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

Remington Place Office Park

Wichita, Sedgwick County, Kansas

11/14/2001

Remington Place Office Park is a commercial development in northeast Wichita. It consists of 21 commercial lots. Development plans include commercial office buildings, parking, open space, two landscaped ponds, and utilities.

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 pasture 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 Fourmile Creek tributary.

For runoff calculations, the plat was divided into 2 major basins, each with its own discharge. Additional runoff on the site will come from the south via a future storm sewer from Remington Place Addition. This storm sewer will discharge to to Pond No. 1. Pond No. 1 will then discharge to Pond No. 2, which also accepts runoff from Basin 2. The net effect of the two ponds is to reduce the plat runoff from 57 cfs for existing conditions to 41 cfs for the proposed conditions.

Using the Army Corp of Engineer's program HEC-1, both systems were modeled with runoff based on the Rational Method. The ponds were included to determine water elevations in the 100-year design storm. The pond outfall from Pond No. 1 to Pond No. 2 was designed using the FHWA Culvert program.

Runoff coefficients were estimated based on tables presented in the Design Aids section and existing land use. 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.

Design Aids

This section includes material used to assist in designing the drainage system. A 1"=100' 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.

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

Project REMINGTON PLACE OFFICE PARK Date 11/12/01

Item HYDROLOGY By DAR

EXISTING CONDITIONS

The land contained in this plat is part of the previously prepared drainage plan for Remington Place Addition. This area was identified as System 4 in that report. The existing conditions runoff from this System is 57.0 cfs for the 100-yr. storm. Therefore, the proposed conditions runoff for this plat should not exceed 57.0 cfs.

The discharge from this basin is an overland swale at the northeast corner of the plat.

PROPOSED CONDITIONS

LAND USE - Commercial Development

BASIN 1

$A = 2.07$ Ac.
$C_{100} = 0.84$
$t_c = 15$ min, $i_{100} = 7.4$ in/hr.

$Q_{100} = 12.9$ cfs

BASIN 2

$A = 5.86$ Ac.
$C_{100} = 0.84$
$t_c = 15$ min, $i_{100} = 7.4$ in/hr.

$Q_{100} = 36.4$ cfs

Professional Engineering Consultants, P.A.

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

Project _____ Date _____

Item Pond Design By _____

Pond #1

Inflow

Basin 1 – 12.9 cfs
24" Storm Sewer from Remington Place Add. (Lindberg St.) – 20.3 cfs

Static Pool El. = 199.0

Surface Area

@202 – 0.53 Ac.
@199 – 0.35 Ac.

Outfall

Assume 15" Pipe outlet pipe w/ drop inlet structure
Assume Structure has 3'x3' opening and is 75% open

Rating Curve –

199.0 – 0 cfs
199.4 – 9 cfs
199.7 – 12 cfs
200.33 – 13 cfs
201.02 – 14 cfs
201.76 – 15 cfs
202.56 – 16 cfs

} From Culvert Run & Eq's:
$Q = CLH^{1.5}$ for Weir flow
$Q = CA\sqrt{2gh}$ for Pressure flow

From HEC-1

DWS_{100} = 201.0
Q_{100} = 14 cfs

Professional Engineering Consultants, P.A.

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

Project _____ Date _____

Item POND DESIGN (CONT.) By _____

POND #2

Inflow

BASIN 2
Pond 1 outflow

Static El. = 1950±

Surface Area

@ 1990 – 1.04 Ac.
@ 1950 – 0.62 Ac.

Outfall

5' Weir @ 1950±, C = 3.2

From HEC-1

DWS_{100} = 1969
Q_{100} = 41 cfs

CURRENT DATE: 11-12-2001
CURRENT TIME: 14:27:42

FILE DATE: 11-12-2001
FILE NAME: REMOFFCE

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA: INLET ELEV. (ft)	SITE DATA: OUTLET ELEV. (ft)	SITE DATA: CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	193.00	192.00	50.01	1 RCP	1.50	1.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: REMOFFCE DATE: 11-12-2001

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
197.13	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
197.37	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
197.63	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
197.91	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
198.21	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
198.54	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
198.89	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
199.27	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
199.66	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
200.08	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
200.52	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: REMOFFCE DATE: 11-12-2001

