.7209	0.0024
243	1.7232	0.0023
244	1.7256	0.0023
245	1.7279	0.0023
246	1.7302	0.0023
247	1.7325	0.0023
248	1.7349	0.0023
249	1.7372	0.0023
250	1.7395	0.0023
251	1.7418	0.0023
252	1.7441	0.0023
253	1.7464	0.0023
254	1.7486	0.0023
255	1.7509	0.0023
256	1.7532	0.0023
257	1.7554	0.0023
258	1.7577	0.0023
259	1.7599	0.0022
260	1.7622	0.0022
261	1.7644	0.0022
262	1.7667	0.0022
263	1.7689	0.0022
264	1.7711	0.0022

265	1.7733	0.0022
266	1.7755	0.0022
267	1.7777	0.0022
268	1.7799	0.0022
269	1.7821	0.0022
270	1.7843	0.0022
271	1.7865	0.0022
272	1.7887	0.0022
273	1.7908	0.0022
274	1.7930	0.0022
275	1.7952	0.0022
276	1.7973	0.0022
277	1.7995	0.0022
278	1.8016	0.0021
279	1.8038	0.0021
280	1.8059	0.0021
281	1.8080	0.0021
282	1.8102	0.0021
283	1.8123	0.0021
284	1.8144	0.0021
285	1.8165	0.0021
286	1.8186	0.0021
287	1.8207	0.0021
288	1.8228	0.0021

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0021	0.0006	0.0015
2	0.0021	0.0006	0.0015
3	0.0021	0.0006	0.0015
4	0.0021	0.0006	0.0016
5	0.0021	0.0006	0.0016
6	0.0021	0.0006	0.0016
7	0.0021	0.0006	0.0016
8	0.0021	0.0006	0.0016
9	0.0022	0.0006	0.0016
10	0.0022	0.0006	0.0016
11	0.0022	0.0006	0.0016
12	0.0022	0.0006	0.0016
13	0.0022	0.0006	0.0016
14	0.0022	0.0006	0.0016
15	0.0022	0.0006	0.0016
16	0.0022	0.0006	0.0016
17	0.0022	0.0006	0.0016
18	0.0022	0.0006	0.0016
19	0.0022	0.0006	0.0016
20	0.0022	0.0006	0.0016
21	0.0023	0.0006	0.0017
22	0.0023	0.0006	0.0017
23	0.0023	0.0006	0.0017
24	0.0023	0.0006	0.0017
25	0.0023	0.0006	0.0017
26	0.0023	0.0006	0.0017
27	0.0023	0.0006	0.0017
28	0.0023	0.0006	0.0017
29	0.0023	0.0006	0.0017
30	0.0023	0.0006	0.0017
31	0.0023	0.0006	0.0017
32	0.0024	0.0006	0.0017
33	0.0024	0.0006	0.0017
34	0.0024	0.0006	0.0017
35	0.0024	0.0006	0.0018
36	0.0024	0.0006	0.0018
37	0.0024	0.0006	0.0018
38	0.0024	0.0006	0.0018
39	0.0024	0.0006	0.0018
40	0.0024	0.0006	0.0018
41	0.0025	0.0007	0.0018
42	0.0025	0.0007	0.0018
43	0.0025	0.0007	0.0018
44	0.0025	0.0007	0.0018
45	0.0025	0.0007	0.0018
46	0.0025	0.0007	0.0018
47	0.0025	0.0007	0.0018
48	0.0025	0.0007	0.0019
49	0.0025	0.0007	0.0019

50	0.0025	0.0007	0.0019
51	0.0026	0.0007	0.0019
52	0.0026	0.0007	0.0019
53	0.0026	0.0007	0.0019
54	0.0026	0.0007	0.0019
55	0.0026	0.0007	0.0019
56	0.0026	0.0007	0.0019
57	0.0026	0.0007	0.0019
58	0.0026	0.0007	0.0019
59	0.0027	0.0007	0.0020
60	0.0027	0.0007	0.0020
61	0.0027	0.0007	0.0020
62	0.0027	0.0007	0.0020
63	0.0027	0.0007	0.0020
64	0.0027	0.0007	0.0020
65	0.0028	0.0007	0.0020
66	0.0028	0.0007	0.0020
67	0.0028	0.0007	0.0020
68	0.0028	0.0007	0.0020
69	0.0028	0.0007	0.0021
70	0.0028	0.0008	0.0021
71	0.0028	0.0008	0.0021
72	0.0029	0.0008	0.0021
73	0.0029	0.0008	0.0021
74	0.0029	0.0008	0.0021
75	0.0029	0.0008	0.0021
76	0.0029	0.0008	0.0021
77	0.0029	0.0008	0.0022
78	0.0029	0.0008	0.0022
79	0.0030	0.0008	0.0022
80	0.0030	0.0008	0.0022
81	0.0030	0.0008	0.0022
82	0.0030	0.0008	0.0022
83	0.0030	0.0008	0.0022
84	0.0031	0.0008	0.0022
85	0.0031	0.0008	0.0023
86	0.0031	0.0008	0.0023
87	0.0031	0.0008	0.0023
88	0.0031	0.0008	0.0023
89	0.0032	0.0008	0.0023
90	0.0032	0.0008	0.0023
91	0.0032	0.0009	0.0024
92	0.0032	0.0009	0.0024
93	0.0032	0.0009	0.0024
94	0.0033	0.0009	0.0024
95	0.0033	0.0009	0.0024
96	0.0033	0.0009	0.0024
97	0.0033	0.0009	0.0024
98	0.0034	0.0009	0.0025
99	0.0034	0.0009	0.0025
100	0.0034	0.0009	0.0025
101	0.0034	0.0009	0.0025
102	0.0034	0.0009	0.0025
103	0.0035	0.0009	0.0026
104	0.0035	0.0009	0.0026
105	0.0035	0.0009	0.0026
106	0.0036	0.0009	0.0026
107	0.0036	0.0010	0.0026
108	0.0036	0.0010	0.0026
109	0.0036	0.0010	0.0027
110	0.0037	0.0010	0.0027
111	0.0037	0.0010	0.0027
112	0.0037	0.0010	0.0027
113	0.0038	0.0010	0.0028
114	0.0038	0.0010	0.0028
115	0.0038	0.0010	0.0028
116	0.0039	0.0010	0.0028
117	0.0039	0.0010	0.0029
118	0.0039	0.0010	0.0029
119	0.0040	0.0011	0.0029
120	0.0040	0.0011	0.0029
121	0.0040	0.0011	0.0030
122	0.0041	0.0011	0.0030
123	0.0041	0.0011	0.0030
124	0.0042	0.0011	0.0030
125	0.0042	0.0011	0.0031
126	0.0042	0.0011	0.0031
127	0.0043	0.0011	0.0031

128	0.0043	0.0012	0.0032
129	0.0044	0.0012	0.0032
130	0.0044	0.0012	0.0032
131	0.0045	0.0012	0.0033
132	0.0045	0.0012	0.0033
133	0.0046	0.0012	0.0034
134	0.0046	0.0012	0.0034
135	0.0047	0.0012	0.0034
136	0.0047	0.0013	0.0035
137	0.0048	0.0013	0.0035
138	0.0048	0.0013	0.0035
139	0.0049	0.0013	0.0036
140	0.0050	0.0013	0.0036
141	0.0050	0.0013	0.0037
142	0.0051	0.0014	0.0037
143	0.0052	0.0014	0.0038
144	0.0052	0.0014	0.0038
145	0.0039	0.0010	0.0028
146	0.0039	0.0010	0.0029
147	0.0040	0.0011	0.0029
148	0.0040	0.0011	0.0030
149	0.0041	0.0011	0.0030
150	0.0042	0.0011	0.0031
151	0.0043	0.0011	0.0031
152	0.0043	0.0012	0.0032
153	0.0044	0.0012	0.0033
154	0.0045	0.0012	0.0033
155	0.0046	0.0012	0.0034
156	0.0047	0.0012	0.0034
157	0.0048	0.0013	0.0035
158	0.0049	0.0013	0.0036
159	0.0050	0.0013	0.0037
160	0.0051	0.0014	0.0037
161	0.0053	0.0014	0.0039
162	0.0054	0.0014	0.0039
163	0.0055	0.0015	0.0041
164	0.0056	0.0015	0.0041
165	0.0058	0.0016	0.0043
166	0.0059	0.0016	0.0044
167	0.0062	0.0016	0.0045
168	0.0063	0.0017	0.0046
169	0.0066	0.0018	0.0048
170	0.0067	0.0018	0.0049
171	0.0070	0.0019	0.0052
172	0.0072	0.0019	0.0053
173	0.0076	0.0020	0.0056
174	0.0078	0.0021	0.0057
175	0.0082	0.0022	0.0060
176	0.0085	0.0023	0.0062
177	0.0090	0.0024	0.0066
178	0.0093	0.0025	0.0068
179	0.0100	0.0027	0.0073
180	0.0104	0.0028	0.0076
181	0.0113	0.0030	0.0083
182	0.0118	0.0031	0.0086
183	0.0130	0.0035	0.0095
184	0.0137	0.0037	0.0101
185	0.0193	0.0051	0.0142
186	0.0206	0.0055	0.0151
187	0.0239	0.0064	0.0175
188	0.0261	0.0065	0.0195
189	0.0324	0.0065	0.0259
190	0.0373	0.0065	0.0308
191	0.0567	0.0065	0.0501
192	0.0822	0.0065	0.0757
193	0.3558	0.0065	0.3493
194	0.0446	0.0065	0.0381
195	0.0288	0.0065	0.0223
196	0.0221	0.0059	0.0162
197	0.0145	0.0039	0.0107
198	0.0123	0.0033	0.0091
199	0.0108	0.0029	0.0079
200	0.0096	0.0026	0.0071
201	0.0087	0.0023	0.0064
202	0.0080	0.0021	0.0059
203	0.0074	0.0020	0.0054
204	0.0069	0.0018	0.0050
205	0.0064	0.0017	0.0047

206	0.0061	0.0016	0.0044
207	0.0057	0.0015	0.0042
208	0.0054	0.0014	0.0040
209	0.0052	0.0014	0.0038
210	0.0050	0.0013	0.0036
211	0.0047	0.0013	0.0035
212	0.0046	0.0012	0.0033
213	0.0044	0.0012	0.0032
214	0.0042	0.0011	0.0031
215	0.0041	0.0011	0.0030
216	0.0039	0.0010	0.0029
217	0.0053	0.0014	0.0039
218	0.0051	0.0014	0.0038
219	0.0050	0.0013	0.0037
220	0.0049	0.0013	0.0036
221	0.0048	0.0013	0.0035
222	0.0046	0.0012	0.0034
223	0.0045	0.0012	0.0033
224	0.0044	0.0012	0.0033
225	0.0044	0.0012	0.0032
226	0.0043	0.0011	0.0031
227	0.0042	0.0011	0.0031
228	0.0041	0.0011	0.0030
229	0.0040	0.0011	0.0030
230	0.0039	0.0011	0.0029
231	0.0039	0.0010	0.0028
232	0.0038	0.0010	0.0028
233	0.0037	0.0010	0.0028
234	0.0037	0.0010	0.0027
235	0.0036	0.0010	0.0027
236	0.0036	0.0010	0.0026
237	0.0035	0.0009	0.0026
238	0.0035	0.0009	0.0025
239	0.0034	0.0009	0.0025
240	0.0034	0.0009	0.0025
241	0.0033	0.0009	0.0024
242	0.0033	0.0009	0.0024
243	0.0032	0.0009	0.0024
244	0.0032	0.0008	0.0023
245	0.0031	0.0008	0.0023
246	0.0031	0.0008	0.0023
247	0.0031	0.0008	0.0023
248	0.0030	0.0008	0.0022
249	0.0030	0.0008	0.0022
250	0.0030	0.0008	0.0022
251	0.0029	0.0008	0.0021
252	0.0029	0.0008	0.0021
253	0.0029	0.0008	0.0021
254	0.0028	0.0008	0.0021
255	0.0028	0.0007	0.0021
256	0.0028	0.0007	0.0020
257	0.0027	0.0007	0.0020
258	0.0027	0.0007	0.0020
259	0.0027	0.0007	0.0020
260	0.0027	0.0007	0.0020
261	0.0026	0.0007	0.0019
262	0.0026	0.0007	0.0019
263	0.0026	0.0007	0.0019
264	0.0026	0.0007	0.0019
265	0.0025	0.0007	0.0019
266	0.0025	0.0007	0.0018
267	0.0025	0.0007	0.0018
268	0.0025	0.0007	0.0018
269	0.0024	0.0007	0.0018
270	0.0024	0.0006	0.0018
271	0.0024	0.0006	0.0018
272	0.0024	0.0006	0.0017
273	0.0024	0.0006	0.0017
274	0.0023	0.0006	0.0017
275	0.0023	0.0006	0.0017
276	0.0023	0.0006	0.0017
277	0.0023	0.0006	0.0017
278	0.0023	0.0006	0.0017
279	0.0022	0.0006	0.0017
280	0.0022	0.0006	0.0016
281	0.0022	0.0006	0.0016
282	0.0022	0.0006	0.0016
283	0.0022	0.0006	0.0016

284	0.0022	0.0006	0.0016
285	0.0022	0.0006	0.0016
286	0.0021	0.0006	0.0016
287	0.0021	0.0006	0.0016
288	0.0021	0.0006	0.0015

Total soil rain loss = 0.36(In)
Total effective rainfall = 1.46(In)
Peak flow rate in flood hydrograph = 11.76(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.01	Q				
0+10	0.0005	0.06	Q				
0+15	0.0010	0.08	Q				
0+20	0.0016	0.08	Q				
0+25	0.0022	0.09	Q				
0+30	0.0028	0.09	Q				
0+35	0.0034	0.09	Q				
0+40	0.0041	0.09	Q				
0+45	0.0047	0.09	Q				
0+50	0.0054	0.09	Q				
0+55	0.0060	0.09	Q				
1+ 0	0.0067	0.09	Q				
1+ 5	0.0073	0.09	Q				
1+10	0.0080	0.09	Q				
1+15	0.0086	0.10	Q				
1+20	0.0093	0.10	Q				
1+25	0.0099	0.10	Q				
1+30	0.0106	0.10	Q				
1+35	0.0113	0.10	Q				
1+40	0.0119	0.10	Q				
1+45	0.0126	0.10	Q				
1+50	0.0133	0.10	Q				
1+55	0.0140	0.10	Q				
2+ 0	0.0146	0.10	Q				
2+ 5	0.0153	0.10	QV				
2+10	0.0160	0.10	QV				
2+15	0.0167	0.10	QV				
2+20	0.0174	0.10	QV				
2+25	0.0181	0.10	QV				
2+30	0.0188	0.10	QV				
2+35	0.0195	0.10	QV				
2+40	0.0202	0.10	QV				
2+45	0.0209	0.10	QV				
2+50	0.0216	0.10	QV				
2+55	0.0223	0.10	QV				
3+ 0	0.0230	0.10	QV				
3+ 5	0.0237	0.10	QV				
3+10	0.0244	0.10	QV				
3+15	0.0252	0.10	QV				
3+20	0.0259	0.11	QV				
3+25	0.0266	0.11	QV				
3+30	0.0273	0.11	QV				
3+35	0.0281	0.11	QV				
3+40	0.0288	0.11	QV				
3+45	0.0296	0.11	QV				
3+50	0.0303	0.11	Q V				
3+55	0.0310	0.11	Q V				
4+ 0	0.0318	0.11	Q V				
4+ 5	0.0326	0.11	Q V				
4+10	0.0333	0.11	Q V				
4+15	0.0341	0.11	Q V				
4+20	0.0348	0.11	Q V				
4+25	0.0356	0.11	Q V				
4+30	0.0364	0.11	Q V				
4+35	0.0372	0.11	Q V				
4+40	0.0379	0.11	Q V				
4+45	0.0387	0.11	Q V				
4+50	0.0395	0.11	Q V				

4+55	0.0403	0.11	Q	V			
5+ 0	0.0411	0.12	Q	V			
5+ 5	0.0419	0.12	Q	V			
5+10	0.0427	0.12	Q	V			
5+15	0.0435	0.12	Q	V			
5+20	0.0443	0.12	Q	V			
5+25	0.0451	0.12	Q	V			
5+30	0.0460	0.12	Q	V			
5+35	0.0468	0.12	Q	V			
5+40	0.0476	0.12	Q	V			
5+45	0.0484	0.12	Q	V			
5+50	0.0493	0.12	Q	V			
5+55	0.0501	0.12	Q	V			
6+ 0	0.0510	0.12	Q	V			
6+ 5	0.0518	0.12	Q	V			
6+10	0.0527	0.12	Q	V			
6+15	0.0535	0.13	Q	V			
6+20	0.0544	0.13	Q	V			
6+25	0.0553	0.13	Q	V			
6+30	0.0562	0.13	Q	V			
6+35	0.0570	0.13	Q	V			
6+40	0.0579	0.13	Q	V			
6+45	0.0588	0.13	Q	V			
6+50	0.0597	0.13	Q	V			
6+55	0.0606	0.13	Q	V			
7+ 0	0.0615	0.13	Q	V			
7+ 5	0.0624	0.13	Q	V			
7+10	0.0634	0.13	Q	V			
7+15	0.0643	0.13	Q	V			
7+20	0.0652	0.14	Q	V			
7+25	0.0661	0.14	Q	V			
7+30	0.0671	0.14	Q	V			
7+35	0.0680	0.14	Q	V			
7+40	0.0690	0.14	Q	V			
7+45	0.0700	0.14	Q	V			
7+50	0.0709	0.14	Q	V			
7+55	0.0719	0.14	Q	V			
8+ 0	0.0729	0.14	Q	V			
8+ 5	0.0739	0.14	Q	V			
8+10	0.0749	0.14	Q	V			
8+15	0.0759	0.15	Q	V			
8+20	0.0769	0.15	Q	V			
8+25	0.0779	0.15	Q	V			
8+30	0.0789	0.15	Q	V			
8+35	0.0799	0.15	Q	V			
8+40	0.0810	0.15	Q	V			
8+45	0.0820	0.15	Q	V			
8+50	0.0831	0.15	Q	V			
8+55	0.0841	0.15	Q	V			
9+ 0	0.0852	0.16	Q	V			
9+ 5	0.0863	0.16	Q	V			
9+10	0.0874	0.16	Q	V			
9+15	0.0885	0.16	Q	V			
9+20	0.0896	0.16	Q	V			
9+25	0.0907	0.16	Q	V			
9+30	0.0918	0.16	Q	V			
9+35	0.0929	0.16	Q	V			
9+40	0.0941	0.17	Q	V			
9+45	0.0952	0.17	Q	V			
9+50	0.0964	0.17	Q	V			
9+55	0.0976	0.17	Q	V			
10+ 0	0.0987	0.17	Q	V			
10+ 5	0.0999	0.17	Q	V			
10+10	0.1011	0.17	Q	V			
10+15	0.1024	0.18	Q	V			
10+20	0.1036	0.18	Q	V			
10+25	0.1048	0.18	Q	V			
10+30	0.1061	0.18	Q	V			
10+35	0.1073	0.18	Q	V			
10+40	0.1086	0.19	Q	V			
10+45	0.1099	0.19	Q	V			
10+50	0.1112	0.19	Q	V			
10+55	0.1125	0.19	Q	V			
11+ 0	0.1139	0.19	Q	V			
11+ 5	0.1152	0.20	Q	V			
11+10	0.1166	0.20	Q	V			
11+15	0.1179	0.20	Q	V			
11+20	0.1193	0.20	Q	V			

