Professional **E**ngineering **C**onsultants, P.A.
303 S. TOPEKA ▪ WICHITA, KANSAS 67202 ▪ 316-262-2691 ▪ FAX 316-262-3003 ▪ www.pec1.com ▪ designers@pec1.com

Remington Place 2nd

Wichita, Sedgwick County, Kansas

9/16/02

Remington Place 2nd is a development in northeast Wichita containing both commercial and residential areas. It consists of a 2.6 acre area for commercial use and 14 residential lots. Development plans include commercial office buildings, parking, open space, patio homes, three landscaped ponds, and utilities. The drainage plan and supporting calculations for Remington Place 2nd are presented herein.

Hydrology

The proposed plat lies in the E ½, NW ¼, Section 9, T27S, R2E of the 6th P.M. The soils on-site consist of Goessel silty clay and Irwin silty clay loam. These soils are classified in hydrologic group D. The existing landscape is vacant posture with trees on all sides and across the middle of the property. The plat generally drains to the northeast corner of the plat and then to a Four Mile Creek tributary.

For runoff calculations, the plat was divided into 3 major basins, each with its own discharge. Additional runoff on the site will come from the south via a future storm sewer and street flow from Remington Place Addition. The offsite runoff combined with Basin 1 runoff will discharge to Pond No. 1. Pond No. 1 will discharge to Pond No. 2, which also accepts runoff from Basin 2. Pond No. 2 will then discharge to Pond No. 3, which also accepts runoff from Basin 3. The net effect of the three ponds is to reduce the plat runoff from 74.6 cfs for existing conditions to 64.0 cfs for proposed conditions.

Using the Army Corp of Engineer's program HEC-1, all systems were modeled with runoff based on the Rational Method. In the model, minor basins 1B, 1C, 1D, and 1E were combined with the offsite basin due to the small size of the basins and to the fact that the runoff from the minor basins joins the offsite runoff before entering Pond No. 1. The minimum time of concentration was assumed for all basins, so the basins could be combined with negligible lag time. The ponds were included to determine water elevations in the 100-year design storm and to determine the outfall from the ponds via weirs.

Runoff coefficients were estimated based on existing land use and the tables presented in the Design Aids section. A map showing the basin boundaries, drainage calculations, and HEC-1 model are included. The analysis made is based on the available site data which includes the following: 1"=100' topographic map with 2' contours of the site and adjacent areas, USGS topographic map, Sedgwick County Soil Survey Map, and references noted herein.

Storm Sewer Design

For the storm sewer hydrologic analysis, the Rational Method was again used. Runoff coefficients were estimated using the charts in the design aids section of this report. For this development, a uniform assumption of the minimum time of concentration of 15 minutes was deemed appropriate. Travel time for flow through defined channels, pipes, etc, for these basins was estimated on the basis of Manning's Equation.

In the hydraulic analysis, the storm sewers are designed for the minor storm, with major storm overflows to be routed through easements and rights-of-way to an appropriate outlet. The minor storm has a recurrence interval of two years. The major storm evaluated has a recurrence interval of one hundred years. To simplify this analysis, the time of concentration is identical for both the major and the minor storms.

For each inlet, street flooding and inlet capacity were checked for the minor storm. Conveyance in the street is based on the Modified Manning's Equation, as expressed in the Design of Urban Highway Drainage-The State of the Art, Equation (5-1), page 5-9. It has been assumed that Tc for street flow is equal to Tc for pipe flow. This is a simplifying, but conservative, assumption, since pipe flow velocities generally exceed street flow velocities.

Inlet capacities were determined by the methods described in Drainage of Highway Pavements, Hydraulic Engineering Circular #12, using Chart #12 as found in the Design Aids section. City of Wichita Type 1A inlets and 3/8 inch per foot cross slopes have been assumed. Streets have been assumed to have 6-5/8 inch standard curb, unless otherwise noted.

The storm sewer for this plat is designed to tie into the future storm sewer from Remington Place Addition and Cranbrook Street. Hydraulic computation for the pipe system was performed using PEC's STORM computer program. This program uses Manning's Equation to calculate friction losses for pipes flowing full. Minor losses are computed by momentum principles at each structure. All pipe area is assumed to be reinforced concrete with a Manning's "n" of 0.013. It is desirable to keep the hydraulic grade line at least one foot below the top of curb for the minor storm. The STORM analysis for the combined storm sewer is included in this report. Note that the inlet at node 130 and, subsequently, the pipe system connecting node 130 to Pond 1 was sized to handle flows from the 100-year storm in order to greatly reduce overflow between lots 11 and 12 during storms greater than the 2-year storm. (The STORM analysis showing the sizing of inlet 130 and the analysis showing the actual 2-year storm flow rates are both included.)

Design Aids

This section includes material used to assist in designing the drainage system. A 1"=50' scale drainage plan map is enclosed in the pocket.

References

Design of Urban Highway Drainage – The State of the Art, by Reitz & Jens, Inc., April 1980.

Drainage of Highway Pavements, Hydraulic Engineering Circular #12, by Tye Engineering, Inc., March 1984.

Interim Drainage and Storm Sewer Policy for Design Criteria and Documentation, City of Wichita, Kansas, 1985.

Soil Survey of Sedgwick County, Kansas, US Department of Agriculture, Soil Conservation Service, 1979.

Professional Engineering Consultants, P.A.
3 S. TOPEKA ▪ WICHITA, KANSAS 67202
316-262-2691 ▪ FAX 316-262-3003
www.pec1.com ▪ designers@pec1.com

Project REMINGTON PLACE 2ND Date 9/12/02
Item HYDROLOGY By ____________

EXISTING CONDITIONS

THE DISCHARGE FROM THIS SITE IS AN OVERLAND SWALE AT THE NORTHEAST CORNER OF THE PLAT. OFFSITE RUNOFF FROM REMINGTON PLACE ADDITION ALSO DISCHARGES AT THIS POINT.

FIND EXISTING RUNOFF USING THE RATIONAL METHOD, $Q = CiA$

1. AREA = 15.5 AC

2. RUNOFF COEFFICIENTS, C
   PERVIOUS OPEN SPACE
   SOIL GROUP "D", 1-4% SLOPE
   $C_{100} = 0.65$

3. INTENSITY, i
   ASSUME MINIMUM TIME OF CONCENTRATION, $T_c = 15$ MIN
   $i_{100} = 7.4$ IN/HR

4. $Q_{100} = C_{100} i_{100} A$

   $Q_{100} = 0.65(7.4 \text{ IN/HR})(15.5 \text{ AC}) = 74.6$ CFS

THEREFORE, THE EXISTING CONDITIONS RUNOFF FROM THIS SITE IS 74.6 CFS FOR THE 100-YR STORM. THE PROPOSED CONDITIONS RUNOFF FOR THIS PLAT SHOULD NOT EXCEED 74.6 CFS. PROPOSED CONDITIONS INCLUDE THE PROPOSED DEVELOPMENT OF THIS PLAT AND THE DEVELOPMENT OF THE AREA IN REMINGTON PLACE ADDITION WHOSE RUNOFF ENTERS THIS SITE.

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?3 S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ____ Date ____
Item ____ By ____

PROPOSED CONDITIONS

FIND PROPOSED CONDITIONS RUNOFF

1. AREAS: 2.2 Ac OFFICE
   1.9 Ac POND RESERVE
   11.4 Ac RESIDENTIAL

2. RUNOFF COEFFICIENTS, C

2.2 Ac OFFICE
BUSINESS NEIGHBORHOOD AREAS
$C_{100} = 0.80$

1.9 Ac POND RESERVE
"D" 1-4% SLOPE
$C_{100} = 0.65$

11.4 AC RESIDENTIAL
1/4 AC RES. SINGLEFAMILY "D"
$C_{100} = 0.76$

$$C_{100} = \frac{2.2}{15.5}(0.80) + \frac{1.9}{15.5}(0.65) + \frac{11.4}{15.5}(0.76) = 0.75$$

3. INTENSITY, i
$T_c = 15$ MIN
$i_{100} = 7.4$ IN/HR

4. $Q_{100} = C_{100} i_{100} A$

$Q_{100} = 0.75(7.4 \text{ IN/HR})(15.5 \text{ Ac}) = 86.0$ CFS

THEREFORE, NEED TO HAVE DETENTION PONDS IN ORDER TO REDUCE RUNOFF FROM THE SITE SINCE 86.0 CFS > EXISTING RUNOFF.

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.3 S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ______ Date ______
Item ______ By ______

POND #1

INFLOW

BASIN 1 AND OFFSITE FROM REMINGTON PLACE ADDITION

BASIN 1: 0.6 AC OFFICE, $C_{100} = 0.80$
4.3 AC 1/4 AC RES, $C_{100} = 0.76$

$C_{100} = {}^{0.6}/_{4.9}(0.80) + {}^{4.3}/_{4.9}(0.76) = 0.76$

$t_c = 15$ MIN, $i_{100} = 7.4$ IN/HR (* USE $t_c = 15$ MIN FOR ALL BASINS)

$Q_{100} = 0.76(7.4$ IN/HR$)(4.9$ AC$) =$ 27.6 CFS

OFFSITE: 6.8 AC 1/4 AC RES, $C_{100} = 0.76$

$i_{100} = 7.4$ IN/HR

$Q_{100} = 0.76(7.4$ IN/HR$)(6.8$ AC$) =$ 38.2 CFS

∴ INFLOW = 27.6 + 38.2 = 65.8 CFS

STATIC POOL EL = 202^{0}

SURFACE AREA

@ 202^{0} = 0.20 AC
@ 204^{0} = 0.27 AC

OUTFALL

ASSUME 10' BROAD-CRESTED WEIR @ 202^{0}

FROM HEC-1 USING WEIR EQUATION $Q = CLH^{1.5}$
WITH $C = 3.2$

$DWS_{100} = 203^{6}$
$Q_{100} = 64$ CFS

Professional Engineering Consultants, P.A.
... S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ____________ Date ____________

Item ____________ By ____________

POND #2

INFLOW

BASIN 2 AND POND 1 OUTFALL

BASIN 2: 2.1 AC OFFICE, $C_{100} = 0.80$
0.9 AC 1/8 ACRES, $C_{100} = 0.79$

$C_{100} = 0.80$

$i_{100} = 7.4$ IN/HR

$Q_{100} = 0.80(7.4$ IN/HR$)(3.0$ AC$) = 17.8$ CFS

POND 1 = 64 CFS

∴ INFLOW = 17.8 + 64 = 81.8 CFS

STATIC EL = 199^{0}

SURFACE AREA

@ 199^{0} = 0.43 AC
@ 202^{0} = 0.64 AC

OUTFALL

5' WEIR @ 199^{0}, C = 3.2

FROM HEC-1

$DWS_{100} = 201^{6}$
$Q_{100} = 67$ CFS

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Project ______ Date ______
Item ______ By ______

POND #3

INFLOW

BASIN 3 AND POND 2 OUTFALL

BASIN 3: 0.6 AC OFFICE, $C_{100} = 0.80$
0.2 AC 1/3 ACRES, $C_{100} = 0.79$

$C_{100} = 0.80$

$i_{100} = 7.4$ IN/HR

$Q_{100} = 0.80(7.4\text{ IN/HR})(0.8\text{ AC}) = 4.7$ CFS

POND 2 = 67 CFS

∴ INFLOW = 4.7 + 67 = 71.7 CFS

STATIC EL = 195^{0}

SURFACE AREA

@ 195^{0} = 0.30 AC
@ 198^{0} = 0.50 AC

OUTFALL

5' WEIR @ 195^{0}, C = 3.2

FROM HEC-1

$DWS_{100} = 197^{5}$
Q_{100} = 64 CFS

POND 3 OUTFALL IS THE RUNOFF LEAVING THE SITE.
∴ RUNOFF LEAVING THE SITE IS 64 CFS WHICH IS LESS THAN EXISTING RUNOFF FROM THE SITE EQUAL TO 74.6 CFS.