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
197.13	0.000	10.00	0.00	0.00
197.37	0.000	11.00	0.00	0.00
197.63	0.000	12.00	0.00	0.00
197.91	0.000	13.00	0.00	0.00
198.21	0.000	14.00	0.00	0.00
198.54	0.000	15.00	0.00	0.00
198.89	0.000	16.00	0.00	0.00
199.27	0.000	17.00	0.00	0.00
199.66	0.000	18.00	0.00	0.00
200.08	0.000	19.00	0.00	0.00
200.52	0.000	20.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 11-12-2001 FILE DATE: 11-12-2001
CURRENT TIME: 14:27:42 FILE NAME: REMOFFCE

PERFORMANCE CURVE FOR CULVERT 1 - 1(1.50 (ft) BY 1.50 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
10.00	197.13	2.26	4.13	4-FFt	0.85	1.22	1.50	4.00	5.66	0.00
11.00	197.37	2.52	4.37	4-FFt	0.91	1.26	1.50	4.00	6.22	0.00
12.00	197.63	2.81	4.63	4-FFt	0.97	1.31	1.50	4.00	6.79	0.00
13.00	197.91	3.13	4.91	4-FFt	1.02	1.35	1.50	4.00	7.36	0.00
14.00	198.21	3.47	5.21	4-FFt	1.08	1.40	1.50	4.00	7.92	0.00
15.00	198.54	3.85	5.54	4-FFt	1.15	1.44	1.50	4.00	8.49	0.00
16.00	198.89	4.25	5.89	4-FFt	1.23	1.49	1.50	4.00	9.05	0.00
17.00	199.27	4.67	6.27	4-FFt	1.33	1.50	1.50	4.00	9.62	0.00
18.00	199.66	5.11	6.66	4-FFt	1.50	1.50	1.50	4.00	10.19	0.00
19.00	200.08	5.58	7.08	4-FFt	1.50	1.50	1.50	4.00	10.75	0.00
20.00	200.52	6.08	7.52	4-FFt	1.50	1.50	1.50	4.00	11.32	0.00

El. inlet face invert 193.00 ft El. outlet invert 192.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

SITE DATA ***** CULVERT INVERT **********

INLET STATION	0.00 ft
INLET ELEVATION	193.00 ft
OUTLET STATION	50.00 ft
OUTLET ELEVATION	192.00 ft
NUMBER OF BARRELS	1
SLOPE (V/H)	0.0200
CULVERT LENGTH ALONG SLOPE	50.01 ft

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.50 ft
BARREL MATERIAL	CONCRETE
BARREL MANNING'S n	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

RUN DATE: 11-12-2001
RUN TIME: 14:27:42

FILE DATE: 11-12-2001
FILE NAME: REMOFFCE

TAILWATER

CONSTANT WATER SURFACE ELEVATION
196.00

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	20.00 ft
CREST LENGTH	10.00 ft
OVERTOPPING CREST ELEVATION	203.00 ft

REMINGTON OFFICE PARK

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  11/12/01  TIME  15:10:17   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (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

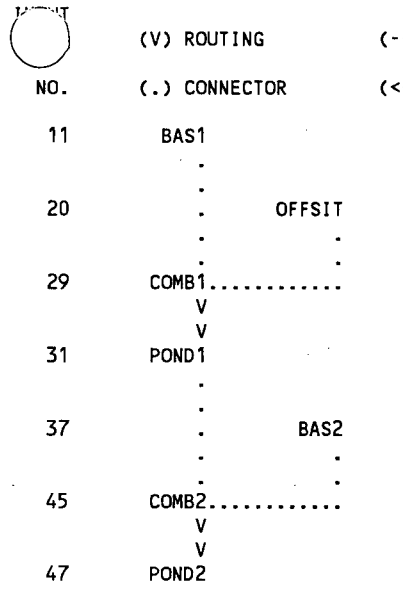
```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  1       ID        Remington Place Office Park
  2       ID        2, 10, 25 & 100 year storms
  3       ID        Professional Engineering Consultants
  4       ID        Wichita, Ks
  5       ID        DRC 11/12/01
  6       ID        File:  T:\DAR\HEC1\REM_OFF.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        Developed Basin 1
 12       BA  .00323
 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     93      0
 19       UD    .15
          *
          *

 20       KK  OFFSIT        OFFSITE RUNOFF FROM REMINGTON PLACE RESIDENTIAL
 21       BA    .005
 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       HC       2
          *
          *

 31       KK   POND1
 32       RS       1   ELEV     199
 33       SA     .35    .53
 34       SE     199    203
 35       SQ       0     12      13      14      15      16
 36       SE     199  199.7  200.33  201.02  201.76  202.56
          *
          *
```

