```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                MAY   1991             *
*              VERSION 4.0.1E           *
*                                       *
*  RUN DATE  11/16/95  TIME  11:28:51   *
*                                       *
*****************************************
```

```
***********************************
*                                 *
*    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        BRADFORD NORTH
    2     ID        PEAK FLOW EXISTING CONDITION
    3     ID        Q100 - 6HR STORM
    4     ID        FILE: BRAD1
    5     IT      2              0     181
    6     IO      5       0

    7     KK     SB1
    8     KM        COMPUTE HYDROGRAPH
    9     BA   0.165
   10     PH    100       0     .87    1.86     3.8     4.6     5.1     6.0
   11     LS      0      81
   12     UD    1.2
   13     ZZ
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*                                       *
*  RUN DATE  11/16/95  TIME  11:28:51   *
*                                       *
*****************************************
```

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

BRADFORD NORTH
PEAK FLOW EXISTING CONDITION
Q100 - 6HR STORM
FILE: BRAD1

6 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN		2	MINUTES IN COMPUTATION INTERVAL
IDATE	1	0	STARTING DATE
ITIME		0000	STARTING TIME
NQ		181	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1	0	ENDING DATE
NDTIME		0600	ENDING TIME
ICENT		19	CENTURY MARK

COMPUTATION INTERVAL 0.03 HOURS
TOTAL TIME BASE 6.00 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

```
**********************************************
*                                            *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)        *
*                MAY   1991                  *
*             VERSION 4.0.1E                 *
*                                            *
*  RUN DATE  11/17/95  TIME  08:57:26        *
*                                            *
**********************************************
```


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


BRADFORD NORTH
PEAK FLOW FUTURE CONDITION
Q100 - 6HR STORM
FILE: BRAD3

```
  6 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          2  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         181  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME        0600  ENDING TIME
                     ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     0.03 HOURS
                      TOTAL TIME BASE      6.00 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


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


          ***************
          *             *
  13 KK   *    POND 1   *
          *             *
          ***************

  15 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
```

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    29NOV95    TIME   10:21:54  *
*******************************************
```


```
***********************************
*  U.S. ARMY CORPS OF ENGINEERS
*  HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*         (916) 756-1104
***********************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 29NOV95 10:21:54

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
************************************


  Determine outflow discharge curve vs. water surface elevation
T1      BRADFORD NORTH ADDITION
T2      POND 1 DISCHARGE CURVE
T3      POE AND ASSOCIATES OF KANSAS

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0        5                             -1                                    163

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     -1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    101

NC       .1        .1       .030        .1        .3
QT         7        20         60       100       140       180       220       260
X1       7.7         4        200       246
GR     166.5       200        162       218       162       228     166.5       246

X1      8.68         4      201.6     244.4                             98
GR     166.5     201.6      162.4       218     162.4       228     166.5     244.4

NC         0         0       .030        .3        .5
X1         9         6      218.9     227.1                             32
X3        10                                                          166.5     166.5
GR     166.5       100      166.5     218.9     162.5       219     162.5       227     166.5     227.1
GR     166.5       300

SC     1.013        .4          3                 3         8          70       8.1     162.8     162.5
X1       9.7         6      218.9     227.1                             70
X2                               2                 166.5
X3        10                                                          166.5     166.5
GR     166.5       100      166.5     218.9     162.8       219     162.8       227     166.5     227.1
GR     166.5       300