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303 S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ______________________ Date ________

Item ______________________ By ________

PROPOSED SWS

THE PROPOSED SWS FOR REMINGTON PLACE 2ND IS DESIGNED TO TIE INTO SWS FROM REMINGTON PLACE ADDITION ALONG CRANBROOK. THE STORM COMPUTER ANALYSIS OF THE ENTIRE SWS SYSTEM IS INCLUDED IN THIS REPORT.

1. HYDROLOGY, USING RATIONAL METHOD, $Q = CiA$

DETERMINE AREAS, A

BASIN	NODE	AREA (AC)
1B	130	2.84
1C	150	0.61
1D	160	0.47
1E	170	0.31

DETERMINE RUNOFF COEFFICIENTS, C

BASIN	NODE	SOIL GROUP	LAND USE	C_2	C_{100}
1B	130	D	1/4 ACRES	0.50	0.76
1C	150	D	1/4 ACRES	0.50	0.76
1D	160	D	1/4 ACRES	0.50	0.76
1E	170	D	1/4 ACRES	0.50	0.76

DETERMINE INTENSITY, i

ASSUME MINIMUM TIME OF CONCENTRATION, $T_c = 15$ MIN FOR ALL BASINS

$\therefore\ i_2 = 3.8$ IN/HR

Professional Engineering Consultants, P.A.
303 S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ______________________ Date ________

Item ______________________ By ________

DETERMINE FLOWRATES, Q

BASIN	NODE	C_2	C_{100}	i_2	i_{100}	A(Ac)	Q_2 (CFS)	Q_{100} (CFS)
1B	130	0.50	0.76	3.8	7.4	2.84	5.4	16.0
1C	150	0.50	0.76	3.8	7.4	0.61	1.2	3.4
1D	160	0.50	0.76	3.8	7.4	0.47	0.9	2.6
1E	170	0.50	0.76	3.8	7.4	0.31	0.6	1.7

2. INLET SIZING / FLOOD ROUTING (2-YR)

BASIN	NODE	INLET	Q	Q_{MAX} (5' INLET)	Q_{MAX} (10' INLET)	Q_{IN}	Q_{BY}	USE
1B	130	SUMP	*16.0	11.0	22.0	16.0	—	L=10'
1C	150	R4826	1.2	N/A	N/A	1.2	—	1-2x2
1D	160	R4826	0.9	N/A	N/A	0.9	—	1-2x2
1E	170	R4826	0.6	N/A	N/A	0.6	—	1-2x2

* NOTE THAT Q_{100} WAS USED TO SIZE THE INLET AT NODE 130. BY SIZING THE INLET TO INTERCEPT THE 100-YR STORM FLOW, OVERLAND FLOW BETWEEN LOTS 11 AND 12 FROM THE STREET SHOULD BE DRASTICALLY REDUCED IN STORMS EXCEEDING THE 2-YR STORM, THUS PREVENTING SEVERE WASHOUT.

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303 S. TOPEKA ▪ WICHITA, KANSAS 67202
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Project ____ Date ____
Item ____ By ____

3. STREET FLOW

2-YR

NODE	BASIN	Q_2	DISTRIBUTION	STREET SLOPE	d	d_{MAX}	COMMENT
130	1B	5.4	100% (E) = 5.4	0.5%	0.36'	0.55'	OK

100-YR

LOCATION	CONTRIBUTING AREA	Q_{100}	Q_{PIPE}	Q_{STREET}	STREET SLOPE	Q_{MAX}	COMMENT
NODE 130	100% 1B	16.0	–	16.0	0.5%	29.2	OK

* Q_{MAX} IS THE MAX FLOW THE STREET CAN HANDLE W/O OVERTOPPING THE CURB

4. OVERFLOW

100-YR FLOW AT NODES 150, 160, AND 170 WILL FLOW TO CRANBROOK STREET AND BE CARRIED TO POND 1 VIA CRANBROOK STREET FLOW, WHICH IS DESIGNED WITH SUFFICIENT CAPACITY TO HANDLE THIS FLOW.

```
                                                          REM4.OH1
1*****************************************                                           *****************************************
 *                                       *                                           *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                           *   U.S. ARMY CORPS OF ENGINEERS        *
 *            FEBRUARY 1981              *                                           * THE HYDROLOGIC ENGINEERING CENTER     *
 *          REVISED 02 AUG 88            *                                           *        609 SECOND STREET              *
 *                                       *                                           *      DAVIS, CALIFORNIA 95616          *
 * RUN DATE  09/13/2002  TIME  08:36:26  *                                           *         (916) 551-1748                *
 *                                       *                                           *                                       *
*****************************************                                            *****************************************


                              X     X  XXXXXXX   XXXXX          X
                              X     X  X        X     X        XX
                              X     X  X        X               X
                              XXXXXXX  XXXX     X       XXXXX   X
                              X     X  X        X               X
                              X     X  X        X     X         X
                              X     X  XXXXXXX   XXXXX         XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL    LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                          HEC-1 INPUT                                              PAGE  1

        LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          1        ID        Remington Place Second
          2        ID        2, 10, 25 & 100 year storms
          3        ID        Professional Engineering Consultants
          4        ID        Wichita, Ks
          5        ID        SPL 08/23/02
          6        ID        File:  O:\SPL\HEC1\REM4.IH1
          7        IT         6 12DEC97     0000      300
          8        IN        30 12DEC97     0600
          9        IO         3       0
         10        JR      PREC .448718 .679487  .78947    1.000
                   *
                   *DIAGRAM
                   *

         11        KK      BAS1      Basin to Pond 1 via street and SWS (offsite, 1B, 1C, 1D, and 1E)
         12        BA    .01672
         13        PB       7.8
         14        PC      0.08      .09     .10     .11     .12    .133    .147    .163    .181    .204
         15        PC      .235     .283    .663    .735    .772    .799    .820    .835    .850    .865
         16        PC      .880     .890    .900    .910    .916    .925    .934    .943    .952    .958
         17        PC      .964     .970    .976    .982    .988    .994   1.000
         18        LS         0       87       0
         19        UD       .15
                   *

         20        KK     BAS1A        Basin 1A directly to pond 1 including pond 1
         21        BA    .00156
         22        PB       7.8
         23        PC      0.08      .09     .10     .11     .12    .133    .147    .163    .181    .204
         24        PC      .235     .283    .663    .735    .772    .799    .820    .835    .850    .865
         25        PC      .880     .890    .900    .910    .916    .925    .934    .943    .952    .958
         26        PC      .964     .970    .976    .982    .988    .994   1.000
         27        LS         0       94       0
         28        UD       .15
                   *

         29        KK     COMB1
         30        KO         5
         31        HC         2
                   *

         32        KK     POND1
         33        RS         1     ELEV     202
         34        SA       .20      .27
         35        SE       202      204
         36        SS       202       10     3.2     1.5
                   *
                   *

         37        KK      BAS2        Basin 2 to Pond 2
         38        BA    .00469
         39        PB       7.8
         40        PC      0.08      .09     .10     .11     .12    .133    .147    .163    .181    .204
         41        PC      .235     .283    .663    .735    .772    .799    .820    .835    .850    .865
         42        PC      .880     .890    .900    .910    .916    .925    .934    .943    .952    .958
1                                          HEC-1 INPUT                                              PAGE  2

        LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

         43        PC      .964     .970    .976    .982    .988    .994   1.000
         44        LS         0       94       0
         45        UD       .15
                   *
                   *
                   *

         46        KK     COMB2
         47        KO         5
         48        HC         2
                   *
                   *

         49        KK     POND2
         50        RS         1     ELEV     199
         51        SA       .43      .64
         52        SE       199      202
         53        SS     199.0        5     3.2     1.5
                   *
                   *

         54        KK      BAS3        Basin 3 to Pond 3
         55        BA    .00125
         56        PB       7.8
         57        PC      0.08      .09     .10     .11     .12    .133    .147    .163    .181    .204
         58        PC      .235     .283    .663    .735    .772    .799    .820    .835    .850    .865
         59        PC      .880     .890    .900    .910    .916    .925    .934    .943    .952    .958
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                                                                   REM4.OH1
        60          PC     .964     .970     .976     .982     .988     .994   1.000
        61          LS        0       94        0
        62          UD      ..15
                    *
                    *

        63          KK    COMB3
        64          KO        5
        65          HC        2
                    *
                    *

        66          KK    POND3
        67          RS        1     ELEV      195
        68          SA      .30      .50
        69          SE      195      198
        70          SS    195.0        5      3.2      1.5
                    *
                    *
        71          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  11        BAS1
              .
              .
  20          .        BAS1A
              .            .
              .            .
  29        COMB1...........
              V
              V
  32        POND1
              .
              .
  37          .        BAS2
              .            .
              .            .
  46        COMB2...........
              V
              V
  49        POND2
              .
              .
  54          .        BAS3
              .            .
              .            .
  63        COMB3...........
              V
              V
  66        POND3
(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*           FEBRUARY 1981               *
*         REVISED 02 AUG 88             *
*                                       *
* RUN DATE  09/13/2002  TIME  08:36:26  *
*                                       *
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*****************************************
*                                       *
*     U.S. ARMY CORPS OF ENGINEERS      *
*   THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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```
                          Remington Place Second
                          2, 10, 25 & 100 year storms
                          Professional Engineering Consultants
                          Wichita, Ks
                          SPL 08/23/02
                          File:  O:\SPL\HEC1\REM4.IH1

    9 IO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN           6  MINUTES IN COMPUTATION INTERVAL
                        IDATE     12DEC97  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE     13DEC97  ENDING DATE
                       NDTIME        0554  ENDING TIME
                        ICENT          19  CENTURY MARK

                    COMPUTATION INTERVAL     .10 HOURS
                         TOTAL TIME BASE   29.90 HOURS

           ENGLISH UNITS
                DRAINAGE AREA          SQUARE MILES
                PRECIPITATION DEPTH    INCHES
                LENGTH, ELEVATION      FEET
                FLOW                   CUBIC FEET PER SECOND
                STORAGE VOLUME         ACRE-FEET
                SURFACE AREA           ACRES
                TEMPERATURE            DEGREES FAHRENHEIT

      JP          MULTI-PLAN OPTION
                        NPLAN            1  NUMBER OF PLANS

      JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                       .45       .68       .79      1.00

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
   11 KK    *    BAS1    *         Basin to Pond 1 via street and SWS (offsite, 1B, 1C, 1D, and 1E)
            *            *
            **************

    8 IN          TIME DATA FOR INPUT TIME SERIES
                        JXMIN          30  TIME INTERVAL IN MINUTES
```

JXDATE 12DEC97 STARTING DATE
JXTIME 600 STARTING TIME

SUBBASIN RUNOFF DATA

12 BA SUBBASIN CHARACTERISTICS
TAREA .02 SUBBASIN AREA

PRECIPITATION DATA

13 PB STORM 7.80 BASIN TOTAL PRECIPITATION

14 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

18 LS SCS LOSS RATE
STRTL .30 INITIAL ABSTRACTION
CRVNBR 87.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

19 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .15 LAG

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

19.	41.	28.	11.	5.	2.	1.	0.	0.	0.