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11+25       0.1207      0.20  Q       V |         |         |         |
11+30       0.1222      0.21  Q       V |         |         |         |
11+35       0.1236      0.21  Q       V |         |         |         |
11+40       0.1251      0.21  Q       V |         |         |         |
11+45       0.1265      0.21  Q       V |         |         |         |
11+50       0.1280      0.22  Q       V |         |         |         |
11+55       0.1295      0.22  Q       V |         |         |         |
12+ 0       0.1311      0.22  Q       V |         |         |         |
12+ 5       0.1326      0.22  Q       V |         |         |         |
12+10       0.1339      0.19  Q       V |         |         |         |
12+15       0.1351      0.18  Q        V|         |         |         |
12+20       0.1363      0.18  Q        V|         |         |         |
12+25       0.1375      0.18  Q        V|         |         |         |
12+30       0.1388      0.18  Q        V|         |         |         |
12+35       0.1400      0.18  Q        V|         |         |         |
12+40       0.1413      0.18  Q        V|         |         |         |
12+45       0.1426      0.19  Q        V|         |         |         |
12+50       0.1439      0.19  Q        V|         |         |         |
12+55       0.1452      0.19  Q        V|         |         |         |
13+ 0       0.1466      0.20  Q        V|         |         |         |
13+ 5       0.1480      0.20  Q        V|         |         |         |
13+10       0.1494      0.21  Q         V         |         |         |
13+15       0.1508      0.21  Q         V         |         |         |
13+20       0.1523      0.22  Q         V         |         |         |
13+25       0.1538      0.22  Q         V         |         |         |
13+30       0.1554      0.23  Q         V         |         |         |
13+35       0.1570      0.23  Q         V         |         |         |
13+40       0.1586      0.24  Q         V         |         |         |
13+45       0.1603      0.24  Q         V         |         |         |
13+50       0.1620      0.25  Q         V         |         |         |
13+55       0.1638      0.26  Q         V         |         |         |
14+ 0       0.1656      0.26  Q         |V        |         |         |
14+ 5       0.1674      0.27  Q         |V        |         |         |
14+10       0.1694      0.28  Q         |V        |         |         |
14+15       0.1714      0.29  Q         |V        |         |         |
14+20       0.1734      0.30  Q         |V        |         |         |
14+25       0.1756      0.31  Q         |V        |         |         |
14+30       0.1778      0.32  Q         |V        |         |         |
14+35       0.1801      0.33  Q         | V       |         |         |
14+40       0.1825      0.35  Q         | V       |         |         |
14+45       0.1850      0.36  Q         | V       |         |         |
14+50       0.1876      0.38  Q         | V       |         |         |
14+55       0.1903      0.40  Q         | V       |         |         |
15+ 0       0.1932      0.42  Q         | V       |         |         |
15+ 5       0.1963      0.44  Q         |  V      |         |         |
15+10       0.1995      0.47  Q         |  V      |         |         |
15+15       0.2030      0.50  |Q        |  V      |         |         |
15+20       0.2067      0.54  |Q        |  V      |         |         |
15+25       0.2109      0.61  |Q        |   V     |         |         |
15+30       0.2160      0.75  |Q        |   V     |         |         |
15+35       0.2219      0.85  |Q        |   V     |         |         |
15+40       0.2286      0.97  |Q        |    V    |         |         |
15+45       0.2364      1.13  | Q       |    V    |         |         |
15+50       0.2460      1.40  | Q       |     V   |         |         |
15+55       0.2585      1.81  |  Q      |      V  |         |         |
16+ 0       0.2771      2.71  |    Q    |       V |         |         |
16+ 5       0.3199      6.21  |         | Q       |V        |         |
16+10       0.4009     11.76  |         |         |  Q  V   |         |
16+15       0.4390      5.53  |         |Q        |       V |         |
16+20       0.4606      3.14  |     Q   |         |        V|         |
16+25       0.4747      2.04  |   Q     |         |         |V        |
16+30       0.4842      1.38  | Q       |         |         | V       |
16+35       0.4908      0.96  |Q        |         |         | V       |
16+40       0.4961      0.78  |Q        |         |         |  V      |
16+45       0.5001      0.58  |Q        |         |         |  V      |
16+50       0.5031      0.43  Q         |         |         |  V      |
16+55       0.5057      0.38  Q         |         |         |  V      |
17+ 0       0.5080      0.34  Q         |         |         |   V     |
17+ 5       0.5102      0.32  Q         |         |         |   V     |
17+10       0.5122      0.29  Q         |         |         |   V     |
17+15       0.5141      0.28  Q         |         |         |   V     |
17+20       0.5159      0.26  Q         |         |         |   V     |
17+25       0.5176      0.25  Q         |         |         |   V     |
17+30       0.5192      0.23  Q         |         |         |   V     |
17+35       0.5208      0.22  Q         |         |         |   V     |
17+40       0.5222      0.21  Q         |         |         |    V    |
17+45       0.5236      0.20  Q         |         |         |    V    |
17+50       0.5250      0.20  Q         |         |         |    V    |
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17+55	0.5263	0.19	Q	|	|	|	V |
18+ 0	0.5275	0.18	Q	|	|	|	V |
18+ 5	0.5288	0.19	Q	|	|	|	V |
18+10	0.5302	0.21	Q	|	|	|	V |
18+15	0.5317	0.22	Q	|	|	|	V |
18+20	0.5332	0.21	Q	|	|	|	V |
18+25	0.5347	0.21	Q	|	|	|	V |
18+30	0.5361	0.21	Q	|	|	|	V |
18+35	0.5375	0.20	Q	|	|	|	V |
18+40	0.5389	0.20	Q	|	|	|	V |
18+45	0.5402	0.20	Q	|	|	|	V |
18+50	0.5415	0.19	Q	|	|	|	V |
18+55	0.5428	0.19	Q	|	|	|	V |
19+ 0	0.5441	0.18	Q	|	|	|	V |
19+ 5	0.5453	0.18	Q	|	|	|	V |
19+10	0.5466	0.18	Q	|	|	|	V |
19+15	0.5478	0.17	Q	|	|	|	V |
19+20	0.5489	0.17	Q	|	|	|	V |
19+25	0.5501	0.17	Q	|	|	|	V |
19+30	0.5512	0.16	Q	|	|	|	V |
19+35	0.5523	0.16	Q	|	|	|	V |
19+40	0.5534	0.16	Q	|	|	|	V |
19+45	0.5545	0.16	Q	|	|	|	V |
19+50	0.5556	0.15	Q	|	|	|	V |
19+55	0.5566	0.15	Q	|	|	|	V |
20+ 0	0.5577	0.15	Q	|	|	|	V |
20+ 5	0.5587	0.15	Q	|	|	|	V |
20+10	0.5597	0.15	Q	|	|	|	V |
20+15	0.5607	0.14	Q	|	|	|	V |
20+20	0.5616	0.14	Q	|	|	|	V |
20+25	0.5626	0.14	Q	|	|	|	V |
20+30	0.5636	0.14	Q	|	|	|	V |
20+35	0.5645	0.14	Q	|	|	|	V |
20+40	0.5654	0.13	Q	|	|	|	V |
20+45	0.5663	0.13	Q	|	|	|	V |
20+50	0.5672	0.13	Q	|	|	|	V |
20+55	0.5681	0.13	Q	|	|	|	V |
21+ 0	0.5690	0.13	Q	|	|	|	V |
21+ 5	0.5699	0.13	Q	|	|	|	V |
21+10	0.5707	0.13	Q	|	|	|	V |
21+15	0.5716	0.12	Q	|	|	|	V |
21+20	0.5724	0.12	Q	|	|	|	V |
21+25	0.5733	0.12	Q	|	|	|	V |
21+30	0.5741	0.12	Q	|	|	|	V |
21+35	0.5749	0.12	Q	|	|	|	V |
21+40	0.5757	0.12	Q	|	|	|	V |
21+45	0.5765	0.12	Q	|	|	|	V |
21+50	0.5773	0.12	Q	|	|	|	V |
21+55	0.5781	0.11	Q	|	|	|	V |
22+ 0	0.5789	0.11	Q	|	|	|	V |
22+ 5	0.5797	0.11	Q	|	|	|	V |
22+10	0.5804	0.11	Q	|	|	|	V |
22+15	0.5812	0.11	Q	|	|	|	V |
22+20	0.5819	0.11	Q	|	|	|	V |
22+25	0.5827	0.11	Q	|	|	|	V |
22+30	0.5834	0.11	Q	|	|	|	V |
22+35	0.5841	0.11	Q	|	|	|	V |
22+40	0.5849	0.10	Q	|	|	|	V |
22+45	0.5856	0.10	Q	|	|	|	V |
22+50	0.5863	0.10	Q	|	|	|	V |
22+55	0.5870	0.10	Q	|	|	|	V |
23+ 0	0.5877	0.10	Q	|	|	|	V |
23+ 5	0.5884	0.10	Q	|	|	|	V |
23+10	0.5891	0.10	Q	|	|	|	V |
23+15	0.5897	0.10	Q	|	|	|	V |
23+20	0.5904	0.10	Q	|	|	|	V |
23+25	0.5911	0.10	Q	|	|	|	V |
23+30	0.5918	0.10	Q	|	|	|	V |
23+35	0.5924	0.10	Q	|	|	|	V |
23+40	0.5931	0.10	Q	|	|	|	V |
23+45	0.5937	0.09	Q	|	|	|	V |
23+50	0.5944	0.09	Q	|	|	|	V |
23+55	0.5950	0.09	Q	|	|	|	V |
24+ 0	0.5957	0.09	Q	|	|	|	V |
24+ 5	0.5962	0.08	Q	|	|	|	V |
24+10	0.5964	0.03	Q	|	|	|	V |
24+15	0.5965	0.02	Q	|	|	|	V |
24+20	0.5966	0.01	Q	|	|	|	V |

```
   24+25       0.5966      0.00  Q         |         |         |        V|
   24+30       0.5966      0.00  Q         |         |         |        V|
   24+35       0.5967      0.00  Q         |         |         |        V|
   24+40       0.5967      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
100 YEAR 24 HOUR EVENT
EXISTING CONDITION - DRAINING TO WEST

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	15.50	1	0.75
Rainfall data for year 2	15.50	6	0.70
Rainfall data for year 2	15.50	24	1.00
Rainfall data for year 100	15.50	1	1.15
Rainfall data for year 100	15.50	6	1.80
Rainfall data for year 100	15.50	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
90.0	98.0	15.50	1.000	0.040	1.000	0.040

Area-averaged adjusted loss rate Fm (In/Hr) = 0.040

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
15.50	1.000	90.0	98.0	0.20	0.923

Area-averaged catchment yield fraction, Y = 0.923
Area-averaged low loss fraction, Yb = 0.077
User entry of time of concentration = 0.162 (hours)

++
Watershed area =   15.50(Ac.)
Catchment Lag time =   0.130 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 64.3004
Hydrograph baseflow =   0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.040(In/Hr)
Average low loss rate fraction (Yb) = 0.077 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.546(In)
Computed peak 30-minute rainfall = 0.934(In)
Specified peak 1-hour rainfall = 1.150(In)
Computed peak 3-hour rainfall = 1.514(In)
Specified peak 6-hour rainfall = 1.800(In)
Specified peak 24-hour rainfall = 3.000(In)

Rainfall depth area reduction factors:
Using a total area of   15.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999   Adjusted rainfall = 0.545(In)
30-minute factor = 0.999   Adjusted rainfall = 0.933(In)
1-hour factor = 0.999   Adjusted rainfall = 1.149(In)
3-hour factor = 1.000   Adjusted rainfall = 1.513(In)
6-hour factor = 1.000   Adjusted rainfall = 1.800(In)
24-hour factor = 1.000   Adjusted rainfall = 3.000(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 187.45 (CFS))	
1	6.444	12.079
2	45.630	73.456
3	70.616	46.837
4	81.394	20.204
5	87.737	11.889
6	91.721	7.468
7	94.495	5.200
8	96.426	3.620
9	97.687	2.364
10	98.437	1.407
11	99.199	1.429
12	99.747	1.026
13	100.000	0.475

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5453	0.5453
2	0.6713	0.1260
3	0.7582	0.0868
4	0.8265	0.0683
5	0.8837	0.0572
6	0.9334	0.0497
7	0.9776	0.0442
8	1.0175	0.0400
9	1.0541	0.0366
10	1.0880	0.0339
11	1.1196	0.0316
12	1.1492	0.0296
13	1.1725	0.0233
14	1.1944	0.0220
15	1.2153	0.0208
16	1.2351	0.0198
17	1.2540	0.0189
18	1.2721	0.0181
19	1.2894	0.0174
20	1.3061	0.0167
21	1.3222	0.0161
22	1.3377	0.0155
23	1.3527	0.0150
24	1.3672	0.0145
25	1.3812	0.0141
26	1.3949	0.0136
27	1.4081	0.0133

28	1.4210	0.0129
29	1.4336	0.0126
30	1.4458	0.0122
31	1.4578	0.0119
32	1.4694	0.0116
33	1.4808	0.0114
34	1.4919	0.0111
35	1.5028	0.0109
36	1.5134	0.0106
37	1.5238	0.0104
38	1.5340	0.0102
39	1.5440	0.0100
40	1.5538	0.0098
41	1.5635	0.0096
42	1.5729	0.0095
43	1.5822	0.0093
44	1.5913	0.0091
45	1.6003	0.0090
46	1.6091	0.0088
47	1.6178	0.0087
48	1.6263	0.0085
49	1.6347	0.0084
50	1.6430	0.0083
51	1.6512	0.0082
52	1.6592	0.0080
53	1.6671	0.0079
54	1.6750	0.0078
55	1.6827	0.0077
56	1.6903	0.0076
57	1.6978	0.0075
58	1.7052	0.0074
59	1.7125	0.0073
60	1.7197	0.0072
61	1.7268	0.0071
62	1.7338	0.0070
63	1.7408	0.0070
64	1.7477	0.0069
65	1.7545	0.0068
66	1.7612	0.0067
67	1.7678	0.0066
68	1.7744	0.0066
69	1.7809	0.0065
70	1.7873	0.0064
71	1.7936	0.0064
72	1.7999	0.0063
73	1.8091	0.0092
74	1.8182	0.0091
75	1.8272	0.0090
76	1.8361	0.0089
77	1.8450	0.0089
78	1.8538	0.0088
79	1.8625	0.0087
80	1.8712	0.0087
81	1.8798	0.0086
82	1.8883	0.0085
83	1.8967	0.0085
84	1.9051	0.0084
85	1.9134	0.0083
86	1.9217	0.0083
87	1.9299	0.0082
88	1.9381	0.0081
89	1.9461	0.0081
90	1.9542	0.0080
91	1.9621	0.0080
92	1.9701	0.0079
93	1.9779	0.0079
94	1.9857	0.0078
95	1.9935	0.0078
96	2.0012	0.0077
97	2.0089	0.0077
98	2.0165	0.0076
99	2.0240	0.0076
100	2.0315	0.0075
101	2.0390	0.0075
102	2.0464	0.0074
103	2.0538	0.0074
104	2.0611	0.0073
105	2.0684	0.0073

106	2.0756	0.0072
107	2.0828	0.0072
108	2.0900	0.0072
109	2.0971	0.0071
110	2.1042	0.0071
111	2.1112	0.0070
112	2.1182	0.0070
113	2.1251	0.0069
114	2.1320	0.0069
115	2.1389	0.0069
116	2.1457	0.0068
117	2.1525	0.0068
118	2.1593	0.0068
119	2.1660	0.0067
120	2.1727	0.0067
121	2.1794	0.0067
122	2.1860	0.0066
123	2.1926	0.0066
124	2.1991	0.0066
125	2.2057	0.0065
126	2.2121	0.0065
127	2.2186	0.0065
128	2.2250	0.0064
129	2.2314	0.0064
130	2.2378	0.0064
131	2.2441	0.0063
132	2.2504	0.0063
133	2.2567	0.0063
134	2.2629	0.0062
135	2.2691	0.0062
136	2.2753	0.0062
137	2.2814	0.0062
138	2.2876	0.0061
139	2.2936	0.0061
140	2.2997	0.0061
141	2.3058	0.0060
142	2.3118	0.0060
143	2.3178	0.0060
144	2.3237	0.0060
145	2.3296	0.0059
146	2.3356	0.0059
147	2.3414	0.0059
148	2.3473	0.0059
149	2.3531	0.0058
150	2.3589	0.0058
151	2.3647	0.0058
152	2.3705	0.0058
153	2.3762	0.0057
154	2.3819	0.0057
155	2.3876	0.0057
156	2.3933	0.0057
157	2.3989	0.0056
158	2.4045	0.0056
159	2.4101	0.0056
160	2.4157	0.0056
161	2.4213	0.0056
162	2.4268	0.0055
163	2.4323	0.0055
164	2.4378	0.0055
165	2.4433	0.0055
166	2.4487	0.0054
167	2.4541	0.0054
168	2.4595	0.0054
169	2.4649	0.0054
170	2.4703	0.0054
171	2.4756	0.0053
172	2.4810	0.0053
173	2.4863	0.0053
174	2.4915	0.0053
175	2.4968	0.0053
176	2.5021	0.0052
177	2.5073	0.0052
178	2.5125	0.0052
179	2.5177	0.0052
180	2.5229	0.0052
181	2.5280	0.0052
182	2.5332	0.0051
183	2.5383	0.0051

184	2.5434	0.0051
185	2.5485	0.0051
186	2.5535	0.0051
187	2.5586	0.0051
188	2.5636	0.0050
189	2.5686	0.0050
190	2.5736	0.0050
191	2.5786	0.0050
192	2.5836	0.0050
193	2.5885	0.0050
194	2.5935	0.0049
195	2.5984	0.0049
196	2.6033	0.0049
197	2.6082	0.0049
198	2.6130	0.0049
199	2.6179	0.0049
200	2.6227	0.0048
201	2.6276	0.0048
202	2.6324	0.0048
203	2.6372	0.0048
204	2.6420	0.0048
205	2.6467	0.0048
206	2.6515	0.0048
207	2.6562	0.0047
208	2.6609	0.0047
209	2.6656	0.0047
210	2.6703	0.0047
211	2.6750	0.0047
212	2.6797	0.0047
213	2.6843	0.0047
214	2.6890	0.0046
215	2.6936	0.0046
216	2.6982	0.0046
217	2.7028	0.0046
218	2.7074	0.0046
219	2.7119	0.0046
220	2.7165	0.0046
221	2.7210	0.0045
222	2.7256	0.0045
223	2.7301	0.0045
224	2.7346	0.0045
225	2.7391	0.0045
226	2.7436	0.0045
227	2.7480	0.0045
228	2.7525	0.0045
229	2.7569	0.0044
230	2.7614	0.0044
231	2.7658	0.0044
232	2.7702	0.0044
233	2.7746	0.0044
234	2.7790	0.0044
235	2.7833	0.0044
236	2.7877	0.0044
237	2.7920	0.0043
238	2.7964	0.0043
239	2.8007	0.0043
240	2.8050	0.0043
241	2.8093	0.0043
242	2.8136	0.0043
243	2.8179	0.0043
244	2.8221	0.0043
245	2.8264	0.0043
246	2.8306	0.0042
247	2.8349	0.0042
248	2.8391	0.0042
249	2.8433	0.0042
250	2.8475	0.0042
251	2.8517	0.0042
252	2.8559	0.0042
253	2.8601	0.0042
254	2.8642	0.0042
255	2.8684	0.0042
256	2.8725	0.0041
257	2.8766	0.0041
258	2.8808	0.0041
259	2.8849	0.0041
260	2.8890	0.0041
261	2.8931	0.0041

262	2.8971	0.0041
263	2.9012	0.0041
264	2.9053	0.0041
265	2.9093	0.0041
266	2.9134	0.0040
267	2.9174	0.0040
268	2.9214	0.0040
269	2.9254	0.0040
270	2.9294	0.0040
271	2.9334	0.0040
272	2.9374	0.0040
273	2.9414	0.0040
274	2.9454	0.0040
275	2.9493	0.0040
276	2.9533	0.0039
277	2.9572	0.0039
278	2.9611	0.0039
279	2.9650	0.0039
280	2.9690	0.0039
281	2.9729	0.0039
282	2.9768	0.0039
283	2.9806	0.0039
284	2.9845	0.0039
285	2.9884	0.0039
286	2.9922	0.0039
287	2.9961	0.0039
288	2.9999	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0003	0.0035
2	0.0039	0.0003	0.0036
3	0.0039	0.0003	0.0036
4	0.0039	0.0003	0.0036
5	0.0039	0.0003	0.0036
6	0.0039	0.0003	0.0036
7	0.0039	0.0003	0.0036
8	0.0039	0.0003	0.0036
9	0.0039	0.0003	0.0036
10	0.0040	0.0003	0.0037
11	0.0040	0.0003	0.0037
12	0.0040	0.0003	0.0037
13	0.0040	0.0003	0.0037
14	0.0040	0.0003	0.0037
15	0.0040	0.0003	0.0037
16	0.0040	0.0003	0.0037
17	0.0041	0.0003	0.0037
18	0.0041	0.0003	0.0038
19	0.0041	0.0003	0.0038
20	0.0041	0.0003	0.0038
21	0.0041	0.0003	0.0038
22	0.0041	0.0003	0.0038
23	0.0042	0.0003	0.0038
24	0.0042	0.0003	0.0038
25	0.0042	0.0003	0.0039
26	0.0042	0.0003	0.0039
27	0.0042	0.0003	0.0039
28	0.0042	0.0003	0.0039
29	0.0042	0.0003	0.0039
30	0.0043	0.0003	0.0039
31	0.0043	0.0003	0.0039
32	0.0043	0.0003	0.0040
33	0.0043	0.0003	0.0040
34	0.0043	0.0003	0.0040
35	0.0043	0.0003	0.0040
36	0.0044	0.0003	0.0040
37	0.0044	0.0003	0.0040
38	0.0044	0.0003	0.0041
39	0.0044	0.0003	0.0041
40	0.0044	0.0003	0.0041
41	0.0045	0.0003	0.0041
42	0.0045	0.0003	0.0041
43	0.0045	0.0003	0.0041
44	0.0045	0.0003	0.0042
45	0.0045	0.0003	0.0042
46	0.0045	0.0004	0.0042

47	0.0046	0.0004	0.0042
48	0.0046	0.0004	0.0042
49	0.0046	0.0004	0.0043
50	0.0046	0.0004	0.0043
51	0.0047	0.0004	0.0043
52	0.0047	0.0004	0.0043
53	0.0047	0.0004	0.0043
54	0.0047	0.0004	0.0043
55	0.0047	0.0004	0.0044
56	0.0048	0.0004	0.0044
57	0.0048	0.0004	0.0044
58	0.0048	0.0004	0.0044
59	0.0048	0.0004	0.0045
60	0.0048	0.0004	0.0045
61	0.0049	0.0004	0.0045
62	0.0049	0.0004	0.0045
63	0.0049	0.0004	0.0045
64	0.0049	0.0004	0.0046
65	0.0050	0.0004	0.0046
66	0.0050	0.0004	0.0046
67	0.0050	0.0004	0.0046
68	0.0050	0.0004	0.0046
69	0.0051	0.0004	0.0047
70	0.0051	0.0004	0.0047
71	0.0051	0.0004	0.0047
72	0.0051	0.0004	0.0047
73	0.0052	0.0004	0.0048
74	0.0052	0.0004	0.0048
75	0.0052	0.0004	0.0048
76	0.0052	0.0004	0.0048
77	0.0053	0.0004	0.0049
78	0.0053	0.0004	0.0049
79	0.0053	0.0004	0.0049
80	0.0054	0.0004	0.0050
81	0.0054	0.0004	0.0050
82	0.0054	0.0004	0.0050
83	0.0055	0.0004	0.0050
84	0.0055	0.0004	0.0051
85	0.0055	0.0004	0.0051
86	0.0056	0.0004	0.0051
87	0.0056	0.0004	0.0052
88	0.0056	0.0004	0.0052
89	0.0057	0.0004	0.0052
90	0.0057	0.0004	0.0052
91	0.0057	0.0004	0.0053
92	0.0058	0.0004	0.0053
93	0.0058	0.0004	0.0054
94	0.0058	0.0005	0.0054
95	0.0059	0.0005	0.0054
96	0.0059	0.0005	0.0055
97	0.0060	0.0005	0.0055
98	0.0060	0.0005	0.0055
99	0.0060	0.0005	0.0056
100	0.0061	0.0005	0.0056
101	0.0061	0.0005	0.0056
102	0.0062	0.0005	0.0057
103	0.0062	0.0005	0.0057
104	0.0062	0.0005	0.0058
105	0.0063	0.0005	0.0058
106	0.0063	0.0005	0.0058
107	0.0064	0.0005	0.0059
108	0.0064	0.0005	0.0059
109	0.0065	0.0005	0.0060
110	0.0065	0.0005	0.0060
111	0.0066	0.0005	0.0061
112	0.0066	0.0005	0.0061
113	0.0067	0.0005	0.0062
114	0.0067	0.0005	0.0062
115	0.0068	0.0005	0.0063
116	0.0068	0.0005	0.0063
117	0.0069	0.0005	0.0064
118	0.0069	0.0005	0.0064
119	0.0070	0.0005	0.0065
120	0.0071	0.0005	0.0065
121	0.0072	0.0006	0.0066
122	0.0072	0.0006	0.0066
123	0.0073	0.0006	0.0067
124	0.0073	0.0006	0.0068

125	0.0074	0.0006	0.0068
126	0.0075	0.0006	0.0069
127	0.0076	0.0006	0.0070
128	0.0076	0.0006	0.0070
129	0.0077	0.0006	0.0071
130	0.0078	0.0006	0.0072
131	0.0079	0.0006	0.0073
132	0.0079	0.0006	0.0073
133	0.0080	0.0006	0.0074
134	0.0081	0.0006	0.0075
135	0.0082	0.0006	0.0076
136	0.0083	0.0006	0.0076
137	0.0084	0.0006	0.0077
138	0.0085	0.0007	0.0078
139	0.0086	0.0007	0.0079
140	0.0087	0.0007	0.0080
141	0.0088	0.0007	0.0081
142	0.0089	0.0007	0.0082
143	0.0090	0.0007	0.0083
144	0.0091	0.0007	0.0084
145	0.0063	0.0005	0.0058
146	0.0064	0.0005	0.0059
147	0.0065	0.0005	0.0060
148	0.0066	0.0005	0.0061
149	0.0067	0.0005	0.0062
150	0.0068	0.0005	0.0063
151	0.0070	0.0005	0.0064
152	0.0070	0.0005	0.0065
153	0.0072	0.0006	0.0067
154	0.0073	0.0006	0.0067
155	0.0075	0.0006	0.0069
156	0.0076	0.0006	0.0070
157	0.0078	0.0006	0.0072
158	0.0079	0.0006	0.0073
159	0.0082	0.0006	0.0075
160	0.0083	0.0006	0.0076
161	0.0085	0.0007	0.0079
162	0.0087	0.0007	0.0080
163	0.0090	0.0007	0.0083
164	0.0091	0.0007	0.0084
165	0.0095	0.0007	0.0087
166	0.0096	0.0007	0.0089
167	0.0100	0.0008	0.0092
168	0.0102	0.0008	0.0094
169	0.0106	0.0008	0.0098
170	0.0109	0.0008	0.0100
171	0.0114	0.0009	0.0105
172	0.0116	0.0009	0.0107
173	0.0122	0.0009	0.0113
174	0.0126	0.0010	0.0116
175	0.0133	0.0010	0.0122
176	0.0136	0.0011	0.0126
177	0.0145	0.0011	0.0134
178	0.0150	0.0012	0.0138
179	0.0161	0.0012	0.0148
180	0.0167	0.0013	0.0154
181	0.0181	0.0014	0.0167
182	0.0189	0.0015	0.0174
183	0.0208	0.0016	0.0192
184	0.0220	0.0017	0.0203
185	0.0296	0.0023	0.0273
186	0.0316	0.0024	0.0291
187	0.0366	0.0028	0.0338
188	0.0400	0.0031	0.0369
189	0.0497	0.0033	0.0464
190	0.0572	0.0033	0.0539
191	0.0868	0.0033	0.0835
192	0.1260	0.0033	0.1227
193	0.5453	0.0033	0.5420
194	0.0683	0.0033	0.0650
195	0.0442	0.0033	0.0409
196	0.0339	0.0026	0.0312
197	0.0233	0.0018	0.0215
198	0.0198	0.0015	0.0183
199	0.0174	0.0013	0.0160
200	0.0155	0.0012	0.0143
201	0.0141	0.0011	0.0130
202	0.0129	0.0010	0.0119

203	0.0119	0.0009	0.0110
204	0.0111	0.0009	0.0103
205	0.0104	0.0008	0.0096
206	0.0098	0.0008	0.0091
207	0.0093	0.0007	0.0086
208	0.0088	0.0007	0.0081
209	0.0084	0.0006	0.0078
210	0.0080	0.0006	0.0074
211	0.0077	0.0006	0.0071
212	0.0074	0.0006	0.0068
213	0.0071	0.0006	0.0066
214	0.0069	0.0005	0.0063
215	0.0066	0.0005	0.0061
216	0.0064	0.0005	0.0059
217	0.0092	0.0007	0.0085
218	0.0089	0.0007	0.0082
219	0.0087	0.0007	0.0080
220	0.0085	0.0007	0.0079
221	0.0083	0.0006	0.0077
222	0.0081	0.0006	0.0075
223	0.0080	0.0006	0.0074
224	0.0078	0.0006	0.0072
225	0.0077	0.0006	0.0071
226	0.0075	0.0006	0.0069
227	0.0074	0.0006	0.0068
228	0.0072	0.0006	0.0067
229	0.0071	0.0005	0.0066
230	0.0070	0.0005	0.0064
231	0.0069	0.0005	0.0063
232	0.0068	0.0005	0.0062
233	0.0067	0.0005	0.0061
234	0.0066	0.0005	0.0060
235	0.0065	0.0005	0.0060
236	0.0064	0.0005	0.0059
237	0.0063	0.0005	0.0058
238	0.0062	0.0005	0.0057
239	0.0061	0.0005	0.0056
240	0.0060	0.0005	0.0055
241	0.0059	0.0005	0.0055
242	0.0059	0.0005	0.0054
243	0.0058	0.0004	0.0053
244	0.0057	0.0004	0.0053
245	0.0056	0.0004	0.0052
246	0.0056	0.0004	0.0051
247	0.0055	0.0004	0.0051
248	0.0054	0.0004	0.0050
249	0.0054	0.0004	0.0050
250	0.0053	0.0004	0.0049
251	0.0053	0.0004	0.0049
252	0.0052	0.0004	0.0048
253	0.0052	0.0004	0.0048
254	0.0051	0.0004	0.0047
255	0.0051	0.0004	0.0047
256	0.0050	0.0004	0.0046
257	0.0050	0.0004	0.0046
258	0.0049	0.0004	0.0045
259	0.0049	0.0004	0.0045
260	0.0048	0.0004	0.0044
261	0.0048	0.0004	0.0044
262	0.0047	0.0004	0.0044
263	0.0047	0.0004	0.0043
264	0.0046	0.0004	0.0043
265	0.0046	0.0004	0.0042
266	0.0046	0.0004	0.0042
267	0.0045	0.0003	0.0042
268	0.0045	0.0003	0.0041
269	0.0044	0.0003	0.0041
270	0.0044	0.0003	0.0041
271	0.0044	0.0003	0.0040
272	0.0043	0.0003	0.0040
273	0.0043	0.0003	0.0040
274	0.0043	0.0003	0.0039
275	0.0042	0.0003	0.0039
276	0.0042	0.0003	0.0039
277	0.0042	0.0003	0.0038
278	0.0041	0.0003	0.0038
279	0.0041	0.0003	0.0038
280	0.0041	0.0003	0.0038

281	0.0041	0.0003	0.0037
282	0.0040	0.0003	0.0037
283	0.0040	0.0003	0.0037
284	0.0040	0.0003	0.0037
285	0.0039	0.0003	0.0036
286	0.0039	0.0003	0.0036
287	0.0039	0.0003	0.0036
288	0.0039	0.0003	0.0036

Total soil rain loss = 0.18(In)
Total effective rainfall = 2.82(In)
Peak flow rate in flood hydrograph = 49.50(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0003	0.04	Q				
0+10	0.0024	0.30	Q				
0+15	0.0056	0.47	Q				
0+20	0.0094	0.54	Q				
0+25	0.0134	0.59	Q				
0+30	0.0177	0.62	Q				
0+35	0.0220	0.64	Q				
0+40	0.0265	0.65	Q				
0+45	0.0311	0.66	Q				
0+50	0.0357	0.67	Q				
0+55	0.0403	0.68	Q				
1+ 0	0.0450	0.68	Q				
1+ 5	0.0498	0.69	Q				
1+10	0.0545	0.69	Q				
1+15	0.0593	0.69	Q				
1+20	0.0641	0.69	Q				
1+25	0.0689	0.70	Q				
1+30	0.0737	0.70	Q				
1+35	0.0785	0.70	Q				
1+40	0.0833	0.70	Q				
1+45	0.0882	0.71	Q				
1+50	0.0931	0.71	QV				
1+55	0.0980	0.71	QV				
2+ 0	0.1029	0.71	QV				
2+ 5	0.1078	0.72	QV				
2+10	0.1128	0.72	QV				
2+15	0.1178	0.72	QV				
2+20	0.1228	0.72	QV				
2+25	0.1278	0.73	QV				
2+30	0.1328	0.73	QV				
2+35	0.1378	0.73	QV				
2+40	0.1429	0.74	QV				
2+45	0.1480	0.74	QV				
2+50	0.1531	0.74	QV				
2+55	0.1582	0.74	QV				
3+ 0	0.1634	0.75	QV				
3+ 5	0.1686	0.75	QV				
3+10	0.1737	0.75	QV				
3+15	0.1790	0.76	QV				
3+20	0.1842	0.76	Q V				
3+25	0.1894	0.76	Q V				
3+30	0.1947	0.77	Q V				
3+35	0.2000	0.77	Q V				
3+40	0.2053	0.77	Q V				
3+45	0.2107	0.78	Q V				
3+50	0.2160	0.78	Q V				
3+55	0.2214	0.78	Q V				
4+ 0	0.2268	0.79	Q V				
4+ 5	0.2323	0.79	Q V				
4+10	0.2377	0.79	Q V				
4+15	0.2432	0.80	Q V				
4+20	0.2487	0.80	Q V				
4+25	0.2542	0.80	Q V				
4+30	0.2598	0.81	Q V				
4+35	0.2654	0.81	Q V				

4+40	0.2710	0.81	Q V	|	|	|	|
4+45	0.2766	0.82	Q V	|	|	|	|
4+50	0.2823	0.82	Q V	|	|	|	|
4+55	0.2879	0.82	Q V	|	|	|	|
5+ 0	0.2937	0.83	Q V	|	|	|	|
5+ 5	0.2994	0.83	Q V	|	|	|	|
5+10	0.3052	0.84	Q V	|	|	|	|
5+15	0.3109	0.84	Q V	|	|	|	|
5+20	0.3168	0.84	Q V	|	|	|	|
5+25	0.3226	0.85	Q V	|	|	|	|
5+30	0.3285	0.85	Q V	|	|	|	|
5+35	0.3344	0.86	Q V	|	|	|	|
5+40	0.3403	0.86	Q V	|	|	|	|
5+45	0.3463	0.87	Q V	|	|	|	|
5+50	0.3523	0.87	Q V	|	|	|	|
5+55	0.3583	0.87	Q V	|	|	|	|
6+ 0	0.3644	0.88	Q V	|	|	|	|
6+ 5	0.3704	0.88	Q V	|	|	|	|
6+10	0.3766	0.89	Q V	|	|	|	|
6+15	0.3827	0.89	Q V	|	|	|	|
6+20	0.3889	0.90	Q V	|	|	|	|
6+25	0.3951	0.90	Q V	|	|	|	|
6+30	0.4014	0.91	Q V	|	|	|	|
6+35	0.4076	0.91	Q V	|	|	|	|
6+40	0.4140	0.92	Q V	|	|	|	|
6+45	0.4203	0.92	Q V	|	|	|	|
6+50	0.4267	0.93	Q V	|	|	|	|
6+55	0.4331	0.93	Q V	|	|	|	|
7+ 0	0.4396	0.94	Q V	|	|	|	|
7+ 5	0.4461	0.94	Q V	|	|	|	|
7+10	0.4526	0.95	Q V	|	|	|	|
7+15	0.4592	0.95	Q V	|	|	|	|
7+20	0.4658	0.96	Q V	|	|	|	|
7+25	0.4724	0.97	Q V	|	|	|	|
7+30	0.4791	0.97	Q V	|	|	|	|
7+35	0.4859	0.98	Q V	|	|	|	|
7+40	0.4926	0.98	Q V	|	|	|	|
7+45	0.4994	0.99	Q V	|	|	|	|
7+50	0.5063	1.00	Q V	|	|	|	|
7+55	0.5132	1.00	Q V	|	|	|	|
8+ 0	0.5201	1.01	Q V	|	|	|	|
8+ 5	0.5271	1.01	Q V	|	|	|	|
8+10	0.5342	1.02	Q V	|	|	|	|
8+15	0.5412	1.03	Q V	|	|	|	|
8+20	0.5484	1.03	Q V	|	|	|	|
8+25	0.5555	1.04	Q V	|	|	|	|
8+30	0.5628	1.05	Q V	|	|	|	|
8+35	0.5700	1.06	Q V	|	|	|	|
8+40	0.5774	1.06	Q V	|	|	|	|
8+45	0.5847	1.07	Q V	|	|	|	|
8+50	0.5922	1.08	Q V	|	|	|	|
8+55	0.5996	1.09	Q V	|	|	|	|
9+ 0	0.6072	1.09	Q V	|	|	|	|
9+ 5	0.6148	1.10	Q V	|	|	|	|
9+10	0.6224	1.11	Q V	|	|	|	|
9+15	0.6301	1.12	Q V	|	|	|	|
9+20	0.6379	1.13	Q V	|	|	|	|
9+25	0.6457	1.14	Q V	|	|	|	|
9+30	0.6536	1.14	Q V	|	|	|	|
9+35	0.6615	1.15	Q V	|	|	|	|
9+40	0.6695	1.16	Q V	|	|	|	|
9+45	0.6776	1.17	Q V	|	|	|	|
9+50	0.6857	1.18	Q V	|	|	|	|
9+55	0.6939	1.19	Q V	|	|	|	|
10+ 0	0.7022	1.20	Q V	|	|	|	|
10+ 5	0.7105	1.21	Q V	|	|	|	|
10+10	0.7190	1.22	Q V	|	|	|	|
10+15	0.7274	1.23	Q V	|	|	|	|
10+20	0.7360	1.24	Q V	|	|	|	|
10+25	0.7446	1.25	|Q V	|	|	|	|
10+30	0.7534	1.27	|Q V	|	|	|	|
10+35	0.7622	1.28	|Q V	|	|	|	|
10+40	0.7710	1.29	|Q V	|	|	|	|
10+45	0.7800	1.30	|Q V	|	|	|	|
10+50	0.7891	1.32	|Q V	|	|	|	|
10+55	0.7982	1.33	|Q V	|	|	|	|
11+ 0	0.8074	1.34	|Q V	|	|	|	|
11+ 5	0.8168	1.35	|Q V	|	|	|	|

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11+10       0.8262      1.37  |Q       V|         |          |          |
11+15       0.8357      1.38  |Q       V|         |          |          |
11+20       0.8453      1.40  |Q       V|         |          |          |
11+25       0.8551      1.41  |Q       V|         |          |          |
11+30       0.8649      1.43  |Q       V|         |          |          |
11+35       0.8749      1.44  |Q       V|         |          |          |
11+40       0.8849      1.46  |Q       V|         |          |          |
11+45       0.8951      1.48  |Q       V|         |          |          |
11+50       0.9054      1.50  |Q       V|         |          |          |
11+55       0.9158      1.51  |Q        V         |          |          |
12+ 0       0.9264      1.53  |Q        V         |          |          |
12+ 5       0.9368      1.52  |Q        V         |          |          |
12+10       0.9460      1.34  |Q        V         |          |          |
12+15       0.9545      1.23  Q         V         |          |          |
12+20       0.9627      1.19  Q         V         |          |          |
12+25       0.9708      1.18  Q         V         |          |          |
12+30       0.9789      1.18  Q         V         |          |          |
12+35       0.9870      1.18  Q         V         |          |          |
12+40       0.9952      1.19  Q         V         |          |          |
12+45       1.0035      1.21  Q         |V        |          |          |
12+50       1.0120      1.22  Q         |V        |          |          |
12+55       1.0205      1.24  Q         |V        |          |          |
13+ 0       1.0292      1.26  |Q        |V        |          |          |
13+ 5       1.0381      1.29  |Q        |V        |          |          |
13+10       1.0471      1.31  |Q        |V        |          |          |
13+15       1.0564      1.34  |Q        |V        |          |          |
13+20       1.0658      1.37  |Q        |V        |          |          |
13+25       1.0754      1.40  |Q        |V        |          |          |
13+30       1.0853      1.43  |Q        |V        |          |          |
13+35       1.0954      1.46  |Q        | V       |          |          |
13+40       1.1057      1.50  |Q        | V       |          |          |
13+45       1.1163      1.54  |Q        | V       |          |          |
13+50       1.1272      1.58  |Q        | V       |          |          |
13+55       1.1383      1.62  |Q        | V       |          |          |
14+ 0       1.1498      1.67  |Q        | V       |          |          |
14+ 5       1.1616      1.71  |Q        | V       |          |          |
14+10       1.1737      1.77  |Q        | V       |          |          |
14+15       1.1863      1.82  |Q        |  V      |          |          |
14+20       1.1992      1.88  |Q        |  V      |          |          |
14+25       1.2126      1.94  |Q        |  V      |          |          |
14+30       1.2265      2.02  |Q        |  V      |          |          |
14+35       1.2409      2.09  |Q        |  V      |          |          |
14+40       1.2559      2.18  |Q        |  V      |          |          |
14+45       1.2715      2.26  |Q        |  V      |          |          |
14+50       1.2878      2.37  |Q        |   V     |          |          |
14+55       1.3048      2.47  |Q        |   V     |          |          |
15+ 0       1.3227      2.60  | Q       |   V     |          |          |
15+ 5       1.3416      2.74  | Q       |   V     |          |          |
15+10       1.3616      2.91  | Q       |   V     |          |          |
15+15       1.3828      3.08  | Q       |    V    |          |          |
15+20       1.4056      3.31  | Q       |    V    |          |          |
15+25       1.4304      3.60  | Q       |    V    |          |          |
15+30       1.4596      4.25  |  Q      |     V   |          |          |
15+35       1.4929      4.83  |  Q      |     V   |          |          |
15+40       1.5306      5.47  |   Q     |     V   |          |          |
15+45       1.5732      6.18  |   Q     |      V  |          |          |
15+50       1.6234      7.30  |    Q    |      V  |          |          |
15+55       1.6843      8.84  |      Q  |       V |          |          |
16+ 0       1.7680     12.15  |        Q|        V|          |          |
16+ 5       1.9182     21.82  |         |      Q  |V         |          |
16+10       2.2591     49.50  |         |         |   V      |         Q|
16+15       2.5008     35.10  |         |         |     VQ   |          |
16+20       2.6394     20.12  |         |    Q    |       V  |          |
16+25       2.7360     14.02  |         |Q        |         V|          |
16+30       2.8058     10.14  |       Q |         |          V          |
16+35       2.8596      7.80  |     Q   |         |          |V         |
16+40       2.9020      6.17  |   Q     |         |          |V         |
16+45       2.9359      4.91  |  Q      |         |          | V        |
16+50       2.9633      3.98  |  Q      |         |          | V        |
16+55       2.9880      3.58  | Q       |         |          | V        |
17+ 0       3.0090      3.05  | Q       |         |          |  V       |
17+ 5       3.0263      2.51  | Q       |         |          |  V       |
17+10       3.0406      2.08  |Q        |         |          |  V       |
17+15       3.0538      1.91  |Q        |         |          |  V       |
17+20       3.0660      1.78  |Q        |         |          |  V       |
17+25       3.0775      1.67  |Q        |         |          |  V       |
17+30       3.0884      1.58  |Q        |         |          |  V       |
17+35       3.0987      1.50  |Q        |         |          |   V      |
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17+40       3.1086      1.43  |Q        |         |          |   V     |
17+45       3.1180      1.37  |Q        |         |          |   V     |
17+50       3.1270      1.31  |Q        |         |          |   V     |
17+55       3.1357      1.26  |Q        |         |          |   V     |
18+ 0       3.1440      1.21  Q         |         |          |   V     |
18+ 5       3.1523      1.20  Q         |         |          |   V     |
18+10       3.1616      1.36  |Q        |         |          |   V     |
18+15       3.1716      1.45  |Q        |         |          |   V     |
18+20       3.1817      1.47  |Q        |         |          |   V     |
18+25       3.1918      1.46  |Q        |         |          |    V    |
18+30       3.2017      1.45  |Q        |         |          |    V    |
18+35       3.2115      1.43  |Q        |         |          |    V    |
18+40       3.2212      1.40  |Q        |         |          |    V    |
18+45       3.2307      1.38  |Q        |         |          |    V    |
18+50       3.2400      1.35  |Q        |         |          |    V    |
18+55       3.2492      1.33  |Q        |         |          |    V    |
19+ 0       3.2582      1.31  |Q        |         |          |    V    |
19+ 5       3.2671      1.28  |Q        |         |          |    V    |
19+10       3.2758      1.26  |Q        |         |          |    V    |
19+15       3.2843      1.24  Q         |         |          |     V   |
19+20       3.2927      1.22  Q         |         |          |     V   |
19+25       3.3009      1.20  Q         |         |          |     V   |
19+30       3.3090      1.18  Q         |         |          |     V   |
19+35       3.3170      1.16  Q         |         |          |     V   |
19+40       3.3249      1.14  Q         |         |          |     V   |
19+45       3.3326      1.12  Q         |         |          |     V   |
19+50       3.3402      1.11  Q         |         |          |     V   |
19+55       3.3477      1.09  Q         |         |          |     V   |
20+ 0       3.3551      1.07  Q         |         |          |     V   |
20+ 5       3.3624      1.06  Q         |         |          |     V   |
20+10       3.3696      1.05  Q         |         |          |      V  |
20+15       3.3767      1.03  Q         |         |          |      V  |
20+20       3.3837      1.02  Q         |         |          |      V  |
20+25       3.3907      1.01  Q         |         |          |      V  |
20+30       3.3975      0.99  Q         |         |          |      V  |
20+35       3.4042      0.98  Q         |         |          |      V  |
20+40       3.4109      0.97  Q         |         |          |      V  |
20+45       3.4175      0.96  Q         |         |          |      V  |
20+50       3.4240      0.95  Q         |         |          |      V  |
20+55       3.4305      0.94  Q         |         |          |      V  |
21+ 0       3.4368      0.92  Q         |         |          |      V  |
21+ 5       3.4431      0.91  Q         |         |          |      V  |
21+10       3.4494      0.90  Q         |         |          |      V  |
21+15       3.4555      0.90  Q         |         |          |      V  |
21+20       3.4616      0.89  Q         |         |          |       V |
21+25       3.4677      0.88  Q         |         |          |       V |
21+30       3.4736      0.87  Q         |         |          |       V |
21+35       3.4796      0.86  Q         |         |          |       V |
21+40       3.4854      0.85  Q         |         |          |       V |
21+45       3.4912      0.84  Q         |         |          |       V |
21+50       3.4970      0.83  Q         |         |          |       V |
21+55       3.5027      0.83  Q         |         |          |       V |
22+ 0       3.5083      0.82  Q         |         |          |       V |
22+ 5       3.5139      0.81  Q         |         |          |       V |
22+10       3.5194      0.80  Q         |         |          |       V |
22+15       3.5249      0.80  Q         |         |          |       V |
22+20       3.5304      0.79  Q         |         |          |       V |
22+25       3.5358      0.78  Q         |         |          |       V |
22+30       3.5411      0.78  Q         |         |          |       V |
22+35       3.5464      0.77  Q         |         |          |       V |
22+40       3.5517      0.76  Q         |         |          |        V|
22+45       3.5569      0.76  Q         |         |          |        V|
22+50       3.5621      0.75  Q         |         |          |        V|
22+55       3.5672      0.75  Q         |         |          |        V|
23+ 0       3.5723      0.74  Q         |         |          |        V|
23+ 5       3.5774      0.73  Q         |         |          |        V|
23+10       3.5824      0.73  Q         |         |          |        V|
23+15       3.5874      0.72  Q         |         |          |        V|
23+20       3.5924      0.72  Q         |         |          |        V|
23+25       3.5973      0.71  Q         |         |          |        V|
23+30       3.6021      0.71  Q         |         |          |        V|
23+35       3.6070      0.70  Q         |         |          |        V|
23+40       3.6118      0.70  Q         |         |          |        V|
23+45       3.6165      0.69  Q         |         |          |        V|
23+50       3.6213      0.69  Q         |         |          |        V|
23+55       3.6260      0.68  Q         |         |          |        V|
24+ 0       3.6307      0.68  Q         |         |          |        V|
24+ 5       3.6350      0.63  Q         |         |          |        V|
```