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

  37      KK    BAS2        Developed Basin 2
  38      BA   .0092
  39      PC    0.08    .09    .10    .11    .12    .133   .147   .163   .181   .204
  40      PC    .235    .283   .663   .735   .772   .799   .820   .835   .850   .865
  41      PC    .880    .890   .900   .910   .916   .925   .934   .943   .952   .958
  42      PC    .964    .970   .976   .982   .988   .994  1.000
  43      LS       0      93      0
  44      UD     .15
          *
          *

  45      KK   COMB2
  46      HC       2
          *

  47      KK   POND2
  48      RS       1   ELEV     195
  49      SA     .44    .53
  50      SE     195    199
  51      SS   195.0       5    3.2    1.5
          *
          *
          *
  52      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)     *
*            MAY  1991                  *
*         VERSION 4.0.1E                *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  11/12/01  TIME  15:10:17   *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748               *
*                                       *
*****************************************
```


```
                        Remington Place Office Park
                        2, 10, 25 & 100 year storms
                        Professional Engineering Consultants
                        Wichita, Ks
                        DRC 11/12/01
                        File:  T:\DAR\HEC1\REM_OFF.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     0.10 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
                   0.45      0.68      0.79      1.00


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


               **************
               *            *
 11 KK         *      BAS1  *            Developed Basin 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

 12 BA          SUBBASIN CHARACTERISTICS
                     TAREA       0.00  SUBBASIN AREA

                PRECIPITATION DATA
```

13 PB STORM 7.80 BASIN TOTAL PRECIPITATION

14 PI INCREMENTAL PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.08	0.08	0.08
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

18 LS SCS LOSS RATE

STRTL	0.15	INITIAL ABSTRACTION
CRVNBR	93.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

19 UD SCS DIMENSIONLESS UNITGRAPH

TLAG 0.15 LAG

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

4.	8.	5.	2.	1.	0.	0.	0.	0.	0.

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.84, TOTAL EXCESS = 6.96

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
13.	12.00	(CFS)	2.	1.	0.	0.
		(INCHES)	5.610	6.964	6.964	6.964
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = 0.45

TOTAL RAINFALL = 3.50, TOTAL LOSS = 0.77, TOTAL EXCESS = 2.73

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
5.	12.00	(CFS)	1.	0.	0.	0.
		(INCHES)	2.239	2.735	2.735	2.735
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION BAS1
FOR PLAN 1, RATIO = 0.68

TOTAL RAINFALL = 5.30, TOTAL LOSS = 0.81, TOTAL EXCESS = 4.49

PEAK FLOW TIME MAXIMUM AVERAGE FLOW

```
  (CFS)      (HR)                 6-HR       24-HR       72-HR      29.90-HR
     8.     12.00      (CFS)        1.          0.          0.            0.
                     (INCHES)     3.652       4.493       4.493         4.493
                      (AC-FT)       1.          1.          1.            1.

                      CUMULATIVE AREA =    0.00 SQ MI


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

                       HYDROGRAPH AT STATION     BAS1
                         FOR PLAN 1, RATIO = 0.79

   TOTAL RAINFALL =    6.16, TOTAL LOSS =    0.82, TOTAL EXCESS =    5.34

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                6-HR       24-HR       72-HR      29.90-HR
    10.      12.00      (CFS)        2.          0.          0.            0.
                     (INCHES)     4.325       5.338       5.338         5.338
                      (AC-FT)       1.          1.          1.            1.

                      CUMULATIVE AREA =    0.00 SQ MI


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

                       HYDROGRAPH AT STATION     BAS1
                         FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =    7.80, TOTAL LOSS =    0.84, TOTAL EXCESS =    6.96

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                6-HR       24-HR       72-HR      29.90-HR
    13.      12.00      (CFS)        2.          1.          0.            0.
                     (INCHES)     5.610       6.964       6.964         6.964
                      (AC-FT)       1.          1.          1.            1.