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.54, TOTAL EXCESS = 6.26

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
60.	12.00		9.	3.	2.	2.
		(INCHES)	5.112	6.255	6.255	6.255
		(AC-FT)	5.	6.	6.	6.

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = .45

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.32, TOTAL EXCESS = 2.18

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 21.	12.00		3.	1.	1.	1.
		(INCHES)	1.796	2.182	2.182	2.182
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = .68

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.45, TOTAL EXCESS = 3.85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 38.	12.00		6.	2.	1.	1.
		(INCHES)	3.162	3.851	3.851	3.851
		(AC-FT)	3.	3.	3.	3.

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = .79

TOTAL RAINFALL = 6.16, TOTAL LOSS = 1.49, TOTAL EXCESS = 4.67

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
(CFS)	(HR)					
		(CFS)				
+ 46.	12.00		7.	2.	2.	2.
		(INCHES)	3.827	4.668	4.668	4.668
		(AC-FT)	3.	4.	4.	4.

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.54, TOTAL EXCESS = 6.26

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
60.	12.00		9.	3.	2.	2.
		(INCHES)	5.112	6.255	6.255	6.255
		(AC-FT)	5.	6.	6.	6.

CUMULATIVE AREA = .02 SQ MI

*** ***

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              ***************
              *             *
20 KK         *    BAS1A    *          Basin 1A directly to pond 1 including pond 1
              *             *
              ***************
```

8 IN TIME DATA FOR INPUT TIME SERIES
- JXMIN 30 TIME INTERVAL IN MINUTES
- JXDATE 12DEC97 STARTING DATE
- JXTIME 600 STARTING TIME

SUBBASIN RUNOFF DATA

21 BA SUBBASIN CHARACTERISTICS
- TAREA .00 SUBBASIN AREA

PRECIPITATION DATA

22 PB STORM 7.80 BASIN TOTAL PRECIPITATION

23 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

27 LS SCS LOSS RATE
- STRTL .13 INITIAL ABSTRACTION
- CRVNBR 94.00 CURVE NUMBER
- RTIMP .00 PERCENT IMPERVIOUS AREA

28 UD SCS DIMENSIONLESS UNITGRAPH
- TLAG .15 LAG

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

2.	4.	3.	1.	0.	0.	0.	0.	0.	0.

TOTAL RAINFALL = 7.80, TOTAL LOSS = .72, TOTAL EXCESS = 7.08

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 6.	12.00		1.	0.	0.	0.
		(INCHES)	5.681	7.083	7.083	7.083
		(AC-FT)	0.	1.	1.	1.

CUMULATIVE AREA = .00 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1A
FOR PLAN 1, RATIO = .45

TOTAL RAINFALL = 3.50, TOTAL LOSS = .66, TOTAL EXCESS = 2.84

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 3.	12.00		0.	0.	0.	0.
		(INCHES)	2.316	2.836	2.836	2.836
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1A
FOR PLAN 1, RATIO = .68

TOTAL RAINFALL = 5.30, TOTAL LOSS = .70, TOTAL EXCESS = 4.60

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 4.	12.00		1.	0.	0.	0.
		(INCHES)	3.729	4.604	4.604	4.604
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1A
FOR PLAN 1, RATIO = .79

TOTAL RAINFALL = 6.16, TOTAL LOSS = .70, TOTAL EXCESS = 5.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 5.	12.00		1.	0.	0.	0.
		(INCHES)	4.400	5.453	5.453	5.453
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION BAS1A
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = .72, TOTAL EXCESS = 7.08

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 6.	12.00		1.	0.	0.	0.
		(INCHES)	5.681	7.083	7.083	7.083
		(AC-FT)	0.	1.	1.	1.

CUMULATIVE AREA = .00 SQ MI

*** ***

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              **************
              *            *
29 KK         *   COMB1    *
              *            *
              **************

30 KO      OUTPUT CONTROL VARIABLES
               IPRNT          5  PRINT CONTROL
               IPLOT          0  PLOT CONTROL
               QSCAL         0.  HYDROGRAPH PLOT SCALE
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*** ***

```
              **************
              *            *
32 KK         *   POND1    *
              *            *
              **************

               HYDROGRAPH ROUTING DATA

33 RS            STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                   ITYP        ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC    202.00  INITIAL CONDITION
                   X            .00  WORKING R AND D COEFFICIENT

34 SA           AREA         .2          .3

35 SE         ELEVATION    202.00      204.00

36 SS         SPILLWAY
                   CREL      202.00  SPILLWAY CREST ELEVATION
                   SPWID      10.00  SPILLWAY WIDTH
                   COQW        3.20  WEIR COEFFICIENT
                   EXPW        1.50  EXPONENT OF HEAD
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***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.47
ELEVATION	202.00	204.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	.00	.00	.02	.12	.42	.99	1.94	3.35	5.32	7.95
ELEVATION	202.00	202.00	202.01	202.02	202.06	202.10	202.15	202.22	202.30	202.40
OUTFLOW	11.31	15.52	20.66	26.82	34.10	42.59	52.38	63.57	76.25	90.51
ELEVATION	202.50	202.62	202.75	202.89	203.04	203.21	203.39	203.58	203.78	204.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.00	.01	.02	.03	.05	.06	.08	.10	.13
OUTFLOW	.00	.12	.42	.99	1.94	3.35	5.32	7.95	11.31	15.52
ELEVATION	202.00	202.02	202.06	202.10	202.15	202.22	202.30	202.40	202.50	202.62
STORAGE	.16	.19	.23	.27	.31	.36	.41	.47		
OUTFLOW	20.66	26.82	34.10	42.59	52.38	63.57	76.25	90.51		
ELEVATION	202.75	202.89	203.04	203.21	203.39	203.58	203.78	204.00		

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 76. TO 91.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** *** *** *** ***