24+10	3.6375	0.37	Q	|	|	|	V|
24+15	3.6389	0.20	Q	|	|	|	V|
24+20	3.6398	0.13	Q	|	|	|	V|
24+25	3.6403	0.08	Q	|	|	|	V|
24+30	3.6407	0.06	Q	|	|	|	V|
24+35	3.6410	0.04	Q	|	|	|	V|
24+40	3.6411	0.02	Q	|	|	|	V|
24+45	3.6412	0.02	Q	|	|	|	V|
24+50	3.6413	0.01	Q	|	|	|	V|
24+55	3.6413	0.01	Q	|	|	|	V|
25+ 0	3.6414	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
10 YEAR 24 HOUR EVENT
EXISTING CONDITION - DRAINING TO WEST

Storm Event Year = 10

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	15.50	1	0.75
Rainfall data for year 2	15.50	6	0.70
Rainfall data for year 2	15.50	24	1.00
Rainfall data for year 100	15.50	1	1.15
Rainfall data for year 100	15.50	6	1.80
Rainfall data for year 100	15.50	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
90.0	98.0	15.50	1.000	0.040	1.000	0.040

Area-averaged adjusted loss rate Fm (In/Hr) = 0.040

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
15.50	1.000	90.0	98.0	0.20	0.877

Area-averaged catchment yield fraction, Y = 0.877
Area-averaged low loss fraction, Yb = 0.123
User entry of time of concentration = 0.162 (hours)

++
Watershed area =   15.50(Ac.)
Catchment Lag time =   0.130 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 64.3004
Hydrograph baseflow =   0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.040(In/Hr)
Average low loss rate fraction (Yb) = 0.123 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.356(In)
Computed peak 30-minute rainfall = 0.609(In)
Specified peak 1-hour rainfall = 0.750(In)
Computed peak 3-hour rainfall = 0.976(In)
Specified peak 6-hour rainfall = 1.153(In)
Specified peak 24-hour rainfall = 1.823(In)

Rainfall depth area reduction factors:
Using a total area of   15.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999   Adjusted rainfall = 0.356(In)
30-minute factor = 0.999   Adjusted rainfall = 0.609(In)
1-hour factor = 0.999   Adjusted rainfall = 0.749(In)
3-hour factor = 1.000   Adjusted rainfall = 0.976(In)
6-hour factor = 1.000   Adjusted rainfall = 1.152(In)
24-hour factor = 1.000   Adjusted rainfall = 1.823(In)

                      U n i t H y d r o g r a p h
++
Interval   'S' Graph   Unit Hydrograph
Number   Mean values   ((CFS))

               (K =   187.45 (CFS))

  1   6.444   12.079
  2   45.630   73.456
  3   70.616   46.837
  4   81.394   20.204
  5   87.737   11.889
  6   91.721   7.468
  7   94.495   5.200
  8   96.426   3.620
  9   97.687   2.364
 10   98.437   1.407
 11   99.199   1.429
 12   99.747   1.026
 13   100.000   0.475

Peak Unit   Adjusted mass rainfall Unit rainfall
Number   (In)   (In)
  1   0.3556   0.3556
  2   0.4378   0.0822
  3   0.4945   0.0566
  4   0.5390   0.0446
  5   0.5763   0.0373
  6   0.6087   0.0324
  7   0.6376   0.0288
  8   0.6636   0.0261
  9   0.6875   0.0239
 10   0.7096   0.0221
 11   0.7301   0.0206
 12   0.7495   0.0193
 13   0.7640   0.0146
 14   0.7777   0.0137
 15   0.7908   0.0130
 16   0.8031   0.0124
 17   0.8149   0.0118
 18   0.8262   0.0113
 19   0.8370   0.0108
 20   0.8474   0.0104
 21   0.8574   0.0100
 22   0.8670   0.0096
 23   0.8763   0.0093
 24   0.8853   0.0090
 25   0.8941   0.0087
 26   0.9025   0.0085
 27   0.9108   0.0082

28	0.9188	0.0080
29	0.9265	0.0078
30	0.9341	0.0076
31	0.9415	0.0074
32	0.9487	0.0072
33	0.9558	0.0070
34	0.9626	0.0069
35	0.9694	0.0067
36	0.9760	0.0066
37	0.9824	0.0064
38	0.9887	0.0063
39	0.9949	0.0062
40	1.0009	0.0061
41	1.0069	0.0059
42	1.0127	0.0058
43	1.0185	0.0057
44	1.0241	0.0056
45	1.0296	0.0055
46	1.0351	0.0054
47	1.0404	0.0054
48	1.0457	0.0053
49	1.0509	0.0052
50	1.0560	0.0051
51	1.0610	0.0050
52	1.0660	0.0050
53	1.0708	0.0049
54	1.0756	0.0048
55	1.0804	0.0047
56	1.0851	0.0047
57	1.0897	0.0046
58	1.0942	0.0046
59	1.0987	0.0045
60	1.1032	0.0044
61	1.1076	0.0044
62	1.1119	0.0043
63	1.1162	0.0043
64	1.1204	0.0042
65	1.1246	0.0042
66	1.1287	0.0041
67	1.1328	0.0041
68	1.1368	0.0040
69	1.1408	0.0040
70	1.1447	0.0039
71	1.1486	0.0039
72	1.1525	0.0039
73	1.1578	0.0053
74	1.1630	0.0052
75	1.1682	0.0052
76	1.1733	0.0051
77	1.1784	0.0051
78	1.1834	0.0050
79	1.1884	0.0050
80	1.1934	0.0050
81	1.1983	0.0049
82	1.2031	0.0049
83	1.2080	0.0048
84	1.2128	0.0048
85	1.2175	0.0048
86	1.2222	0.0047
87	1.2269	0.0047
88	1.2316	0.0046
89	1.2362	0.0046
90	1.2408	0.0046
91	1.2453	0.0045
92	1.2498	0.0045
93	1.2543	0.0045
94	1.2587	0.0044
95	1.2631	0.0044
96	1.2675	0.0044
97	1.2719	0.0044
98	1.2762	0.0043
99	1.2805	0.0043
100	1.2847	0.0043
101	1.2890	0.0042
102	1.2932	0.0042
103	1.2974	0.0042
104	1.3015	0.0042
105	1.3056	0.0041

106	1.3097	0.0041
107	1.3138	0.0041
108	1.3179	0.0040
109	1.3219	0.0040
110	1.3259	0.0040
111	1.3299	0.0040
112	1.3338	0.0040
113	1.3377	0.0039
114	1.3416	0.0039
115	1.3455	0.0039
116	1.3494	0.0039
117	1.3532	0.0038
118	1.3570	0.0038
119	1.3608	0.0038
120	1.3646	0.0038
121	1.3683	0.0038
122	1.3721	0.0037
123	1.3758	0.0037
124	1.3795	0.0037
125	1.3831	0.0037
126	1.3868	0.0036
127	1.3904	0.0036
128	1.3940	0.0036
129	1.3976	0.0036
130	1.4012	0.0036
131	1.4047	0.0036
132	1.4083	0.0035
133	1.4118	0.0035
134	1.4153	0.0035
135	1.4188	0.0035
136	1.4223	0.0035
137	1.4257	0.0034
138	1.4291	0.0034
139	1.4326	0.0034
140	1.4360	0.0034
141	1.4393	0.0034
142	1.4427	0.0034
143	1.4461	0.0034
144	1.4494	0.0033
145	1.4527	0.0033
146	1.4560	0.0033
147	1.4593	0.0033
148	1.4626	0.0033
149	1.4658	0.0033
150	1.4691	0.0032
151	1.4723	0.0032
152	1.4755	0.0032
153	1.4787	0.0032
154	1.4819	0.0032
155	1.4851	0.0032
156	1.4883	0.0032
157	1.4914	0.0031
158	1.4946	0.0031
159	1.4977	0.0031
160	1.5008	0.0031
161	1.5039	0.0031
162	1.5070	0.0031
163	1.5100	0.0031
164	1.5131	0.0031
165	1.5161	0.0030
166	1.5192	0.0030
167	1.5222	0.0030
168	1.5252	0.0030
169	1.5282	0.0030
170	1.5312	0.0030
171	1.5341	0.0030
172	1.5371	0.0030
173	1.5401	0.0029
174	1.5430	0.0029
175	1.5459	0.0029
176	1.5488	0.0029
177	1.5517	0.0029
178	1.5546	0.0029
179	1.5575	0.0029
180	1.5604	0.0029
181	1.5633	0.0029
182	1.5661	0.0029
183	1.5689	0.0028

184	1.5718	0.0028
185	1.5746	0.0028
186	1.5774	0.0028
187	1.5802	0.0028
188	1.5830	0.0028
189	1.5858	0.0028
190	1.5885	0.0028
191	1.5913	0.0028
192	1.5941	0.0028
193	1.5968	0.0027
194	1.5995	0.0027
195	1.6022	0.0027
196	1.6050	0.0027
197	1.6077	0.0027
198	1.6104	0.0027
199	1.6130	0.0027
200	1.6157	0.0027
201	1.6184	0.0027
202	1.6210	0.0027
203	1.6237	0.0026
204	1.6263	0.0026
205	1.6290	0.0026
206	1.6316	0.0026
207	1.6342	0.0026
208	1.6368	0.0026
209	1.6394	0.0026
210	1.6420	0.0026
211	1.6446	0.0026
212	1.6472	0.0026
213	1.6497	0.0026
214	1.6523	0.0026
215	1.6548	0.0025
216	1.6574	0.0025
217	1.6599	0.0025
218	1.6624	0.0025
219	1.6649	0.0025
220	1.6675	0.0025
221	1.6700	0.0025
222	1.6725	0.0025
223	1.6749	0.0025
224	1.6774	0.0025
225	1.6799	0.0025
226	1.6824	0.0025
227	1.6848	0.0025
228	1.6873	0.0025
229	1.6897	0.0024
230	1.6921	0.0024
231	1.6946	0.0024
232	1.6970	0.0024
233	1.6994	0.0024
234	1.7018	0.0024
235	1.7042	0.0024
236	1.7066	0.0024
237	1.7090	0.0024
238	1.7114	0.0024
239	1.7138	0.0024
240	1.7161	0.0024
241	1.7185	0.0024
242	1.7208	0.0024
243	1.7232	0.0023
244	1.7255	0.0023
245	1.7279	0.0023
246	1.7302	0.0023
247	1.7325	0.0023
248	1.7348	0.0023
249	1.7371	0.0023
250	1.7395	0.0023
251	1.7418	0.0023
252	1.7440	0.0023
253	1.7463	0.0023
254	1.7486	0.0023
255	1.7509	0.0023
256	1.7531	0.0023
257	1.7554	0.0023
258	1.7577	0.0023
259	1.7599	0.0022
260	1.7622	0.0022
261	1.7644	0.0022

262	1.7666	0.0022	
263	1.7689	0.0022	
264	1.7711	0.0022	
265	1.7733	0.0022	
266	1.7755	0.0022	
267	1.7777	0.0022	
268	1.7799	0.0022	
269	1.7821	0.0022	
270	1.7843	0.0022	
271	1.7865	0.0022	
272	1.7887	0.0022	
273	1.7908	0.0022	
274	1.7930	0.0022	
275	1.7952	0.0022	
276	1.7973	0.0022	
277	1.7995	0.0022	
278	1.8016	0.0021	
279	1.8037	0.0021	
280	1.8059	0.0021	
281	1.8080	0.0021	
282	1.8101	0.0021	
283	1.8123	0.0021	
284	1.8144	0.0021	
285	1.8165	0.0021	
286	1.8186	0.0021	
287	1.8207	0.0021	
288	1.8228	0.0021	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0021	0.0003	0.0018
2	0.0021	0.0003	0.0018
3	0.0021	0.0003	0.0019
4	0.0021	0.0003	0.0019
5	0.0021	0.0003	0.0019
6	0.0021	0.0003	0.0019
7	0.0021	0.0003	0.0019
8	0.0021	0.0003	0.0019
9	0.0022	0.0003	0.0019
10	0.0022	0.0003	0.0019
11	0.0022	0.0003	0.0019
12	0.0022	0.0003	0.0019
13	0.0022	0.0003	0.0019
14	0.0022	0.0003	0.0019
15	0.0022	0.0003	0.0019
16	0.0022	0.0003	0.0019
17	0.0022	0.0003	0.0019
18	0.0022	0.0003	0.0020
19	0.0022	0.0003	0.0020
20	0.0022	0.0003	0.0020
21	0.0023	0.0003	0.0020
22	0.0023	0.0003	0.0020
23	0.0023	0.0003	0.0020
24	0.0023	0.0003	0.0020
25	0.0023	0.0003	0.0020
26	0.0023	0.0003	0.0020
27	0.0023	0.0003	0.0020
28	0.0023	0.0003	0.0020
29	0.0023	0.0003	0.0020
30	0.0023	0.0003	0.0020
31	0.0023	0.0003	0.0021
32	0.0024	0.0003	0.0021
33	0.0024	0.0003	0.0021
34	0.0024	0.0003	0.0021
35	0.0024	0.0003	0.0021
36	0.0024	0.0003	0.0021
37	0.0024	0.0003	0.0021
38	0.0024	0.0003	0.0021
39	0.0024	0.0003	0.0021
40	0.0024	0.0003	0.0021
41	0.0025	0.0003	0.0021
42	0.0025	0.0003	0.0022
43	0.0025	0.0003	0.0022
44	0.0025	0.0003	0.0022
45	0.0025	0.0003	0.0022
46	0.0025	0.0003	0.0022

47	0.0025	0.0003	0.0022
48	0.0025	0.0003	0.0022
49	0.0025	0.0003	0.0022
50	0.0025	0.0003	0.0022
51	0.0026	0.0003	0.0023
52	0.0026	0.0003	0.0023
53	0.0026	0.0003	0.0023
54	0.0026	0.0003	0.0023
55	0.0026	0.0003	0.0023
56	0.0026	0.0003	0.0023
57	0.0026	0.0003	0.0023
58	0.0026	0.0003	0.0023
59	0.0027	0.0003	0.0023
60	0.0027	0.0003	0.0023
61	0.0027	0.0003	0.0024
62	0.0027	0.0003	0.0024
63	0.0027	0.0003	0.0024
64	0.0027	0.0003	0.0024
65	0.0028	0.0003	0.0024
66	0.0028	0.0003	0.0024
67	0.0028	0.0003	0.0024
68	0.0028	0.0003	0.0024
69	0.0028	0.0003	0.0025
70	0.0028	0.0003	0.0025
71	0.0028	0.0003	0.0025
72	0.0029	0.0004	0.0025
73	0.0029	0.0004	0.0025
74	0.0029	0.0004	0.0025
75	0.0029	0.0004	0.0025
76	0.0029	0.0004	0.0026
77	0.0029	0.0004	0.0026
78	0.0029	0.0004	0.0026
79	0.0030	0.0004	0.0026
80	0.0030	0.0004	0.0026
81	0.0030	0.0004	0.0026
82	0.0030	0.0004	0.0026
83	0.0030	0.0004	0.0027
84	0.0031	0.0004	0.0027
85	0.0031	0.0004	0.0027
86	0.0031	0.0004	0.0027
87	0.0031	0.0004	0.0027
88	0.0031	0.0004	0.0027
89	0.0032	0.0004	0.0028
90	0.0032	0.0004	0.0028
91	0.0032	0.0004	0.0028
92	0.0032	0.0004	0.0028
93	0.0032	0.0004	0.0028
94	0.0033	0.0004	0.0029
95	0.0033	0.0004	0.0029
96	0.0033	0.0004	0.0029
97	0.0033	0.0004	0.0029
98	0.0034	0.0004	0.0029
99	0.0034	0.0004	0.0030
100	0.0034	0.0004	0.0030
101	0.0034	0.0004	0.0030
102	0.0034	0.0004	0.0030
103	0.0035	0.0004	0.0031
104	0.0035	0.0004	0.0031
105	0.0035	0.0004	0.0031
106	0.0036	0.0004	0.0031
107	0.0036	0.0004	0.0032
108	0.0036	0.0004	0.0032
109	0.0036	0.0004	0.0032
110	0.0037	0.0005	0.0032
111	0.0037	0.0005	0.0033
112	0.0037	0.0005	0.0033
113	0.0038	0.0005	0.0033
114	0.0038	0.0005	0.0033
115	0.0038	0.0005	0.0034
116	0.0039	0.0005	0.0034
117	0.0039	0.0005	0.0034
118	0.0039	0.0005	0.0034
119	0.0040	0.0005	0.0035
120	0.0040	0.0005	0.0035
121	0.0040	0.0005	0.0036
122	0.0041	0.0005	0.0036
123	0.0041	0.0005	0.0036
124	0.0042	0.0005	0.0036

125	0.0042	0.0005	0.0037
126	0.0042	0.0005	0.0037
127	0.0043	0.0005	0.0038
128	0.0043	0.0005	0.0038
129	0.0044	0.0005	0.0038
130	0.0044	0.0005	0.0039
131	0.0045	0.0005	0.0039
132	0.0045	0.0006	0.0040
133	0.0046	0.0006	0.0040
134	0.0046	0.0006	0.0040
135	0.0047	0.0006	0.0041
136	0.0047	0.0006	0.0041
137	0.0048	0.0006	0.0042
138	0.0048	0.0006	0.0042
139	0.0049	0.0006	0.0043
140	0.0050	0.0006	0.0043
141	0.0050	0.0006	0.0044
142	0.0051	0.0006	0.0045
143	0.0052	0.0006	0.0045
144	0.0052	0.0006	0.0046
145	0.0039	0.0005	0.0034
146	0.0039	0.0005	0.0034
147	0.0040	0.0005	0.0035
148	0.0040	0.0005	0.0035
149	0.0041	0.0005	0.0036
150	0.0042	0.0005	0.0037
151	0.0043	0.0005	0.0038
152	0.0043	0.0005	0.0038
153	0.0044	0.0005	0.0039
154	0.0045	0.0006	0.0039
155	0.0046	0.0006	0.0040
156	0.0047	0.0006	0.0041
157	0.0048	0.0006	0.0042
158	0.0049	0.0006	0.0043
159	0.0050	0.0006	0.0044
160	0.0051	0.0006	0.0045
161	0.0053	0.0006	0.0046
162	0.0054	0.0007	0.0047
163	0.0055	0.0007	0.0049
164	0.0056	0.0007	0.0049
165	0.0058	0.0007	0.0051
166	0.0059	0.0007	0.0052
167	0.0062	0.0008	0.0054
168	0.0063	0.0008	0.0055
169	0.0066	0.0008	0.0058
170	0.0067	0.0008	0.0059
171	0.0070	0.0009	0.0062
172	0.0072	0.0009	0.0063
173	0.0076	0.0009	0.0066
174	0.0078	0.0010	0.0068
175	0.0082	0.0010	0.0072
176	0.0085	0.0010	0.0074
177	0.0090	0.0011	0.0079
178	0.0093	0.0011	0.0082
179	0.0100	0.0012	0.0088
180	0.0104	0.0013	0.0091
181	0.0113	0.0014	0.0099
182	0.0118	0.0014	0.0103
183	0.0130	0.0016	0.0114
184	0.0137	0.0017	0.0120
185	0.0193	0.0024	0.0169
186	0.0206	0.0025	0.0181
187	0.0239	0.0029	0.0209
188	0.0261	0.0032	0.0229
189	0.0324	0.0033	0.0291
190	0.0373	0.0033	0.0340
191	0.0566	0.0033	0.0533
192	0.0822	0.0033	0.0789
193	0.3556	0.0033	0.3523
194	0.0446	0.0033	0.0413
195	0.0288	0.0033	0.0255
196	0.0221	0.0027	0.0194
197	0.0146	0.0018	0.0128
198	0.0124	0.0015	0.0108
199	0.0108	0.0013	0.0095
200	0.0096	0.0012	0.0085
201	0.0087	0.0011	0.0077
202	0.0080	0.0010	0.0070

203	0.0074	0.0009	0.0065
204	0.0069	0.0008	0.0060
205	0.0064	0.0008	0.0056
206	0.0061	0.0007	0.0053
207	0.0057	0.0007	0.0050
208	0.0054	0.0007	0.0048
209	0.0052	0.0006	0.0045
210	0.0050	0.0006	0.0043
211	0.0047	0.0006	0.0042
212	0.0046	0.0006	0.0040
213	0.0044	0.0005	0.0038
214	0.0042	0.0005	0.0037
215	0.0041	0.0005	0.0036
216	0.0039	0.0005	0.0035
217	0.0053	0.0006	0.0046
218	0.0051	0.0006	0.0045
219	0.0050	0.0006	0.0044
220	0.0049	0.0006	0.0043
221	0.0048	0.0006	0.0042
222	0.0046	0.0006	0.0041
223	0.0045	0.0006	0.0040
224	0.0044	0.0005	0.0039
225	0.0044	0.0005	0.0038
226	0.0043	0.0005	0.0037
227	0.0042	0.0005	0.0037
228	0.0041	0.0005	0.0036
229	0.0040	0.0005	0.0035
230	0.0040	0.0005	0.0035
231	0.0039	0.0005	0.0034
232	0.0038	0.0005	0.0033
233	0.0038	0.0005	0.0033
234	0.0037	0.0005	0.0032
235	0.0036	0.0004	0.0032
236	0.0036	0.0004	0.0031
237	0.0035	0.0004	0.0031
238	0.0035	0.0004	0.0030
239	0.0034	0.0004	0.0030
240	0.0034	0.0004	0.0030
241	0.0033	0.0004	0.0029
242	0.0033	0.0004	0.0029
243	0.0032	0.0004	0.0028
244	0.0032	0.0004	0.0028
245	0.0031	0.0004	0.0028
246	0.0031	0.0004	0.0027
247	0.0031	0.0004	0.0027
248	0.0030	0.0004	0.0027
249	0.0030	0.0004	0.0026
250	0.0030	0.0004	0.0026
251	0.0029	0.0004	0.0026
252	0.0029	0.0004	0.0025
253	0.0029	0.0004	0.0025
254	0.0028	0.0003	0.0025
255	0.0028	0.0003	0.0025
256	0.0028	0.0003	0.0024
257	0.0027	0.0003	0.0024
258	0.0027	0.0003	0.0024
259	0.0027	0.0003	0.0024
260	0.0027	0.0003	0.0023
261	0.0026	0.0003	0.0023
262	0.0026	0.0003	0.0023
263	0.0026	0.0003	0.0023
264	0.0026	0.0003	0.0022
265	0.0025	0.0003	0.0022
266	0.0025	0.0003	0.0022
267	0.0025	0.0003	0.0022
268	0.0025	0.0003	0.0022
269	0.0024	0.0003	0.0021
270	0.0024	0.0003	0.0021
271	0.0024	0.0003	0.0021
272	0.0024	0.0003	0.0021
273	0.0024	0.0003	0.0021
274	0.0023	0.0003	0.0021
275	0.0023	0.0003	0.0020
276	0.0023	0.0003	0.0020
277	0.0023	0.0003	0.0020
278	0.0023	0.0003	0.0020
279	0.0022	0.0003	0.0020
280	0.0022	0.0003	0.0020

281	0.0022	0.0003	0.0019
282	0.0022	0.0003	0.0019
283	0.0022	0.0003	0.0019
284	0.0022	0.0003	0.0019
285	0.0022	0.0003	0.0019
286	0.0021	0.0003	0.0019
287	0.0021	0.0003	0.0019
288	0.0021	0.0003	0.0018

Total soil rain loss = 0.17(In)
Total effective rainfall = 1.65(In)
Peak flow rate in flood hydrograph = 32.07(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0002	0.02	Q				
0+10	0.0012	0.16	Q				
0+15	0.0029	0.24	Q				
0+20	0.0049	0.28	Q				
0+25	0.0070	0.30	Q				
0+30	0.0092	0.32	Q				
0+35	0.0114	0.33	Q				
0+40	0.0138	0.34	Q				
0+45	0.0161	0.34	Q				
0+50	0.0185	0.35	Q				
0+55	0.0209	0.35	Q				
1+ 0	0.0234	0.35	Q				
1+ 5	0.0258	0.36	Q				
1+10	0.0283	0.36	Q				
1+15	0.0308	0.36	Q				
1+20	0.0332	0.36	Q				
1+25	0.0357	0.36	Q				
1+30	0.0382	0.36	Q				
1+35	0.0408	0.36	Q				
1+40	0.0433	0.37	Q				
1+45	0.0458	0.37	Q				
1+50	0.0483	0.37	Q				
1+55	0.0509	0.37	Q				
2+ 0	0.0535	0.37	QV				
2+ 5	0.0560	0.37	QV				
2+10	0.0586	0.37	QV				
2+15	0.0612	0.38	QV				
2+20	0.0638	0.38	QV				
2+25	0.0664	0.38	QV				
2+30	0.0690	0.38	QV				
2+35	0.0717	0.38	QV				
2+40	0.0743	0.38	QV				
2+45	0.0770	0.39	QV				
2+50	0.0796	0.39	QV				
2+55	0.0823	0.39	QV				
3+ 0	0.0850	0.39	QV				
3+ 5	0.0877	0.39	QV				
3+10	0.0904	0.39	QV				
3+15	0.0931	0.40	QV				
3+20	0.0959	0.40	QV				
3+25	0.0986	0.40	QV				
3+30	0.1014	0.40	QV				
3+35	0.1041	0.40	QV				
3+40	0.1069	0.40	Q V				
3+45	0.1097	0.41	Q V				
3+50	0.1125	0.41	Q V				
3+55	0.1153	0.41	Q V				
4+ 0	0.1182	0.41	Q V				
4+ 5	0.1210	0.41	Q V				
4+10	0.1239	0.42	Q V				
4+15	0.1267	0.42	Q V				
4+20	0.1296	0.42	Q V				
4+25	0.1325	0.42	Q V				
4+30	0.1354	0.42	Q V				
4+35	0.1384	0.42	Q V				