NC         0         0       .030        .1        .3
X1      9.78         4      203.2     242.8                              8
GR     166.5     203.2      162.8       218     162.8       228     166.5     242.8
```

X1	11	4	205	241			122	
GR	166.5	205	163.3	218	163.3	228	166.5	241
X1	11.4	4	0	545			40	
GR	166.5	0	163.3	20	163.3	515	166.5	545
X1	12.6	4	0	600			120	
GR	166.5	0	163.3	20	163.3	560	166.5	600
X1	14.5	4	330	570			190	
GR	166.5	330	163.3	365	163.3	530	166.5	570

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300
*SECNO 7.700
3720 CRITICAL DEPTH ASSUMED

7.700	1.49	163.49	163.49	163.00	164.03	.54	.00	.00	166.50
140.0	.0	140.0	.0	.0	23.7	.0	.0	.0	166.50
.00	.00	5.90	.00	.000	.030	.000	.000	162.00	212.05
.013058	0.	0.	0.	0	10	0	.00	21.90	233.95

*SECNO 8.680

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.89

8.680	2.06	164.46	.00	.00	164.67	.22	.61	.03	166.50
140.0	.0	140.0	.0	.0	37.5	.0	.1	.1	166.50
.01	.00	3.73	.00	.000	.030	.000	.000	162.40	209.77
.003659	0.	98.	0.	3	0	0	.00	26.46	236.23

CCHV= .300 CEHV= .500
*SECNO 9.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 166.50 ELREA= 166.50

9.000	2.11	164.61	164.61	.00	165.66	1.06	.22	.42	166.50
140.0	.0	140.0	.0	.0	17.0	.0	.1	.1	166.50
.01	.00	8.25	.00	.000	.030	.000	.000	162.50	218.95
.017918	0.	32.	0.	20	8	0	.00	8.11	227.05

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.013	.40	3.00	.00	3.00	8.00	70.00	8	1	162.80	162.50

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 9.700

SPECIAL CULVERT OUTLET CONTROL
EGIC = 166.234 EGOC = 166.402 PCWSE= 164.606 ELTRD= 166.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.75

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
166.23	166.40	.74	0.	140.	5.540	24.0	166.50	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 166.50 ELREA= 166.50

9.700	3.13	165.93	.00	.00	166.40	.48	.74	.00	166.50
140.0	.0	140.0	.0	.0	25.3	.0	.1	.1	166.50
.01	.00	5.54	.00	.000	.030	.000	.000	162.80	218.92
.005828	0.	70.	0.	3	0	0	.00	8.17	227.08

CCHV= .100 CEHV= .300
*SECNO 9.780

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.07

9.780	3.61	166.41	.00	.00	166.45	.04	.01	.04	166.50
140.0	.0	140.0	.0	.0	88.5	.0	.1	.1	166.50
.01	.00	1.58	.00	.000	.030	.000	.000	162.80	203.53
.000352	0.	8.	0.	2	0	0	.00	38.93	242.47

*SECNO 11.000

11.000	3.16	166.46	.00	.00	166.51	.06	.06	.01	166.50
140.0	.0	140.0	.0	.0	72.0	.0	.4	.2	166.50

.03	.00	1.94	.00	.000	.030	.000	.000	163.30	205.18
.000620	0.	122.	0.	2	0	0	.00	35.64	240.82

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.400
3280 CROSS SECTION 11.40 EXTENDED .02 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 31.18

11.400	3.22	166.52	.00	.00	166.52	.00	.00	.01	166.50
140.0	.0	140.0	.0	.0	1675.2	.0	1.2	.5	166.50
.16	.00	.08	.00	.000	.030	.000	.000	163.30	.00
.000001	0.	40.	0.	2	0	0	.00	545.00	545.00

*SECNO 12.600
3280 CROSS SECTION 12.60 EXTENDED .03 FEET

12.600	3.22	166.52	.00	.00	166.52	.00	.00	.00	166.50
140.0	.0	140.0	.0	.0	1840.0	.0	6.0	2.0	166.50
.60	.00	.08	.00	.000	.030	.000	.000	163.30	.00
.000001	0.	120.	0.	1	0	0	.00	600.00	600.00

*SECNO 14.500
3280 CROSS SECTION 14.50 EXTENDED .02 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .33

14.500	3.22	166.52	.00	.00	166.52	.00	.00	.00	166.50
140.0	.0	140.0	.0	.0	652.9	.0	11.4	3.9	166.50
.85	.00	.21	.00	.000	.030	.000	.000	163.30	330.00
.000005	0.	190.	0.	0	0	0	.00	240.00	570.00

THIS RUN EXECUTED 29NOV95 10:21:55

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

POE AND ASSOCIATES OF KA

SUMMARY PRINTOUT TABLE 101

	SECNO	EGOC	ELLC	EGIC	ELTRD	QCULV	QWEIR	CLASS	H4	DEPTH	CWSEL	VCH	E
*	9.700	166.40	.00	166.23	166.50	140.00	.00	7.00	.74	3.13	165.93	5.54	166

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 7.700 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 8.680 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 9.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 9.700 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 9.780 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 11.400 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 14.500 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    28NOV95    TIME   15:28:36  *