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = .45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 23.	12.10		4.	1.	1.	1.

```
                                                                    REM4.OH1
                            (INCHES)     1.836        2.238        2.238        2.238
                             (AC-FT)        2.           2.           2.           2.

   PEAK STORAGE    TIME                            MAXIMUM AVERAGE STORAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +  (AC-FT)        (HR)
         0.        12.10                   0.            0.           0.           0.

   PEAK STAGE      TIME                            MAXIMUM AVERAGE STAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (FEET)        (HR)
     202.80        12.10                 202.20       202.07       202.06       202.06

                              CUMULATIVE AREA =       .02 SQ MI

        ***             ***            ***             ***            ***

                              HYDROGRAPH AT STATION      POND1
                                FOR PLAN 1, RATIO =  .68

   PEAK FLOW       TIME                            MAXIMUM AVERAGE FLOW
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)         (HR)
                            (CFS)
 +       40.       12.10                    6.           2.           2.           2.
                            (INCHES)     3.207        3.915        3.915        3.915
                             (AC-FT)        3.           4.           4.           4.

   PEAK STORAGE    TIME                            MAXIMUM AVERAGE STORAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +  (AC-FT)        (HR)
         0.        12.00                   0.            0.           0.           0.

   PEAK STAGE      TIME                            MAXIMUM AVERAGE STAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (FEET)        (HR)
     203.15        12.10                 202.29       202.11       202.09       202.09

                              CUMULATIVE AREA =       .02 SQ MI

        ***             ***            ***             ***            ***

                              HYDROGRAPH AT STATION      POND1
                                FOR PLAN 1, RATIO =  .79

   PEAK FLOW       TIME                            MAXIMUM AVERAGE FLOW
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)         (HR)
                            (CFS)
 +       48.       12.00                    8.           2.           2.           2.
                            (INCHES)     3.873        4.735        4.735        4.735
                             (AC-FT)        4.           5.           5.           5.

   PEAK STORAGE    TIME                            MAXIMUM AVERAGE STORAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +  (AC-FT)        (HR)
         0.        12.00                   0.            0.           0.           0.

   PEAK STAGE      TIME                            MAXIMUM AVERAGE STAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (FEET)        (HR)
     203.31        12.00                 202.33       202.12       202.10       202.10

                              CUMULATIVE AREA =       .02 SQ MI

        ***             ***            ***             ***            ***

                              HYDROGRAPH AT STATION      POND1
                                FOR PLAN 1, RATIO = 1.00

   PEAK FLOW       TIME                            MAXIMUM AVERAGE FLOW
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)         (HR)
                            (CFS)
 +       64.       12.00                   10.           3.           2.           2.
                            (INCHES)     5.157        6.326        6.326        6.326
                             (AC-FT)        5.           6.           6.           6.

   PEAK STORAGE    TIME                            MAXIMUM AVERAGE STORAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +  (AC-FT)        (HR)
         0.        12.00                   0.            0.           0.           0.

   PEAK STAGE      TIME                            MAXIMUM AVERAGE STAGE
                                         6-HR         24-HR        72-HR       29.90-HR
 +   (FEET)        (HR)
     203.59        12.00                 202.40       202.15       202.12       202.12

                              CUMULATIVE AREA =       .02 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

              **************
              *            *
  37 KK       *     BAS2   *          Basin 2 to Pond 2
              *            *
              **************

   8 IN            TIME DATA FOR INPUT TIME SERIES
                       JXMIN          30  TIME INTERVAL IN MINUTES
                       JXDATE    12DEC97  STARTING DATE
                       JXTIME        600  STARTING TIME

                 SUBBASIN RUNOFF DATA

  38 BA            SUBBASIN CHARACTERISTICS
                       TAREA         .00  SUBBASIN AREA

                   PRECIPITATION DATA

  39 PB                STORM        7.80  BASIN TOTAL PRECIPITATION

  40 PI              INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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  44 LS         SCS LOSS RATE
                     STRTL          .13  INITIAL ABSTRACTION
                    CRVNBR        94.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

  45 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .15  LAG

                                        ***

                                    UNIT HYDROGRAPH
                               10 END-OF-PERIOD ORDINATES
              5.      11.       8.       3.       1.       1.       0.       0.       0.       0.

     TOTAL RAINFALL =     7.80, TOTAL LOSS =     .72, TOTAL EXCESS =    7.08

   PEAK FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                          (CFS)
 +     18.       12.00                 3.          1.          1.          1.
                        (INCHES)    5.681       7.083       7.083       7.083
                         (AC-FT)       1.          2.          2.          2.

                          CUMULATIVE AREA =      .00 SQ MI

       ***          ***          ***          ***          ***

                         HYDROGRAPH AT STATION      BAS2
                           FOR PLAN 1, RATIO =  .45

     TOTAL RAINFALL =     3.50, TOTAL LOSS =     .66, TOTAL EXCESS =    2.84

   PEAK FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                          (CFS)
 +      8.       12.00                 1.          0.          0.          0.
                        (INCHES)    2.316       2.836       2.836       2.836
                         (AC-FT)       1.          1.          1.          1.

                          CUMULATIVE AREA =      .00 SQ MI

       ***          ***          ***          ***          ***

                         HYDROGRAPH AT STATION      BAS2
                           FOR PLAN 1, RATIO =  .68

     TOTAL RAINFALL =     5.30, TOTAL LOSS =     .70, TOTAL EXCESS =    4.60

   PEAK FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                          (CFS)
 +     12.       12.00                 2.          1.          0.          0.
                        (INCHES)    3.729       4.604       4.604       4.604
                         (AC-FT)       1.          1.          1.          1.

                          CUMULATIVE AREA =      .00 SQ MI

       ***          ***          ***          ***          ***

                         HYDROGRAPH AT STATION      BAS2
                           FOR PLAN 1, RATIO =  .79

     TOTAL RAINFALL =     6.16, TOTAL LOSS =     .70, TOTAL EXCESS =    5.45

   PEAK FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                          (CFS)
 +     14.       12.00                 2.          1.          1.          1.
                        (INCHES)    4.400       5.453       5.453       5.453
                         (AC-FT)       1.          1.          1.          1.

                          CUMULATIVE AREA =      .00 SQ MI

       ***          ***          ***          ***          ***

                         HYDROGRAPH AT STATION      BAS2
                           FOR PLAN 1, RATIO = 1.00

     TOTAL RAINFALL =     7.80, TOTAL LOSS =     .72, TOTAL EXCESS =    7.08

   PEAK FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                          (CFS)
 +     18.       12.00                 3.          1.          1.          1.
                        (INCHES)    5.681       7.083       7.083       7.083
                         (AC-FT)       1.          2.          2.          2.

                          CUMULATIVE AREA =      .00 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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                 **************
                 *            *
   46 KK         *   COMB2    *
                 *            *
                 **************

   47 KO            OUTPUT CONTROL VARIABLES
                          IPRNT          5  PRINT CONTROL
                          IPLOT          0  PLOT CONTROL
                          QSCAL         0.  HYDROGRAPH PLOT SCALE


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


                 **************
                 *            *
   49 KK         *   POND2    *
                 *            *
                 **************

               HYDROGRAPH ROUTING DATA

   50 RS            STORAGE ROUTING
                          NSTPS          1  NUMBER OF SUBREACHES
                           ITYP       ELEV  TYPE OF INITIAL CONDITION
                         RSVRIC     199.00  INITIAL CONDITION
                              X        .00  WORKING R AND D COEFFICIENT

   51 SA                AREA          .4          .6

   52 SE            ELEVATION      199.00      202.00

   53 SS            SPILLWAY
                           CREL     199.00  SPILLWAY CREST ELEVATION
                          SPWID       5.00  SPILLWAY WIDTH
                           COQW       3.20  WEIR COEFFICIENT
                           EXPW       1.50  EXPONENT OF HEAD

                                                         ***

                                        COMPUTED STORAGE-ELEVATION DATA

         STORAGE        .00      1.59
       ELEVATION     199.00    202.00

                                        COMPUTED OUTFLOW-ELEVATION DATA

         OUTFLOW        .00       .00       .01       .11       .38       .91      1.78      3.08      4.89      7.30
       ELEVATION     199.00    199.00    199.01    199.04    199.08    199.15    199.23    199.33    199.45    199.59

         OUTFLOW      10.39     14.26     18.97     24.63     31.32     39.12     48.11     58.39     70.04     83.14
       ELEVATION     199.75    199.93    200.12    200.33    200.56    200.81    201.08    201.37    201.68    202.00

                                    COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

         STORAGE        .00       .02       .04       .06       .10       .15       .20       .27       .34       .43
         OUTFLOW        .00       .11       .38       .91      1.78      3.08      4.89      7.30     10.39     14.26
       ELEVATION     199.00    199.04    199.08    199.15    199.23    199.33    199.45    199.59    199.75    199.93

         STORAGE        .52       .63       .75       .89      1.04      1.21      1.39      1.59
         OUTFLOW      18.97     24.63     31.32     39.12     48.11     58.39     70.04     83.14
       ELEVATION     200.12    200.33    200.56    200.81    201.08    201.37    201.68    202.00

     ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION      POND2
                      FOR PLAN 1, RATIO =   .45

   PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR         24-HR         72-HR       29.90-HR
 +   (CFS)        (HR)
                                (CFS)
 +      23.      12.20                    5.           1.            1.             1.
                              (INCHES)  1.912        2.359         2.359          2.359
                               (AC-FT)    2.           3.            3.             3.

  PEAK STORAGE    TIME                         MAXIMUM AVERAGE STORAGE
                                       6-HR         24-HR         72-HR       29.90-HR
 +  (AC-FT)       (HR)
        1.       12.20                    0.           0.            0.             0.

   PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
                                       6-HR         24-HR         72-HR       29.90-HR
 +   (FEET)       (HR)
    200.26       12.20                 199.39       199.15        199.12         199.12

                             CUMULATIVE AREA =      .02 SQ MI


     ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION      POND2
                      FOR PLAN 1, RATIO =   .68

   PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR         24-HR         72-HR       29.90-HR
 +   (CFS)        (HR)
                                (CFS)
 +      41.      12.20                    8.           3.            2.             2.
                              (INCHES)  3.290        4.054         4.054          4.054
                               (AC-FT)    4.           5.            5.             5.

  PEAK STORAGE    TIME                         MAXIMUM AVERAGE STORAGE
                                       6-HR         24-HR         72-HR       29.90-HR
    (AC-FT)       (HR)
        1.       12.20                    0.           0.            0.             0.

   PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
                                       6-HR         24-HR         72-HR       29.90-HR
 +   (FEET)       (HR)
    200.88       12.20                 199.56       199.21        199.17         199.17

                             CUMULATIVE AREA =      .02 SQ MI


     ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION      POND2
                      FOR PLAN 1, RATIO =   .79
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                                                                                         REM4.OH1
   PEAK FLOW      TIME                                MAXIMUM AVERAGE FLOW
                                          6-HR          24-HR          72-HR          29.90-HR
+   (CFS)         (HR)
                               (CFS)
+       50.      12.20                      10.             3.             2.              2.
                            (INCHES)      3.957          4.880          4.880           4.880
                             (AC-FT)         5.             6.             6.              6.

   PEAK STORAGE   TIME                                MAXIMUM AVERAGE STORAGE
                                          6-HR          24-HR          72-HR          29.90-HR
+  (AC-FT)        (HR)
        1.       12.20                       0.             0.             0.              0.

   PEAK STAGE     TIME                                MAXIMUM AVERAGE STAGE
                                          6-HR          24-HR          72-HR          29.90-HR
+  (FEET)         (HR)
    201.15       12.20                   199.63         199.24         199.19          199.19

                            CUMULATIVE AREA =      .02 SQ MI

        ***            ***             ***            ***            ***

                             HYDROGRAPH AT STATION     POND2
                               FOR PLAN 1, RATIO = 1.00

   PEAK FLOW      TIME                                MAXIMUM AVERAGE FLOW
                                          6-HR          24-HR          72-HR          29.90-HR
+   (CFS)         (HR)
                               (CFS)
+       67.      12.20                      13.             4.             3.              3.
                            (INCHES)      5.240          6.479          6.479           6.479
                             (AC-FT)         6.             8.             8.              8.

   PEAK STORAGE   TIME                                MAXIMUM AVERAGE STORAGE
                                          6-HR          24-HR          72-HR          29.90-HR
+  (AC-FT)        (HR)
        1.       12.20                       0.             0.             0.              0.

   PEAK STAGE     TIME                                MAXIMUM AVERAGE STAGE
                                          6-HR          24-HR          72-HR          29.90-HR
+  (FEET)         (HR)
    201.61       12.20                   199.76         199.29         199.24          199.24

                            CUMULATIVE AREA =      .02 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

               ***************
               *             *
  54 KK        *    BAS3     *              Basin 3 to Pond 3
               *             *
               ***************

   8 IN             TIME DATA FOR INPUT TIME SERIES
                         JXMIN          30  TIME INTERVAL IN MINUTES
                        JXDATE     12DEC97  STARTING DATE
                        JXTIME         600  STARTING TIME

                  SUBBASIN RUNOFF DATA

  55 BA             SUBBASIN CHARACTERISTICS
                         TAREA         .00  SUBBASIN AREA

                    PRECIPITATION DATA

  56 PB                  STORM        7.80  BASIN TOTAL PRECIPITATION

  57 PI                INCREMENTAL PRECIPITATION PATTERN
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .01      .01      .01      .01      .01
                         .01      .01      .01      .01      .01      .08      .08      .08      .08      .08
                         .01      .01      .01      .01      .01      .01      .01      .01      .01      .01
                         .01      .01      .01      .01      .01      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                         .00      .00      .00      .00      .00      .00      .00      .00      .00      .00

  61 LS             SCS LOSS RATE
                        STRTL          .13  INITIAL ABSTRACTION
                       CRVNBR        94.00  CURVE NUMBER
                        RTIMP          .00  PERCENT IMPERVIOUS AREA

  62 UD             SCS DIMENSIONLESS UNITGRAPH
                         TLAG          .15  LAG

                                                      ***

                                                  UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
             1.        3.        2.        1.        0.        0.        0.        0.        0.        0.

   TOTAL RAINFALL =     7.80, TOTAL LOSS =        .72, TOTAL EXCESS =      7.08

  PEAK FLOW      TIME                                 MAXIMUM AVERAGE FLOW
                                          6-HR          24-HR          72-HR          29.90-HR
+   (CFS)         (HR)
                               (CFS)
+        5.      12.00                       1.             0.             0.              0.
                            (INCHES)      5.681          7.083          7.083           7.083
                             (AC-FT)         0.             0.             0.              0.

                            CUMULATIVE AREA =      .00 SQ MI
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***          ***          ***          ***          ***

                 HYDROGRAPH AT STATION     BAS3
                  FOR PLAN 1, RATIO =  .45

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    .66, TOTAL EXCESS =    2.84

  PEAK FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      29.90-HR
+   (CFS)       (HR)
                        (CFS)
+      2.      12.00                 0.          0.          0.          0.
                      (INCHES)     2.316       2.836       2.836       2.836
                       (AC-FT)       0.          0.          0.          0.

                      CUMULATIVE AREA =      .00 SQ MI

***          ***          ***          ***          ***

                 HYDROGRAPH AT STATION     BAS3
                  FOR PLAN 1, RATIO =  .68

   TOTAL RAINFALL =    5.30, TOTAL LOSS =    .70, TOTAL EXCESS =    4.60

  PEAK FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      29.90-HR
+   (CFS)       (HR)
                        (CFS)
+      3.      12.00                 1.          0.          0.          0.
                      (INCHES)     3.729       4.604       4.604       4.604
                       (AC-FT)       0.          0.          0.          0.

                      CUMULATIVE AREA =      .00 SQ MI

***          ***          ***          ***          ***

                 HYDROGRAPH AT STATION     BAS3
                  FOR PLAN 1, RATIO =  .79

   TOTAL RAINFALL =    6.16, TOTAL LOSS =    .70, TOTAL EXCESS =    5.45

  PEAK FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      29.90-HR
+   (CFS)       (HR)
                        (CFS)
+      4.      12.00                 1.          0.          0.          0.
                      (INCHES)     4.400       5.453       5.453       5.453
                       (AC-FT)       0.          0.          0.          0.

                      CUMULATIVE AREA =      .00 SQ MI

***          ***          ***          ***          ***

                 HYDROGRAPH AT STATION     BAS3
                  FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =    7.80, TOTAL LOSS =    .72, TOTAL EXCESS =    7.08

  PEAK FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      29.90-HR
+   (CFS)       (HR)
                        (CFS)
+      5.      12.00                 1.          0.          0.          0.
                      (INCHES)     5.681       7.083       7.083       7.083
                       (AC-FT)       0.          0.          0.          0.

                      CUMULATIVE AREA =      .00 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  63 KK     *   COMB3    *
            *            *
            **************

  64 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  66 KK     *   POND3    *
            *            *
            **************

              HYDROGRAPH ROUTING DATA

  67 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC      195.00  INITIAL CONDITION
                           X         .00  WORKING R AND D COEFFICIENT

  68 SA                 AREA          .3          .5

  69 SE            ELEVATION      195.00      198.00

  70 SS            SPILLWAY
                        CREL      195.00  SPILLWAY CREST ELEVATION
                       SPWID        5.00  SPILLWAY WIDTH
                        COQW        3.20  WEIR COEFFICIENT
                        EXPW        1.50  EXPONENT OF HEAD

                                                 ***

                                   COMPUTED STORAGE-ELEVATION DATA

         STORAGE         .00        1.19
```