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 4+40       0.1413      0.43  Q V       |         |         |         |
 4+45       0.1443      0.43  Q V       |         |         |         |
 4+50       0.1472      0.43  Q V       |         |         |         |
 4+55       0.1502      0.43  Q V       |         |         |         |
 5+ 0       0.1532      0.44  Q V       |         |         |         |
 5+ 5       0.1562      0.44  Q V       |         |         |         |
 5+10       0.1592      0.44  Q V       |         |         |         |
 5+15       0.1623      0.44  Q  V      |         |         |         |
 5+20       0.1654      0.44  Q  V      |         |         |         |
 5+25       0.1684      0.45  Q  V      |         |         |         |
 5+30       0.1715      0.45  Q  V      |         |         |         |
 5+35       0.1746      0.45  Q  V      |         |         |         |
 5+40       0.1777      0.45  Q  V      |         |         |         |
 5+45       0.1809      0.46  Q  V      |         |         |         |
 5+50       0.1840      0.46  Q  V      |         |         |         |
 5+55       0.1872      0.46  Q  V      |         |         |         |
 6+ 0       0.1904      0.46  Q  V      |         |         |         |
 6+ 5       0.1936      0.47  Q  V      |         |         |         |
 6+10       0.1968      0.47  Q  V      |         |         |         |
 6+15       0.2001      0.47  Q  V      |         |         |         |
 6+20       0.2034      0.47  Q  V      |         |         |         |
 6+25       0.2066      0.48  Q  V      |         |         |         |
 6+30       0.2099      0.48  Q  V      |         |         |         |
 6+35       0.2133      0.48  Q  V      |         |         |         |
 6+40       0.2166      0.48  Q   V     |         |         |         |
 6+45       0.2199      0.49  Q   V     |         |         |         |
 6+50       0.2233      0.49  Q   V     |         |         |         |
 6+55       0.2267      0.49  Q   V     |         |         |         |
 7+ 0       0.2301      0.50  Q   V     |         |         |         |
 7+ 5       0.2336      0.50  Q   V     |         |         |         |
 7+10       0.2370      0.50  Q   V     |         |         |         |
 7+15       0.2405      0.51  Q   V     |         |         |         |
 7+20       0.2440      0.51  Q   V     |         |         |         |
 7+25       0.2475      0.51  Q   V     |         |         |         |
 7+30       0.2511      0.52  Q   V     |         |         |         |
 7+35       0.2547      0.52  Q   V     |         |         |         |
 7+40       0.2583      0.52  Q   V     |         |         |         |
 7+45       0.2619      0.53  Q   V     |         |         |         |
 7+50       0.2655      0.53  Q   V     |         |         |         |
 7+55       0.2692      0.53  Q    V    |         |         |         |
 8+ 0       0.2729      0.54  Q    V    |         |         |         |
 8+ 5       0.2766      0.54  Q    V    |         |         |         |
 8+10       0.2803      0.54  Q    V    |         |         |         |
 8+15       0.2841      0.55  Q    V    |         |         |         |
 8+20       0.2879      0.55  Q    V    |         |         |         |
 8+25       0.2917      0.55  Q    V    |         |         |         |
 8+30       0.2956      0.56  Q    V    |         |         |         |
 8+35       0.2994      0.56  Q    V    |         |         |         |
 8+40       0.3033      0.57  Q    V    |         |         |         |
 8+45       0.3073      0.57  Q    V    |         |         |         |
 8+50       0.3112      0.58  Q    V    |         |         |         |
 8+55       0.3152      0.58  Q    V    |         |         |         |
 9+ 0       0.3192      0.58  Q    V    |         |         |         |
 9+ 5       0.3233      0.59  Q     V   |         |         |         |
 9+10       0.3274      0.59  Q     V   |         |         |         |
 9+15       0.3315      0.60  Q     V   |         |         |         |
 9+20       0.3357      0.60  Q     V   |         |         |         |
 9+25       0.3398      0.61  Q     V   |         |         |         |
 9+30       0.3441      0.61  Q     V   |         |         |         |
 9+35       0.3483      0.62  Q     V   |         |         |         |
 9+40       0.3526      0.62  Q     V   |         |         |         |
 9+45       0.3569      0.63  Q     V   |         |         |         |
 9+50       0.3613      0.63  Q     V   |         |         |         |
 9+55       0.3657      0.64  Q     V   |         |         |         |
10+ 0       0.3701      0.65  Q     V   |         |         |         |
10+ 5       0.3746      0.65  Q      V  |         |         |         |
10+10       0.3792      0.66  Q      V  |         |         |         |
10+15       0.3837      0.66  Q      V  |         |         |         |
10+20       0.3883      0.67  Q      V  |         |         |         |
10+25       0.3930      0.68  Q      V  |         |         |         |
10+30       0.3977      0.68  Q      V  |         |         |         |
10+35       0.4024      0.69  Q      V  |         |         |         |
10+40       0.4072      0.70  Q      V  |         |         |         |
10+45       0.4120      0.70  Q      V  |         |         |         |
10+50       0.4169      0.71  Q      V  |         |         |         |
10+55       0.4219      0.72  Q      V  |         |         |         |
11+ 0       0.4269      0.73  Q      V  |         |         |         |
11+ 5       0.4319      0.73  Q       V |         |         |         |
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11+10       0.4370      0.74  Q       V |         |         |         |
11+15       0.4422      0.75  Q       V |         |         |         |
11+20       0.4474      0.76  Q       V |         |         |         |
11+25       0.4527      0.77  Q       V |         |         |         |
11+30       0.4580      0.78  Q       V |         |         |         |
11+35       0.4634      0.78  Q       V |         |         |         |
11+40       0.4689      0.79  Q       V |         |         |         |
11+45       0.4744      0.80  Q       V |         |         |         |
11+50       0.4800      0.81  Q       V |         |         |         |
11+55       0.4857      0.82  Q        V|         |         |         |
12+ 0       0.4914      0.84  Q        V|         |         |         |
12+ 5       0.4972      0.83  Q        V|         |         |         |
12+10       0.5023      0.75  Q        V|         |         |         |
12+15       0.5071      0.70  Q        V|         |         |         |
12+20       0.5118      0.68  Q        V|         |         |         |
12+25       0.5165      0.68  Q        V|         |         |         |
12+30       0.5212      0.68  Q        V|         |         |         |
12+35       0.5259      0.69  Q        V|         |         |         |
12+40       0.5307      0.69  Q        V|         |         |         |
12+45       0.5356      0.70  Q         V         |         |         |
12+50       0.5405      0.71  Q         V         |         |         |
12+55       0.5455      0.73  Q         V         |         |         |
13+ 0       0.5506      0.74  Q         V         |         |         |
13+ 5       0.5558      0.75  Q         V         |         |         |
13+10       0.5611      0.77  Q         V         |         |         |
13+15       0.5665      0.78  Q         V         |         |         |
13+20       0.5720      0.80  Q         V         |         |         |
13+25       0.5776      0.82  Q         V         |         |         |
13+30       0.5834      0.84  Q         V         |         |         |
13+35       0.5893      0.86  Q         |V        |         |         |
13+40       0.5954      0.88  Q         |V        |         |         |
13+45       0.6016      0.90  Q         |V        |         |         |
13+50       0.6080      0.93  Q         |V        |         |         |
13+55       0.6145      0.95  Q         |V        |         |         |
14+ 0       0.6213      0.98  Q         |V        |         |         |
14+ 5       0.6282      1.01  |Q        |V        |         |         |
14+10       0.6353      1.04  |Q        |V        |         |         |
14+15       0.6427      1.07  |Q        | V       |         |         |
14+20       0.6503      1.11  |Q        | V       |         |         |
14+25       0.6582      1.14  |Q        | V       |         |         |
14+30       0.6664      1.19  |Q        | V       |         |         |
14+35       0.6748      1.23  |Q        | V       |         |         |
14+40       0.6837      1.28  |Q        | V       |         |         |
14+45       0.6929      1.33  |Q        | V       |         |         |
14+50       0.7025      1.40  |Q        |  V      |         |         |
14+55       0.7125      1.46  |Q        |  V      |         |         |
15+ 0       0.7231      1.54  |Q        |  V      |         |         |
15+ 5       0.7343      1.62  |Q        |  V      |         |         |
15+10       0.7461      1.72  |Q        |  V      |         |         |
15+15       0.7587      1.82  |Q        |   V     |         |         |
15+20       0.7722      1.96  |Q        |   V     |         |         |
15+25       0.7869      2.14  | Q       |   V     |         |         |
15+30       0.8047      2.58  | Q       |    V    |         |         |
15+35       0.8252      2.97  | Q       |    V    |         |         |
15+40       0.8484      3.38  |  Q      |    V    |         |         |
15+45       0.8748      3.82  |  Q      |     V   |         |         |
15+50       0.9061      4.55  |   Q     |     V   |         |         |
15+55       0.9444      5.55  |    Q    |      V  |         |         |
16+ 0       0.9974      7.71  |      Q  |       V |         |         |
16+ 5       1.0940     14.01  |         |   Q     V         |         |
16+10       1.3148     32.07  |         |         |   V     | Q       |
16+15       1.4710     22.67  |         |         | Q    V  |         |
16+20       1.5599     12.91  |         | Q       |        V|         |
16+25       1.6214      8.94  |       Q |         |         V         |
16+30       1.6655      6.40  |     Q   |         |         |V        |
16+35       1.6991      4.88  |   Q     |         |         |V        |
16+40       1.7255      3.83  |  Q      |         |         | V       |
16+45       1.7463      3.02  |  Q      |         |         | V       |
16+50       1.7630      2.43  | Q       |         |         |  V      |
16+55       1.7780      2.18  | Q       |         |         |  V      |
17+ 0       1.7908      1.85  |Q        |         |         |  V      |
17+ 5       1.8011      1.50  |Q        |         |         |  V      |
17+10       1.8096      1.23  |Q        |         |         |  V      |
17+15       1.8173      1.13  |Q        |         |         |   V     |
17+20       1.8245      1.05  |Q        |         |         |   V     |
17+25       1.8313      0.98  Q         |         |         |   V     |
17+30       1.8376      0.93  Q         |         |         |   V     |
17+35       1.8437      0.88  Q         |         |         |   V     |
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17+40	1.8495	0.84	Q	|	|	|	V |
17+45	1.8550	0.80	Q	|	|	|	V |
17+50	1.8603	0.77	Q	|	|	|	V |
17+55	1.8653	0.74	Q	|	|	|	V |
18+ 0	1.8702	0.71	Q	|	|	|	V |
18+ 5	1.8750	0.70	Q	|	|	|	V |
18+10	1.8803	0.77	Q	|	|	|	V |
18+15	1.8858	0.80	Q	|	|	|	V |
18+20	1.8914	0.81	Q	|	|	|	V |
18+25	1.8969	0.80	Q	|	|	|	V |
18+30	1.9023	0.79	Q	|	|	|	V |
18+35	1.9077	0.78	Q	|	|	|	V |
18+40	1.9129	0.76	Q	|	|	|	V |
18+45	1.9181	0.75	Q	|	|	|	V |
18+50	1.9231	0.73	Q	|	|	|	V |
18+55	1.9281	0.72	Q	|	|	|	V |
19+ 0	1.9330	0.71	Q	|	|	|	V |
19+ 5	1.9377	0.69	Q	|	|	|	V |
19+10	1.9424	0.68	Q	|	|	|	V |
19+15	1.9470	0.67	Q	|	|	|	V |
19+20	1.9515	0.65	Q	|	|	|	V |
19+25	1.9559	0.64	Q	|	|	|	V |
19+30	1.9603	0.63	Q	|	|	|	V |
19+35	1.9646	0.62	Q	|	|	|	V |
19+40	1.9688	0.61	Q	|	|	|	V |
19+45	1.9729	0.60	Q	|	|	|	V |
19+50	1.9770	0.59	Q	|	|	|	V |
19+55	1.9810	0.58	Q	|	|	|	V |
20+ 0	1.9849	0.57	Q	|	|	|	V |
20+ 5	1.9888	0.56	Q	|	|	|	V |
20+10	1.9927	0.56	Q	|	|	|	V |
20+15	1.9964	0.55	Q	|	|	|	V |
20+20	2.0002	0.54	Q	|	|	|	V |
20+25	2.0039	0.53	Q	|	|	|	V |
20+30	2.0075	0.53	Q	|	|	|	V |
20+35	2.0111	0.52	Q	|	|	|	V |
20+40	2.0146	0.51	Q	|	|	|	V |
20+45	2.0181	0.51	Q	|	|	|	V |
20+50	2.0215	0.50	Q	|	|	|	V |
20+55	2.0250	0.49	Q	|	|	|	V |
21+ 0	2.0283	0.49	Q	|	|	|	V |
21+ 5	2.0316	0.48	Q	|	|	|	V |
21+10	2.0349	0.48	Q	|	|	|	V |
21+15	2.0382	0.47	Q	|	|	|	V |
21+20	2.0414	0.47	Q	|	|	|	V |
21+25	2.0446	0.46	Q	|	|	|	V |
21+30	2.0477	0.46	Q	|	|	|	V |
21+35	2.0509	0.45	Q	|	|	|	V |
21+40	2.0539	0.45	Q	|	|	|	V |
21+45	2.0570	0.44	Q	|	|	|	V |
21+50	2.0600	0.44	Q	|	|	|	V |
21+55	2.0630	0.43	Q	|	|	|	V |
22+ 0	2.0660	0.43	Q	|	|	|	V |
22+ 5	2.0689	0.43	Q	|	|	|	V |
22+10	2.0718	0.42	Q	|	|	|	V |
22+15	2.0747	0.42	Q	|	|	|	V |
22+20	2.0775	0.41	Q	|	|	|	V |
22+25	2.0804	0.41	Q	|	|	|	V |
22+30	2.0832	0.41	Q	|	|	|	V|
22+35	2.0859	0.40	Q	|	|	|	V|
22+40	2.0887	0.40	Q	|	|	|	V|
22+45	2.0914	0.40	Q	|	|	|	V|
22+50	2.0941	0.39	Q	|	|	|	V|
22+55	2.0968	0.39	Q	|	|	|	V|
23+ 0	2.0995	0.39	Q	|	|	|	V|
23+ 5	2.1021	0.38	Q	|	|	|	V|
23+10	2.1047	0.38	Q	|	|	|	V|
23+15	2.1073	0.38	Q	|	|	|	V|
23+20	2.1099	0.37	Q	|	|	|	V|
23+25	2.1124	0.37	Q	|	|	|	V|
23+30	2.1150	0.37	Q	|	|	|	V|
23+35	2.1175	0.37	Q	|	|	|	V|
23+40	2.1200	0.36	Q	|	|	|	V|
23+45	2.1225	0.36	Q	|	|	|	V|
23+50	2.1249	0.36	Q	|	|	|	V|
23+55	2.1274	0.35	Q	|	|	|	V|
24+ 0	2.1298	0.35	Q	|	|	|	V|
24+ 5	2.1320	0.33	Q	|	|	|	V|

```
   24+10       2.1334      0.19  Q         |         |         |        V|
   24+15       2.1341      0.10  Q         |         |         |        V|
   24+20       2.1345      0.07  Q         |         |         |        V|
   24+25       2.1348      0.04  Q         |         |         |        V|
   24+30       2.1350      0.03  Q         |         |         |        V|
   24+35       2.1351      0.02  Q         |         |         |        V|
   24+40       2.1352      0.01  Q         |         |         |        V|
   24+45       2.1353      0.01  Q         |         |         |        V|
   24+50       2.1353      0.01  Q         |         |         |        V|
   24+55       2.1353      0.00  Q         |         |         |        V|
   25+ 0       2.1353      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
100 YEAR 24 HOUR EVENT
EXISTING CONDITION - DRAINING TO EAST

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)	
Rainfall data for year 10			
5.50	1	0.75	
Rainfall data for year 2			
5.50	6	0.70	
Rainfall data for year 2			
5.50	24	1.00	
Rainfall data for year 100			
5.50	1	1.15	
Rainfall data for year 100			
5.50	6	1.80	
Rainfall data for year 100			
5.50	24	3.00	

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
90.0	98.0	5.50	1.000	0.040	1.000	0.040

Area-averaged adjusted loss rate Fm (In/Hr) = 0.040

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
5.50	1.000	90.0	98.0	0.20	0.923

Area-averaged catchment yield fraction, Y = 0.923
Area-averaged low loss fraction, Yb = 0.077
User entry of time of concentration = 0.160 (hours)

++
Watershed area =   5.50(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =   0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.040(In/Hr)
Average low loss rate fraction (Yb) = 0.077 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.546(In)
Computed peak 30-minute rainfall = 0.934(In)
Specified peak 1-hour rainfall = 1.150(In)
Computed peak 3-hour rainfall = 1.514(In)
Specified peak 6-hour rainfall = 1.800(In)
Specified peak 24-hour rainfall = 3.000(In)

Rainfall depth area reduction factors:
Using a total area of   5.50(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000   Adjusted rainfall = 0.546(In)
30-minute factor = 1.000   Adjusted rainfall = 0.934(In)
1-hour factor = 1.000   Adjusted rainfall = 1.150(In)
3-hour factor = 1.000   Adjusted rainfall = 1.514(In)
6-hour factor = 1.000   Adjusted rainfall = 1.800(In)
24-hour factor = 1.000   Adjusted rainfall = 3.000(In)

                      U n i t H y d r o g r a p h
++
Interval   'S' Graph   Unit Hydrograph
Number   Mean values   ((CFS))

               (K =   66.52 (CFS))

  1   6.621   4.404
  2   46.358   26.432
  3   71.060   16.431
  4   81.731   7.098
  5   88.011   4.177
  6   91.943   2.615
  7   94.679   1.820
  8   96.569   1.257
  9   97.782   0.807
 10   98.525   0.494
 11   99.292   0.510
 12   100.000   0.471

Peak Unit   Adjusted mass rainfall Unit rainfall
Number   (In)   (In)
  1   0.5455   0.5455
  2   0.6716   0.1261
  3   0.7585   0.0869
  4   0.8269   0.0684
  5   0.8841   0.0572
  6   0.9338   0.0497
  7   0.9780   0.0442
  8   1.0180   0.0400
  9   1.0546   0.0366
 10   1.0885   0.0339
 11   1.1201   0.0316
 12   1.1497   0.0296
 13   1.1730   0.0233
 14   1.1949   0.0220
 15   1.2157   0.0208
 16   1.2355   0.0198
 17   1.2544   0.0189
 18   1.2725   0.0181
 19   1.2898   0.0173
 20   1.3065   0.0167
 21   1.3225   0.0160
 22   1.3380   0.0155
 23   1.3530   0.0150
 24   1.3675   0.0145
 25   1.3815   0.0140
 26   1.3951   0.0136
 27   1.4084   0.0132
 28   1.4213   0.0129

29	1.4338	0.0125
30	1.4460	0.0122
31	1.4579	0.0119
32	1.4696	0.0116
33	1.4809	0.0114
34	1.4920	0.0111
35	1.5029	0.0109
36	1.5135	0.0106
37	1.5239	0.0104
38	1.5341	0.0102
39	1.5441	0.0100
40	1.5539	0.0098
41	1.5635	0.0096
42	1.5730	0.0095
43	1.5823	0.0093
44	1.5914	0.0091
45	1.6004	0.0090
46	1.6092	0.0088
47	1.6179	0.0087
48	1.6264	0.0085
49	1.6348	0.0084
50	1.6431	0.0083
51	1.6513	0.0082
52	1.6593	0.0080
53	1.6672	0.0079
54	1.6750	0.0078
55	1.6827	0.0077
56	1.6903	0.0076
57	1.6978	0.0075
58	1.7052	0.0074
59	1.7125	0.0073
60	1.7197	0.0072
61	1.7269	0.0071
62	1.7339	0.0070
63	1.7409	0.0070
64	1.7477	0.0069
65	1.7545	0.0068
66	1.7612	0.0067
67	1.7679	0.0066
68	1.7744	0.0066
69	1.7809	0.0065
70	1.7873	0.0064
71	1.7937	0.0064
72	1.8000	0.0063
73	1.8091	0.0092
74	1.8182	0.0091
75	1.8272	0.0090