                      CUMULATIVE AREA =    0.00 SQ MI


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


          **************
          *            *
  20 KK   *   OFFSIT   *         OFFSITE RUNOFF FROM REMINGTON PLACE RESIDENTIAL
          *            *
          **************

   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          0.00  SUBBASIN AREA

                  PRECIPITATION DATA

  22 PB                 STORM          7.80  BASIN TOTAL PRECIPITATION

  23 PI             INCREMENTAL PRECIPITATION PATTERN
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                       0.00      0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01      0.01
```

0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.08	0.08	0.08
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

```
27 LS          SCS LOSS RATE
                   STRTL        0.13  INITIAL ABSTRACTION
                  CRVNBR       94.00  CURVE NUMBER
                   RTIMP        0.00  PERCENT IMPERVIOUS AREA

28 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG        0.15  LAG
```

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

6.	12.	8.	3.	2.	1.	0.	0.	0.	0.

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.72, TOTAL EXCESS = 7.08

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
20.	12.00	(CFS)	3.	1.	1.	1.
		(INCHES)	5.681	7.083	7.083	7.083
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION OFFSIT
FOR PLAN 1, RATIO = 0.45

TOTAL RAINFALL = 3.50, TOTAL LOSS = 0.66, TOTAL EXCESS = 2.84

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

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION OFFSIT
FOR PLAN 1, RATIO = 0.68

TOTAL RAINFALL = 5.30, TOTAL LOSS = 0.70, TOTAL EXCESS = 4.60

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
13.	12.00	(CFS)	2.	1.	0.	0.
		(INCHES)	3.729	4.604	4.604	4.604
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION OFFSIT
FOR PLAN 1, RATIO = 0.79

TOTAL RAINFALL = 6.16, TOTAL LOSS = 0.70, TOTAL EXCESS = 5.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
15.	12.00	(CFS)	2.	1.	1.	1.
		(INCHES)	4.400	5.453	5.453	5.453
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.00 SQ MI

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

HYDROGRAPH AT STATION OFFSIT
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.72, TOTAL EXCESS = 7.08

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
20.	12.00	(CFS)	3.	1.	1.	1.
		(INCHES)	5.681	7.083	7.083	7.083
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.00 SQ MI

*** ***

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

HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION COMB1
FOR PLAN 1, RATIO = 0.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
13.	12.00	(CFS)	2.	1.	0.	0.
		(INCHES)	2.285	2.796	2.796	2.796
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION COMB1
FOR PLAN 1, RATIO = 0.68

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
21.	12.00	(CFS)	3.	1.	1.	1.
		(INCHES)	3.699	4.560	4.560	4.560
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION COMB1
FOR PLAN 1, RATIO = 0.79

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR

REMINGTON OFFICE PARK

25.	12.00	(CFS)	4.	1.	1.	1.
		(INCHES)	4.371	5.408	5.408	5.408
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION COMB1
FOR PLAN 1, RATIO = 1.00

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
32.	12.00	(CFS)	5.	2.	1.	1.
		(INCHES)	5.653	7.036	7.036	7.036
		(AC-FT)	2.	3.	3.	3.

CUMULATIVE AREA = 0.01 SQ MI

*** ***

```
          **************
          *            *
 31 KK    *    POND1   *
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

32 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	199.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

33 SA	AREA	0.3	0.5				
34 SE	ELEVATION	199.00	203.00				
35 SQ	DISCHARGE	0.	12.	13.	14.	15.	16.
36 SE	ELEVATION	199.00	199.70	200.33	201.02	201.76	202.56

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	1.75
ELEVATION	199.00	203.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.26	0.50	0.79	1.13	1.52	1.75
OUTFLOW	0.00	12.00	13.00	14.00	15.00	16.00	16.55
ELEVATION	199.00	199.70	200.33	201.02	201.76	202.56	203.00

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 0.45

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
10.	12.10	(CFS)	2.	1.	0.	0.
		(INCHES)	2.282	2.796	2.796	2.796
		(AC-FT)	1.	1.	1.	1.

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

PEAK STAGE TIME MAXIMUM AVERAGE STAGE

(FEET)	(HR)		6-HR	24-HR	72-HR	29.90-HR
199.59	12.10		199.12	199.04	199.03	199.03

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 0.68

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW		
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
13.	12.20	(CFS)	3.	1.	1.	1.
		(INCHES)	3.692	4.560	4.560	4.560
		(AC-FT)	2.	2.	2.	2.

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

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
(FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
200.08	12.20	199.21	199.06	199.05	199.05

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 0.79

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW		
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
13.	12.20	(CFS)	4.	1.	1.	1.
		(INCHES)	4.364	5.408	5.408	5.408
		(AC-FT)	2.	2.	2.	2.

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

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
(FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
200.39	12.20	199.28	199.08	199.07	199.07

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW		
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
14.	12.30	(CFS)	5.	2.	1.	1.
		(INCHES)	5.646	7.036	7.036	7.036
		(AC-FT)	2.	3.	3.	3.