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	.00	.00	.01	.11	.38	.91	1.78	3.08	4.89	7.30
ELEVATION	195.00	195.00	195.01	195.04	195.08	195.15	195.23	195.33	195.45	195.59
OUTFLOW	10.39	14.26	18.97	24.63	31.32	39.12	48.11	58.39	70.04	83.14
ELEVATION	195.75	195.93	196.12	196.33	196.56	196.81	197.08	197.37	197.68	198.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.01	.03	.05	.07	.10	.14	.19	.24	.30
OUTFLOW	.00	.11	.38	.91	1.78	3.08	4.89	7.30	10.39	14.26
ELEVATION	195.00	195.04	195.08	195.15	195.23	195.33	195.45	195.59	195.75	195.93
STORAGE	.37	.45	.54	.65	.76	.89	1.03	1.19		
OUTFLOW	18.97	24.63	31.32	39.12	48.11	58.39	70.04	83.14		
ELEVATION	196.12	196.33	196.56	196.81	197.08	197.37	197.68	198.00		

*** *** *** *** ***

HYDROGRAPH AT STATION POND3
FOR PLAN 1, RATIO = .45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 20.	12.40		5.	2.	1.	1.
		(INCHES)	1.919	2.381	2.381	2.381
		(AC-FT)	2.	3.	3.	3.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
0.	12.40	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
196.17	12.40	195.42	195.16	195.13	195.13

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION POND3
FOR PLAN 1, RATIO = .68

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 38.	12.30		9.	3.	2.	2.
		(INCHES)	3.300	4.080	4.080	4.080
		(AC-FT)	4.	5.	5.	5.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
1.	12.30	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
196.78	12.30	195.59	195.23	195.18	195.18

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION POND3
FOR PLAN 1, RATIO = .79

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 47.	12.30		10.	3.	3.	3.
		(INCHES)	3.967	4.907	4.907	4.907
		(AC-FT)	5.	6.	6.	6.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
1.	12.30	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
197.05	12.30	195.67	195.25	195.20	195.20

CUMULATIVE AREA = .02 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION POND3
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 64.	12.30		14.	4.	3.	3.
		(INCHES)	5.250	6.507	6.507	6.507
		(AC-FT)	7.	8.	8.	8.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
1.	12.30	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
197.51	12.30	195.80	195.31	195.25	195.25

CUMULATIVE AREA = .02 SQ MI

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIO 1 .45	RATIO 2 .68	RATIO 3 .79	RATIO 4 1.00
					RATIOS APPLIED TO PRECIPITATION			
HYDROGRAPH AT +	BAS1	.02	1	FLOW	21.	38.	46.	60.
				TIME	12.00	12.00	12.00	12.00
HYDROGRAPH AT +	BAS1A	.00	1	FLOW	3.	4.	5.	6.
				TIME	12.00	12.00	12.00	12.00
2 COMBINED AT +	COMB1	.02	1	FLOW	24.	42.	50.	67.
				TIME	12.00	12.00	12.00	12.00
ROUTED TO +	POND1	.02	1	FLOW	23.	40.	48.	64.
				TIME	12.10	12.10	12.00	12.00
			** PEAK STAGES IN FEET **					
			1	STAGE	202.80	203.15	203.31	203.59
				TIME	12.10	12.10	12.00	12.00
HYDROGRAPH AT +	BAS2	.00	1	FLOW	8.	12.	14.	18.
				TIME	12.00	12.00	12.00	12.00
2 COMBINED AT +	COMB2	.02	1	FLOW	30.	52.	62.	83.
				TIME	12.00	12.00	12.00	12.00
ROUTED TO +	POND2	.02	1	FLOW	23.	41.	50.	67.
				TIME	12.20	12.20	12.20	12.20
			** PEAK STAGES IN FEET **					
			1	STAGE	200.26	200.88	201.15	201.61
				TIME	12.20	12.20	12.20	12.20
HYDROGRAPH AT +	BAS3	.00	1	FLOW	2.	3.	4.	5.
				TIME	12.00	12.00	12.00	12.00
2 COMBINED AT +	COMB3	.02	1	FLOW	24.	43.	53.	71.
				TIME	12.20	12.20	12.20	12.10
ROUTED TO +	POND3	.02	1	FLOW	20.	38.	47.	64.
				TIME	12.40	12.30	12.30	12.30
			** PEAK STAGES IN FEET **					
			1	STAGE	196.17	196.78	197.05	197.51
				TIME	12.40	12.30	12.30	12.30

*** NORMAL END OF HEC-1 ***

Remington 10

Input File: rem10.inp

Date: 09-12-2002
Time: 17:22:12

Storm Frequency = 2-Year

* * * H Y D R O L O G Y * * *

Node to		Tributary Area							Hydrology Summation				Conduit Data				
Node		C	Area (AC)	Slope (%)	Length (Ft)	TC(0) (Min)	I(0) (In/Hr)	Q(0) (CFS)	TC (Min)	I (In/Hr)	Q (CFS)	Sum Q (CFS)	Size	Velocity (Ft/Sec)	Length (Ft)	TT (Min)	TT+TC (Min)
200	190	.50	1.19	.00	.0	15.00	3.83	2.30	15.00	3.83	2.30	2.30	15"	1.87	155.00	1.38	16.38
195	190	.57	.52	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	15"	.49	35.00	1.19	16.19
190	180	.57	.97	.00	.0	15.00	3.83	.90	16.38	3.68	.86	3.76	15"	3.06	240.00	1.31	17.68
185	180	.57	.70	.00	.0	15.00	3.83	.90	15.00	3.83	.90	.90	15"	.73	35.00	.80	15.80
180	140	.57	1.72	.00	.0	15.00	3.83	1.60	17.68	3.54	1.48	6.10	18"	3.45	135.00	.65	18.34
170	160	.50	.31	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	15"	.49	80.00	2.73	17.73
160	150	.50	.47	.00	.0	15.00	3.83	.90	17.73	3.54	.83	1.43	15"	1.17	240.00	3.43	21.15
150	140	.50	.61	.00	.0	15.00	3.83	1.20	21.15	3.24	1.02	2.45	18"	1.38	125.00	1.50	22.66
145	140	.57	.11	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	18"	.34	35.00	1.72	16.72
140	120	.57	.18	.00	.0	15.00	3.83	1.30	18.34	3.48	1.18	9.83	24"	3.13	130.00	.69	19.03
130	120	.50	2.84	.00	.0	15.00	3.83	5.40	15.00	3.83	5.40	5.40	18"	3.06	125.00	.68	15.68
125	120	.57	.11	.00	.0	15.00	3.83	.50	15.00	3.83	.50	.50	18"	.28	35.00	2.06	17.06
120	110	.57	.22	.00	.0	15.00	3.83	1.10	19.03	3.42	.98	16.21	30"	3.30	195.00	.98	20.01
115	110	.57	.16	.00	.0	15.00	3.83	.70	15.00	3.83	.70	.70	18"	.40	35.00	1.47	16.47
110	100	.57	.34	.00	.0	15.00	3.83	2.50	20.01	3.33	2.18	19.02	30"	3.88	50.00	.22	20.23

Remington 10

Input File: rem10.inp

Date: 09-12-2002
Time: 17:22:12

Storm Frequency = 2-Year

* * * H Y D R A U L I C S * * *

Node	Hyd-Slope (Ft/Ft)	Friction (Ft)	Bend (Ft)	Transition (Ft)	Manhole (Ft)	Deflection (Ft)	Junction (Ft)	Total (Ft)	Hyd-Gl Elevation	Desired Elevation	Diff. (Ft)
100	.00000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	202.8000	202.8000	.00
110	.00127	.0636	.0000	.0064	.0000	.4768	.1319	.6787	203.4787	205.5000	2.02
115	.00003	.0009	.0000	.0000	.0000	.0000	.0000	.0009	203.4796	205.5000	2.02
120	.00092	.1802	.0000	.0017	.0000	.3419	.0526	.5764	204.0551	207.1000	3.04
125	.00001	.0005	.0000	.0000	.0000	.0000	.0000	.0005	204.0556	207.1000	3.04
130	.00156	.1955	.0000	.0000	.0000	.0000	.0000	.1955	204.2506	209.6000	5.35
140	.00112	.1453	.0000	.0065	.0000	.4633	.0954	.7105	204.7655	208.2000	3.43
145	.00002	.0007	.0000	.0000	.0000	.0000	.0000	.0007	204.7662	208.2000	3.43
150	.00032	.0401	.0000	.0009	.0000	.0028	.0372	.0811	204.8466	206.1000	1.25
160	.00029	.0698	.0000	.0017	.0000	.0005	.0358	.1078	204.9545	207.3000	2.35
170	.00005	.0041	.0000	.0000	.0000	.0000	.0000	.0041	204.9585	209.1000	4.14
180	.00199	.2690	.0000	.0039	.0000	.3279	.1941	.7949	205.5605	209.5000	3.94
185	.00011	.0040	.0000	.0000	.0000	.0000	.0000	.0040	205.5645	209.5000	3.94
190	.00201	.4814	.0000	.0091	.0000	.1368	.1834	.8107	206.3712	211.4000	5.03
195	.00005	.0018	.0000	.0000	.0000	.0000	.0000	.0018	206.3730	211.4000	5.03
200	.00075	.1163	.0000	.0000	.0000	.0000	.0000	.1163	206.4874	208.3000	1.81