76	1.8362	0.0089
77	1.8451	0.0089
78	1.8538	0.0088
79	1.8626	0.0087
80	1.8712	0.0087
81	1.8798	0.0086
82	1.8883	0.0085
83	1.8968	0.0085
84	1.9052	0.0084
85	1.9135	0.0083
86	1.9218	0.0083
87	1.9300	0.0082
88	1.9381	0.0081
89	1.9462	0.0081
90	1.9542	0.0080
91	1.9622	0.0080
92	1.9701	0.0079
93	1.9780	0.0079
94	1.9858	0.0078
95	1.9936	0.0078
96	2.0013	0.0077
97	2.0089	0.0077
98	2.0165	0.0076
99	2.0241	0.0076
100	2.0316	0.0075
101	2.0391	0.0075
102	2.0465	0.0074
103	2.0538	0.0074
104	2.0612	0.0073
105	2.0684	0.0073
106	2.0757	0.0072

107	2.0829	0.0072
108	2.0900	0.0072
109	2.0971	0.0071
110	2.1042	0.0071
111	2.1112	0.0070
112	2.1182	0.0070
113	2.1252	0.0069
114	2.1321	0.0069
115	2.1390	0.0069
116	2.1458	0.0068
117	2.1526	0.0068
118	2.1594	0.0068
119	2.1661	0.0067
120	2.1728	0.0067
121	2.1794	0.0067
122	2.1860	0.0066
123	2.1926	0.0066
124	2.1992	0.0066
125	2.2057	0.0065
126	2.2122	0.0065
127	2.2186	0.0065
128	2.2251	0.0064
129	2.2315	0.0064
130	2.2378	0.0064
131	2.2441	0.0063
132	2.2504	0.0063
133	2.2567	0.0063
134	2.2629	0.0062
135	2.2692	0.0062
136	2.2753	0.0062
137	2.2815	0.0062
138	2.2876	0.0061
139	2.2937	0.0061
140	2.2998	0.0061
141	2.3058	0.0060
142	2.3118	0.0060
143	2.3178	0.0060
144	2.3238	0.0060
145	2.3297	0.0059
146	2.3356	0.0059
147	2.3415	0.0059
148	2.3473	0.0059
149	2.3532	0.0058
150	2.3590	0.0058
151	2.3648	0.0058
152	2.3705	0.0058
153	2.3763	0.0057
154	2.3820	0.0057
155	2.3877	0.0057
156	2.3933	0.0057
157	2.3990	0.0056
158	2.4046	0.0056
159	2.4102	0.0056
160	2.4158	0.0056
161	2.4213	0.0056
162	2.4268	0.0055
163	2.4323	0.0055
164	2.4378	0.0055
165	2.4433	0.0055
166	2.4487	0.0054
167	2.4542	0.0054
168	2.4596	0.0054
169	2.4650	0.0054
170	2.4703	0.0054
171	2.4757	0.0053
172	2.4810	0.0053
173	2.4863	0.0053
174	2.4916	0.0053
175	2.4969	0.0053
176	2.5021	0.0052
177	2.5073	0.0052
178	2.5125	0.0052
179	2.5177	0.0052
180	2.5229	0.0052
181	2.5281	0.0052
182	2.5332	0.0051
183	2.5383	0.0051
184	2.5434	0.0051

185	2.5485	0.0051
186	2.5536	0.0051
187	2.5586	0.0051
188	2.5637	0.0050
189	2.5687	0.0050
190	2.5737	0.0050
191	2.5787	0.0050
192	2.5836	0.0050
193	2.5886	0.0050
194	2.5935	0.0049
195	2.5984	0.0049
196	2.6033	0.0049
197	2.6082	0.0049
198	2.6131	0.0049
199	2.6179	0.0049
200	2.6228	0.0048
201	2.6276	0.0048
202	2.6324	0.0048
203	2.6372	0.0048
204	2.6420	0.0048
205	2.6468	0.0048
206	2.6515	0.0048
207	2.6562	0.0047
208	2.6610	0.0047
209	2.6657	0.0047
210	2.6704	0.0047
211	2.6750	0.0047
212	2.6797	0.0047
213	2.6844	0.0047
214	2.6890	0.0046
215	2.6936	0.0046
216	2.6982	0.0046
217	2.7028	0.0046
218	2.7074	0.0046
219	2.7120	0.0046
220	2.7165	0.0046
221	2.7211	0.0045
222	2.7256	0.0045
223	2.7301	0.0045
224	2.7346	0.0045
225	2.7391	0.0045
226	2.7436	0.0045
227	2.7481	0.0045
228	2.7525	0.0045
229	2.7570	0.0044
230	2.7614	0.0044
231	2.7658	0.0044
232	2.7702	0.0044
233	2.7746	0.0044
234	2.7790	0.0044
235	2.7834	0.0044
236	2.7877	0.0044
237	2.7921	0.0043
238	2.7964	0.0043
239	2.8007	0.0043
240	2.8051	0.0043
241	2.8094	0.0043
242	2.8136	0.0043
243	2.8179	0.0043
244	2.8222	0.0043
245	2.8264	0.0043
246	2.8307	0.0042
247	2.8349	0.0042
248	2.8391	0.0042
249	2.8434	0.0042
250	2.8476	0.0042
251	2.8518	0.0042
252	2.8559	0.0042
253	2.8601	0.0042
254	2.8643	0.0042
255	2.8684	0.0042
256	2.8726	0.0041
257	2.8767	0.0041
258	2.8808	0.0041
259	2.8849	0.0041
260	2.8890	0.0041
261	2.8931	0.0041
262	2.8972	0.0041

263	2.9013	0.0041
264	2.9053	0.0041
265	2.9094	0.0041
266	2.9134	0.0040
267	2.9174	0.0040
268	2.9215	0.0040
269	2.9255	0.0040
270	2.9295	0.0040
271	2.9335	0.0040
272	2.9375	0.0040
273	2.9414	0.0040
274	2.9454	0.0040
275	2.9494	0.0040
276	2.9533	0.0039
277	2.9572	0.0039
278	2.9612	0.0039
279	2.9651	0.0039
280	2.9690	0.0039
281	2.9729	0.0039
282	2.9768	0.0039
283	2.9807	0.0039
284	2.9846	0.0039
285	2.9884	0.0039
286	2.9923	0.0039
287	2.9961	0.0039
288	3.0000	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0003	0.0035
2	0.0039	0.0003	0.0036
3	0.0039	0.0003	0.0036
4	0.0039	0.0003	0.0036
5	0.0039	0.0003	0.0036
6	0.0039	0.0003	0.0036
7	0.0039	0.0003	0.0036
8	0.0039	0.0003	0.0036
9	0.0039	0.0003	0.0036
10	0.0040	0.0003	0.0037
11	0.0040	0.0003	0.0037
12	0.0040	0.0003	0.0037
13	0.0040	0.0003	0.0037
14	0.0040	0.0003	0.0037
15	0.0040	0.0003	0.0037
16	0.0040	0.0003	0.0037
17	0.0041	0.0003	0.0037
18	0.0041	0.0003	0.0038
19	0.0041	0.0003	0.0038
20	0.0041	0.0003	0.0038
21	0.0041	0.0003	0.0038
22	0.0041	0.0003	0.0038
23	0.0042	0.0003	0.0038
24	0.0042	0.0003	0.0038
25	0.0042	0.0003	0.0039
26	0.0042	0.0003	0.0039
27	0.0042	0.0003	0.0039
28	0.0042	0.0003	0.0039
29	0.0042	0.0003	0.0039
30	0.0043	0.0003	0.0039
31	0.0043	0.0003	0.0039
32	0.0043	0.0003	0.0040
33	0.0043	0.0003	0.0040
34	0.0043	0.0003	0.0040
35	0.0043	0.0003	0.0040
36	0.0044	0.0003	0.0040
37	0.0044	0.0003	0.0040
38	0.0044	0.0003	0.0041
39	0.0044	0.0003	0.0041
40	0.0044	0.0003	0.0041
41	0.0045	0.0003	0.0041
42	0.0045	0.0003	0.0041
43	0.0045	0.0003	0.0041
44	0.0045	0.0003	0.0042
45	0.0045	0.0003	0.0042
46	0.0045	0.0004	0.0042
47	0.0046	0.0004	0.0042

48	0.0046	0.0004	0.0042
49	0.0046	0.0004	0.0043
50	0.0046	0.0004	0.0043
51	0.0047	0.0004	0.0043
52	0.0047	0.0004	0.0043
53	0.0047	0.0004	0.0043
54	0.0047	0.0004	0.0043
55	0.0047	0.0004	0.0044
56	0.0048	0.0004	0.0044
57	0.0048	0.0004	0.0044
58	0.0048	0.0004	0.0044
59	0.0048	0.0004	0.0045
60	0.0048	0.0004	0.0045
61	0.0049	0.0004	0.0045
62	0.0049	0.0004	0.0045
63	0.0049	0.0004	0.0045
64	0.0049	0.0004	0.0046
65	0.0050	0.0004	0.0046
66	0.0050	0.0004	0.0046
67	0.0050	0.0004	0.0046
68	0.0050	0.0004	0.0046
69	0.0051	0.0004	0.0047
70	0.0051	0.0004	0.0047
71	0.0051	0.0004	0.0047
72	0.0051	0.0004	0.0047
73	0.0052	0.0004	0.0048
74	0.0052	0.0004	0.0048
75	0.0052	0.0004	0.0048
76	0.0052	0.0004	0.0048
77	0.0053	0.0004	0.0049
78	0.0053	0.0004	0.0049
79	0.0053	0.0004	0.0049
80	0.0054	0.0004	0.0050
81	0.0054	0.0004	0.0050
82	0.0054	0.0004	0.0050
83	0.0055	0.0004	0.0050
84	0.0055	0.0004	0.0051
85	0.0055	0.0004	0.0051
86	0.0056	0.0004	0.0051
87	0.0056	0.0004	0.0052
88	0.0056	0.0004	0.0052
89	0.0057	0.0004	0.0052
90	0.0057	0.0004	0.0052
91	0.0057	0.0004	0.0053
92	0.0058	0.0004	0.0053
93	0.0058	0.0004	0.0054
94	0.0058	0.0005	0.0054
95	0.0059	0.0005	0.0054
96	0.0059	0.0005	0.0055
97	0.0060	0.0005	0.0055
98	0.0060	0.0005	0.0055
99	0.0060	0.0005	0.0056
100	0.0061	0.0005	0.0056
101	0.0061	0.0005	0.0056
102	0.0062	0.0005	0.0057
103	0.0062	0.0005	0.0057
104	0.0062	0.0005	0.0058
105	0.0063	0.0005	0.0058
106	0.0063	0.0005	0.0058
107	0.0064	0.0005	0.0059
108	0.0064	0.0005	0.0059
109	0.0065	0.0005	0.0060
110	0.0065	0.0005	0.0060
111	0.0066	0.0005	0.0061
112	0.0066	0.0005	0.0061
113	0.0067	0.0005	0.0062
114	0.0067	0.0005	0.0062
115	0.0068	0.0005	0.0063
116	0.0068	0.0005	0.0063
117	0.0069	0.0005	0.0064
118	0.0069	0.0005	0.0064
119	0.0070	0.0005	0.0065
120	0.0071	0.0005	0.0065
121	0.0072	0.0006	0.0066
122	0.0072	0.0006	0.0066
123	0.0073	0.0006	0.0067
124	0.0073	0.0006	0.0068
125	0.0074	0.0006	0.0068

126	0.0075	0.0006	0.0069
127	0.0076	0.0006	0.0070
128	0.0076	0.0006	0.0070
129	0.0077	0.0006	0.0071
130	0.0078	0.0006	0.0072
131	0.0079	0.0006	0.0073
132	0.0079	0.0006	0.0073
133	0.0080	0.0006	0.0074
134	0.0081	0.0006	0.0075
135	0.0082	0.0006	0.0076
136	0.0083	0.0006	0.0076
137	0.0084	0.0006	0.0077
138	0.0085	0.0007	0.0078
139	0.0086	0.0007	0.0079
140	0.0087	0.0007	0.0080
141	0.0088	0.0007	0.0081
142	0.0089	0.0007	0.0082
143	0.0090	0.0007	0.0083
144	0.0091	0.0007	0.0084
145	0.0063	0.0005	0.0058
146	0.0064	0.0005	0.0059
147	0.0065	0.0005	0.0060
148	0.0066	0.0005	0.0061
149	0.0067	0.0005	0.0062
150	0.0068	0.0005	0.0063
151	0.0070	0.0005	0.0064
152	0.0070	0.0005	0.0065
153	0.0072	0.0006	0.0067
154	0.0073	0.0006	0.0067
155	0.0075	0.0006	0.0069
156	0.0076	0.0006	0.0070
157	0.0078	0.0006	0.0072
158	0.0079	0.0006	0.0073
159	0.0082	0.0006	0.0075
160	0.0083	0.0006	0.0076
161	0.0085	0.0007	0.0079
162	0.0087	0.0007	0.0080
163	0.0090	0.0007	0.0083
164	0.0091	0.0007	0.0084
165	0.0095	0.0007	0.0087
166	0.0096	0.0007	0.0089
167	0.0100	0.0008	0.0092
168	0.0102	0.0008	0.0094
169	0.0106	0.0008	0.0098
170	0.0109	0.0008	0.0100
171	0.0114	0.0009	0.0105
172	0.0116	0.0009	0.0107
173	0.0122	0.0009	0.0113
174	0.0125	0.0010	0.0116
175	0.0132	0.0010	0.0122
176	0.0136	0.0011	0.0126
177	0.0145	0.0011	0.0134
178	0.0150	0.0012	0.0138
179	0.0160	0.0012	0.0148
180	0.0167	0.0013	0.0154
181	0.0181	0.0014	0.0167
182	0.0189	0.0015	0.0174
183	0.0208	0.0016	0.0192
184	0.0220	0.0017	0.0203
185	0.0296	0.0023	0.0273
186	0.0316	0.0024	0.0291
187	0.0366	0.0028	0.0338
188	0.0400	0.0031	0.0369
189	0.0497	0.0033	0.0464
190	0.0572	0.0033	0.0539
191	0.0869	0.0033	0.0836
192	0.1261	0.0033	0.1228
193	0.5455	0.0033	0.5422
194	0.0684	0.0033	0.0651
195	0.0442	0.0033	0.0409
196	0.0339	0.0026	0.0313
197	0.0233	0.0018	0.0215
198	0.0198	0.0015	0.0183
199	0.0173	0.0013	0.0160
200	0.0155	0.0012	0.0143
201	0.0140	0.0011	0.0130
202	0.0129	0.0010	0.0119
203	0.0119	0.0009	0.0110

204	0.0111	0.0009	0.0102
205	0.0104	0.0008	0.0096
206	0.0098	0.0008	0.0090
207	0.0093	0.0007	0.0086
208	0.0088	0.0007	0.0081
209	0.0084	0.0006	0.0078
210	0.0080	0.0006	0.0074
211	0.0077	0.0006	0.0071
212	0.0074	0.0006	0.0068
213	0.0071	0.0006	0.0066
214	0.0069	0.0005	0.0063
215	0.0066	0.0005	0.0061
216	0.0064	0.0005	0.0059
217	0.0092	0.0007	0.0085
218	0.0089	0.0007	0.0082
219	0.0087	0.0007	0.0080
220	0.0085	0.0007	0.0079
221	0.0083	0.0006	0.0077
222	0.0081	0.0006	0.0075
223	0.0080	0.0006	0.0074
224	0.0078	0.0006	0.0072
225	0.0077	0.0006	0.0071
226	0.0075	0.0006	0.0069
227	0.0074	0.0006	0.0068
228	0.0072	0.0006	0.0067
229	0.0071	0.0005	0.0066
230	0.0070	0.0005	0.0064
231	0.0069	0.0005	0.0063
232	0.0068	0.0005	0.0062
233	0.0067	0.0005	0.0061
234	0.0066	0.0005	0.0060
235	0.0065	0.0005	0.0060
236	0.0064	0.0005	0.0059
237	0.0063	0.0005	0.0058
238	0.0062	0.0005	0.0057
239	0.0061	0.0005	0.0056
240	0.0060	0.0005	0.0055
241	0.0059	0.0005	0.0055
242	0.0059	0.0005	0.0054
243	0.0058	0.0004	0.0053
244	0.0057	0.0004	0.0053
245	0.0056	0.0004	0.0052
246	0.0056	0.0004	0.0051
247	0.0055	0.0004	0.0051
248	0.0054	0.0004	0.0050
249	0.0054	0.0004	0.0050
250	0.0053	0.0004	0.0049
251	0.0053	0.0004	0.0049
252	0.0052	0.0004	0.0048
253	0.0052	0.0004	0.0048
254	0.0051	0.0004	0.0047
255	0.0051	0.0004	0.0047
256	0.0050	0.0004	0.0046
257	0.0050	0.0004	0.0046
258	0.0049	0.0004	0.0045
259	0.0049	0.0004	0.0045
260	0.0048	0.0004	0.0044
261	0.0048	0.0004	0.0044
262	0.0047	0.0004	0.0044
263	0.0047	0.0004	0.0043
264	0.0046	0.0004	0.0043
265	0.0046	0.0004	0.0042
266	0.0046	0.0004	0.0042
267	0.0045	0.0003	0.0042
268	0.0045	0.0003	0.0041
269	0.0044	0.0003	0.0041
270	0.0044	0.0003	0.0041
271	0.0044	0.0003	0.0040
272	0.0043	0.0003	0.0040
273	0.0043	0.0003	0.0040
274	0.0043	0.0003	0.0039
275	0.0042	0.0003	0.0039
276	0.0042	0.0003	0.0039
277	0.0042	0.0003	0.0038
278	0.0041	0.0003	0.0038
279	0.0041	0.0003	0.0038
280	0.0041	0.0003	0.0038
281	0.0041	0.0003	0.0037

282	0.0040	0.0003	0.0037
283	0.0040	0.0003	0.0037
284	0.0040	0.0003	0.0037
285	0.0039	0.0003	0.0036
286	0.0039	0.0003	0.0036
287	0.0039	0.0003	0.0036
288	0.0039	0.0003	0.0036

Total soil rain loss = 0.18(In)
Total effective rainfall = 2.82(In)
Peak flow rate in flood hydrograph = 17.74(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.02	Q				
0+10	0.0009	0.11	Q				
0+15	0.0020	0.17	Q				
0+20	0.0034	0.19	Q				
0+25	0.0048	0.21	Q				
0+30	0.0063	0.22	Q				
0+35	0.0079	0.23	Q				
0+40	0.0095	0.23	Q				
0+45	0.0111	0.24	Q				
0+50	0.0127	0.24	Q				
0+55	0.0144	0.24	Q				
1+ 0	0.0160	0.24	Q				
1+ 5	0.0177	0.24	Q				
1+10	0.0194	0.24	Q				
1+15	0.0211	0.25	Q				
1+20	0.0228	0.25	Q				
1+25	0.0245	0.25	Q				
1+30	0.0262	0.25	Q				
1+35	0.0279	0.25	Q				
1+40	0.0296	0.25	Q				
1+45	0.0313	0.25	Q				
1+50	0.0331	0.25	QV				
1+55	0.0348	0.25	QV				
2+ 0	0.0366	0.25	QV				
2+ 5	0.0383	0.25	QV				
2+10	0.0401	0.26	QV				
2+15	0.0418	0.26	QV				
2+20	0.0436	0.26	QV				
2+25	0.0454	0.26	QV				
2+30	0.0472	0.26	QV				
2+35	0.0490	0.26	QV				
2+40	0.0508	0.26	QV				
2+45	0.0526	0.26	QV				
2+50	0.0544	0.26	QV				
2+55	0.0562	0.26	QV				
3+ 0	0.0580	0.27	QV				
3+ 5	0.0599	0.27	QV				
3+10	0.0617	0.27	QV				
3+15	0.0636	0.27	QV				
3+20	0.0654	0.27	Q V				
3+25	0.0673	0.27	Q V				
3+30	0.0691	0.27	Q V				
3+35	0.0710	0.27	Q V				
3+40	0.0729	0.27	Q V				
3+45	0.0748	0.28	Q V				
3+50	0.0767	0.28	Q V				
3+55	0.0786	0.28	Q V				
4+ 0	0.0805	0.28	Q V				
4+ 5	0.0825	0.28	Q V				
4+10	0.0844	0.28	Q V				
4+15	0.0864	0.28	Q V				
4+20	0.0883	0.28	Q V				
4+25	0.0903	0.28	Q V				
4+30	0.0922	0.29	Q V				
4+35	0.0942	0.29	Q V				
4+40	0.0962	0.29	Q V				

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 4+45       0.0982      0.29  Q  V      |         |         |         |
 4+50       0.1002      0.29  Q  V      |         |         |         |
 4+55       0.1022      0.29  Q  V      |         |         |         |
 5+ 0       0.1043      0.29  Q  V      |         |         |         |
 5+ 5       0.1063      0.30  Q  V      |         |         |         |
 5+10       0.1083      0.30  Q  V      |         |         |         |
 5+15       0.1104      0.30  Q  V      |         |         |         |
 5+20       0.1125      0.30  Q  V      |         |         |         |
 5+25       0.1145      0.30  Q  V      |         |         |         |
 5+30       0.1166      0.30  Q  V      |         |         |         |
 5+35       0.1187      0.30  Q  V      |         |         |         |
 5+40       0.1208      0.31  Q  V      |         |         |         |
 5+45       0.1229      0.31  Q  V      |         |         |         |
 5+50       0.1251      0.31  Q  V      |         |         |         |
 5+55       0.1272      0.31  Q  V      |         |         |         |
 6+ 0       0.1294      0.31  Q   V     |         |         |         |
 6+ 5       0.1315      0.31  Q   V     |         |         |         |
 6+10       0.1337      0.32  Q   V     |         |         |         |
 6+15       0.1359      0.32  Q   V     |         |         |         |
 6+20       0.1381      0.32  Q   V     |         |         |         |
 6+25       0.1403      0.32  Q   V     |         |         |         |
 6+30       0.1425      0.32  Q   V     |         |         |         |
 6+35       0.1447      0.32  Q   V     |         |         |         |
 6+40       0.1470      0.33  Q   V     |         |         |         |
 6+45       0.1492      0.33  Q   V     |         |         |         |
 6+50       0.1515      0.33  Q   V     |         |         |         |
 6+55       0.1538      0.33  Q   V     |         |         |         |
 7+ 0       0.1560      0.33  Q   V     |         |         |         |
 7+ 5       0.1583      0.33  Q   V     |         |         |         |
 7+10       0.1607      0.34  Q   V     |         |         |         |
 7+15       0.1630      0.34  Q    V    |         |         |         |
 7+20       0.1653      0.34  Q    V    |         |         |         |
 7+25       0.1677      0.34  Q    V    |         |         |         |
 7+30       0.1701      0.34  Q    V    |         |         |         |
 7+35       0.1725      0.35  Q    V    |         |         |         |
 7+40       0.1749      0.35  Q    V    |         |         |         |
 7+45       0.1773      0.35  Q    V    |         |         |         |
 7+50       0.1797      0.35  Q    V    |         |         |         |
 7+55       0.1822      0.36  Q    V    |         |         |         |
 8+ 0       0.1846      0.36  Q    V    |         |         |         |
 8+ 5       0.1871      0.36  Q    V    |         |         |         |
 8+10       0.1896      0.36  Q    V    |         |         |         |
 8+15       0.1921      0.36  Q    V    |         |         |         |
 8+20       0.1947      0.37  Q     V   |         |         |         |
 8+25       0.1972      0.37  Q     V   |         |         |         |
 8+30       0.1998      0.37  Q     V   |         |         |         |
 8+35       0.2023      0.37  Q     V   |         |         |         |
 8+40       0.2049      0.38  Q     V   |         |         |         |
 8+45       0.2076      0.38  Q     V   |         |         |         |
 8+50       0.2102      0.38  Q     V   |         |         |         |
 8+55       0.2128      0.39  Q     V   |         |         |         |
 9+ 0       0.2155      0.39  Q     V   |         |         |         |
 9+ 5       0.2182      0.39  Q     V   |         |         |         |
 9+10       0.2209      0.39  Q     V   |         |         |         |
 9+15       0.2237      0.40  Q     V   |         |         |         |
 9+20       0.2264      0.40  Q      V  |         |         |         |
 9+25       0.2292      0.40  Q      V  |         |         |         |
 9+30       0.2320      0.41  Q      V  |         |         |         |
 9+35       0.2348      0.41  Q      V  |         |         |         |
 9+40       0.2376      0.41  Q      V  |         |         |         |
 9+45       0.2405      0.42  Q      V  |         |         |         |
 9+50       0.2434      0.42  Q      V  |         |         |         |
 9+55       0.2463      0.42  Q      V  |         |         |         |
10+ 0       0.2492      0.43  Q      V  |         |         |         |
10+ 5       0.2522      0.43  Q      V  |         |         |         |
10+10       0.2552      0.43  Q      V  |         |         |         |
10+15       0.2582      0.44  Q      V  |         |         |         |
10+20       0.2612      0.44  Q       V |         |         |         |
10+25       0.2643      0.45  Q       V |         |         |         |
10+30       0.2674      0.45  Q       V |         |         |         |
10+35       0.2705      0.45  Q       V |         |         |         |
10+40       0.2737      0.46  Q       V |         |         |         |
10+45       0.2769      0.46  Q       V |         |         |         |
10+50       0.2801      0.47  Q       V |         |         |         |
10+55       0.2833      0.47  Q       V |         |         |         |
11+ 0       0.2866      0.48  Q       V |         |         |         |
11+ 5       0.2899      0.48  Q       V |         |         |         |
11+10       0.2933      0.49  Q        V|         |         |         |