*******************************************
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**********************************
*  U.S. ARMY CORPS OF ENGINEERS
*  HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*           (916) 756-1104
**********************************
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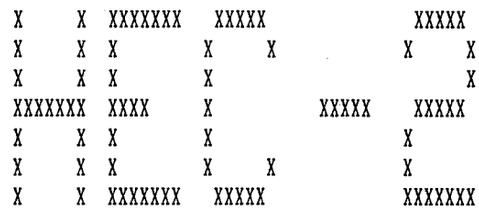

THIS RUN EXECUTED 28NOV95 15:28:36

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

Determine outflow discharge curve vs. water surface elevation
T1 BRADFORD NORTH ADDITION .
T2 POND 1 AND 2 DISCHARGE CURVES
T3 POE AND ASSOCIATES OF KANSAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	8			-1				162	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1		-1							

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

101

NC	.1	.1	.030	.1	.3					
QT	7	20	60	100	140	180	220	260		
X1	0	4	100	163.8						
GR	166.5	100	159.8	127	159.8	137	166.5	163.8		
X1	2.82	4	104.6	159.4			282			
GR	166.5	104.6	160.9	127	160.9	137	166.5	159.4		
NC	0	0	.030	.3	.5					
X1	3.3	6	125.9	138.1			48			
X3	10							166.5	166.5	
GR	166.5	0	166.5	125.9	161.1	126	161.1	138	166.5	138.1
GR	166.5	200								
SC	2.013	.4	3		3	6	70	8.1	161.3	161.1
X1	4.0	6	125.9	138.1			70			
X2			2		166.5					
X3	10							166.5	166.5	
GR	166.5	0	166.5	125.9	161.3	126	161.3	138	166.5	138.1
GR	166.5	200								
NC	0	0	.030	.1	.3					
X1	4.11	4	106.6	157.4			11			
GR	166.5	106.6	161.4	127	161.4	137	166.5	157.4		

X1	5	5	107.8	550			89			
GR	166.5	107.8	161.7	127	161.7	137	166.5	156.2	166.5	550
X1	5.3	6	107.8	520			30			
GR	166.5	107.8	162	127	162	137	162	139	162	520
GR	166.5	550								
X1	6.5	4	40	538			120			
GR	166.5	40	162	58	162	520	166.5	538		
X1	7.3	4	100	538			80			
GR	166.5	100	162	150	162	520	166.5	538		
X1	7.6	4	160	500			30			
GR	166.5	160	162	220	162	400	166.5	500		
X1	7.7	4	200	246			10			
GR	166.5	200	162	218	162	228	166.5	246		
X1	8.68	4	201.6	244.4			98			
GR	166.5	201.6	162.4	218	162.4	228	166.5	244.4		
NC	0	0	.030	.3	.5					
X1	9	6	218.9	223.1			130			
X3	10							166.5	166.5	
GR	166.5	100	166.5	218.9	162.5	219	162.5	223	166.5	223.1
GR	166.5	300								
SC	1.013	.4	3		3	8	70	8.1	162.8	162.5
X1	9.7	6	218.9	223.1			70			
X2			2		166.5					
X3	10							166.5	166.5	
GR	166.5	100	166.5	218.9	162.8	219	162.8	223	166.5	223.1
GR	166.5	300								
NC	0	0	.030	.1	.3					
X1	9.78	4	203.2	242.8			8			
GR	166.5	203.2	162.8	218	162.8	228	166.5	242.8		
X1	11	4	205	241			122			
GR	166.5	205	163.3	218	163.3	228	166.5	241		
X1	11.4	4	0	545			40			
GR	166.5	0	163.3	20	163.3	515	166.5	545		
X1	12.6	4	0	600			120			
GR	166.5	0	163.3	20	163.3	560	166.5	600		

X1	14.5	4	330	570			190	
GR	166.5	330	163.3	365	163.3	530	166.5	570

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*               MAY   1991              *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  11/17/95  TIME  08:57:26   *
*                                       *
*****************************************
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```
***********************************
*                                 *
*    U.S. ARMY CORPS OF ENGINEERS *
*    HYDROLOGIC ENGINEERING CENTER*
*          609 SECOND STREET      *
*       DAVIS, CALIFORNIA 95616   *
*           (916) 551-1748        *
*                                 *
***********************************
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```
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        BRADFORD NORTH
  2       ID        PEAK FLOW FUTURE CONDITION
  3       ID        Q100 - 6HR STORM
  4       ID        FILE: BRAD3
  5       IT      2          0     181
  6       IO      5       0

  7       KK     SB1
  8       KM        COMPUTE HYDROGRAPH
  9       BA   0.083