Remington 12

Input File: rem12.inp
**Analysis with 100-yr flow to node 130

Date: 09-12-2002
Time: 17:29:41

Storm Frequency = 2-Year

* * * H Y D R O L O G Y * * *

Node	to Node	C	Tributary Area: Area (Ac)	Slope (%)	Length (Ft)	TC(0) (Min)	I(0) (In/Hr)	Q(0) (CFS)	Hydrology Summation: TC (Min)	I (In/Hr)	Q (CFS)	Sum Q (CFS)	Conduit Data: Size	Velocity (Ft/Sec)	Length (Ft)	TT (Min)	TT+TC (Min)
200	190	.50	1.19	.00	.0	15.00	3.83	2.30	15.00	3.83	2.30	2.30	15"	1.87	155.00	1.38	16.38
195	190	.57	.52	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	15"	.49	35.00	1.19	16.19
190	180	.57	.97	.00	.0	15.00	3.83	.90	16.38	3.68	.86	3.76	15"	3.06	240.00	1.31	17.68
185	180	.57	.70	.00	.0	15.00	3.83	.90	15.00	3.83	.90	.90	15"	.73	35.00	.80	15.80
180	140	.57	1.72	.00	.0	15.00	3.83	1.60	17.68	3.54	1.48	6.10	18"	3.45	135.00	.65	18.34
170	160	.50	.31	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	15"	.49	80.00	2.73	17.73
160	150	.50	.47	.00	.0	15.00	3.83	.90	17.73	3.54	.83	1.43	15"	1.17	240.00	3.43	21.15
150	140	.50	.61	.00	.0	15.00	3.83	1.20	21.15	3.24	1.02	2.45	18"	1.38	125.00	1.50	22.66
145	140	.57	.11	.00	.0	15.00	3.83	.60	15.00	3.83	.60	.60	18"	.34	35.00	1.72	16.72
140	120	.57	.18	.00	.0	15.00	3.83	1.30	18.34	3.48	1.18	9.83	24"	3.13	130.00	.69	19.03
130	120	.50	2.84	.00	.0	15.00	3.83	16.00	15.00	3.83	16.00	16.00	18"	9.05	125.00	.23	15.23
125	120	.57	.11	.00	.0	15.00	3.83	.50	15.00	3.83	.50	.50	18"	.28	35.00	2.06	17.06
120	110	.57	.22	.00	.0	15.00	3.83	1.10	19.03	3.42	.98	25.67	30"	5.23	195.00	.62	19.65
115	110	.57	.16	.00	.0	15.00	3.83	.70	15.00	3.83	.70	.70	18"	.40	35.00	1.47	16.47
110	100	.57	.34	.00	.0	15.00	3.83	2.50	19.65	3.36	2.20	28.51	30"	5.81	50.00	.14	19.79

Remington 12

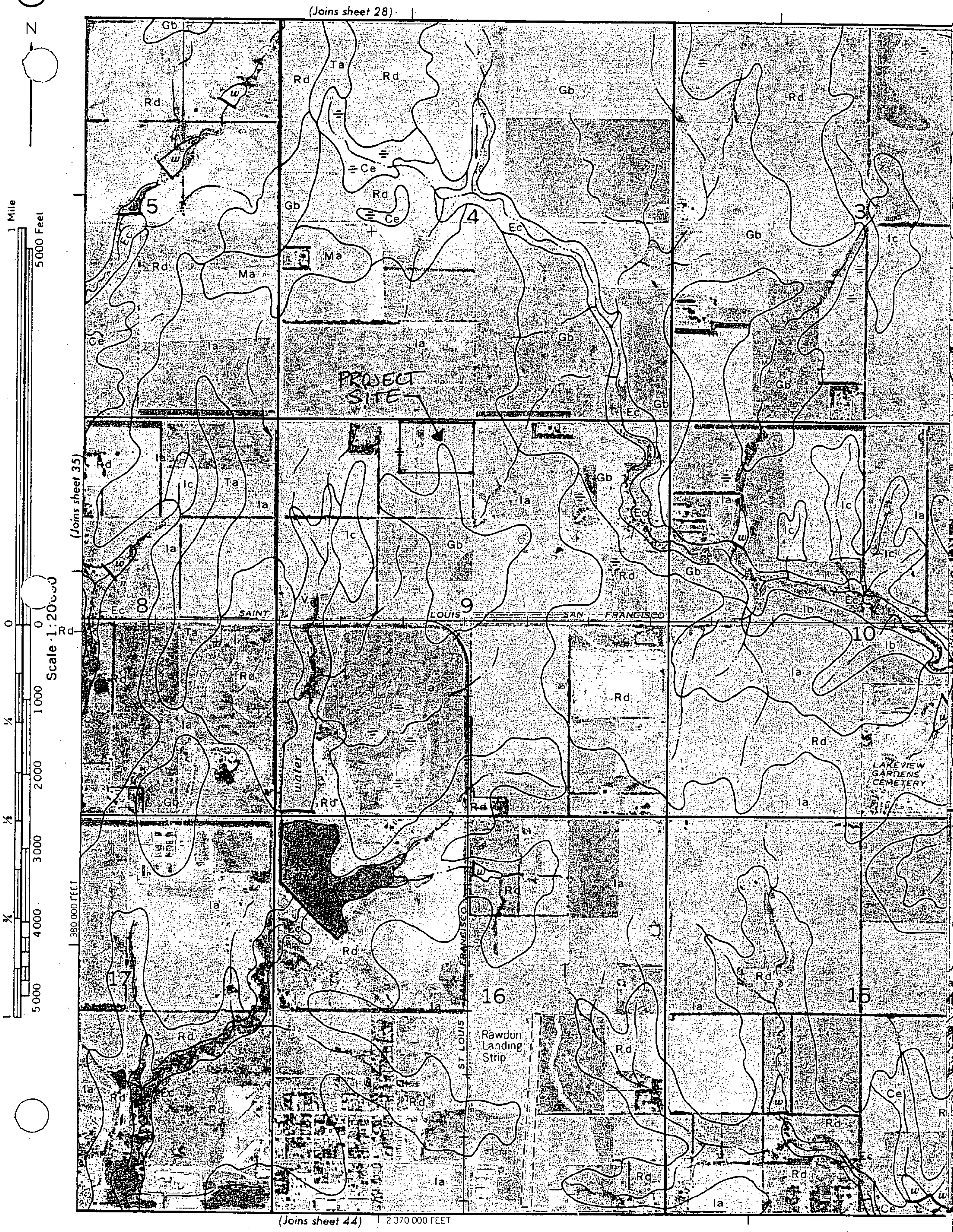
Input File: rem12.inp
**Analysis with 100-yr flow to node 130

Date: 09-12-2002
Time: 17:29:41

Storm Frequency = 2-Year

* * * H Y D R A U L I C S * * *

Node	Hyd-Slope (Ft/Ft)	Friction (Ft)	Bend (Ft)	Transition (Ft)	Manhole (Ft)	Deflection (Ft)	Junction (Ft)	Total (Ft)	Hyd-Gl Elevation	Desired Elevation	Diff. (Ft)
100	.00000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	202.8000	202.8000	.00
110	.00286	.1430	.0000	.0099	.0000	1.1962	.2101	1.5591	204.3591	205.5000	1.14
115	.00003	.0009	.0006	.0000	.0000	.0000	.0000	.0016	204.3606	205.5000	1.14
120	.00232	.4521	.0000	.1696	.0000	.0112	-.2625	.3704	204.7294	207.1000	2.37
125	.00001	.0005	.0000	.0000	.0000	.0000	.0000	.0005	204.7299	207.1000	2.37
130	.01373	1.7160	.0000	.0000	.0000	.0000	.0000	1.7160	206.4455	209.6000	3.15
140	.00112	.1453	.0000	.0065	.0000	.4633	.0954	.7105	205.4399	208.2000	2.76
145	.00002	.0007	.0000	.0000	.0000	.0000	.0000	.0007	205.4406	208.2000	2.76
150	.00032	.0401	.0000	.0009	.0000	.0028	.0372	.0811	205.5210	206.1000	.58
160	.00029	.0698	.0000	.0017	.0000	.0005	.0358	.1078	205.6288	207.3000	1.67
170	.00005	.0041	.0000	.0000	.0000	.0000	.0000	.0041	205.6329	209.1000	3.47
180	.00199	.2690	.0000	.0039	.0000	.3279	.1941	.7949	206.2348	209.5000	3.27
185	.00011	.0040	.0000	.0000	.0000	.0000	.0000	.0040	206.2388	209.5000	3.26
190	.00201	.4814	.0000	.0091	.0000	.1368	.1834	.8107	207.0455	211.4000	4.35
195	.00005	.0018	.0000	.0000	.0000	.0000	.0000	.0018	207.0473	211.4000	4.35
200	.00075	.1163	.0000	.0000	.0000	.0000	.0000	.1163	207.1618	208.3000	1.14


(Joins sheet 28)
N
1 Mile
5000 Feet
Scale 1:20000
0 1000 2000 3000 4000 5000
0 ¼ ½ ¾ 1
(Joins sheet 35)
PROJECT SITE
5
4
3
8
9
10
17
16
15
SAINT LOUIS SAN FRANCISCO
water
LAKEVIEW GARDENS CEMETERY
ST LOUIS SAN FRANCISCO
Rawdon Landing Strip
380 000 FEET
(Joins sheet 44)
2 370 000 FEET

SOIL LEGEND

SYMBOL	NAME
Aa	Albion–Shellabarger sandy loams, 1 to 4 percent slopes
Ab	Albion and Shellabarger sandy loams, 7 to 15 percent slopes
Ba	Blanket silt loam, 0 to 1 percent slopes
Bb	Blanket silt loam, 1 to 3 percent slopes
Ca	Canadian fine sandy loam
Cb	Canadian–Waldeck fine sandy loams
Cc	Carwile fine sandy loam
Cd	Clark–Ost clay loams, 1 to 4 percent slopes
Ce	Clime silty clay, 3 to 6 percent slopes
Ea	Elandco silt loam
Eb	Elandco silt loam, occasionally flooded
Ec	Elandco silt loam, frequently flooded
Fa	Farnum loam, 0 to 1 percent slopes
Fb	Farnum loam, 1 to 3 percent slopes
Fc	Farnum loam, sandy substratum, 0 to 1 percent slopes
Ga	Goessel silty clay, 0 to 1 percent slopes
Gb	Goessel silty clay, 1 to 2 percent slopes
Ia	Irwin silty clay loam, 1 to 3 percent slopes
Ib	Irwin silty clay loam, 3 to 6 percent slopes
Ic	Irwin silty clay loam, 2 to 6 percent slopes, eroded
La	Lesho loam
Lb	Lincoln soils
Ma	Milan loam, 1 to 3 percent slopes
Mb	Milan loam, 3 to 6 percent slopes
Mc	Milan clay loam, 2 to 6 percent slopes, eroded
Na	Naron fine sandy loam
Oc	Owens clay loam, 1 to 3 percent slopes
Od	Owens–Rock outcrop complex, 3 to 10 percent slopes
Pa	Pits
Pb	Plevna fine sandy loam
Pc	Pratt loamy fine sand, undulating
Pd	Pratt–Tivoli complex, rolling
Ra	Renfrow silty clay loam, 1 to 3 percent slopes
Rb	Renfrow silty clay loam, 3 to 6 percent slopes
Rc	Renfrow–Owens clay loams, 1 to 4 percent slopes
Rd	Rosehill silty clay, 1 to 3 percent slopes
Sa	Shellabarger sandy loam, 1 to 3 percent slopes
Sb	Shellabarger sandy loam, 3 to 6 percent slopes
Sc	Shellabarger sandy loam, 3 to 6 percent slopes, eroded
Ta	Tabler silty clay loam
Tb	Tabler–Drummond complex
Ua	Urban land–Canadian complex
Ub	Urban land–Elandco complex
Uc	Urban land–Farnum complex, 0 to 3 percent slopes
Ud	Urban land–Irwin complex, 1 to 3 percent slopes
Ue	Urban land–Tabler complex
Va	Vanoss silt loam, 0 to 1 percent slopes
Vb	Vanoss silt loam, 1 to 3 percent slopes
Vc	Vanoss silt loam, 3 to 6 percent slopes
Vd	Vanoss silt loam, 3 to 6 percent slopes, eroded
Ve	Vernon sandy loam, 1 to 3 percent slopes
Vf	Vernon sandy loam, 3 to 6 percent slopes
Wa	Waldeck sandy loam
Wb	Waurika silt loam