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11+15       0.2966      0.49  Q        V|         |          |          |
11+20       0.3001      0.50  Q        V|         |          |          |
11+25       0.3035      0.50  |Q       V|         |          |          |
11+30       0.3070      0.51  |Q       V|         |          |          |
11+35       0.3105      0.51  |Q       V|         |          |          |
11+40       0.3141      0.52  |Q       V|         |          |          |
11+45       0.3177      0.52  |Q       V|         |          |          |
11+50       0.3214      0.53  |Q       V|         |          |          |
11+55       0.3251      0.54  |Q        V         |          |          |
12+ 0       0.3288      0.54  |Q        V         |          |          |
12+ 5       0.3325      0.54  |Q        V         |          |          |
12+10       0.3358      0.47  Q         V         |          |          |
12+15       0.3388      0.43  Q         V         |          |          |
12+20       0.3417      0.42  Q         V         |          |          |
12+25       0.3446      0.42  Q         V         |          |          |
12+30       0.3474      0.42  Q         V         |          |          |
12+35       0.3503      0.42  Q         V         |          |          |
12+40       0.3532      0.42  Q         V         |          |          |
12+45       0.3562      0.43  Q         |V        |          |          |
12+50       0.3592      0.43  Q         |V        |          |          |
12+55       0.3622      0.44  Q         |V        |          |          |
13+ 0       0.3653      0.45  Q         |V        |          |          |
13+ 5       0.3684      0.46  Q         |V        |          |          |
13+10       0.3717      0.47  Q         |V        |          |          |
13+15       0.3749      0.48  Q         |V        |          |          |
13+20       0.3783      0.49  Q         |V        |          |          |
13+25       0.3817      0.50  Q         |V        |          |          |
13+30       0.3852      0.51  |Q        |V        |          |          |
13+35       0.3888      0.52  |Q        | V       |          |          |
13+40       0.3925      0.53  |Q        | V       |          |          |
13+45       0.3962      0.55  |Q        | V       |          |          |
13+50       0.4001      0.56  |Q        | V       |          |          |
13+55       0.4040      0.57  |Q        | V       |          |          |
14+ 0       0.4081      0.59  |Q        | V       |          |          |
14+ 5       0.4123      0.61  |Q        | V       |          |          |
14+10       0.4166      0.63  |Q        | V       |          |          |
14+15       0.4210      0.65  |Q        |  V      |          |          |
14+20       0.4256      0.67  |Q        |  V      |          |          |
14+25       0.4304      0.69  |Q        |  V      |          |          |
14+30       0.4353      0.72  |Q        |  V      |          |          |
14+35       0.4404      0.74  |Q        |  V      |          |          |
14+40       0.4457      0.77  |Q        |  V      |          |          |
14+45       0.4513      0.80  |Q        |  V      |          |          |
14+50       0.4571      0.84  |Q        |   V     |          |          |
14+55       0.4631      0.88  |Q        |   V     |          |          |
15+ 0       0.4695      0.92  |Q        |   V     |          |          |
15+ 5       0.4761      0.97  |Q        |   V     |          |          |
15+10       0.4833      1.03  | Q       |   V     |          |          |
15+15       0.4908      1.09  | Q       |    V    |          |          |
15+20       0.4989      1.17  | Q       |    V    |          |          |
15+25       0.5077      1.28  | Q       |    V    |          |          |
15+30       0.5181      1.51  |  Q      |     V   |          |          |
15+35       0.5299      1.72  |  Q      |     V   |          |          |
15+40       0.5433      1.95  |  Q      |     V   |          |          |
15+45       0.5585      2.20  |   Q     |      V  |          |          |
15+50       0.5764      2.60  |    Q    |      V  |          |          |
15+55       0.5981      3.15  |     Q   |       V |          |          |
16+ 0       0.6280      4.34  |       Q |        V|          |          |
16+ 5       0.6819      7.83  |         |    Q    |V         |          |
16+10       0.8041     17.74  |         |         |   V      |    Q     |
16+15       0.8893     12.37  |         |         |   Q  V   |          |
16+20       0.9381      7.10  |         |   Q     |       V  |          |
16+25       0.9722      4.95  |        Q|         |         V          |
16+30       0.9968      3.57  |      Q  |         |         V          |
16+35       1.0157      2.75  |    Q    |         |         |V         |
16+40       1.0306      2.17  |   Q     |         |         |V         |
16+45       1.0425      1.72  |  Q      |         |         | V        |
16+50       1.0522      1.41  | Q       |         |         | V        |
16+55       1.0609      1.27  | Q       |         |         | V        |
17+ 0       1.0686      1.12  | Q       |         |         |  V       |
17+ 5       1.0742      0.81  |Q        |         |         |  V       |
17+10       1.0792      0.73  |Q        |         |         |  V       |
17+15       1.0838      0.67  |Q        |         |         |  V       |
17+20       1.0881      0.63  |Q        |         |         |  V       |
17+25       1.0922      0.59  |Q        |         |         |  V       |
17+30       1.0961      0.56  |Q        |         |         |  V       |
17+35       1.0997      0.53  |Q        |         |         |   V      |
17+40       1.1032      0.51  |Q        |         |         |   V      |
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17+45	1.1065	0.48	Q	|	|	|	V |
17+50	1.1097	0.46	Q	|	|	|	V |
17+55	1.1128	0.45	Q	|	|	|	V |
18+ 0	1.1157	0.43	Q	|	|	|	V |
18+ 5	1.1187	0.43	Q	|	|	|	V |
18+10	1.1220	0.48	Q	|	|	|	V |
18+15	1.1256	0.51	|Q	|	|	|	V |
18+20	1.1291	0.52	|Q	|	|	|	V |
18+25	1.1327	0.52	|Q	|	|	|	V |
18+30	1.1362	0.51	|Q	|	|	|	V |
18+35	1.1397	0.51	|Q	|	|	|	V |
18+40	1.1431	0.50	Q	|	|	|	V |
18+45	1.1465	0.49	Q	|	|	|	V |
18+50	1.1498	0.48	Q	|	|	|	V |
18+55	1.1531	0.47	Q	|	|	|	V |
19+ 0	1.1563	0.46	Q	|	|	|	V |
19+ 5	1.1594	0.46	Q	|	|	|	V |
19+10	1.1625	0.45	Q	|	|	|	V |
19+15	1.1655	0.44	Q	|	|	|	V |
19+20	1.1685	0.43	Q	|	|	|	V |
19+25	1.1714	0.42	Q	|	|	|	V |
19+30	1.1743	0.42	Q	|	|	|	V |
19+35	1.1771	0.41	Q	|	|	|	V |
19+40	1.1799	0.40	Q	|	|	|	V |
19+45	1.1827	0.40	Q	|	|	|	V |
19+50	1.1854	0.39	Q	|	|	|	V |
19+55	1.1880	0.39	Q	|	|	|	V |
20+ 0	1.1906	0.38	Q	|	|	|	V |
20+ 5	1.1932	0.38	Q	|	|	|	V |
20+10	1.1958	0.37	Q	|	|	|	V |
20+15	1.1983	0.37	Q	|	|	|	V |
20+20	1.2008	0.36	Q	|	|	|	V |
20+25	1.2032	0.36	Q	|	|	|	V |
20+30	1.2057	0.35	Q	|	|	|	V |
20+35	1.2081	0.35	Q	|	|	|	V |
20+40	1.2104	0.34	Q	|	|	|	V |
20+45	1.2128	0.34	Q	|	|	|	V |
20+50	1.2151	0.34	Q	|	|	|	V |
20+55	1.2174	0.33	Q	|	|	|	V |
21+ 0	1.2196	0.33	Q	|	|	|	V |
21+ 5	1.2219	0.32	Q	|	|	|	V |
21+10	1.2241	0.32	Q	|	|	|	V |
21+15	1.2263	0.32	Q	|	|	|	V |
21+20	1.2284	0.31	Q	|	|	|	V |
21+25	1.2306	0.31	Q	|	|	|	V |
21+30	1.2327	0.31	Q	|	|	|	V |
21+35	1.2348	0.30	Q	|	|	|	V |
21+40	1.2369	0.30	Q	|	|	|	V |
21+45	1.2389	0.30	Q	|	|	|	V |
21+50	1.2410	0.30	Q	|	|	|	V |
21+55	1.2430	0.29	Q	|	|	|	V |
22+ 0	1.2450	0.29	Q	|	|	|	V |
22+ 5	1.2470	0.29	Q	|	|	|	V |
22+10	1.2489	0.29	Q	|	|	|	V |
22+15	1.2509	0.28	Q	|	|	|	V |
22+20	1.2528	0.28	Q	|	|	|	V |
22+25	1.2547	0.28	Q	|	|	|	V |
22+30	1.2566	0.28	Q	|	|	|	V |
22+35	1.2585	0.27	Q	|	|	|	V |
22+40	1.2604	0.27	Q	|	|	|	V|
22+45	1.2622	0.27	Q	|	|	|	V|
22+50	1.2641	0.27	Q	|	|	|	V|
22+55	1.2659	0.26	Q	|	|	|	V|
23+ 0	1.2677	0.26	Q	|	|	|	V|
23+ 5	1.2695	0.26	Q	|	|	|	V|
23+10	1.2713	0.26	Q	|	|	|	V|
23+15	1.2730	0.26	Q	|	|	|	V|
23+20	1.2748	0.25	Q	|	|	|	V|
23+25	1.2765	0.25	Q	|	|	|	V|
23+30	1.2783	0.25	Q	|	|	|	V|
23+35	1.2800	0.25	Q	|	|	|	V|
23+40	1.2817	0.25	Q	|	|	|	V|
23+45	1.2834	0.25	Q	|	|	|	V|
23+50	1.2851	0.24	Q	|	|	|	V|
23+55	1.2867	0.24	Q	|	|	|	V|
24+ 0	1.2884	0.24	Q	|	|	|	V|
24+ 5	1.2899	0.22	Q	|	|	|	V|
24+10	1.2908	0.13	Q	|	|	|	V|

24+15	1.2913	0.07	Q	|	|	|	V|
24+20	1.2916	0.04	Q	|	|	|	V|
24+25	1.2918	0.03	Q	|	|	|	V|
24+30	1.2919	0.02	Q	|	|	|	V|
24+35	1.2920	0.01	Q	|	|	|	V|
24+40	1.2921	0.01	Q	|	|	|	V|
24+45	1.2921	0.01	Q	|	|	|	V|
24+50	1.2921	0.00	Q	|	|	|	V|
24+55	1.2921	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/17/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6150

LAKE VIEW APARTMENTS
10 YEAR 24 HOUR EVENT
EXISTING CONDITION - DRAINING TO EAST

Storm Event Year = 10

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
5.50	1	0.75
Rainfall data for year 2		
5.50	6	0.70
Rainfall data for year 2		
5.50	24	1.00
Rainfall data for year 100		
5.50	1	1.15
Rainfall data for year 100		
5.50	6	1.80
Rainfall data for year 100		
5.50	24	3.00

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
90.0	98.0	5.50	1.000	0.040	1.000	0.040

Area-averaged adjusted loss rate Fm (In/Hr) = 0.040

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
5.50	1.000	90.0	98.0	0.20	0.877

Area-averaged catchment yield fraction, Y = 0.877
Area-averaged low loss fraction, Yb = 0.123
User entry of time of concentration = 0.160 (hours)

++
Watershed area =   5.50(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =   0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.040(In/Hr)
Average low loss rate fraction (Yb) = 0.123 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.356(In)
Computed peak 30-minute rainfall = 0.609(In)
Specified peak 1-hour rainfall = 0.750(In)
Computed peak 3-hour rainfall = 0.976(In)
Specified peak 6-hour rainfall = 1.153(In)
Specified peak 24-hour rainfall = 1.823(In)

Rainfall depth area reduction factors:
Using a total area of   5.50(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000   Adjusted rainfall = 0.356(In)
30-minute factor = 1.000   Adjusted rainfall = 0.609(In)
1-hour factor = 1.000   Adjusted rainfall = 0.750(In)
3-hour factor = 1.000   Adjusted rainfall = 0.976(In)
6-hour factor = 1.000   Adjusted rainfall = 1.153(In)
24-hour factor = 1.000   Adjusted rainfall = 1.823(In)

                      U n i t H y d r o g r a p h
++
Interval   'S' Graph   Unit Hydrograph
Number   Mean values   ((CFS))

               (K =   66.52 (CFS))

  1   6.621   4.404
  2   46.358   26.432
  3   71.060   16.431
  4   81.731   7.098
  5   88.011   4.177
  6   91.943   2.615
  7   94.679   1.820
  8   96.569   1.257
  9   97.782   0.807
 10   98.525   0.494
 11   99.292   0.510
 12   100.000   0.471

Peak Unit   Adjusted mass rainfall Unit rainfall
Number   (In)   (In)
  1   0.3558   0.3558
  2   0.4380   0.0822
  3   0.4947   0.0567
  4   0.5393   0.0446
  5   0.5766   0.0373
  6   0.6090   0.0324
  7   0.6379   0.0288
  8   0.6639   0.0261
  9   0.6878   0.0239
 10   0.7099   0.0221
 11   0.7305   0.0206
 12   0.7498   0.0193
 13   0.7643   0.0145
 14   0.7781   0.0137
 15   0.7911   0.0130
 16   0.8034   0.0123
 17   0.8152   0.0118
 18   0.8264   0.0113
 19   0.8372   0.0108
 20   0.8476   0.0104
 21   0.8576   0.0100
 22   0.8672   0.0096
 23   0.8765   0.0093
 24   0.8855   0.0090
 25   0.8942   0.0087
 26   0.9027   0.0085
 27   0.9109   0.0082
 28   0.9189   0.0080

29	0.9267	0.0078
30	0.9342	0.0076
31	0.9416	0.0074
32	0.9488	0.0072
33	0.9559	0.0070
34	0.9627	0.0069
35	0.9694	0.0067
36	0.9760	0.0066
37	0.9825	0.0064
38	0.9888	0.0063
39	0.9949	0.0062
40	1.0010	0.0061
41	1.0069	0.0059
42	1.0128	0.0058
43	1.0185	0.0057
44	1.0241	0.0056
45	1.0297	0.0055
46	1.0351	0.0054
47	1.0405	0.0054
48	1.0457	0.0053
49	1.0509	0.0052
50	1.0560	0.0051
51	1.0611	0.0050
52	1.0660	0.0050
53	1.0709	0.0049
54	1.0757	0.0048
55	1.0804	0.0047
56	1.0851	0.0047
57	1.0897	0.0046
58	1.0943	0.0046
59	1.0988	0.0045
60	1.1032	0.0044
61	1.1076	0.0044
62	1.1119	0.0043
63	1.1162	0.0043
64	1.1204	0.0042
65	1.1246	0.0042
66	1.1287	0.0041
67	1.1328	0.0041
68	1.1368	0.0040
69	1.1408	0.0040
70	1.1448	0.0039
71	1.1487	0.0039
72	1.1525	0.0039
73	1.1578	0.0053
74	1.1630	0.0052
75	1.1682	0.0052
76	1.1733	0.0051
77	1.1784	0.0051
78	1.1834	0.0050
79	1.1884	0.0050
80	1.1934	0.0050
81	1.1983	0.0049
82	1.2032	0.0049
83	1.2080	0.0048
84	1.2128	0.0048
85	1.2176	0.0048
86	1.2223	0.0047
87	1.2270	0.0047
88	1.2316	0.0046
89	1.2362	0.0046
90	1.2408	0.0046
91	1.2453	0.0045
92	1.2498	0.0045
93	1.2543	0.0045
94	1.2588	0.0044
95	1.2632	0.0044
96	1.2676	0.0044
97	1.2719	0.0044
98	1.2762	0.0043
99	1.2805	0.0043
100	1.2848	0.0043
101	1.2890	0.0042
102	1.2932	0.0042
103	1.2974	0.0042
104	1.3016	0.0042
105	1.3057	0.0041
106	1.3098	0.0041

107	1.3138	0.0041
108	1.3179	0.0040
109	1.3219	0.0040
110	1.3259	0.0040
111	1.3299	0.0040
112	1.3338	0.0039
113	1.3378	0.0039
114	1.3417	0.0039
115	1.3456	0.0039
116	1.3494	0.0039
117	1.3532	0.0038
118	1.3571	0.0038
119	1.3609	0.0038
120	1.3646	0.0038
121	1.3684	0.0037
122	1.3721	0.0037
123	1.3758	0.0037
124	1.3795	0.0037
125	1.3832	0.0037
126	1.3868	0.0036
127	1.3904	0.0036
128	1.3941	0.0036
129	1.3977	0.0036
130	1.4012	0.0036
131	1.4048	0.0036
132	1.4083	0.0035
133	1.4118	0.0035
134	1.4153	0.0035
135	1.4188	0.0035
136	1.4223	0.0035
137	1.4257	0.0034
138	1.4292	0.0034
139	1.4326	0.0034
140	1.4360	0.0034
141	1.4394	0.0034
142	1.4427	0.0034
143	1.4461	0.0034
144	1.4494	0.0033
145	1.4527	0.0033
146	1.4561	0.0033
147	1.4593	0.0033
148	1.4626	0.0033
149	1.4659	0.0033
150	1.4691	0.0032
151	1.4724	0.0032
152	1.4756	0.0032
153	1.4788	0.0032
154	1.4820	0.0032
155	1.4851	0.0032
156	1.4883	0.0032
157	1.4914	0.0031
158	1.4946	0.0031
159	1.4977	0.0031
160	1.5008	0.0031
161	1.5039	0.0031
162	1.5070	0.0031
163	1.5101	0.0031
164	1.5131	0.0031
165	1.5162	0.0030
166	1.5192	0.0030
167	1.5222	0.0030
168	1.5252	0.0030
169	1.5282	0.0030
170	1.5312	0.0030
171	1.5342	0.0030
172	1.5371	0.0030
173	1.5401	0.0029
174	1.5430	0.0029
175	1.5460	0.0029
176	1.5489	0.0029
177	1.5518	0.0029
178	1.5547	0.0029
179	1.5575	0.0029
180	1.5604	0.0029
181	1.5633	0.0029
182	1.5661	0.0029
183	1.5690	0.0028
184	1.5718	0.0028

185	1.5746	0.0028
186	1.5774	0.0028
187	1.5802	0.0028
188	1.5830	0.0028
189	1.5858	0.0028
190	1.5886	0.0028
191	1.5913	0.0028
192	1.5941	0.0028
193	1.5968	0.0027
194	1.5996	0.0027
195	1.6023	0.0027
196	1.6050	0.0027
197	1.6077	0.0027
198	1.6104	0.0027
199	1.6131	0.0027
200	1.6157	0.0027
201	1.6184	0.0027
202	1.6211	0.0027
203	1.6237	0.0026
204	1.6264	0.0026
205	1.6290	0.0026
206	1.6316	0.0026
207	1.6342	0.0026
208	1.6368	0.0026
209	1.6394	0.0026
210	1.6420	0.0026
211	1.6446	0.0026
212	1.6472	0.0026
213	1.6497	0.0026
214	1.6523	0.0026
215	1.6549	0.0025
216	1.6574	0.0025
217	1.6599	0.0025
218	1.6625	0.0025
219	1.6650	0.0025
220	1.6675	0.0025
221	1.6700	0.0025
222	1.6725	0.0025
223	1.6750	0.0025
224	1.6774	0.0025
225	1.6799	0.0025
226	1.6824	0.0025
227	1.6848	0.0025
228	1.6873	0.0025
229	1.6897	0.0024
230	1.6922	0.0024
231	1.6946	0.0024
232	1.6970	0.0024
233	1.6994	0.0024
234	1.7018	0.0024
235	1.7042	0.0024
236	1.7066	0.0024
237	1.7090	0.0024
238	1.7114	0.0024
239	1.7138	0.0024
240	1.7162	0.0024
241	1.7185	0.0024
242	1.7209	0.0024
243	1.7232	0.0023
244	1.7256	0.0023
245	1.7279	0.0023
246	1.7302	0.0023
247	1.7325	0.0023
248	1.7349	0.0023
249	1.7372	0.0023
250	1.7395	0.0023
251	1.7418	0.0023
252	1.7441	0.0023
253	1.7464	0.0023
254	1.7486	0.0023
255	1.7509	0.0023
256	1.7532	0.0023
257	1.7554	0.0023
258	1.7577	0.0023
259	1.7599	0.0022
260	1.7622	0.0022
261	1.7644	0.0022
262	1.7667	0.0022

263	1.7689	0.0022
264	1.7711	0.0022
265	1.7733	0.0022
266	1.7755	0.0022
267	1.7777	0.0022
268	1.7799	0.0022
269	1.7821	0.0022
270	1.7843	0.0022
271	1.7865	0.0022
272	1.7887	0.0022
273	1.7908	0.0022
274	1.7930	0.0022
275	1.7952	0.0022
276	1.7973	0.0022
277	1.7995	0.0022
278	1.8016	0.0021
279	1.8038	0.0021
280	1.8059	0.0021
281	1.8080	0.0021
282	1.8102	0.0021
283	1.8123	0.0021
284	1.8144	0.0021
285	1.8165	0.0021
286	1.8186	0.0021
287	1.8207	0.0021
288	1.8228	0.0021

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0021	0.0003	0.0018
2	0.0021	0.0003	0.0018
3	0.0021	0.0003	0.0019
4	0.0021	0.0003	0.0019
5	0.0021	0.0003	0.0019
6	0.0021	0.0003	0.0019
7	0.0021	0.0003	0.0019
8	0.0021	0.0003	0.0019
9	0.0022	0.0003	0.0019
10	0.0022	0.0003	0.0019
11	0.0022	0.0003	0.0019
12	0.0022	0.0003	0.0019
13	0.0022	0.0003	0.0019
14	0.0022	0.0003	0.0019
15	0.0022	0.0003	0.0019
16	0.0022	0.0003	0.0019
17	0.0022	0.0003	0.0019
18	0.0022	0.0003	0.0020
19	0.0022	0.0003	0.0020
20	0.0022	0.0003	0.0020
21	0.0023	0.0003	0.0020
22	0.0023	0.0003	0.0020
23	0.0023	0.0003	0.0020
24	0.0023	0.0003	0.0020
25	0.0023	0.0003	0.0020
26	0.0023	0.0003	0.0020
27	0.0023	0.0003	0.0020
28	0.0023	0.0003	0.0020
29	0.0023	0.0003	0.0020
30	0.0023	0.0003	0.0020
31	0.0023	0.0003	0.0021
32	0.0024	0.0003	0.0021
33	0.0024	0.0003	0.0021
34	0.0024	0.0003	0.0021
35	0.0024	0.0003	0.0021
36	0.0024	0.0003	0.0021
37	0.0024	0.0003	0.0021
38	0.0024	0.0003	0.0021
39	0.0024	0.0003	0.0021
40	0.0024	0.0003	0.0021
41	0.0025	0.0003	0.0021
42	0.0025	0.0003	0.0022
43	0.0025	0.0003	0.0022
44	0.0025	0.0003	0.0022
45	0.0025	0.0003	0.0022
46	0.0025	0.0003	0.0022
47	0.0025	0.0003	0.0022

48	0.0025	0.0003	0.0022
49	0.0025	0.0003	0.0022
50	0.0025	0.0003	0.0022
51	0.0026	0.0003	0.0023
52	0.0026	0.0003	0.0023
53	0.0026	0.0003	0.0023
54	0.0026	0.0003	0.0023
55	0.0026	0.0003	0.0023
56	0.0026	0.0003	0.0023
57	0.0026	0.0003	0.0023
58	0.0026	0.0003	0.0023
59	0.0027	0.0003	0.0023
60	0.0027	0.0003	0.0023
61	0.0027	0.0003	0.0024
62	0.0027	0.0003	0.0024
63	0.0027	0.0003	0.0024
64	0.0027	0.0003	0.0024
65	0.0028	0.0003	0.0024
66	0.0028	0.0003	0.0024
67	0.0028	0.0003	0.0024
68	0.0028	0.0003	0.0024
69	0.0028	0.0003	0.0025
70	0.0028	0.0003	0.0025
71	0.0028	0.0003	0.0025
72	0.0029	0.0004	0.0025
73	0.0029	0.0004	0.0025
74	0.0029	0.0004	0.0025
75	0.0029	0.0004	0.0025
76	0.0029	0.0004	0.0026
77	0.0029	0.0004	0.0026
78	0.0029	0.0004	0.0026
79	0.0030	0.0004	0.0026
80	0.0030	0.0004	0.0026
81	0.0030	0.0004	0.0026
82	0.0030	0.0004	0.0026
83	0.0030	0.0004	0.0027
84	0.0031	0.0004	0.0027
85	0.0031	0.0004	0.0027
86	0.0031	0.0004	0.0027
87	0.0031	0.0004	0.0027
88	0.0031	0.0004	0.0027
89	0.0032	0.0004	0.0028