 10       PH    100       0     .87    1.86     3.8     4.6     5.1     6.0
 11       LS      0 .  84.1
 12       UD    0.32

 13       KK  POND 1
 14       KM        ROUTE FLOW THROUTH 8X3 RCBC
 15       KO                                      21
 16       RS       1    STOR      -1
 17       SV       0     9.4
 18       SE   162.0   166.0
 19       SQ       0      24      64     120     164
 20       SE   162.0   163.0   164.0   165.0   166.0

 21       KK     SB2
 22       KM        COMPUTE HYDROGRAPH
 23       BA   0.082
 24       LS       0    84.3
 25       UD   0.284

 26       KK      J1
 27       KM        COMBINE HYDROGRAPH AT J1
 28       HC       2
 29       KO                                      21

 30       KK  POND 2
 31       KM        ROUTE FLOW THROUGH DBL 6X3 RCBC
 32       KO                                      21
 33       RS       1    STOR      -1
 34       SV       0    10.2
 35       SE   162.0   166.0
 36       SQ       0    37.2    98.4     180     264
 37       SE   162.0   163.0   164.0   165.0   166.0
 38       ZZ
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SB1	230.	3.37	37.	37.	37.	0.08		
ROUTED TO	POND 1	125.	3.73	32.	32.	32.	0.08	165.12	3.73
HYDROGRAPH AT	SB2	241.	3.33	37.	37.	37.	0.08		
2 COMBINED AT	J1	313.	3.40	69.	69.	69.	0.16		
ROUTED TO	POND 2	223.	3.80	62.	62.	62.	0.16	165.51	3.80

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

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300
*SECNO .000
3720 CRITICAL DEPTH ASSUMED

.000	2.08	161.88	161.88	162.00	162.60	.72	.00	.00	166.50
260.0	.0	260.0	.0	.0	38.1	.0	.0	.0	166.50
.00	.00	6.83	.00	.000	.030	.000	.000	159.80	118.63
.012139	0.	0.	0.	0	10	0	.00	26.67	145.30

*SECNO 2.820

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.06

2.820	2.96	163.86	.00	.00	164.11	.25	1.46	.05	166.50
260.0	.0	260.0	.0	.0	64.5	.0	.3	.2	166.50
.02	.00	4.03	.00	.000	.030	.000	.000	160.90	115.18
.002866	0.	282.	0.	3	0	0	.00	33.64	148.82

CCHV= .300 CEHV= .500
*SECNO 3.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .48

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 166.50 ELREA= 166.50

3.300	2.61	163.71	.00	.00	164.77	1.06	.25	.40	166.50
260.0	.0	260.0	.0	.0	31.5	.0	.4	.2	166.50
.02	.00	8.25	.00	.000	.030	.000	.000	161.10	125.95
.012406	0.	48.	0.	2	0	0	.00	12.10	138.05

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.013	.40	3.00	.00	3.00	6.00	70.00	8	1	161.30	161.10

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 4.000

SPECIAL CULVERT INLET CONTROL
EGIC = 165.734 EGOC = 165.400 PCWSE= 163.708 ELTRD= 166.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.84

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
165.73	165.40	.97	0.	260.	5.396	36.0	166.50	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 166.50 ELREA= 166.50

4.000	3.98	165.28	.00	.00	165.73	.45	.97	.00	166.50
260.0	.0	260.0	.0	.0	48.2	.0	.4	.2	166.50
.02	.00	5.40	.00	.000	.030	.000	.000	161.30	125.92
.003670	0.	70.	0.	2	0	0	.00	12.15	138.08

CCHV= .100 CEHV= .300
*SECNO 4.110

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.55

4.110	4.31	165.71	.00	.00	165.78	.08	.01	.04	166.50
260.0	.0	260.0	.0	.0	117.5	.0	.5	.2	166.50
.03	.00	2.21	.00	.000	.030	.000	.000	161.40	109.76
.000565	0.	11.	0.	2	0	0	.00	44.49	154.24

*SECNO 5.000

5.000	4.05	165.75	.00	.00	165.85	.09	.06	.00	166.50
260.0	.0	260.0	.0	.0	106.6	.0	.7	.3	166.50

.04	.00	2.44	.00	.000	.030	.000	.000	161.70	110.75
.000733	0.	89.	0.	1	0	0	.00	42.50	153.25

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 19.45

5.300	3.86	165.86	.00	.00	165.86	.00	.00	.01	166.50
260.0	.0	258.4	1.6	.0	1546.8	49.5	1.3	.5	162.00
.09	.00	.17	.03	.000	.030	.100	.000	162.00	110.55
.000002	0.	30.	0.	2	0	0	.00	435.15	545.70

*SECNO 6.500

6.500	3.86	165.86	.00	.00	165.86	.00	.00	.00	166.50
260.0	.0	260.0	.0	.0	1844.3	.0	5.9	1.7	166.50
.32	.00	.14	.00	.000	.030	.000	.000	162.00	42.55
.000001	0.	120.	0.	1	0	0	.00	492.90	535.45

*SECNO 7.300