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

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
(FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
201.00	12.30	199.45	199.13	199.10	199.10

CUMULATIVE AREA = 0.01 SQ MI

*** ***

REMINGTON OFFICE PARK

```
KK     **************
       *            *
       *    BAS2    *           Developed Basin 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        0.01  SUBBASIN AREA

              PRECIPITATION DATA

38 PB               STORM        7.80  BASIN TOTAL PRECIPITATION

38 PI            INCREMENTAL PRECIPITATION PATTERN
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01      0.01
                   0.01      0.01      0.01      0.01      0.01      0.08      0.08      0.08      0.08      0.08
                   0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                   0.01      0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                   0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

43 LS         SCS LOSS RATE
                    STRTL        0.15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP        0.00  PERCENT IMPERVIOUS AREA

44 UD         SCS DIMENSIONLESS UNITGRAPH
                     TLAG        0.15  LAG

                                                               ***

                                                          UNIT HYDROGRAPH
                                                      10 END-OF-PERIOD ORDINATES
           11.       22.       15.        6.        3.        1.        1.        0.        0.        0.

   TOTAL RAINFALL =     7.80, TOTAL LOSS =     0.84, TOTAL EXCESS =     6.96

PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                        6-HR        24-HR        72-HR      29.90-HR
     36.      12.00          (CFS)          6.           2.           1.            1.
                          (INCHES)       5.610        6.964        6.964         6.964
                           (AC-FT)          3.           3.           3.            3.

                        CUMULATIVE AREA =     0.01 SQ MI

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

                         HYDROGRAPH AT STATION     BAS2
                           FOR PLAN 1, RATIO = 0.45

   TOTAL RAINFALL =     3.50, TOTAL LOSS =     0.77, TOTAL EXCESS =     2.73
```

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
15.	12.00	(CFS)	2.	1.	1.	1.
		(INCHES)	2.239	2.735	2.735	2.735
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION BAS2
FOR PLAN 1, RATIO = 0.68

TOTAL RAINFALL = 5.30, TOTAL LOSS = 0.81, TOTAL EXCESS = 4.49

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
24.	12.00	(CFS)	4.	1.	1.	1.
		(INCHES)	3.652	4.493	4.493	4.493
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION BAS2
FOR PLAN 1, RATIO = 0.79

TOTAL RAINFALL = 6.16, TOTAL LOSS = 0.82, TOTAL EXCESS = 5.34

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
28.	12.00	(CFS)	4.	1.	1.	1.
		(INCHES)	4.325	5.338	5.338	5.338
		(AC-FT)	2.	3.	3.	3.

CUMULATIVE AREA = 0.01 SQ MI

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

HYDROGRAPH AT STATION BAS2
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.84, TOTAL EXCESS = 6.96

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
36.	12.00	(CFS)	6.	2.	1.	1.
		(INCHES)	5.610	6.964	6.964	6.964
		(AC-FT)	3.	3.	3.	3.

CUMULATIVE AREA = 0.01 SQ MI

*** ***

```
         **************
         *            *
45 KK    *    COMB2   *
         *            *
         **************
```

46 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION COMB2

FOR PLAN 1, RATIO = 0.45

P FLOW	TIME		MAXIMUM AVERAGE FLOW			
S)	(HR)		6-HR	24-HR	72-HR	29.90-HR
23.	12.00	(CFS)	4.	1.	1.	1.
		(INCHES)	2.258	2.764	2.764	2.764
		(AC-FT)	2.	3.	3.	3.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION COMB2
FOR PLAN 1, RATIO = 0.68

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
36.	12.00	(CFS)	7.	2.	2.	2.
		(INCHES)	3.670	4.525	4.525	4.525
		(AC-FT)	3.	4.	4.	4.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION COMB2
FOR PLAN 1, RATIO = 0.79

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
40.	12.00	(CFS)	8.	3.	2.	2.
		(INCHES)	4.343	5.371	5.371	5.371
		(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION COMB2
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
49.	12.00	(CFS)	11.	3.	3.	3.
		(INCHES)	5.626	6.998	6.998	6.998
		(AC-FT)	5.	7.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

*** ***

```
        **************
        *            *
47 KK   *    POND2   *
        *            *
        **************
```

HYDROGRAPH ROUTING DATA

48 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	195.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