County	Expected 24-hour Storm Rainfall in Inches — Storm Frequency in Years: 100	50	25	10	5	2	Normal Annual Precipitation Inches
Pawnee	6.6	6.0	5.2	4.5	3.7	2.8	23.3
Phillips	6.0	5.5	4.8	4.1	3.4	2.5	23.6
Pottawatomie	7.5	6.6	5.9	5.1	4.3	3.4	33.6
Pratt	7.2	6.4	5.6	4.8	4.1	3.0	24.6
Rawlins	5.5	5.0	4.3	3.6	3.1	2.3	21.0
Reno	7.4	6.6	5.8	5.0	4.2	3.2	27.7
Republic	6.8	6.0	5.4	4.6	3.9	2.9	28.6
Rice	7.3	6.4	5.6	4.8	4.1	3.0	26.6
Riley	7.4	6.5	5.8	5.1	4.3	3.3	33.5
Rooks	6.1	5.7	4.9	4.1	3.4	2.5	23.9
Rush	6.5	5.9	5.0	4.3	3.6	2.7	23.3
Russell	6.7	5.9	5.2	4.4	3.7	2.8	26.8
Saline	7.3	6.4	5.7	4.9	4.1	3.1	28.4
Scott	5.7	5.3	4.5	3.8	3.2	2.4	20.2
Sedgwick	7.8	7.0	6.1	5.3	4.5	3.5	30.6
Seward	6.0	5.7	4.8	4.2	3.5	2.6	19.8
Shawnee	7.8	6.8	6.1	5.3	4.5	3.5	34.7
Sheridan	5.7	5.3	4.5	3.8	3.2	2.4	21.3
Sherman	5.3	4.8	4.2	3.5	3.0	2.2	16.7
Smith	6.3	5.7	5.0	4.2	3.5	2.6	24.4
Stafford	7.1	6.2	5.5	4.7	4.0	2.9	25.1
Stanton	5.6	5.2	4.5	3.8	3.2	2.4	15.8
Stevens	5.9	5.5	4.7	4.1	3.4	2.5	19.7
Sumner	8.0	7.1	6.2	5.4	4.6	3.6	34.0

(3 pages)

ATTACHMENT D

DRAINAGE CRITERIA

CITY OF WICHITA, KANSAS

RECOMMENDED RUNOFF COEFFICIENTS FOR RATIONAL METHOD AND PERCENT IMPERVIOUS FOR UNIT HYDROGRAPH METHOD

Land Use or Surface Characteristics	Percent Impervious	Frequency 2	5	10	100
1. Business:					
Downtown Areas	95	0.84	0.85	0.87	0.91
Neighborhood Areas	70	0.68	0.69	0.73	0.80
2. Residential:					
Single Family (Soil Group D)					
1/8 Acre	50	0.57	0.61	0.66	0.79
1/4 Acre	38	0.50	0.54	0.62	0.76
1/3 Acre	30	0.46	0.50	0.59	0.73
1/2 Acre	25	0.42	0.48	0.56	0.72
3/4 Acre	22	0.42	0.46	0.55	0.71
1 Acre	20	0.41	0.45	0.54	0.71
Multi-Family (Soil Group D)					
Multi-Unit (detached)	60	0.62	0.66	0.72	0.82
Multi-Unit (attached)	65	0.64	0.68	0.73	0.83
Apartments	75	0.70	0.73	0.79	0.86
Single Family (Soil Group C)					
1/8 Acre	50	0.55	0.58	0.64	0.73
1/4 Acre	38	0.48	0.51	0.57	0.68
1/3 Acre	30	0.43	0.46	0.53	0.65
1/2 Acre	25	0.40	0.43	0.50	0.63
3/4 Acre	22	0.39	0.42	0.49	0.62
1 Acre	20	0.37	0.40	0.48	0.61
Multi-Family (Soil Group C)					
Multi-Unit (detached)	60	0.60	0.63	0.69	0.77
Multi-Unit (attached)	65	0.63	0.66	0.71	0.79
Apartments	75	0.68	0.72	0.77	0.83
Single-Family (Soil Group B)					
1/8 Acre	50	0.52	0.54	0.59	0.67
1/4 Acre	38	0.44	0.46	0.52	0.61
1/3 Acre	30	0.39	0.41	0.47	0.57
1/2 Acre	25	0.36	0.38	0.44	0.54
3/4 Acre	22	0.34	0.36	0.42	0.52
1 Acre	20	0.33	0.35	0.40	0.51
Multi-Family (Soil Group B)					
Multi-Unit (detached)	60	0.58	0.60	0.65	0.72
Multi-Unit (attached)	65	0.61	0.64	0.68	0.75
Apartments	75	0.67	0.70	0.74	0.80

Land Use or Surface Characteristics	Percent Impervious	Frequency 2	5	10	25	100
Single Family (Soil Group A)						
1/8 Acre	50	0.47	0.50	0.54		0.60
1/4 Acre	38	0.39	0.41	0.45		0.52
1/3 Acre	30	0.33	0.35	0.39		0.47
1/2 Acre	25	0.30	0.31	0.35		0.44
3/4 Acre	22	0.28	0.29	0.33		0.42
1 Acre	20	0.26	0.28	0.32		0.40
Multi-Family (Soil Group A)						
Multi-Unit (detached)	60	0.55	0.57	0.61		0.67
Multi-Unit (attached)	65	0.58	0.60	0.64		0.70
Apartments	75	0.65	0.68	0.72		0.77
3. Industrial:						
Light Areas	70	0.68	0.69	0.73		0.80
Heavy Areas	80	0.74	0.76	0.79		0.84
4. Playgrounds:	15	0.33	0.35	0.42		0.55
Schools:	40	0.49	0.51	0.56		0.66
Railroad Yard Areas:	30	0.43	0.45	0.50		0.62
7. Undeveloped Urban Areas:						
Offsite Flow Analysis (when land use not defined)	45	0.52	0.54	0.59		0.68
8. Streets:						
Paved	99	0.87	0.88	0.90		0.93
Gravel	00	0.24	0.26	0.33		0.48
9. Drive, Parking Lots and Walks:	96	0.87	0.87	0.88		0.89
10. Roofs:	90	0.80	0.85	0.90		0.93
11. Urban Lawn Areas (See Note No. 1 below):						
Soil Group A						
Slope less than 1%	00	0.08	0.09	0.13		0.23
Slope 1% to 4%	00	0.12	0.13	0.17		0.27
Slope more than 4%	00	0.16	0.17	0.21		0.31
Soil Group B						
Slope less than 1%	00	0.16 0.26	0.18	0.24		0.37
Slope 1% to 4%	00	0.20	0.22	0.28		0.41
Slope more than 4%	00	0.24	0.26	0.32		0.45
Soil Group C						
Slope less than 1%	00	0.24	0.27	0.35		0.51
Slope 1% to 4%	00	0.26	0.29	0.37	0.40	0.53
Slope more than 4%.	00	0.28	0.31	0.39		0.55

Land Use or Surface Characteristics	Percent Impervious	Frequency 2	5	10	100
Soil Group D					
Slope less than 1%	00	0.28	0.33	0.43	0.63
Slope 1% to 4%	00	0.30	0.35	0.45	0.65
Slope more than 4%	00	0.32	0.37	0.47	0.67

Note No. 1: Coefficients shown in the above table are for pervious open space areas with thick turf which includes pervious areas in parks and cemeteries. Coefficients shown above must be increased 0.02 for use with agricultural pasture areas. Coefficients shown above must be reduced by 0.04 for use with agricultural cultivated areas. Group A soils are well-drained, coarse textured sands with high infiltration rates. Group B soils are moderately well-drained, moderately coarse textured soils with moderate infiltration rates. Group C soils are moderately poor-drained, moderately fine textured soils with slow infiltration rates. Group D soils are poor-drained, fine textured soils with very slow infiltration rates.

GENERAL NOTE: These Rational Formula Coefficients may not be valid for large basins.

RAINFALL INTENS] ABLE

SEDGWICK COUNTY KANSAS
(revised June 1997)

This table contains average rainfall intensities in inches per hour.

DURATION, HR:MIN	1 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
			RETURN PERIOD				
0:05	4.91	5.64	6.64	7.38	8.48	9.34	10.20
0:06	4.62	5.34	6.33	7.07	8.15	9.00	9.84
0:07	4.38	5.09	6.08	6.80	7.86	8.69	9.52
0:08	4.17	4.87	5.85	6.56	7.60	8.41	9.22
0:09	4.00	4.68	5.63	6.33	7.34	8.14	8.93
0:10	3.84	4.50	5.43	6.11	7.10	7.87	8.64
0:11	3.70	4.34	5.25	5.90	6.86	7.61	8.36
0:12	3.56	4.19	5.07	5.71	6.64	7.36	8.09
0:13	3.44	4.05	4.91	5.53	6.43	7.14	7.84
0:14	3.33	3.92	4.76	5.36	6.24	6.92	7.61
0:15	3.22	3.80	4.62	5.21	6.06	6.73	7.40
0:16	3.12	3.69	4.49	5.07	5.91	6.56	7.21
0:17	3.03	3.58	4.37	4.94	5.76	6.40	7.04
0:18	2.94	3.48	4.26	4.82	5.63	6.26	6.88
0:19	2.85	3.39	4.16	4.71	5.50	6.12	6.74
0:20	2.77	3.30	4.06	4.60	5.38	5.99	6.60
0:21	2.70	3.22	3.97	4.50	5.27	5.87	6.47
0:22	2.63	3.14	3.88	4.41	5.17	5.76	6.35
0:23	2.56	3.07	3.80	4.32	5.07	5.65	6.23
0:24	2.50	3.00	3.72	4.23	4.97	5.54	6.12
0:25	2.44	2.93	3.64	4.15	4.88	5.44	6.01
0:26	2.38	2.87	3.57	4.07	4.79	5.35	5.90
0:27	2.33	2.81	3.50	4.00	4.70	5.26	5.80
0:28	2.27	2.75	3.44	3.92	4.62	5.17	5.71
0:29	2.23	2.69	3.37	3.86	4.54	5.08	5.61
0:30	2.18	2.64	3.31	3.79	4.47	4.99	5.52
0:31	2.14	2.59	3.26	3.72	4.39	4.91	5.43
0:32	2.09	2.54	3.20	3.66	4.32	4.83	5.34
0:33	2.05	2.50	3.14	3.60	4.25	4.76	5.26
0:34	2.02	2.45	3.09	3.54	4.18	4.68	5.18
0:35	1.98	2.41	3.04	3.48	4.12	4.61	5.10
0:36	1.94	2.37	2.99	3.43	4.05	4.54	5.02
0:37	1.91	2.33	2.94	3.38	3.99	4.47	4.95
0:38	1.88	2.29	2.90	3.32	3.93	4.40	4.87
0:39	1.85	2.25	2.85	3.27	3.87	4.34	4.80
0:40	1.82	2.22	2.81	3.23	3.82	4.28	4.73
0:41	1.79	2.18	2.77	3.18	3.76	4.22	4.67
0:42	1.76	2.15	2.73	3.13	3.71	4.16	4.60
0:43	1.73	2.12	2.69	3.09	3.66	4.10	4.54
0:44	1.71	2.09	2.65	3.05	3.61	4.04	4.48
0:45	1.68	2.06	2.62	3.01	3.56	3.99	4.42
0:46	1.66	2.03	2.58	2.96	3.51	3.94	4.36
0:47	1.63	2.00	2.55	2.93	3.47	3.89	4.30
0:48	1.61	1.97	2.51	2.89	3.42	3.84	4.25
0:49	1.59	1.95	2.48	2.85	3.38	3.79	4.20
0:50	1.57	1.92	2.45	2.81	3.34	3.74	4.15