7.300	3.86	165.86	.00	.00	165.86	.00	.00	.00	166.50
260.0	.0	260.0	.0	.0	1538.9	.0	9.0	2.6	166.50
.45	.00	.17	.00	.000	.030	.000	.000	162.00	107.16
.000002	0.	80.	0.	0	0	0	.00	428.26	535.42

*SECNO 7.600

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .56

7.600	3.86	165.86	.00	.00	165.86	.00	.00	.00	166.50
260.0	.0	260.0	.0	.0	958.3	.0	9.9	2.8	166.50
.48	.00	.27	.00	.000	.030	.000	.000	162.00	168.59
.000007	0.	30.	0.	0	0	0	.00	317.09	485.68

*SECNO 7.700

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .08

7.700	3.77	165.77	.00	.00	165.89	.12	.00	.03	166.50
260.0	.0	260.0	.0	.0	94.7	.0	10.0	2.9	166.50
.49	.00	2.74	.00	.000	.030	.000	.000	162.00	202.90
.001009	0.	10.	0.	2	0	0	.00	40.20	243.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.680

8.680	3.47	165.87	.00	.00	166.02	.15	.12	.01	166.50
260.0	.0	260.0	.0	.0	82.7	.0	10.2	3.0	166.50
.49	.00	3.14	.00	.000	.030	.000	.000	162.40	204.13
.001455	0.	98.	0.	2	0	0	.00	37.73	241.87

CCHV= .300 CEHV= .500
*SECNO 9.000
3280 CROSS SECTION 9.00 EXTENDED .66 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.000	4.66	167.16	167.16	.00	167.47	.31	.28	.08	166.50
260.0	83.6	122.4	54.0	78.8	19.2	51.0	10.4	3.0	166.50
.50	1.06	6.38	1.06	.100	.030	.100	.000	162.50	100.00
.008882	0.	130.	0.	20	12	0	.00	200.00	300.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.013	.40	3.00	.00	3.00	8.00	70.00	8	1	162.80	162.50

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 9.700

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 170.23
3280 CROSS SECTION 9.70 EXTENDED 3.73 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 10.29

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
169.74	170.27	2.76	0.	258.	.880	24.0	166.50	0.

9.700	7.42	170.22	.00	.00	170.23	.00	2.76	.00	166.50
260.0	142.0	27.1	90.8	443.1	30.8	286.6	10.4	3.0	166.50
.52	.32	.88	.32	.100	.030	.100	.000	162.80	100.00
.000084	0.	70.	0.	0	0	0	.00	200.00	300.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 9.780
3280 CROSS SECTION 9.78 EXTENDED 3.71 FEET

9.780	7.41	170.21	.00	.00	170.23	.02	.00	.00	166.50
260.0	.0	260.0	.0	.0	238.8	.0	10.4	3.0	166.50
.52	.00	1.09	.00	.000	.030	.000	.000	162.80	203.20
.000057	0.	8.	0.	2	0	0	.00	39.60	242.80

*SECNO 11.000
3280 CROSS SECTION 11.00 EXTENDED 3.72 FEET

11.000	6.92	170.22	.00	.00	170.24	.02	.01	.00	166.50
260.0	.0	260.0	.0	.0	207.4	.0	11.1	3.1	166.50
.54	.00	1.25	.00	.000	.030	.000	.000	163.30	205.00
.000082	0.	122.	0.	0	0	0	.00	36.00	241.00

*SECNO 11.400
3280 CROSS SECTION 11.40 EXTENDED 3.74 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 22.66

11.400	6.94	170.24	.00	.00	170.24	.00	.00	.00	166.50
260.0	.0	260.0	.0	.0	3704.7	.0	12.9	3.4	166.50
.70	.00	.07	.00	.000	.030	.000	.000	163.30	.00
.000000	0.	40.	0.	2	0	0	.00	545.00	545.00

*SECNO 12.600
3280 CROSS SECTION 12.60 EXTENDED 3.75 FEET

12.600	6.94	170.24	.00	.00	170.24	.00	.00	.00	166.50
260.0	.0	260.0	.0	.0	4071.7	.0	23.6	5.0	166.50
1.22	.00	.06	.00	.000	.030	.000	.000	163.30	.00
.000000	0.	120.	0.	0	0	0	.00	600.00	600.00

*SECNO 14.500
3280 CROSS SECTION 14.50 EXTENDED 3.74 FEET

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* Determine outflow discharge curve vs. water surface elevation
T1       BRADFORD NORTH ADDITION
T2       POND 1 AND 2 DISCHARGE CURVES
T3       POE AND ASSOCIATES OF KANSAS
J1     0       8                      -1                                    162
J2    -1              -1
J3   101
NC    .1      .1    .030      .1      .3
QT     7      20      60      100     140     180     220     260
X1     0       4     100     163.8
GR 166.5     100   159.8     127   159.8     137   166.5   163.8
X1  2.82       4   104.6   159.4                     282
GR 166.5   104.6   160.9     127   160.9     137   166.5   159.4
NC     0       0    .030      .3      .5
X1   3.3       6   125.9   138.1                      48
X3    10                                                 166.5   166.5
GR 166.5       0   166.5   125.9   161.1     126   161.1     138   166.5   138.1