90	0.0032	0.0004	0.0028
91	0.0032	0.0004	0.0028
92	0.0032	0.0004	0.0028
93	0.0032	0.0004	0.0028
94	0.0033	0.0004	0.0029
95	0.0033	0.0004	0.0029
96	0.0033	0.0004	0.0029
97	0.0033	0.0004	0.0029
98	0.0034	0.0004	0.0029
99	0.0034	0.0004	0.0030
100	0.0034	0.0004	0.0030
101	0.0034	0.0004	0.0030
102	0.0034	0.0004	0.0030
103	0.0035	0.0004	0.0031
104	0.0035	0.0004	0.0031
105	0.0035	0.0004	0.0031
106	0.0036	0.0004	0.0031
107	0.0036	0.0004	0.0032
108	0.0036	0.0004	0.0032
109	0.0036	0.0004	0.0032
110	0.0037	0.0005	0.0032
111	0.0037	0.0005	0.0033
112	0.0037	0.0005	0.0033
113	0.0038	0.0005	0.0033
114	0.0038	0.0005	0.0033
115	0.0038	0.0005	0.0034
116	0.0039	0.0005	0.0034
117	0.0039	0.0005	0.0034
118	0.0039	0.0005	0.0034
119	0.0040	0.0005	0.0035
120	0.0040	0.0005	0.0035
121	0.0040	0.0005	0.0036
122	0.0041	0.0005	0.0036
123	0.0041	0.0005	0.0036
124	0.0042	0.0005	0.0036
125	0.0042	0.0005	0.0037

126	0.0042	0.0005	0.0037
127	0.0043	0.0005	0.0038
128	0.0043	0.0005	0.0038
129	0.0044	0.0005	0.0038
130	0.0044	0.0005	0.0039
131	0.0045	0.0005	0.0039
132	0.0045	0.0006	0.0040
133	0.0046	0.0006	0.0040
134	0.0046	0.0006	0.0040
135	0.0047	0.0006	0.0041
136	0.0047	0.0006	0.0041
137	0.0048	0.0006	0.0042
138	0.0048	0.0006	0.0042
139	0.0049	0.0006	0.0043
140	0.0050	0.0006	0.0043
141	0.0050	0.0006	0.0044
142	0.0051	0.0006	0.0045
143	0.0052	0.0006	0.0045
144	0.0052	0.0006	0.0046
145	0.0039	0.0005	0.0034
146	0.0039	0.0005	0.0034
147	0.0040	0.0005	0.0035
148	0.0040	0.0005	0.0035
149	0.0041	0.0005	0.0036
150	0.0042	0.0005	0.0037
151	0.0043	0.0005	0.0037
152	0.0043	0.0005	0.0038
153	0.0044	0.0005	0.0039
154	0.0045	0.0006	0.0039
155	0.0046	0.0006	0.0040
156	0.0047	0.0006	0.0041
157	0.0048	0.0006	0.0042
158	0.0049	0.0006	0.0043
159	0.0050	0.0006	0.0044
160	0.0051	0.0006	0.0045
161	0.0053	0.0006	0.0046
162	0.0054	0.0007	0.0047
163	0.0055	0.0007	0.0049
164	0.0056	0.0007	0.0049
165	0.0058	0.0007	0.0051
166	0.0059	0.0007	0.0052
167	0.0062	0.0008	0.0054
168	0.0063	0.0008	0.0055
169	0.0066	0.0008	0.0058
170	0.0067	0.0008	0.0059
171	0.0070	0.0009	0.0062
172	0.0072	0.0009	0.0063
173	0.0076	0.0009	0.0066
174	0.0078	0.0010	0.0068
175	0.0082	0.0010	0.0072
176	0.0085	0.0010	0.0074
177	0.0090	0.0011	0.0079
178	0.0093	0.0011	0.0082
179	0.0100	0.0012	0.0088
180	0.0104	0.0013	0.0091
181	0.0113	0.0014	0.0099
182	0.0118	0.0014	0.0103
183	0.0130	0.0016	0.0114
184	0.0137	0.0017	0.0120
185	0.0193	0.0024	0.0169
186	0.0206	0.0025	0.0181
187	0.0239	0.0029	0.0209
188	0.0261	0.0032	0.0229
189	0.0324	0.0033	0.0291
190	0.0373	0.0033	0.0340
191	0.0567	0.0033	0.0534
192	0.0822	0.0033	0.0789
193	0.3558	0.0033	0.3525
194	0.0446	0.0033	0.0413
195	0.0288	0.0033	0.0255
196	0.0221	0.0027	0.0194
197	0.0145	0.0018	0.0128
198	0.0123	0.0015	0.0108
199	0.0108	0.0013	0.0095
200	0.0096	0.0012	0.0084
201	0.0087	0.0011	0.0076
202	0.0080	0.0010	0.0070
203	0.0074	0.0009	0.0065

204	0.0069	0.0008	0.0060
205	0.0064	0.0008	0.0056
206	0.0061	0.0007	0.0053
207	0.0057	0.0007	0.0050
208	0.0054	0.0007	0.0048
209	0.0052	0.0006	0.0045
210	0.0050	0.0006	0.0043
211	0.0047	0.0006	0.0042
212	0.0046	0.0006	0.0040
213	0.0044	0.0005	0.0038
214	0.0042	0.0005	0.0037
215	0.0041	0.0005	0.0036
216	0.0039	0.0005	0.0035
217	0.0053	0.0006	0.0046
218	0.0051	0.0006	0.0045
219	0.0050	0.0006	0.0044
220	0.0049	0.0006	0.0043
221	0.0048	0.0006	0.0042
222	0.0046	0.0006	0.0041
223	0.0045	0.0006	0.0040
224	0.0044	0.0005	0.0039
225	0.0044	0.0005	0.0038
226	0.0043	0.0005	0.0037
227	0.0042	0.0005	0.0037
228	0.0041	0.0005	0.0036
229	0.0040	0.0005	0.0035
230	0.0039	0.0005	0.0035
231	0.0039	0.0005	0.0034
232	0.0038	0.0005	0.0033
233	0.0037	0.0005	0.0033
234	0.0037	0.0005	0.0032
235	0.0036	0.0004	0.0032
236	0.0036	0.0004	0.0031
237	0.0035	0.0004	0.0031
238	0.0035	0.0004	0.0030
239	0.0034	0.0004	0.0030
240	0.0034	0.0004	0.0030
241	0.0033	0.0004	0.0029
242	0.0033	0.0004	0.0029
243	0.0032	0.0004	0.0028
244	0.0032	0.0004	0.0028
245	0.0031	0.0004	0.0028
246	0.0031	0.0004	0.0027
247	0.0031	0.0004	0.0027
248	0.0030	0.0004	0.0027
249	0.0030	0.0004	0.0026
250	0.0030	0.0004	0.0026
251	0.0029	0.0004	0.0026
252	0.0029	0.0004	0.0025
253	0.0029	0.0004	0.0025
254	0.0028	0.0003	0.0025
255	0.0028	0.0003	0.0025
256	0.0028	0.0003	0.0024
257	0.0027	0.0003	0.0024
258	0.0027	0.0003	0.0024
259	0.0027	0.0003	0.0024
260	0.0027	0.0003	0.0023
261	0.0026	0.0003	0.0023
262	0.0026	0.0003	0.0023
263	0.0026	0.0003	0.0023
264	0.0026	0.0003	0.0022
265	0.0025	0.0003	0.0022
266	0.0025	0.0003	0.0022
267	0.0025	0.0003	0.0022
268	0.0025	0.0003	0.0022
269	0.0024	0.0003	0.0021
270	0.0024	0.0003	0.0021
271	0.0024	0.0003	0.0021
272	0.0024	0.0003	0.0021
273	0.0024	0.0003	0.0021
274	0.0023	0.0003	0.0021
275	0.0023	0.0003	0.0020
276	0.0023	0.0003	0.0020
277	0.0023	0.0003	0.0020
278	0.0023	0.0003	0.0020
279	0.0022	0.0003	0.0020
280	0.0022	0.0003	0.0020
281	0.0022	0.0003	0.0019

282	0.0022	0.0003	0.0019
283	0.0022	0.0003	0.0019
284	0.0022	0.0003	0.0019
285	0.0022	0.0003	0.0019
286	0.0021	0.0003	0.0019
287	0.0021	0.0003	0.0019
288	0.0021	0.0003	0.0018

Total soil rain loss = 0.17(In)
Total effective rainfall = 1.65(In)
Peak flow rate in flood hydrograph = 11.49(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.01	Q				
0+10	0.0004	0.06	Q				
0+15	0.0010	0.09	Q				
0+20	0.0017	0.10	Q				
0+25	0.0025	0.11	Q				
0+30	0.0033	0.11	Q				
0+35	0.0041	0.12	Q				
0+40	0.0049	0.12	Q				
0+45	0.0057	0.12	Q				
0+50	0.0066	0.12	Q				
0+55	0.0075	0.12	Q				
1+ 0	0.0083	0.13	Q				
1+ 5	0.0092	0.13	Q				
1+10	0.0101	0.13	Q				
1+15	0.0109	0.13	Q				
1+20	0.0118	0.13	Q				
1+25	0.0127	0.13	Q				
1+30	0.0136	0.13	Q				
1+35	0.0145	0.13	Q				
1+40	0.0154	0.13	Q				
1+45	0.0163	0.13	Q				
1+50	0.0172	0.13	Q				
1+55	0.0181	0.13	Q				
2+ 0	0.0190	0.13	QV				
2+ 5	0.0199	0.13	QV				
2+10	0.0208	0.13	QV				
2+15	0.0217	0.13	QV				
2+20	0.0227	0.13	QV				
2+25	0.0236	0.13	QV				
2+30	0.0245	0.14	QV				
2+35	0.0255	0.14	QV				
2+40	0.0264	0.14	QV				
2+45	0.0273	0.14	QV				
2+50	0.0283	0.14	QV				
2+55	0.0292	0.14	QV				
3+ 0	0.0302	0.14	QV				
3+ 5	0.0311	0.14	QV				
3+10	0.0321	0.14	QV				
3+15	0.0331	0.14	QV				
3+20	0.0340	0.14	QV				
3+25	0.0350	0.14	QV				
3+30	0.0360	0.14	QV				
3+35	0.0370	0.14	QV				
3+40	0.0380	0.14	Q V				
3+45	0.0390	0.14	Q V				
3+50	0.0400	0.14	Q V				
3+55	0.0410	0.15	Q V				
4+ 0	0.0420	0.15	Q V				
4+ 5	0.0430	0.15	Q V				
4+10	0.0440	0.15	Q V				
4+15	0.0450	0.15	Q V				
4+20	0.0460	0.15	Q V				
4+25	0.0471	0.15	Q V				
4+30	0.0481	0.15	Q V				
4+35	0.0491	0.15	Q V				
4+40	0.0502	0.15	Q V				

4+45	0.0512	0.15	Q V	|	|	|	|
4+50	0.0523	0.15	Q V	|	|	|	|
4+55	0.0533	0.15	Q V	|	|	|	|
5+ 0	0.0544	0.15	Q V	|	|	|	|
5+ 5	0.0555	0.16	Q V	|	|	|	|
5+10	0.0565	0.16	Q V	|	|	|	|
5+15	0.0576	0.16	Q V	|	|	|	|
5+20	0.0587	0.16	Q V	|	|	|	|
5+25	0.0598	0.16	Q V	|	|	|	|
5+30	0.0609	0.16	Q V	|	|	|	|
5+35	0.0620	0.16	Q V	|	|	|	|
5+40	0.0631	0.16	Q V	|	|	|	|
5+45	0.0642	0.16	Q V	|	|	|	|
5+50	0.0653	0.16	Q V	|	|	|	|
5+55	0.0665	0.16	Q V	|	|	|	|
6+ 0	0.0676	0.16	Q V	|	|	|	|
6+ 5	0.0687	0.17	Q V	|	|	|	|
6+10	0.0699	0.17	Q V	|	|	|	|
6+15	0.0710	0.17	Q V	|	|	|	|
6+20	0.0722	0.17	Q V	|	|	|	|
6+25	0.0734	0.17	Q V	|	|	|	|
6+30	0.0745	0.17	Q V	|	|	|	|
6+35	0.0757	0.17	Q V	|	|	|	|
6+40	0.0769	0.17	Q V	|	|	|	|
6+45	0.0781	0.17	Q V	|	|	|	|
6+50	0.0793	0.17	Q V	|	|	|	|
6+55	0.0805	0.18	Q V	|	|	|	|
7+ 0	0.0817	0.18	Q V	|	|	|	|
7+ 5	0.0829	0.18	Q V	|	|	|	|
7+10	0.0841	0.18	Q V	|	|	|	|
7+15	0.0854	0.18	Q V	|	|	|	|
7+20	0.0866	0.18	Q V	|	|	|	|
7+25	0.0879	0.18	Q V	|	|	|	|
7+30	0.0891	0.18	Q V	|	|	|	|
7+35	0.0904	0.18	Q V	|	|	|	|
7+40	0.0917	0.19	Q V	|	|	|	|
7+45	0.0930	0.19	Q V	|	|	|	|
7+50	0.0943	0.19	Q V	|	|	|	|
7+55	0.0956	0.19	Q V	|	|	|	|
8+ 0	0.0969	0.19	Q V	|	|	|	|
8+ 5	0.0982	0.19	Q V	|	|	|	|
8+10	0.0995	0.19	Q V	|	|	|	|
8+15	0.1008	0.19	Q V	|	|	|	|
8+20	0.1022	0.20	Q V	|	|	|	|
8+25	0.1035	0.20	Q V	|	|	|	|
8+30	0.1049	0.20	Q V	|	|	|	|
8+35	0.1063	0.20	Q V	|	|	|	|
8+40	0.1077	0.20	Q V	|	|	|	|
8+45	0.1091	0.20	Q V	|	|	|	|
8+50	0.1105	0.20	Q V	|	|	|	|
8+55	0.1119	0.21	Q V	|	|	|	|
9+ 0	0.1133	0.21	Q V	|	|	|	|
9+ 5	0.1148	0.21	Q V	|	|	|	|
9+10	0.1162	0.21	Q V	|	|	|	|
9+15	0.1177	0.21	Q V	|	|	|	|
9+20	0.1191	0.21	Q V	|	|	|	|
9+25	0.1206	0.22	Q V	|	|	|	|
9+30	0.1221	0.22	Q V	|	|	|	|
9+35	0.1236	0.22	Q V	|	|	|	|
9+40	0.1252	0.22	Q V	|	|	|	|
9+45	0.1267	0.22	Q V	|	|	|	|
9+50	0.1282	0.23	Q V	|	|	|	|
9+55	0.1298	0.23	Q V	|	|	|	|
10+ 0	0.1314	0.23	Q V	|	|	|	|
10+ 5	0.1330	0.23	Q V	|	|	|	|
10+10	0.1346	0.23	Q V	|	|	|	|
10+15	0.1362	0.24	Q V	|	|	|	|
10+20	0.1378	0.24	Q V	|	|	|	|
10+25	0.1395	0.24	Q V	|	|	|	|
10+30	0.1412	0.24	Q V	|	|	|	|
10+35	0.1428	0.24	Q V	|	|	|	|
10+40	0.1445	0.25	Q V	|	|	|	|
10+45	0.1463	0.25	Q V	|	|	|	|
10+50	0.1480	0.25	Q V	|	|	|	|
10+55	0.1497	0.25	Q V	|	|	|	|
11+ 0	0.1515	0.26	Q V	|	|	|	|
11+ 5	0.1533	0.26	Q V	|	|	|	|
11+10	0.1551	0.26	Q V	|	|	|	|

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11+15       0.1570      0.27  Q       V |         |          |          |
11+20       0.1588      0.27  Q       V |         |          |          |
11+25       0.1607      0.27  Q       V |         |          |          |
11+30       0.1626      0.28  Q       V |         |          |          |
11+35       0.1645      0.28  Q       V |         |          |          |
11+40       0.1664      0.28  Q       V |         |          |          |
11+45       0.1684      0.29  Q       V |         |          |          |
11+50       0.1704      0.29  Q       V |         |          |          |
11+55       0.1724      0.29  Q        V|         |          |          |
12+ 0       0.1744      0.30  Q        V|         |          |          |
12+ 5       0.1765      0.29  Q        V|         |          |          |
12+10       0.1783      0.27  Q        V|         |          |          |
12+15       0.1800      0.25  Q        V|         |          |          |
12+20       0.1817      0.24  Q        V|         |          |          |
12+25       0.1833      0.24  Q        V|         |          |          |
12+30       0.1850      0.24  Q        V|         |          |          |
12+35       0.1867      0.24  Q        V|         |          |          |
12+40       0.1884      0.25  Q        V|         |          |          |
12+45       0.1901      0.25  Q         V         |          |          |
12+50       0.1918      0.25  Q         V         |          |          |
12+55       0.1936      0.26  Q         V         |          |          |
13+ 0       0.1954      0.26  Q         V         |          |          |
13+ 5       0.1973      0.27  Q         V         |          |          |
13+10       0.1991      0.27  Q         V         |          |          |
13+15       0.2011      0.28  Q         V         |          |          |
13+20       0.2030      0.28  Q         V         |          |          |
13+25       0.2050      0.29  Q         V         |          |          |
13+30       0.2071      0.30  Q         V         |          |          |
13+35       0.2092      0.30  Q         |V        |          |          |
13+40       0.2113      0.31  Q         |V        |          |          |
13+45       0.2135      0.32  Q         |V        |          |          |
13+50       0.2158      0.33  Q         |V        |          |          |
13+55       0.2181      0.34  Q         |V        |          |          |
14+ 0       0.2205      0.35  Q         |V        |          |          |
14+ 5       0.2230      0.36  Q         |V        |          |          |
14+10       0.2255      0.37  Q         |V        |          |          |
14+15       0.2281      0.38  Q         | V       |          |          |
14+20       0.2308      0.39  Q         | V       |          |          |
14+25       0.2336      0.41  Q         | V       |          |          |
14+30       0.2365      0.42  Q         | V       |          |          |
14+35       0.2395      0.44  Q         | V       |          |          |
14+40       0.2427      0.45  Q         | V       |          |          |
14+45       0.2459      0.47  Q         | V       |          |          |
14+50       0.2493      0.50  Q         |  V      |          |          |
14+55       0.2529      0.52  |Q        |  V      |          |          |
15+ 0       0.2567      0.55  |Q        |  V      |          |          |
15+ 5       0.2606      0.57  |Q        |  V      |          |          |
15+10       0.2648      0.61  |Q        |  V      |          |          |
15+15       0.2693      0.65  |Q        |   V     |          |          |
15+20       0.2741      0.70  |Q        |   V     |          |          |
15+25       0.2793      0.76  |Q        |   V     |          |          |
15+30       0.2856      0.92  |Q        |    V    |          |          |
15+35       0.2929      1.06  | Q       |    V    |          |          |
15+40       0.3012      1.20  | Q       |    V    |          |          |
15+45       0.3106      1.36  | Q       |     V   |          |          |
15+50       0.3217      1.62  |  Q      |     V   |          |          |
15+55       0.3354      1.98  |  Q      |      V  |          |          |
16+ 0       0.3543      2.75  |    Q    |       V |          |          |
16+ 5       0.3890      5.03  |         Q         V          |          |
16+10       0.4681     11.49  |         |         | Q V      |          |
16+15       0.5232      7.99  |         |    Q    |      V   |          |
16+20       0.5545      4.55  |        Q|         |        V |          |
16+25       0.5762      3.15  |     Q   |         |         V          |
16+30       0.5917      2.25  |   Q     |         |         |V         |
16+35       0.6036      1.72  |  Q      |         |         |V         |
16+40       0.6128      1.34  | Q       |         |         | V        |
16+45       0.6201      1.06  | Q       |         |         | V        |
16+50       0.6260      0.86  |Q        |         |         |  V       |
16+55       0.6313      0.77  |Q        |         |         |  V       |
17+ 0       0.6360      0.68  |Q        |         |         |  V       |
17+ 5       0.6393      0.48  Q         |         |         |  V       |
17+10       0.6423      0.43  Q         |         |         |  V       |
17+15       0.6450      0.40  Q         |         |         |   V      |
17+20       0.6475      0.37  Q         |         |         |   V      |
17+25       0.6499      0.35  Q         |         |         |   V      |
17+30       0.6522      0.33  Q         |         |         |   V      |
17+35       0.6543      0.31  Q         |         |         |   V      |
17+40       0.6564      0.30  Q         |         |         |   V      |
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17+45       0.6583      0.28  Q         |         |         |    V     |
17+50       0.6602      0.27  Q         |         |         |    V     |
17+55       0.6620      0.26  Q         |         |         |    V     |
18+ 0       0.6637      0.25  Q         |         |         |     V    |
18+ 5       0.6654      0.25  Q         |         |         |     V    |
18+10       0.6673      0.27  Q         |         |         |     V    |
18+15       0.6693      0.29  Q         |         |         |     V    |
18+20       0.6712      0.29  Q         |         |         |     V    |
18+25       0.6732      0.28  Q         |         |         |     V    |
18+30       0.6751      0.28  Q         |         |         |     V    |
18+35       0.6770      0.28  Q         |         |         |     V    |
18+40       0.6789      0.27  Q         |         |         |     V    |
18+45       0.6807      0.27  Q         |         |         |     V    |
18+50       0.6825      0.26  Q         |         |         |      V   |
18+55       0.6842      0.26  Q         |         |         |      V   |
19+ 0       0.6860      0.25  Q         |         |         |      V   |
19+ 5       0.6877      0.25  Q         |         |         |      V   |
19+10       0.6893      0.24  Q         |         |         |      V   |
19+15       0.6910      0.24  Q         |         |         |      V   |
19+20       0.6926      0.23  Q         |         |         |      V   |
19+25       0.6941      0.23  Q         |         |         |      V   |
19+30       0.6957      0.22  Q         |         |         |      V   |
19+35       0.6972      0.22  Q         |         |         |      V   |
19+40       0.6987      0.22  Q         |         |         |      V   |
19+45       0.7001      0.21  Q         |         |         |      V   |
19+50       0.7016      0.21  Q         |         |         |       V  |
19+55       0.7030      0.21  Q         |         |         |       V  |
20+ 0       0.7044      0.20  Q         |         |         |       V  |
20+ 5       0.7058      0.20  Q         |         |         |       V  |
20+10       0.7071      0.20  Q         |         |         |       V  |
20+15       0.7085      0.19  Q         |         |         |       V  |
20+20       0.7098      0.19  Q         |         |         |       V  |
20+25       0.7111      0.19  Q         |         |         |       V  |
20+30       0.7124      0.19  Q         |         |         |       V  |
20+35       0.7137      0.18  Q         |         |         |       V  |
20+40       0.7149      0.18  Q         |         |         |       V  |
20+45       0.7162      0.18  Q         |         |         |       V  |
20+50       0.7174      0.18  Q         |         |         |       V  |
20+55       0.7186      0.18  Q         |         |         |       V  |
21+ 0       0.7198      0.17  Q         |         |         |       V  |
21+ 5       0.7210      0.17  Q         |         |         |        V |
21+10       0.7221      0.17  Q         |         |         |        V |
21+15       0.7233      0.17  Q         |         |         |        V |
21+20       0.7244      0.17  Q         |         |         |        V |
21+25       0.7256      0.16  Q         |         |         |        V |
21+30       0.7267      0.16  Q         |         |         |        V |
21+35       0.7278      0.16  Q         |         |         |        V |
21+40       0.7289      0.16  Q         |         |         |        V |