49 SA AREA 0.4 0.5

50 SE ELEVATION 195.00 199.00

51 SS SPILLWAY

REMINGTON OFFICE PARK

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	0.00	1.94
ELEVATION	195.00	199.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	0.02	0.18	0.59	1.40	2.74	4.74	7.53	11.24
ELEVATION	195.00	195.00	195.01	195.05	195.11	195.20	195.31	195.44	195.60	195.79
OUTFLOW	16.00	21.95	29.21	37.93	48.22	60.22	74.07	89.90	107.83	128.00
ELEVATION	196.00	196.23	196.49	196.78	197.09	197.42	197.78	198.16	198.57	199.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.01	0.02	0.05	0.09	0.14	0.20	0.27	0.35	0.45
OUTFLOW	0.00	0.02	0.18	0.59	1.40	2.74	4.74	7.53	11.24	16.00
ELEVATION	195.00	195.01	195.05	195.11	195.20	195.31	195.44	195.60	195.79	196.00
STORAGE	0.56	0.68	0.82	0.97	1.13	1.31	1.50	1.71	1.94	
OUTFLOW	21.95	29.21	37.93	48.22	60.23	74.07	89.90	107.83	128.00	
ELEVATION	196.23	196.49	196.78	197.09	197.42	197.78	198.16	198.57	199.00	

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

HYDROGRAPH AT STATION POND2
FOR PLAN 1, RATIO = 0.45

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
18.	12.20	(CFS)	4.	1.	1.	1.
		(INCHES)	2.241	2.761	2.761	2.761
		(AC-FT)	2.	3.	3.	3.

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

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
196.09	12.20	195.37	195.14	195.11	195.11

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION POND2
FOR PLAN 1, RATIO = 0.68

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
29.	12.20	(CFS)	7.	2.	2.	2.
		(INCHES)	3.652	4.521	4.521	4.521
		(AC-FT)	3.	4.	4.	4.

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

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
196.48	12.20	195.51	195.19	195.16	195.16

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION POND2
FOR PLAN 1, RATIO = 0.79

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
33.	12.20	(CFS)	8.	3.	2.	2.
		(INCHES)	4.325	5.368	5.368	5.368
		(AC-FT)	4.	5.	5.	5.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
1.	12.10	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
196.62	12.20	195.57	195.22	195.18	195.18

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION POND2
FOR PLAN 1, RATIO = 1.00

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
41.	12.10	(CFS)	11.	3.	3.	3.
		(INCHES)	5.608	6.995	6.995	6.995
		(AC-FT)	5.	7.	7.	7.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
1.	12.10	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
196.88	12.10	195.68	195.26	195.21	195.21

CUMULATIVE AREA = 0.02 SQ MI

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		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4
					0.45	0.68	0.79	1.00
HYDROGRAPH AT	BAS1	0.00	1	FLOW	5.	8.	10.	13.
				TIME	12.00	12.00	12.00	12.00
HYDROGRAPH AT	OFFSIT	0.00	1	FLOW	8.	13.	15.	20.
				TIME	12.00	12.00	12.00	12.00
2 COMBINED AT	COMB1	0.01	1	FLOW	13.	21.	25.	32.
				TIME	12.00	12.00	12.00	12.00
ROUTED TO	POND1	0.01	1	FLOW	10.	13.	13.	14.
				TIME	12.10	12.20	12.20	12.30
			** PEAK STAGES IN FEET **					
			1	STAGE	199.59	200.08	200.39	201.00
				TIME	12.10	12.20	12.20	12.30
HYDROGRAPH AT	BAS2	0.01	1	FLOW	15.	24.	28.	36.
				TIME	12.00	12.00	12.00	12.00
2 COMBINED AT	COMB2	0.02	1	FLOW	23.	36.	40.	49.
				TIME	12.00	12.00	12.00	12.00
ROUTED TO	POND2	0.02	1	FLOW	18.	29.	33.	41.
				TIME	12.20	12.20	12.20	12.10
			** PEAK STAGES IN FEET **					
			1	STAGE	196.09	196.48	196.62	196.88
				TIME	12.20	12.20	12.20	12.10

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

(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
5. 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	040	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 INTENSITY TABLE

SEDGWICK COUNTY KANSAS
(revised June 1997)

This table contains average rainfall intensities in inches per hour.