GR 166.5     200
SC 2.013      .4       3               3       6      70     8.1   161.3   161.1
X1   4.0       6   125.9   138.1                      70
X2                     2           166.5
X3    10                                                 166.5   166.5
GR 166.5       0   166.5   125.9   161.3     126   161.3     138   166.5   138.1
GR 166.5     200
NC     0       0    .030      .1      .3
X1  4.12       4   106.6   157.4                      12
GR 166.5   106.6   161.4     127   161.4     137   166.5   157.4
X1     5       5   107.8     550                      88
GR 166.5   107.8   161.7     127   161.7     137   166.5   156.2   166.5     550
X1   5.3       6   107.8     520                      30
GR 166.5   107.8     162     127     162     137     162     139     162     520
GR 166.5     550
X1   6.5       4      40     538                     120
GR 166.5      40     162      58     162     520   166.5     538
X1   7.3       4     100     538                      80
GR 166.5     100     162     150     162     520   166.5     538
X1   7.6       4     160     500                      30
GR 166.5     160     162     220     162     400   166.5     500
X1   7.7       4     100     146                      10
GR 166.5     100     162     118     162     128   166.5     146
X1  8.68       4   101.6   144.4                      98
GR 166.5   101.6   162.4     118   162.4     128   166.5   144.4
NC     0       0    .030      .3      .5
X1     9       6   118.9   123.1                     130
X3    10                                                 166.5   166.5
GR 166.5       0   166.5   118.9   162.5     119   162.5     123   166.5   123.1
GR 166.5     200
SC 1.013      .4       3               3       8      70     8.1   162.8   162.5
X1   9.7       6   118.9   123.1                      70
X2                     2           166.5
X3    10                                                 166.5   166.5
GR 166.5       0   166.5   118.9   162.8     119   162.8     123   166.5   123.1
GR 166.5     200
NC     0       0    .030      .1      .3
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X1  9.78      4   103.2   142.8                      8
GR 166.5   103.2   162.8     118   162.8     128  166.5   142.8
X1    11      4     105     141                    122
GR 166.5     105   163.3     118   163.3     128  166.5     141
X1  11.4      4    -120     445                     40
GR 166.5    -120   163.3     -80   163.3     415  166.5     445
X1  12.6      4    -120     500                    120
GR 166.5    -120   163.3     -80   163.3     460  166.5     500
X1  14.5      4     230     470                    190
GR 166.5     230   163.3     265   163.3     430  166.5     470
EJ
ER
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T1      BRADFORD NORTH ADDITION
T2      POND 1 AND 2 DISCHARGE CURVES
T3      POE AND ASSOCIATES OF KANSAS
J1     0       8                    -1                                  162
J2    -1              -1
J3   101
NC    .1      .1    .030      .1      .3
QT     7      20      60     100     140     180     220     260
X1     0       4     100   163.8
GR 166.5     100   159.8     127   159.8     137   166.5   163.8
X1  2.82       4   104.6   159.4                     282
GR 166.5   104.6   160.9     127   160.9     137   166.5   159.4
NC     0       0    .030      .3      .5
X1   3.3       6   125.9   138.1                      48
X3    10                                                166.5   166.5
GR 166.5       0   166.5   125.9   161.1     126   161.1     138   166.5   138.1
GR 166.5     200                           .
SC 2.013      .4       3                3       6      70     8.1   161.3   161.1
X1   4.0       6   125.9   138.1                      70
X2                     2           166.5
X3    10                                                166.5   166.5
GR 166.5       0   166.5   125.9   161.3     126   161.3     138   166.5   138.1