21+45       0.7300      0.16  Q         |         |         |        V |
21+50       0.7310      0.16  Q         |         |         |        V |
21+55       0.7321      0.15  Q         |         |         |        V |
22+ 0       0.7331      0.15  Q         |         |         |        V |
22+ 5       0.7342      0.15  Q         |         |         |        V |
22+10       0.7352      0.15  Q         |         |         |        V |
22+15       0.7362      0.15  Q         |         |         |        V |
22+20       0.7372      0.15  Q         |         |         |        V |
22+25       0.7382      0.15  Q         |         |         |        V |
22+30       0.7392      0.14  Q         |         |         |        V|
22+35       0.7402      0.14  Q         |         |         |        V|
22+40       0.7412      0.14  Q         |         |         |        V|
22+45       0.7422      0.14  Q         |         |         |        V|
22+50       0.7431      0.14  Q         |         |         |        V|
22+55       0.7441      0.14  Q         |         |         |        V|
23+ 0       0.7450      0.14  Q         |         |         |        V|
23+ 5       0.7460      0.14  Q         |         |         |        V|
23+10       0.7469      0.13  Q         |         |         |        V|
23+15       0.7478      0.13  Q         |         |         |        V|
23+20       0.7487      0.13  Q         |         |         |        V|
23+25       0.7496      0.13  Q         |         |         |        V|
23+30       0.7505      0.13  Q         |         |         |        V|
23+35       0.7514      0.13  Q         |         |         |        V|
23+40       0.7523      0.13  Q         |         |         |        V|
23+45       0.7532      0.13  Q         |         |         |        V|
23+50       0.7541      0.13  Q         |         |         |        V|
23+55       0.7549      0.13  Q         |         |         |        V|
24+ 0       0.7558      0.12  Q         |         |         |        V|
24+ 5       0.7566      0.12  Q         |         |         |        V|
24+10       0.7570      0.07  Q         |         |         |        V|
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   24+15       0.7573      0.04  Q         |         |         |        V|
   24+20       0.7574      0.02  Q         |         |         |        V|
   24+25       0.7575      0.01  Q         |         |         |        V|
   24+30       0.7576      0.01  Q         |         |         |        V|
   24+35       0.7577      0.01  Q         |         |         |        V|
   24+40       0.7577      0.00  Q         |         |         |        V|
   24+45       0.7577      0.00  Q         |         |         |        V|
   24+50       0.7577      0.00  Q         |         |         |        V|
   24+55       0.7577      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
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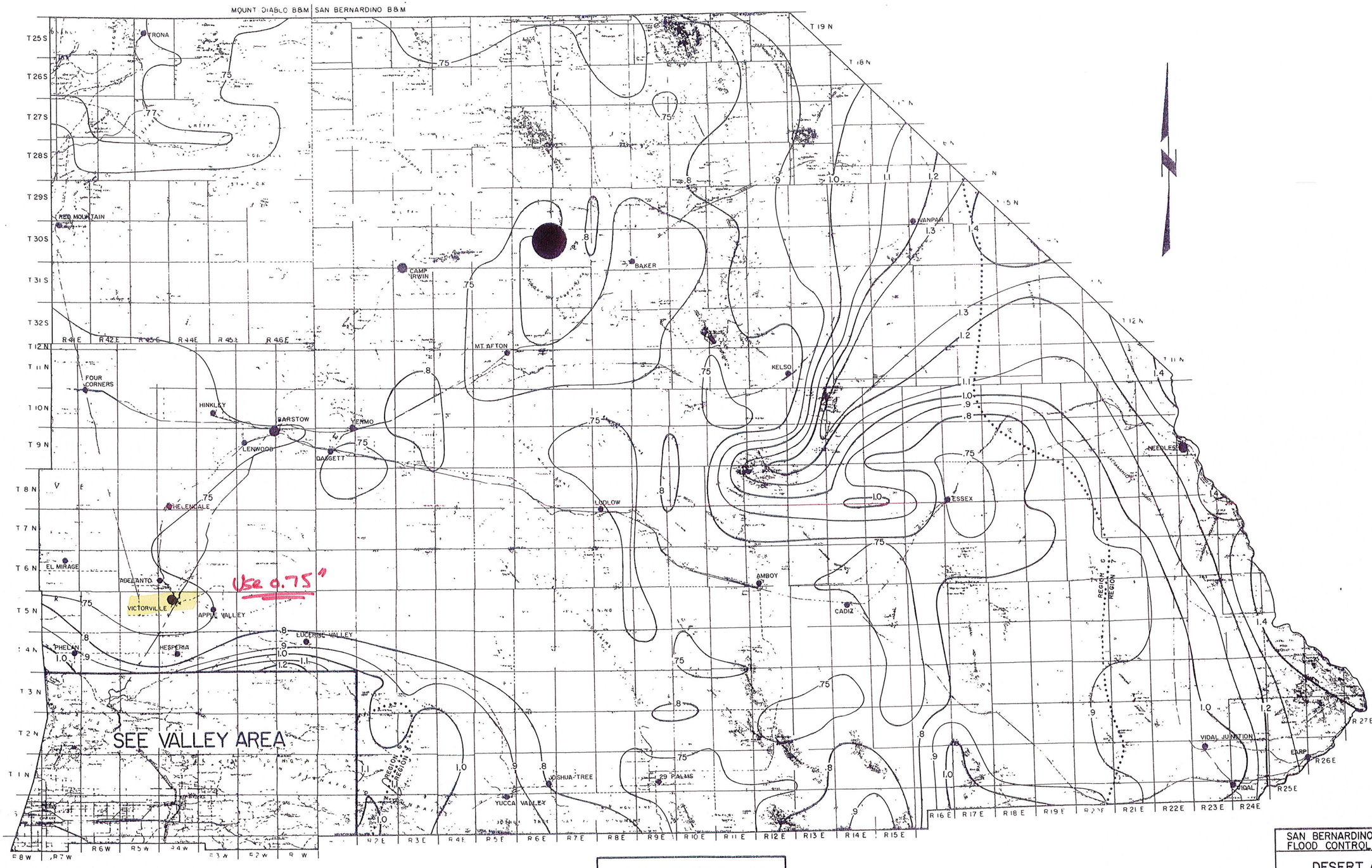
APPENDIX D – SUPPORTING DOCUMENTS/EXHIBITS

MOUNT DIABLO B&M | SAN BERNARDINO B&M



REDUCED DRAWING

0 1 2 3

3 INCHES ON ORIGINAL

LEGEND:

3.5 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

DESERT AREA

ISOHYETALS

Y_{10} - 10 YEAR 1 HOUR

BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973

APPROVED BY _____ FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1" = 6 MI.	WRD-1	9 of 12

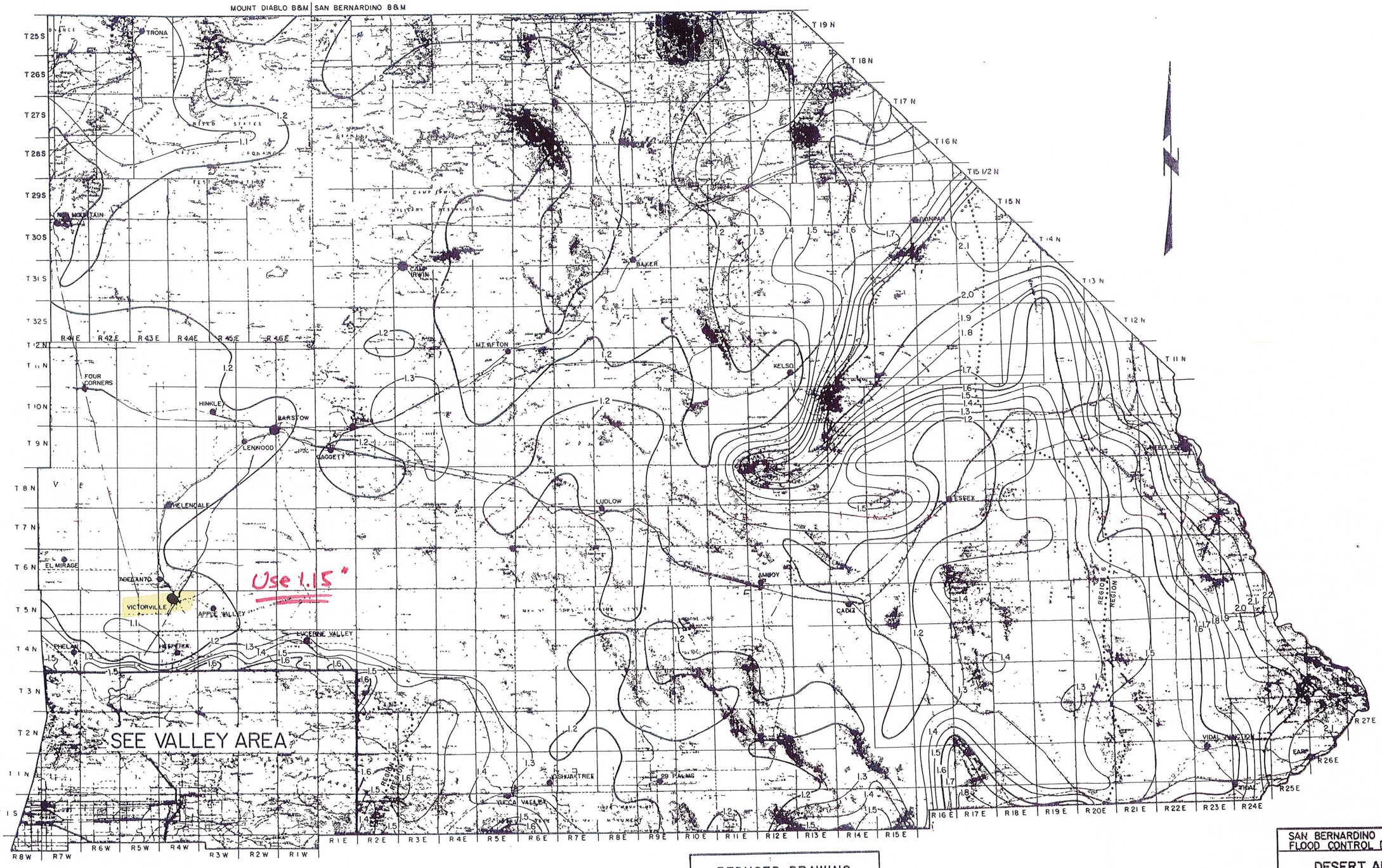
WATER RESOURCES DIVISION

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

FIGURE B-9

MOUNT DIABLO B&M | SAN BERNARDINO B&M



REDUCED DRAWING

0 1 2 3

3 INCHES ON ORIGINAL

LEGEND:

.2 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

DESERT AREA

ISOHYETALS

Y_{100}-100 YEAR 1 HOUR

BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973

APPROVED BY _____ FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1" = 6 MI.	WRD-1	10 of 18

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

FIGURE B-10

NOAA Atlas 14, Volume 6, Version 2
Location name: Victorville, California, USA*
Latitude: 34.4981°, Longitude: -117.2813°
Elevation: 2903.68 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.093** (0.077-0.114)	**0.129** (0.106-0.158)	**0.179** (0.147-0.220)	**0.222** (0.181-0.275)	**0.285** (0.225-0.365)	**0.336** (0.260-0.439)	**0.391** (0.295-0.524)	**0.451** (0.331-0.621)	**0.537** (0.378-0.770)	**0.608** (0.414-0.902)
10-min	**0.133** (0.110-0.163)	**0.185** (0.152-0.226)	**0.257** (0.211-0.315)	**0.319** (0.260-0.395)	**0.408** (0.322-0.523)	**0.482** (0.373-0.630)	**0.561** (0.423-0.751)	**0.646** (0.474-0.890)	**0.770** (0.542-1.10)	**0.871** (0.593-1.29)
15-min	**0.161** (0.133-0.197)	**0.223** (0.184-0.274)	**0.310** (0.255-0.381)	**0.385** (0.314-0.477)	**0.494** (0.390-0.632)	**0.583** (0.451-0.762)	**0.678** (0.512-0.908)	**0.782** (0.574-1.08)	**0.931** (0.655-1.34)	**1.05** (0.717-1.56)
30-min	**0.216** (0.179-0.265)	**0.300** (0.248-0.368)	**0.417** (0.343-0.513)	**0.518** (0.423-0.642)	**0.664** (0.524-0.850)	**0.784** (0.606-1.02)	**0.912** (0.688-1.22)	**1.05** (0.771-1.45)	**1.25** (0.881-1.80)	**1.42** (0.964-2.10)
60-min	**0.257** (0.213-0.315)	**0.357** (0.295-0.437)	**0.496** (0.408-0.609)	**0.616** (0.503-0.763)	**0.790** (0.623-1.01)	**0.932** (0.720-1.22)	**1.08** (0.818-1.45)	**1.25** (0.917-1.72)	**1.49** (1.05-2.13)	**1.69** (1.15-2.50)
2-hr	**0.363** (0.299-0.443)	**0.488** (0.402-0.597)	**0.660** (0.543-0.811)	**0.808** (0.659-1.00)	**1.02** (0.805-1.31)	**1.19** (0.922-1.56)	**1.38** (1.04-1.84)	**1.57** (1.15-2.16)	**1.85** (1.30-2.65)	**2.08** (1.41-3.09)
3-hr	**0.435** (0.360-0.532)	**0.579** (0.478-0.710)	**0.778** (0.640-0.955)	**0.946** (0.772-1.17)	**1.19** (0.937-1.52)	**1.38** (1.07-1.80)	**1.59** (1.20-2.12)	**1.81** (1.33-2.48)	**2.12** (1.49-3.03)	**2.37** (1.61-3.51)
6-hr	**0.591** (0.488-0.723)	**0.782** (0.645-0.958)	**1.04** (0.856-1.28)	**1.26** (1.03-1.56)	**1.57** (1.24-2.01)	**1.81** (1.40-2.37)	**2.07** (1.56-2.77)	**2.34** (1.72-3.23)	**2.73** (1.92-3.91)	**3.03** (2.06-4.50)
12-hr	**0.759** (0.627-0.928)	**1.01** (0.836-1.24)	**1.35** (1.11-1.66)	**1.64** (1.34-2.03)	**2.03** (1.60-2.60)	**2.34** (1.81-3.06)	**2.66** (2.01-3.56)	**3.00** (2.20-4.13)	**3.47** (2.44-4.97)	**3.84** (2.61-5.69)
24-hr	**0.986** (0.874-1.14)	**1.34** (1.19-1.54)	**1.81** (1.59-2.09)	**2.19** (1.92-2.55)	**2.72** (2.30-3.27)	**3.13** (2.60-3.85)	**3.55** (2.88-4.47)	**3.99** (3.14-5.17)	**4.59** (3.47-6.20)	**5.07** (3.70-7.08)
2-day	**1.14** (1.01-1.31)	**1.57** (1.39-1.81)	**2.15** (1.90-2.48)	**2.62** (2.29-3.05)	**3.27** (2.77-3.93)	**3.77** (3.13-4.64)	**4.29** (3.48-5.40)	**4.83** (3.81-6.26)	**5.58** (4.22-7.53)	**6.16** (4.50-8.61)
3-day	**1.24** (1.10-1.43)	**1.73** (1.53-1.99)	**2.37** (2.09-2.74)	**2.90** (2.54-3.38)	**3.63** (3.08-4.37)	**4.20** (3.49-5.16)	**4.79** (3.88-6.03)	**5.40** (4.25-6.99)	**6.24** (4.72-8.43)	**6.91** (5.05-9.65)
4-day	**1.32** (1.17-1.52)	**1.84** (1.63-2.12)	**2.53** (2.23-2.92)	**3.10** (2.71-3.61)	**3.88** (3.28-4.67)	**4.48** (3.72-5.51)	**5.10** (4.14-6.43)	**5.75** (4.53-7.45)	**6.65** (5.03-8.97)	**7.35** (5.37-10.3)
7-day	**1.43** (1.27-1.65)	**1.98** (1.75-2.28)	**2.70** (2.38-3.12)	**3.29** (2.89-3.84)	**4.11** (3.48-4.94)	**4.74** (3.93-5.82)	**5.38** (4.36-6.78)	**6.05** (4.77-7.84)	**6.97** (5.27-9.41)	**7.69** (5.62-10.7)
10-day	**1.51** (1.34-1.74)	**2.08** (1.84-2.40)	**2.83** (2.50-3.27)	**3.45** (3.02-4.01)	**4.29** (3.64-5.17)	**4.95** (4.11-6.08)	**5.62** (4.55-7.07)	**6.31** (4.97-8.17)	**7.26** (5.49-9.80)	**8.00** (5.84-11.2)
20-day	**1.73** (1.53-1.99)	**2.39** (2.12-2.76)	**3.28** (2.90-3.79)	**4.01** (3.52-4.68)	**5.03** (4.26-6.05)	**5.82** (4.83-7.15)	**6.63** (5.37-8.35)	**7.48** (5.89-9.68)	**8.63** (6.53-11.7)	**9.54** (6.97-13.3)
30-day	**1.95** (1.73-2.25)	**2.72** (2.41-3.13)	**3.76** (3.32-4.34)	**4.63** (4.06-5.39)	**5.85** (4.96-7.04)	**6.81** (5.66-8.38)	**7.81** (6.33-9.84)	**8.85** (6.98-11.5)	**10.3** (7.79-13.9)	**11.4** (8.35-16.0)
45-day	**2.28** (2.02-2.63)	**3.20** (2.83-3.68)	**4.46** (3.94-5.15)	**5.54** (4.85-6.45)	**7.08** (6.00-8.53)	**8.32** (6.91-10.2)	**9.63** (7.80-12.1)	**11.0** (8.67-14.3)	**13.0** (9.79-17.5)	**14.5** (10.6-20.3)
60-day	**2.48** (2.20-2.86)	**3.48** (3.08-4.01)	**4.89** (4.32-5.65)	**6.11** (5.35-7.12)	**7.89** (6.68-9.49)	**9.34** (7.76-11.5)	**10.9** (8.83-13.7)	**12.6** (9.91-16.3)	**15.0** (11.3-20.2)	**16.9** (12.4-23.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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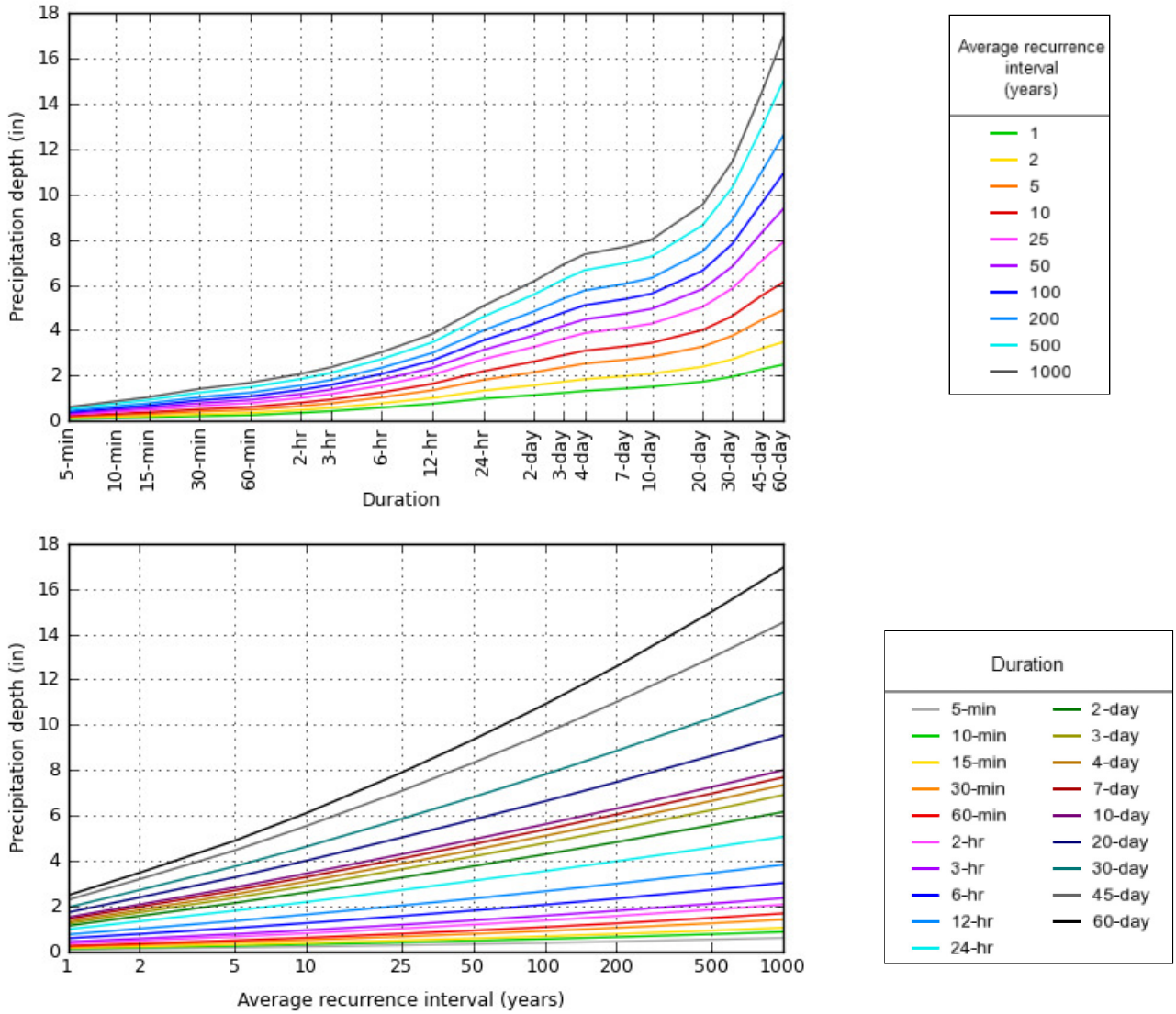
PF graphical

Note: This NOAA Atlas 14 table for the project location is for reference only. The study herewith utilizes the County of San Bernardino Isohyetal Maps since precipitation values for the 10 year/100 year 1 hour duruation are higher than the values in this table.

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.4981°, Longitude: -117.2813°



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Jul 3 17:29:10 2019

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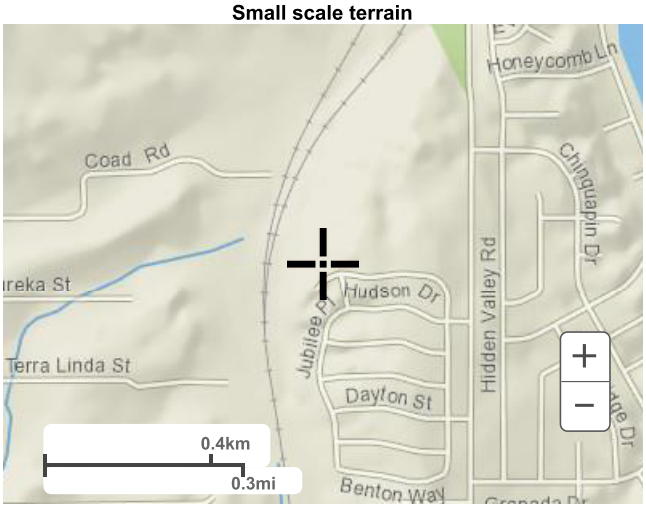
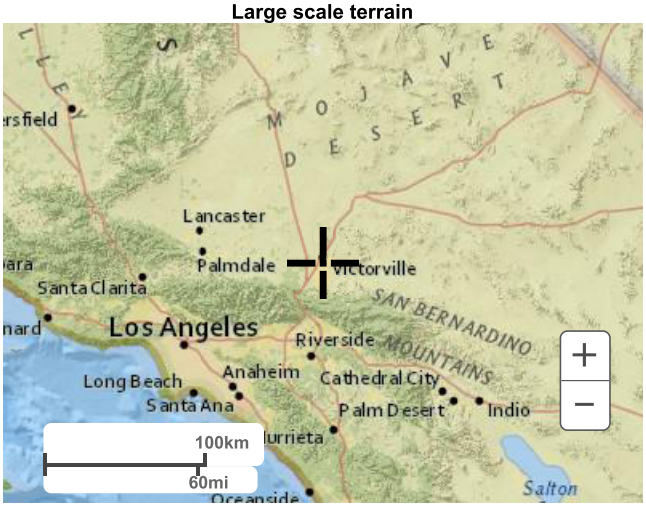
Maps & aerials

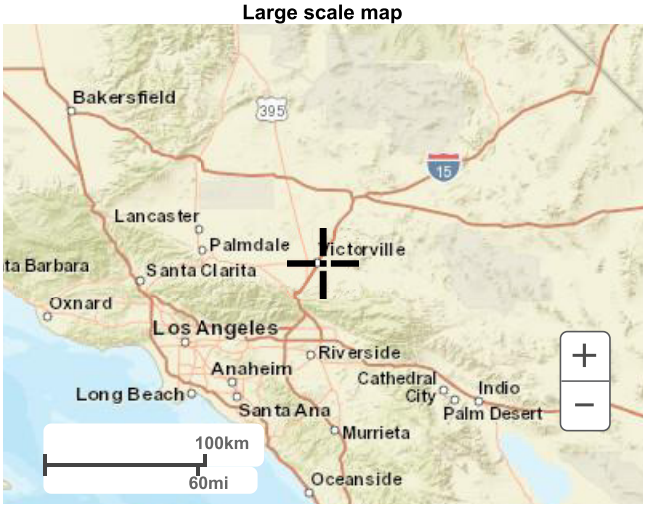
Small scale terrain



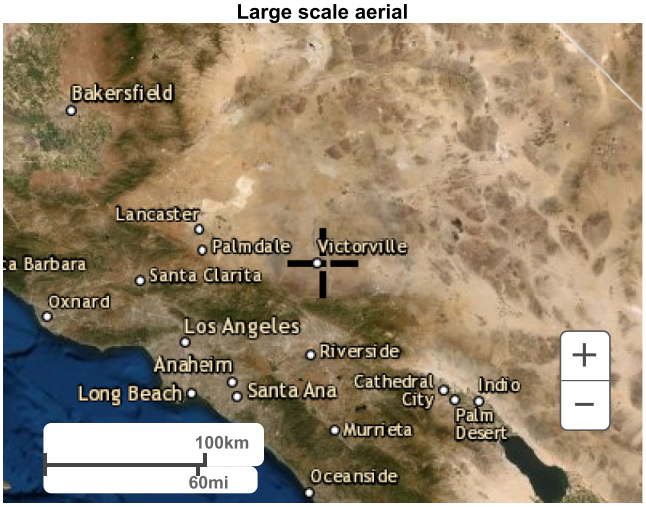
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Map Scale: 1:2,400 if printed on A landscape (11" x 8.5") sheet.

N

0 35 70 140 210 Meters

0 100 200 400 600 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 10, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 1, 2015—Feb 4, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
107	BRYMAN LOAMY FINE SAND, 5 TO 9 PERCENT SLOPES	C	7.6	32.6%
108	BRYMAN LOAMY FINE SAND, 9 TO 15 PERCENT SLOPES	C	4.5	19.4%
113	CAJON SAND, 2 TO 9 PERCENT SLOPES	A	2.7	11.6%
130	HAPLARGIDS-CALCIORTHIDS COMPLEX, 15 TO 50 PERCENT SLOPES		8.4	36.4%
Totals for Area of Interest			**23.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

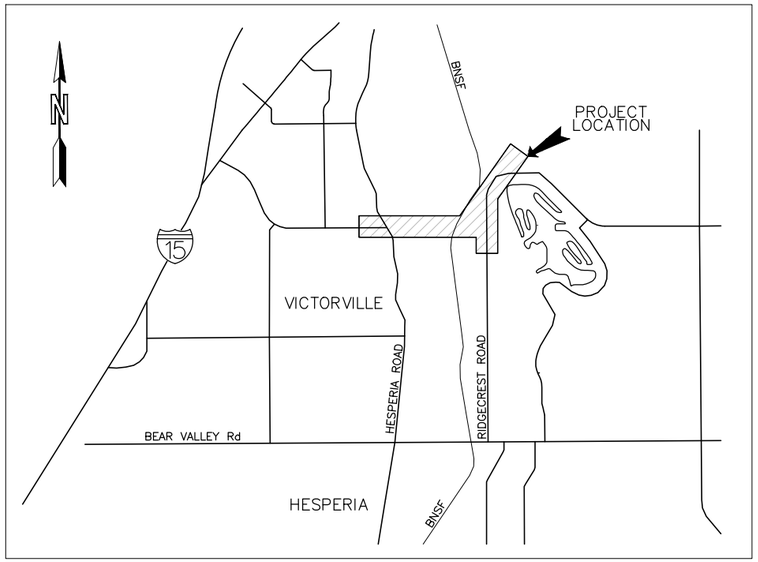
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

CITY OF VICTORVILLE
STREET IMPROVEMENT PLANS FOR
GREEN TREE BOULEVARD EXTENSION

SPECIAL NOTE TO THE CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF ALL AVAILABLE RECORDS, TO THE BEST OF OUR KNOWLEDGE. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINE NOT OF RECORD OR NOT SHOWN ON THESE PLANS. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CALL TOLL FREE 1-800-422-4133 TO VERIFY THE UNDERGROUND LOCATION OF ALL UTILITIES.



VICINITY MAP

SHEET INDEX:

DWG. NO.	SHEET NO.	DESCRIPTION
T-1	1	TITLE SHEET
T-2	2	NOTES, LEGEND AND ABBREVIATIONS
X-1 TO X-7	3 TO 9	TYPICAL SECTIONS
K-1	10	KEY MAP
PC-1	11	PROJECT CONTROL
L-1 TO L-14	12 TO 25	STREET IMPROVEMENTS - ROAD DESIGN
P-1	26	DRIVEWAY PROFILES
CD-1 TO CD-22	27 TO 48	STREET IMPROVEMENTS - CONSTRUCTION DETAILS
G-1 TO G-12	49 TO 60	GRADING
DR-1 TO DR-14	61 TO 74	STREET IMPROVEMENTS - STORM DRAIN DESIGN
DRP-1 TO DRP-8	75 TO 82	STREET IMPROVEMENTS - DRAINAGE PROFILES
DD-1 TO DD-14	83 TO 96	STREET IMPROVEMENTS - DRAIN DETAILS, CULVERT
W-1 TO W-10	97 TO 106	WATER IMPROVEMENTS - WATER DESIGN
U-1 TO U-13	107 TO 119	UTILITY
TWPC-1 TO TWPC-39	120 TO 158	TEMPORARY WATER POLLUTION CONTROL
TH-1 TO TH-39	159 TO 197	TRAFFIC HANDLING
DE-1	198	DETOUR PLAN
THD-1 TO THD-2	199 TO 200	TRAFFIC HANDLING DETAILS
PD-1 TO PD-13	201 TO 213	SIGNING AND STRIPING
BL-1	214	BRIDGE LIGHTING
TS-1 TO TS-4	215 TO 218	TRAFFIC SIGNAL AND SIGNAL INTERCONNECT
EC-1 TO EC-14	219 TO 232	EROSION CONTROL
S-1 TO S-36	233 TO 268	RAILROAD OVERHEAD
S-37 TO S-41	269 TO 273	RETAINING WALLS

PURSUANT TO THE AGREEMENT (COUNTY CONTRACT NOS. 11-238 AND 07-1076) BETWEEN THE COUNTY OF SAN BERNARDINO (COUNTY) AND THE CITY OF VICTORVILLE. THE COUNTY, THROUGH ITS DEPARTMENT OF PUBLIC WORKS (DEPARTMENT), HAS REVIEWED THE PLANS PREPARED BY DOKKEN ENGINEERING AND THE WORK SHOWN IN THE COUNTY'S JURISDICTION ONLY. THE DEPARTMENT, SUBJECT TO APPROVAL BY THE COUNTY BOARD OF SUPERVISORS, TENTATIVELY APPROVES THE WORK SHOWN ON THE PLANS IN THE COUNTY'S JURISDICTION ONLY.

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS-TRANSPORTATION
'COUNTY JURISDICTION ONLY'

MAZIN KASEY, R.C.E. 53328 — DATE
DEPUTY DIRECTOR, TRANSPORTATION

100% SUBMITTAL
MARCH 2019

PRELIMINARY
SUBJECT TO CHANGE

DIGALERT
800-227-2600
Call 2 Full Working Days In Advance

NO.	REVISION	BY	DATE

APPROVED BY: DEPUTY DIRECTOR — MAZIN KASEY — DATE: _____ — R.C.E. 53328 EXP. 06-30-19

APPROVED BY: CITY ENGINEER — BRIAN GENGLER — DATE: _____ — R.C.E. 44730 EXP. 03-31-20

DESIGNED: MARY E. WESTRUM
DRAWN: JEREMY SCOTT
CHECKED: ELIZABETH DIAMOND

RECORD DRAWING DATE:

SCALE — HORIZ: - — VERT: -

PROJECT NO. 2040
CAD FILE: 2040-SHT001-TITLE01.dwg

CITY OF VICTORVILLE
ENGINEERING DIVISION
14343 CIVIC DRIVE,
VICTORVILLE, CA 92392
(760) 955-5158

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD SUITE 200, FOLSOM CA. 916-858-0642

MARY E. WESTRUM, PROJECT ENGINEER — DATE

MARY E. WESTRUM
No. C75418
Exp. 12/31/19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

GREEN TREE BOULEVARD EXTENSION

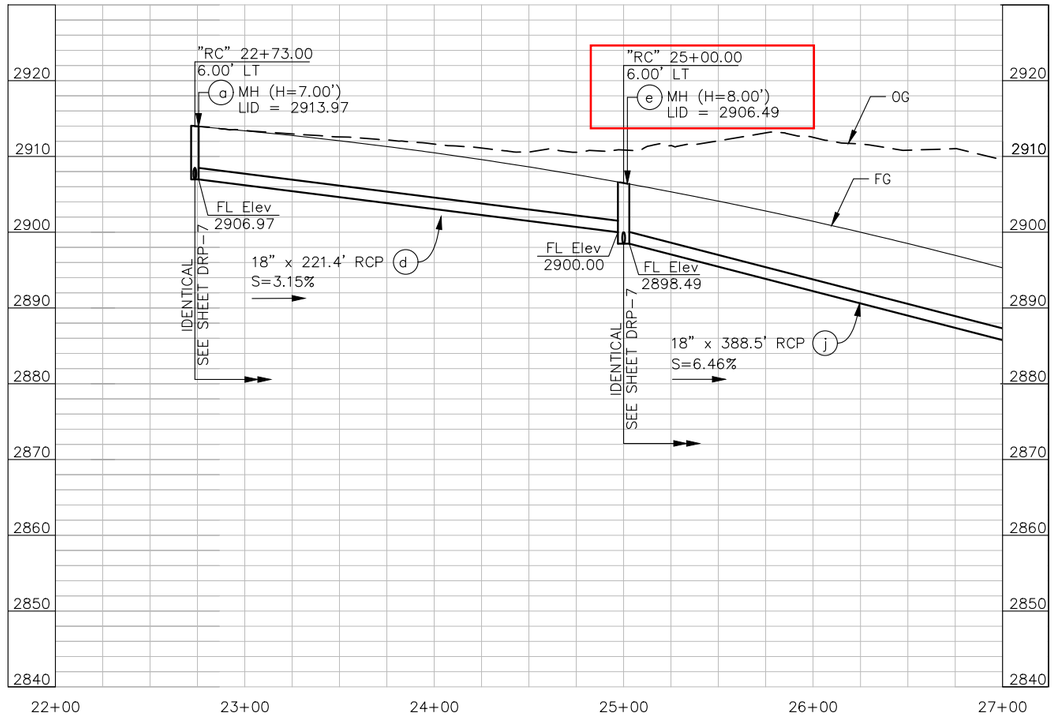
TITLE SHEET

1 OF 273

T-1

DWG. NO.

Plot Date: 03/25/2019 2:37:32 PM User: Megan File Name: P:\2040_Green Tree_SD\S11\2040-SHT001-TITLE01.dwg Last Update: 3/25/2019 2:37:21 PM



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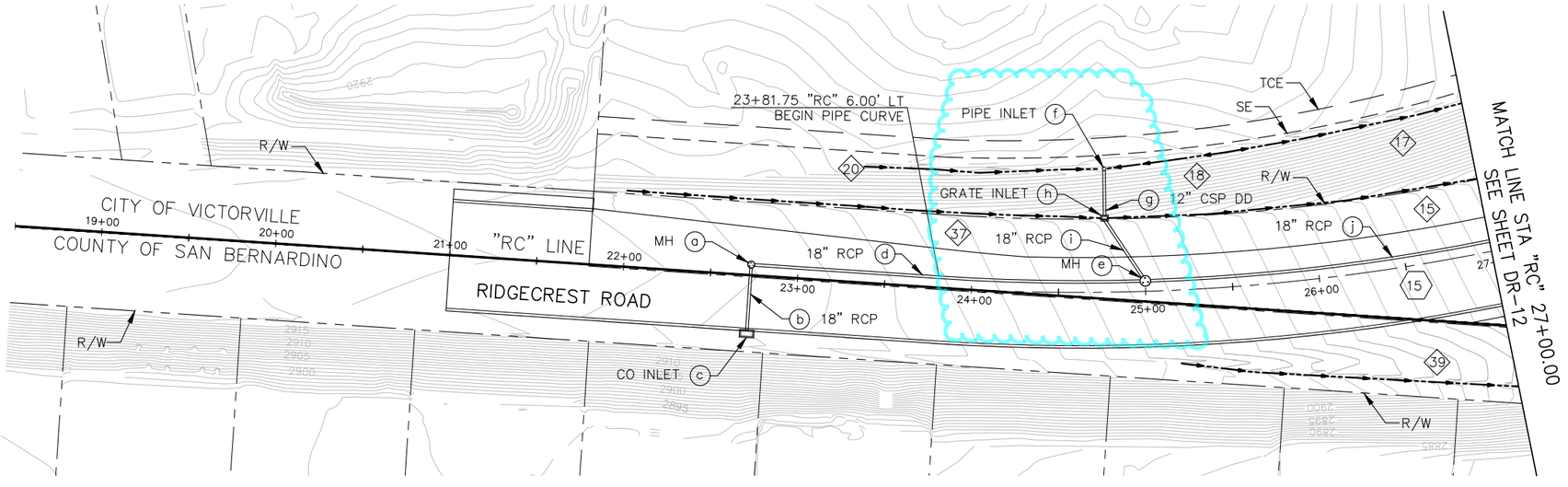
SEE SHEET DR-12

DRAINAGE PROFILE

DRAINAGE SYSTEM 15



NOTES:

1. FOR DITCH, DITCH TRANSITION, MH, PIPE INLET, CO INLET, AND GRATE INLET SEE DRAINAGE DETIALS.
2. FOR CSP DD, SEE CTSP D87A.

PRELIMINARY
SUBJECT TO CHANGE

NO.	REVISION	BY	DATE

APPROVED BY: DEPUTY DIRECTOR MAZIN KASEY DATE: _____ R.C.E. 53328 EXP. 06-30-19

APPROVED BY: CITY ENGINEER BRIAN GENGLER DATE: _____ R.C.E. 44730 EXP. 03-31-20

DESIGNED: SHAWN KENNEY

DRAWN: SARAH MORTON

CHECKED: PAMELA DALCIN-WALLING

RECORD DRAWING DATE:

SCALE HORIZ: 1"=40'
VERT: 1"=4'

PROJECT NO. 2040
CAD FILE: 2040-SHT071-DR11.dwg

CITY OF VICTORVILLE
ENGINEERING DIVISION
14343 CIVIC DRIVE,
VICTORVILLE, CA 92392
(760) 955-5158

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD SUITE 200, FOLSOM CA. 916-858-0642

PAMELA DALCIN-WALLING, PROJECT ENGINEER DATE

PAMELA DALCIN-WALLING No. C52187 Exp. 12/31/20 CIVIL STATE OF CALIFORNIA

GREEN TREE BOULEVARD EXTENSION

DRAINAGE PLANS

71 OF 273

DR-11

DWG. NO.

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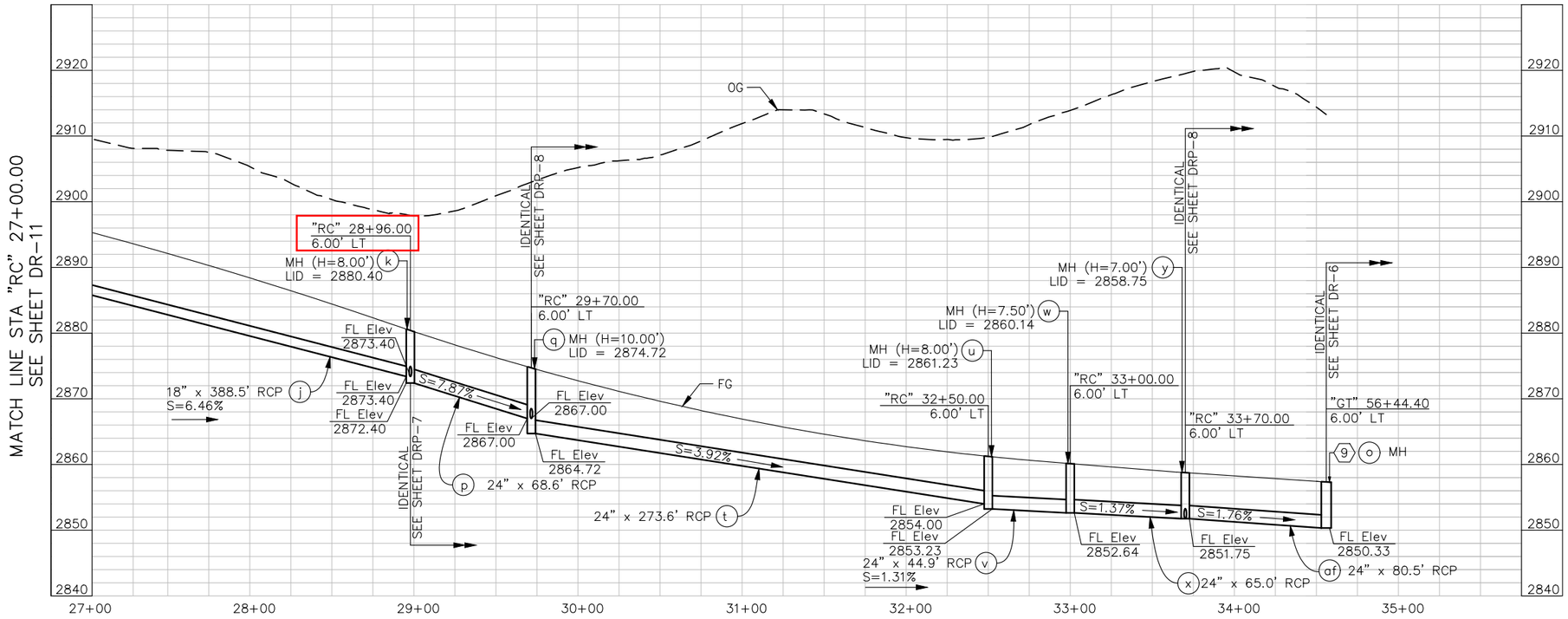

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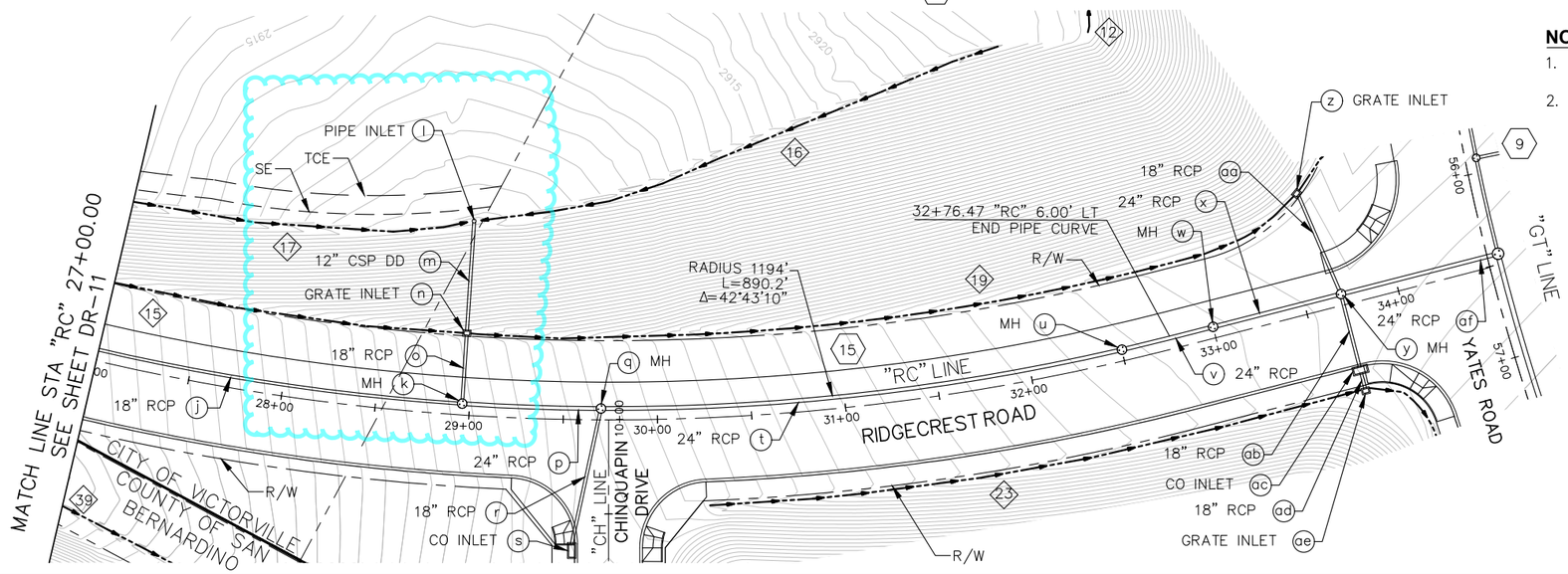
SEE SHEET DR-11

DRAINAGE PROFILE
DRAINAGE SYSTEM 15



NOTES:

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2. FOR CSP DD, SEE CTSP D87A.

PRELIMINARY
SUBJECT TO CHANGE

NO.	REVISION	BY	DATE

DESIGNED: SHAWN KENNEY
DRAWN: SARAH MORTON
CHECKED: PAMELA DALCIN–WALLING

RECORD DRAWING DATE:

SCALE: HORIZ: 1"=40'; VERT: 1"=4'

PROJECT NO. 2040
CAD FILE: 2040-SHT072-DR12.dwg

APPROVED BY: CITY ENGINEER _____ DATE: _____
BRIAN GENGLER
R.C.E. 44730 EXP. 03–31–20

CITY OF VICTORVILLE
ENGINEERING DIVISION
14343 CIVIC DRIVE,
VICTORVILLE, CA 92392
(760) 955-5158

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD SUITE 200, FOLSOM CA. 916-858-0642

PAMELA DALCIN–WALLING, PROJECT ENGINEER DATE

PAMELA DALCIN–WALLING No. C52187 Exp. 12/31/20 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

GREEN TREE BOULEVARD EXTENSION

DRAINAGE PLANS

72 OF 273

DR-12

DWG. NO.

Plot Date: 03/25/2019 11:56:05 AM User: Hrebello File Name: P:\2040_Green Tree_SD\Sht\2040-SHT072-DR12.dwg Last Update: 3/24/2019 4:32:34 PM

APPENDIX E – HYDROLOGY MAP(S)

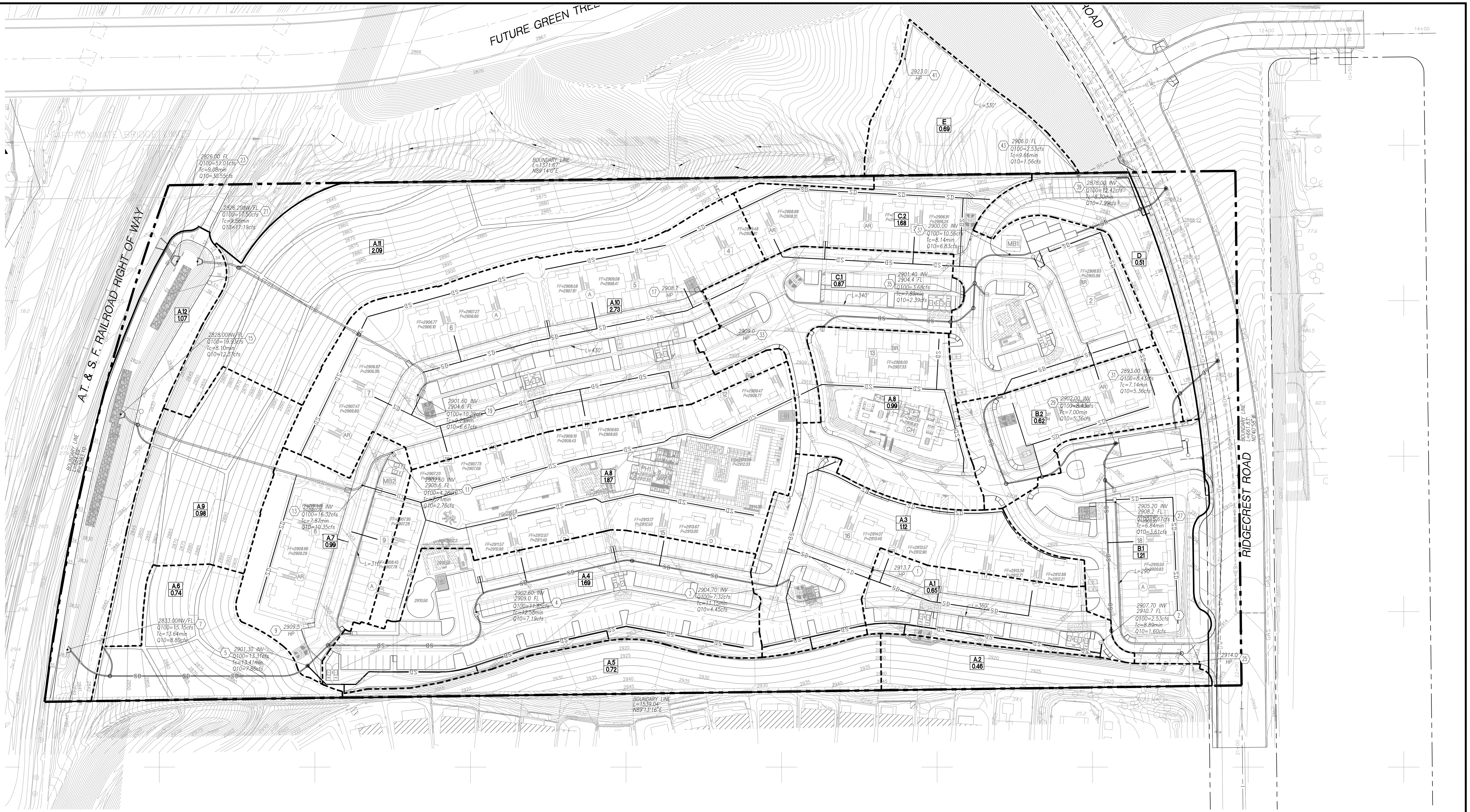
Hydrology Routing

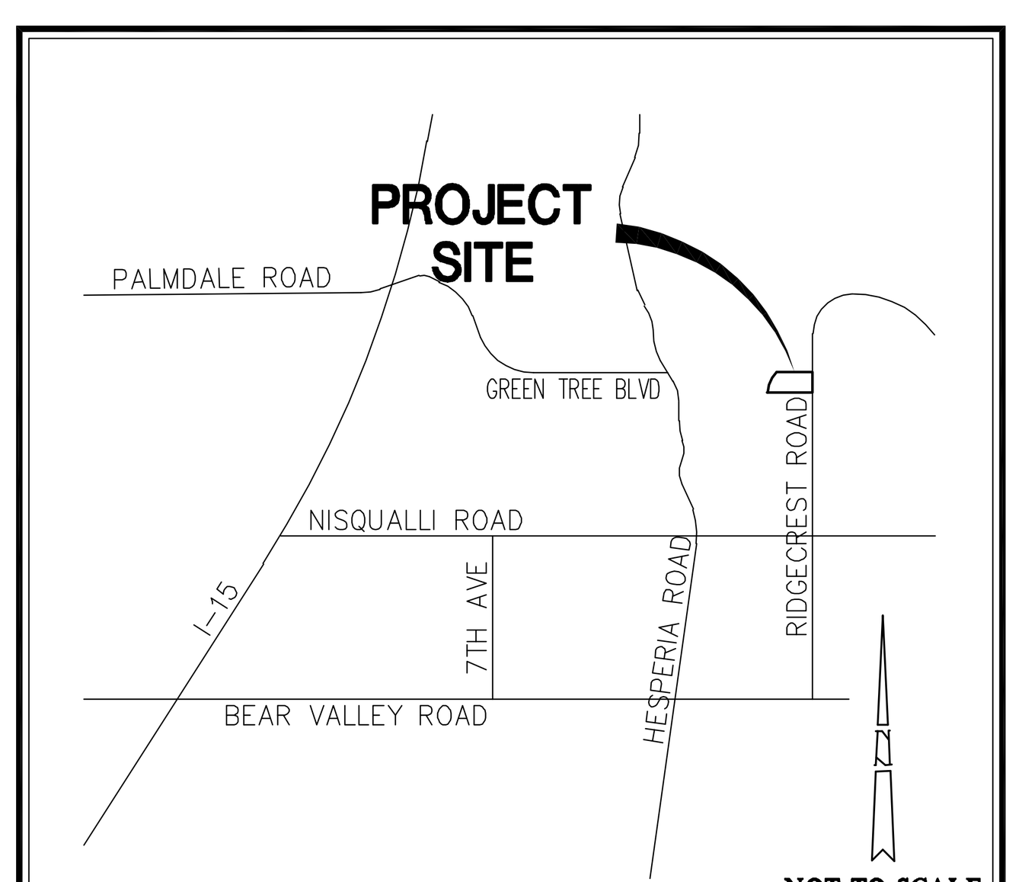
Proposed Condition

Node Begin	Node End	L (ft)	S (%)	Tc (min.)
1	2	360	0.8	8.89
2	3	509	0.6	11.15
3	4	413	0.5	12.58
4	5	263	0.5	13.41
5	7	321	6.2	13.64
7	23	520	1.3	15.91
9	11	310	1.3	7.71
11	13	52	1.0	7.87
13	15	325	22.8	8.10
15	23	211	0.9	9.08
17	19	430	1.0	9.29
19	21	346	22.0	9.56
21	23	26	0.8	9.70
25	27	290	2.0	6.84
27	29	87	3.7	7.00
29	31	113	8.0	7.14
33	35	340	1.4	7.89
35	37	92	1.5	8.14
37	39	165	13.3	8.30

Existing Condition

Node Begin	Node End	L (ft)	S (%)	Tc
1	3	560	6.7	11.34
3	7	348	5.8	13.08
5	7	586	8.5	11.00
9	11	735	9.7	11.74
11	19	571	9.2	13.69
13	15	306	22.5	6.98
15	19	275	8.9	8.42
17	19	834	14.4	11.39





VICINITY MAP
THOMAS BROS MAP: PAGE ---, GRID -

LEGEND

	BOUNDARY LINE (TRACT 18005)
	WATERSHED BOUNDARY
	SUB-AREA BOUNDARY
	FLOWLINE AND DIRECTION OF FLOW
X	SUB-AREA LABEL
Y	AREA (ACRES)
100	NODE NUMBER
Q10	10 YEAR PEAK FLOW (CFS)
Q100	25 YEAR PEAK FLOW (CFS)
Tc	TIME OF CONCENTRATION (100 YEAR STORM, IN MIN.)
MIN	MINUTES
CFS	CUBIC FEET PER SECOND
EG	EXISTING GRADE ELEVATION
FG	FINISH GRADE ELEVATION
FS	FINISH SURFACE ELEVATION
INV	INVERT OF PIPE
L=X'	LENGTH OF FLOWPATH (FT)

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

PROPOSED CONDITION

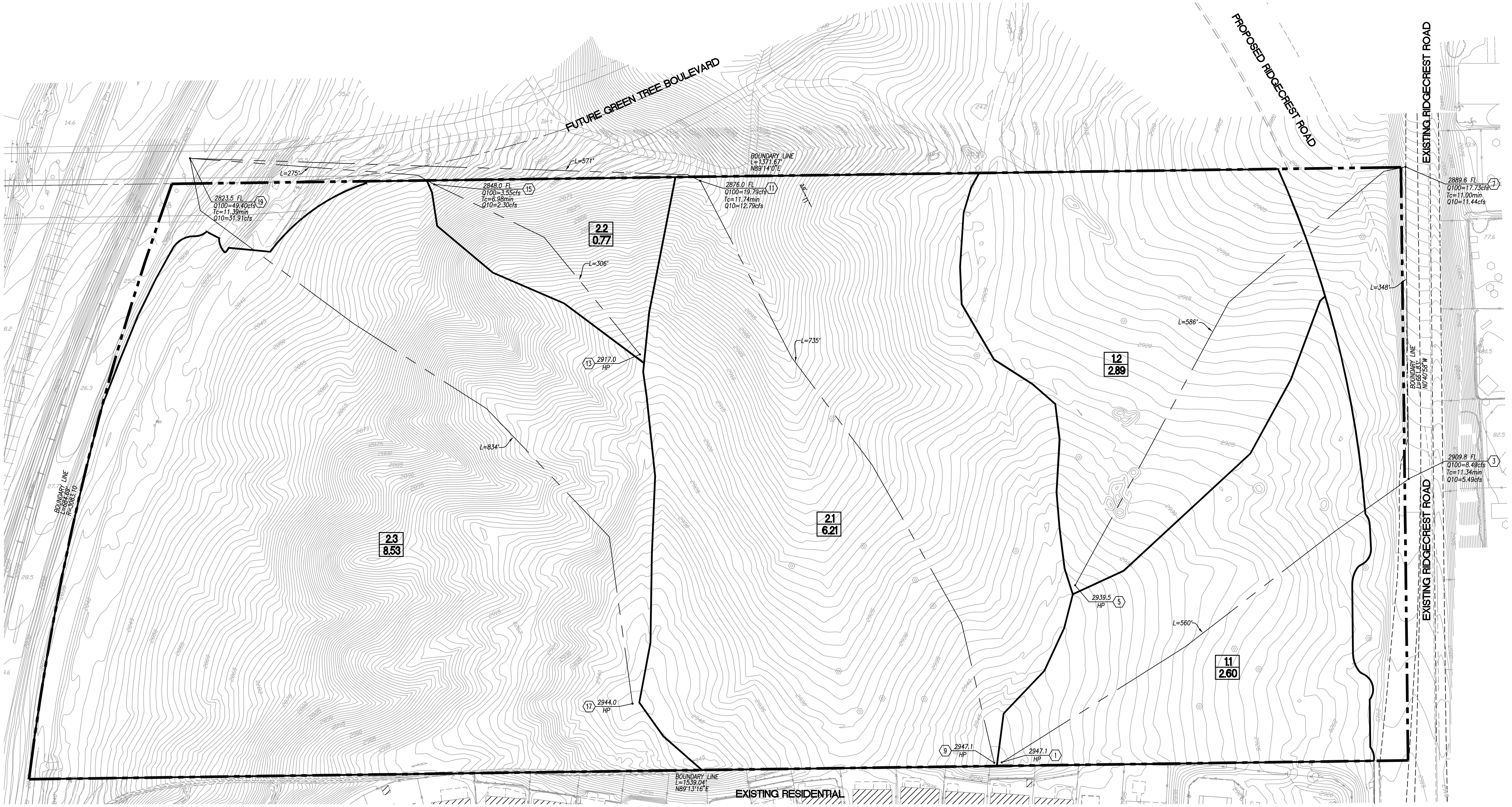
REVISIONS:

MARK	DESCRIPTION	BY	APPR	DATE

DESIGNED BY: TPA
CHECKED BY: TPA
DRAWN BY: TPA
PROJECT MANAGER: TPA

URBAN RESOURCE
CONSULTING CIVIL ENGINEERS
2923 SATURN STREET, UNIT H
BREA, CA 92821
949-727-9095 PHONE

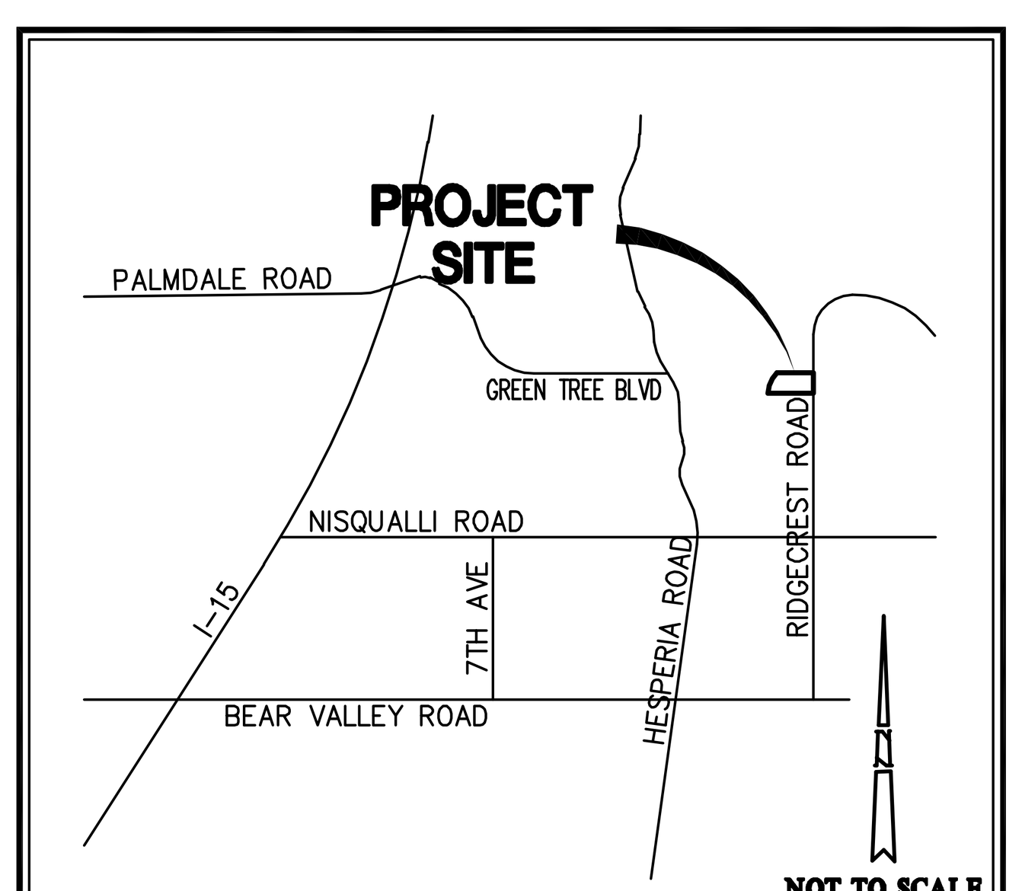
PRELIMINARY HYDROLOGY MAP
TRACT 18005
LAKE VIEW APARTMENTS



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.



VICINITY MAP
THOMAS BROS MAP: PAGE ---, GRID -

LEGEND

▬ ▪ ▪ ▬	BOUNDARY LINE (TRACT 18005)
▬▬	WATERSHED BOUNDARY
▬ ▬	SUB-AREA BOUNDARY
— · — →	FLOWLINE AND DIRECTION OF FLOW
X	SUB-AREA LABEL
Y	AREA (ACRES)
(100)	NODE NUMBER
Q10	10 YEAR PEAK FLOW (CFS)
Q100	100 YEAR PEAK FLOW (CFS)
Qconf	100 YEAR CONFLUENCE PEAK FLOW (CFS)
Tc	TIME OF CONCENTRATION (25 YEAR STORM, IN MIN.)
MIN	MINUTES
CFS	CUBIC FEET PER SECOND
EG	EXISTING GRADE ELEVATION
FG	FINISH GRADE ELEVATION
FS	FINISH SURFACE ELEVATION
INV	INVERT OF PIPE
L=X'	LENGTH OF FLOWPATH (FT)

EXISTING CONDITION

REVISIONS:

MARK	DESCRIPTION	BY	APPR	DATE

DESIGNED BY: TPA	DRAWN BY: TPA
CHECKED BY: TPA	PROJECT MANAGER: TPA

URBAN RESOURCE
CONSULTING CIVIL ENGINEERS
2923 SATURN STREET, UNIT H
BREA, CA 92821
949-727-9095 PHONE

PRELIMINARY HYDROLOGY MAP
TRACT 18005
LAKE VIEW APARTMENTS