RAINFALL INTENSITY TABLE

SEDGWICK COUNTY KANSAS
(revised June 1997)

This table contains average rainfall intensities in inches per hour.

DURATION,	RETURN PERIOD						
HR:MIN	1 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
0:51	1.55	1.90	2.42	2.78	3.30	3.70	4.10
0:52	1.53	1.87	2.39	2.75	3.26	3.65	4.05
0:53	1.51	1.85	2.36	2.71	3.22	3.61	4.00
0:54	1.49	1.83	2.33	2.68	3.18	3.57	3.95
0:55	1.47	1.80	2.30	2.65	3.14	3.53	3.91
0:56	1.45	1.78	2.28	2.62	3.11	3.49	3.86
0:57	1.43	1.76	2.25	2.59	3.07	3.45	3.82
0:58	1.41	1.74	2.22	2.56	3.04	3.41	3.78
0:59	1.40	1.72	2.20	2.53	3.01	3.37	3.74
1:00	1.38	1.70	2.17	2.50	2.97	3.34	3.70
1:05	1.30	1.61	2.06	2.38	2.82	3.17	3.52
1:10	1.23	1.53	1.96	2.26	2.69	3.02	3.35
1:15	1.17	1.45	1.87	2.16	2.57	2.89	3.20
1:20	1.11	1.38	1.79	2.06	2.46	2.77	3.07
1:25	1.06	1.32	1.71	1.98	2.36	2.65	2.95
1:30	1.01	1.27	1.64	1.90	2.27	2.55	2.83
1:35	0.97	1.21	1.58	1.83	2.18	2.46	2.73
1:40	0.93	1.16	1.52	1.76	2.10	2.37	2.63
1:45	0.89	1.12	1.46	1.70	2.03	2.29	2.54
1:50	0.86	1.08	1.41	1.64	1.96	2.21	2.46
1:55	0.82	1.04	1.36	1.58	1.89	2.13	2.38
2:00	0.79	1.00	1.31	1.53	1.83	2.07	2.30
2:05	0.76	0.97	1.27	1.48	1.77	2.00	2.23
2:10	0.74	0.93	1.23	1.43	1.72	1.94	2.16
2:15	0.71	0.90	1.19	1.39	1.67	1.88	2.10
2:20	0.69	0.87	1.15	1.35	1.62	1.83	2.04
2:25	0.66	0.85	1.12	1.31	1.57	1.78	1.98
2:30	0.64	0.82	1.09	1.27	1.53	1.73	1.93
2:35	0.62	0.80	1.06	1.24	1.49	1.68	1.88
2:40	0.61	0.78	1.03	1.21	1.45	1.64	1.83
2:45	0.59	0.75	1.01	1.18	1.42	1.60	1.79
2:50	0.57	0.74	0.98	1.15	1.38	1.56	1.74
2:55	0.56	0.72	0.96	1.12	1.35	1.53	1.70
3:00	0.55	0.70	0.94	1.10	1.32	1.49	1.67
3:15	0.51	0.66	0.88	1.03	1.24	1.40	1.57
3:30	0.48	0.62	0.83	0.97	1.17	1.32	1.48
3:45	0.45	0.59	0.78	0.92	1.11	1.26	1.40
4:00	0.43	0.56	0.75	0.88	1.06	1.20	1.34
4:15	0.41	0.53	0.71	0.84	1.01	1.14	1.28
4:30	0.40	0.51	0.68	0.80	0.97	1.10	1.22
4:45	0.38	0.49	0.66	0.77	0.93	1.05	1.17
5:00	0.37	0.47	0.63	0.74	0.89	1.01	1.13
5:15	0.36	0.46	0.61	0.72	0.86	0.98	1.09
5:30	0.35	0.44	0.59	0.69	0.83	0.94	1.05
5:45	0.34	0.43	0.57	0.67	0.81	0.91	1.02
6:00	0.33	0.42	0.55	0.65	0.78	0.88	0.98

@ L=5' : P= 5+1.8(2') = 8.6
@ L=10' : P= 10' + 1.8(2) = 13.6

REMINGTON PLACE 2ND

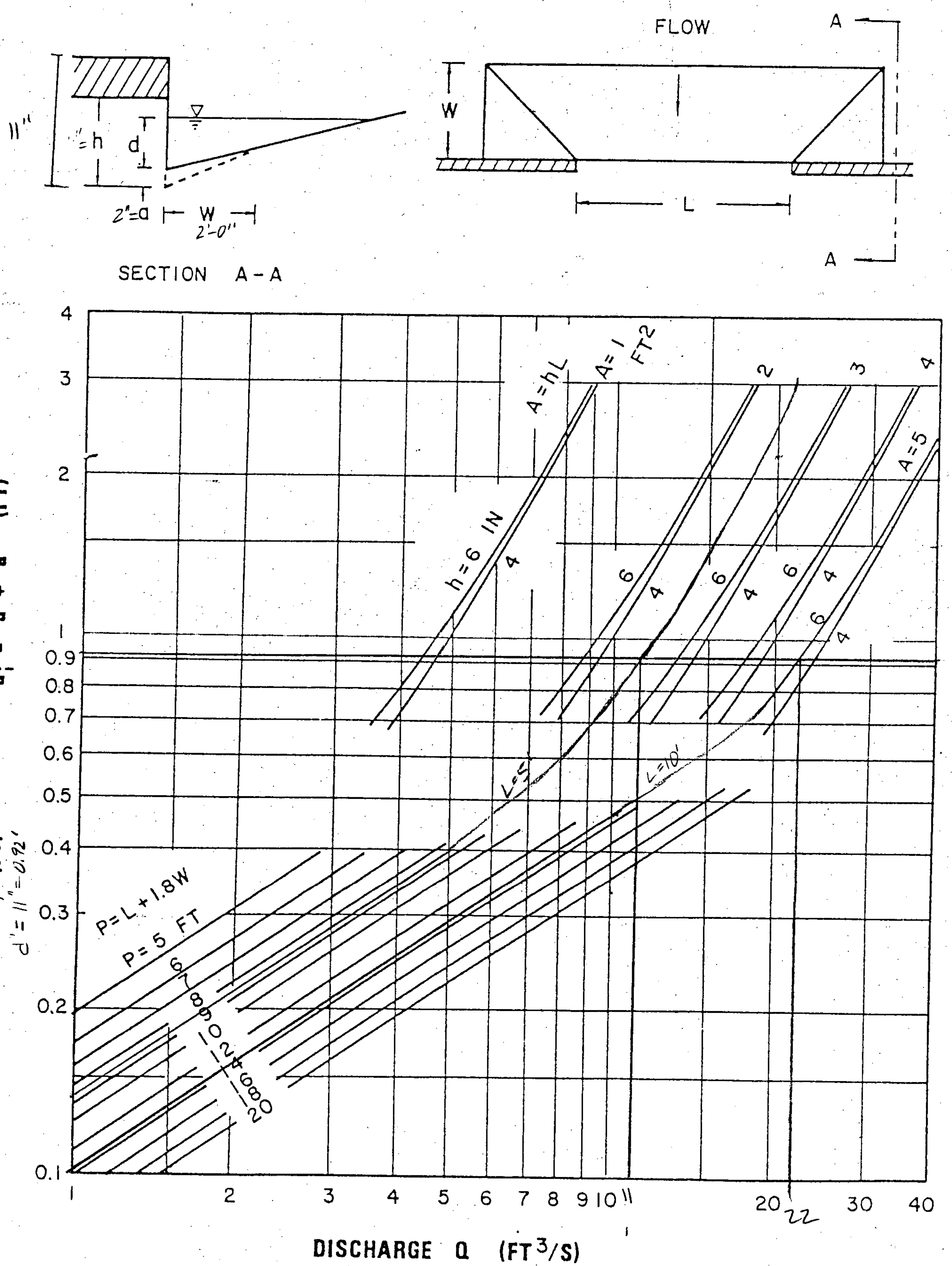


CHART 12. Depressed curb-opening inlet capacity in sump locations.

Professional Engineering Consultants, P.A.

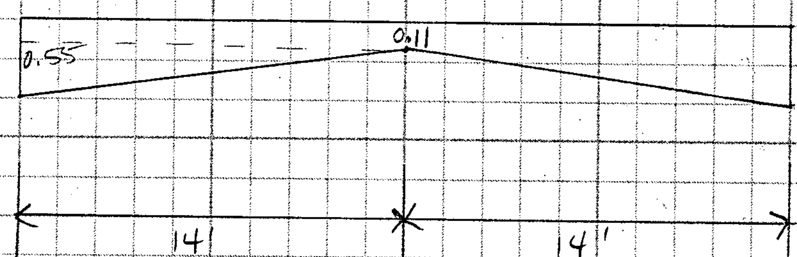
303 S. TOPEKA ▪ WICHITA, KANSAS 67202
316-262-2691 ▪ FAX 316-262-3003
www.pec1.com ▪ designers@pec1.com

Project ____________________ Date ________

Item ____________________ By ________

DETERMINE CAPACITIES OF STANDARD CURB STREETS (32' R-O-W)

* ASSUME FLOW CARRIED BY STREET ONLY



$n = \frac{(2 \times 2.55 \times 0.013) + (2 \times 12 \times 0.016)}{29.1} = 0.01547$

$A = (2 \times \frac{1}{2} \times 14 \times 0.44) + (0.11 \times 28) = 9.24$ SF

$P = 29.1$

$R = \frac{A}{P} = \frac{9.24}{29.1} = 0.318$

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

$Q = \frac{1.486}{0.01547} (9.24)(0.318)^{2/3} (S)^{1/2}$

$Q = 413.5 \sqrt{S}$