GR 166.5     200
NC     0       0    .030      .1      .3
X1  4.12       4   106.6   157.4                      12
GR 166.5   106.6   161.4     127   161.4     137   166.5   157.4
X1     5       5   107.8     550                      88
GR 166.5   107.8   161.7     127   161.7     137   166.5   156.2   166.5     550
X1   5.3       6   107.8     520                      30
GR 166.5   107.8     162     127     162     137     162     139     162     520
GR 166.5     550
X1   6.5       4      40     538                     120
GR 166.5      40     162      58     162     520   166.5     538
X1   7.3       4     100     538                      80
GR 166.5     100     162     150     162     520   166.5     538
X1   7.6       4     160     500                      30
GR 166.5     160     162     220     162     400   166.5     500
X1   7.7       4     100     146                      10
GR 166.5     100     162     118     162     128   166.5     146
X1  8.68       4   101.6   144.4                      98
GR 166.5   101.6   162.4     118   162.4     128   166.5   144.4
NC     0       0    .030      .3      .5
X1     9       6   118.9   123.1                     130
X3    10                                                166.5   166.5
GR 166.5       0   166.5   118.9   162.5     119   162.5     123   166.5   123.1
GR 166.5     200
SC 1.013      .4       3                3       8      70     8.1   162.8   162.5
X1   9.7       6   118.9   123.1                      70
X2                     2           166.5
X3    10                                                166.5   166.5
GR 166.5       0   166.5   118.9   162.8     119   162.8     123   166.5   123.1
GR 166.5     200
NC     0       0    .030      .1      .3
X1  9.78       4   103.2   142.8                       8
GR 166.5   103.2   162.8     118   162.8     128   166.5   142.8
X1    11       4     105     141                     122
GR 166.5     105   163.3     118   163.3     128   166.5     141
X1  11.4       4    -120     445                      40
GR 166.5    -120   163.3     -80   163.3     415   166.5     445
X1  12.6       4    -120     500                     120
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```
GR 166.5   -120   163.3    -80   163.3     460   166.5     500
X1  14.5      4     230    470                     190
GR 166.5     230   163.3    265   163.3     430   166.5     470
EJ
ER
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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*                                       *
*  RUN DATE  11/16/95  TIME  13:20:15   *
*                                       *
*****************************************
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***********************************
*                                 *
*    U.S. ARMY CORPS OF ENGINEERS *
*    HYDROLOGIC ENGINEERING CENTER*
*          609 SECOND STREET      *
*       DAVIS, CALIFORNIA 95616   *
*          (916) 551-1748         *
*                                 *
***********************************
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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
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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        BRADFORD NORTH
  2       ID        PEAK FLOW FUTURE CONDITION
  3       ID        Q100 - 6HR STORM
  4       ID        FILE: BRAD2
  5       IT      2              0     181
  6       IO      5       0

  7       KK     SB1
  8       KM        COMPUTE HYDROGRAPH
  9       BA   0.083
 10       PH    100       0     .87    1.86     3.8     4.6     5.1     6.0
 11       LS      0 .  84.1
 12       UD    0.32
 13       ZZ
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*                                       *
*  RUN DATE  11/16/95  TIME  13:20:15   *
*                                       *
*****************************************
```