DURATION, HR:MIN	RETURN PERIOD 1 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
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)

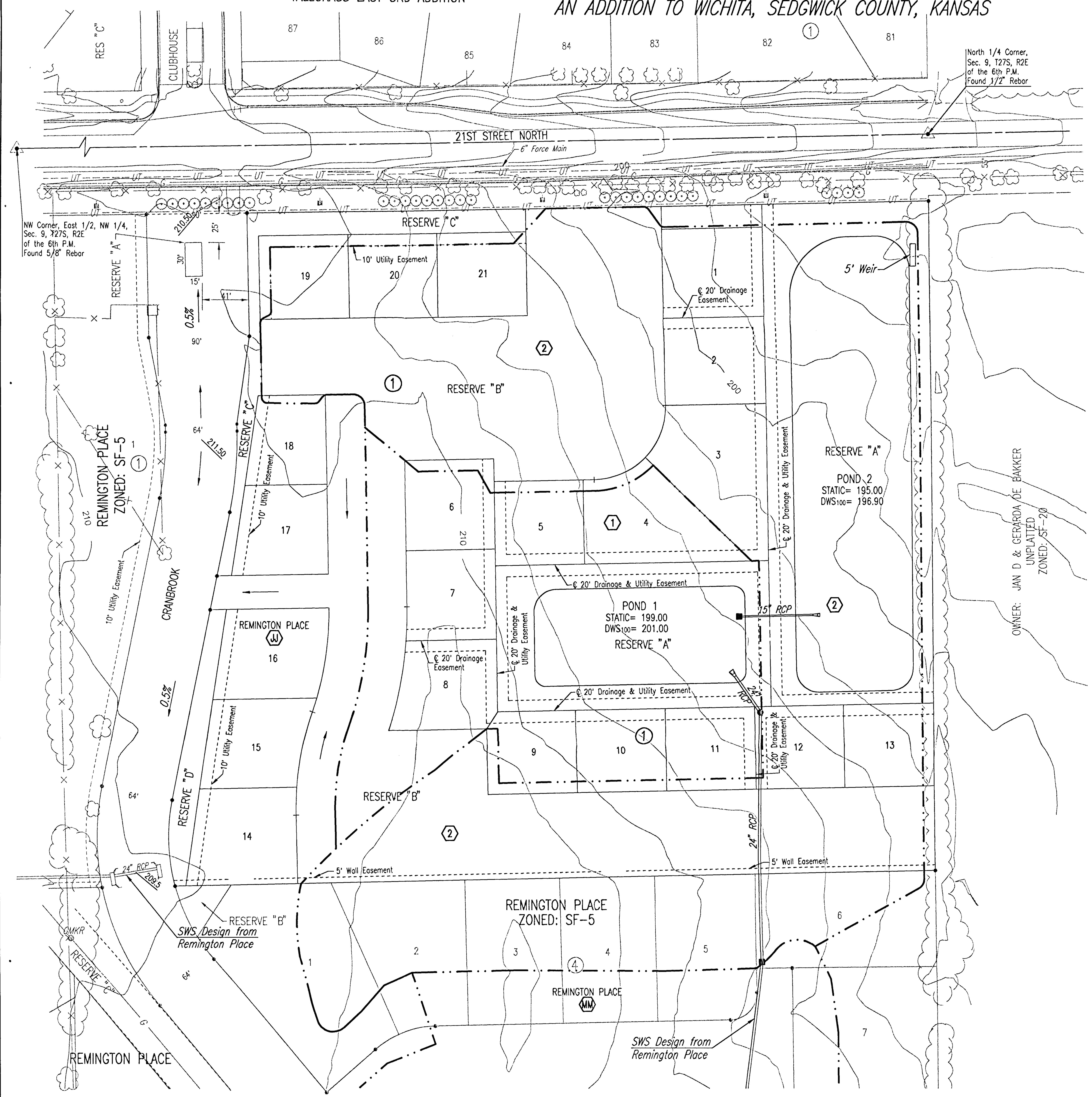
This table contains average rainfall intensities in inches per hour.

DURATION, HR:MIN	RETURN PERIOD 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

DRAINAGE PLAN

REMINGTON PLACE OFFICE PARK

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

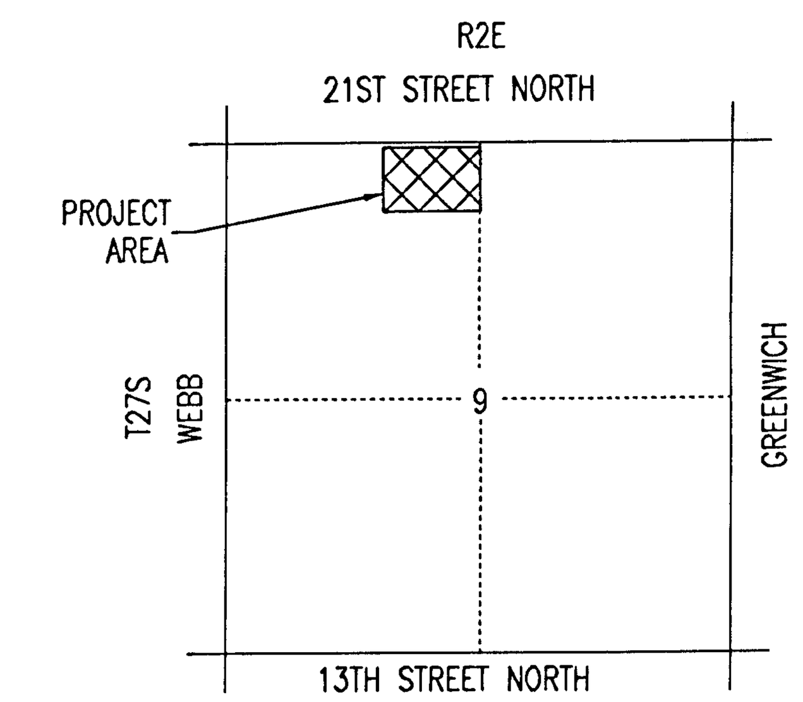

TALLGRASS EAST 3RD ADDITION
RES "C"
CLUBHOUSE
87
86
85
84
83
82
81
North 1/4 Corner, Sec. 9, T27S, R2E of the 6th P.M. Found 3/2" Rebar
21ST STREET NORTH
6" Force Main
NW Corner, East 1/2, NW 1/4, Sec. 9, T27S, R2E of the 6th P.M. Found 5/8" Rebar
RESERVE "A"
RESERVE "C"
10' Utility Easement
19
20
21
5' Weir
1
℄ 20' Drainage Easement
2
200
0.5%
RESERVE "B"
RESERVE "C"
211.50
18
3
RESERVE "A"
POND 2
STATIC= 195.00
DWS100= 196.90
REMINGTON PLACE
ZONED: SF-5
10' Utility Easement
17
6
210
5
4
℄ 20' Drainage & Utility Easement
CRANBROOK
10' Utility Easement
7
POND 1
STATIC= 199.00
DWS100= 201.00
RESERVE "A"
15" RCP
REMINGTON PLACE
JJ
16
℄ 20' Drainage Easement
8
℄ 20' Drainage & Utility Easement
0.5%
10' Utility Easement
15
9
10
11
12
13
OWNER: JAN D & GERARDA DE BAKKER
UNPLATTED
ZONED: SF-20
RESERVE "D"
64'
RESERVE "B"
14
24" RCP
5' Wall Easement
5' Wall Easement
24" RCP
RESERVE "B"
SWS Design from Remington Place
REMINGTON PLACE
ZONED: SF-5
6
1
2
3
4
5
REMINGTON PLACE
MM
7
RESERVE "C"
REMINGTON PLACE
SWS Design from Remington Place

SCALE: 1" = 50'

● = 3/4" IRON PIPE W/PEC CAP UNLESS OTHERWISE NOTED

B.S.L. = BUILDING SETBACK LINE

B.M. – CITY OF WICHITA TABLET 39 FEET NORTH OF NORTH 1/4 CORNER SECTION 9, T27S, R2E.
ELEV. = 196.23 (City Datum)
ELEV. = 1383.63 N.G.V.D.



VICINITY MAP

LEGEND

(3A)	BASIN IDENTIFIER
—·—·—	MAJOR BASIN BOUNDARY
——→	STORM WATER FLOW
——■——	STORM SEWER AND INLET
——●——	STORM SEWER AND MANHOLE

BASIN 1 SHALL BE GRADED TO DRAIN TO PROPOSED POND #1 VIA APPROVED DRAINAGE CONVEYANCE METHODS.

BASIN 2 SHALL BE GRADED TO DRAIN TO PROPOSED POND #2 VIA APPROVED DRAINAGE CONVEYANCE METHODDS.

DSNR: SAD OPER: SAD SCALE: 1=50.00
Q:\2001\0137\001\remington place office park\dwg\DRAINAGE PLAN 11-15-2001 09:24:18 am