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


BRADFORD NORTH
PEAK FLOW FUTURE CONDITION
Q100 - 6HR STORM
FILE: BRAD2

6 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	2	MINUTES IN COMPUTATION INTERVAL
IDATE	1 0	STARTING DATE
ITIME	0000	STARTING TIME
NQ	181	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1 0	ENDING DATE
NDTIME	0600	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.03 HOURS
TOTAL TIME BASE 6.00 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

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SB1	230.	3.37	37.	37.	37.	0.08		

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

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                MAY   1991             *
*              VERSION 4.0.1E           *
*                                       *
*  RUN DATE  11/16/95  TIME  13:38:08   *
*                                       *
*****************************************
```


```
***********************************
*                                 *
*    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        BRADFORD NORTH
  2       ID        PEAK FLOW FUTURE CONDITION
  3       ID        Q100 - 6HR STORM
  4       ID        FILE: BRAD3
  5       IT      2              0     181
  6       IO      5       0

  7       KK     SB1
  8       KM        COMPUTE HYDROGRAPH
  9       BA   0.083
 10       PH    100       0     .87    1.86    3.8     4.6     5.1     6.0
 11       LS      0 .  84.1
 12       UD   0.32

 13       KK          POND 1
 14       KM        ROUTE FLOW THROUTH 8X3 RCBC
 15       KO                                      21
 16       RS      1    STOR      -1
 17       SV      0     9.4
 18       SE  162.0   166.0
 19       SQ      0      24      64     120     164
 20       SE  162.0   163.0   164.0   165.0   166.0
 21       ZZ
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*                                       *
*  RUN DATE  11/16/95  TIME  13:38:08   *
*                                       *
*****************************************
```

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

BRADFORD NORTH
PEAK FLOW FUTURE CONDITION
Q100 - 6HR STORM
FILE: BRAD3

```
  6 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          2  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         181  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME        0600  ENDING TIME
                     ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     0.03 HOURS
                      TOTAL TIME BASE      6.00 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


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


          ***************
          *             *
 13 KK    *             *       POND 1
          *             *
          ***************

 15 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
```

QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	181	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.033	TIME INTERVAL IN HOURS

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SB1	230.	3.37	37.	37.	37.	0.08		
ROUTED TO		125.	3.73	32.	32.	32.	0.08	165.12	3.73

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

Memorandum

To: Vicki Huang, P.E.

CC:

From: Kenny E. Hill, P.E.

Date: December 20, 1995

Subject: Bradford North Drainage Plan

Summary of Drainage Calculations

HEC1 File Brad1 - Q100 existing condidion to Pond 1 = 188cfs

HEC1 File Brad2 - Q100 exixting concition to Pond 2 = 230cfs

HEC1 File Brad3 - Preliminary cslculation routing pond 1 through 8'x3' RCBC (future condition)
Inflow = 230cfs
Outflow = 125cfs

HEC2 File BradR - Backwater through 10' bottom channel with 4:1 sides and double 6'x3' RCBC to Pond 1

HEC2 File BradR1 - Backwater through 10' bottom channel with 4:1 sides and 8'x3' RCBC to Pond 2

Both HEC2 runs wer to develop a discharge vs water level curve

HEC1 File Brad 5 - Pond 1 and 2 inflow and outflow using the discharge curves developed with HEC2

Pond 1 inflow = 230cfs DWS = 166.31
outflow = 129cfs

Pond 2 inflow = 241cfs DWS = 165.33
outflow = 230cfs

X:\APPS\WPFILES\548\VICKI

BRADFORD NORTH

DA = 53.3 Ac = 0.0832 SQ MI.

CN = 84.3

LAG = 0.284

STORAGE	162	163	164	165	1606	167
	0	3.04	6.23	9.59	13.28	17.32

10' X 3'

OUTFLOW	162	162.5	163	163.5	164	164.5	165
	0	10.99	30.9	56.58	87.12	121.75	160.04

1606	1607
310.16	450

8' X 3'

162	162.5	163	163.5	164	164.5	165
0	9.71	24.64	45.27	69.69	97.45	128.08

1606	1607
246.15	359.85

NOV - 27 1995

DESCRIBED NORTH DISCHARGE CURVE THROUGH SOUTH POND
SUMMARY OF HEC-2 RUN.

BEG W.S. CALC. AT CRITICAL DEPTH
GRASS CHANNEL n=.030
CHANNEL 10' WIDE - 4:1 SIDES - 0.4% SLOPE
DBL 6' X 3' RCBC n=.013
STA 0+00 AT WEST LINE OF ADDN.
STA 2+30 D.S. FACE RCBC 4+00 D.S. FACE
STA 5+30 NORMAL POND W.S. @ 162.0

DBL 6x3
T.W. AT D.S. FACE RCBC

Q	ELEV
20	161.57
60	162.01
100	162.33
140	162.54
180	162.80
220	163.67
260	163.18

W.S. AT POND 2

ELEV
162.43
163.06
163.53
163.89
164.20
164.47
164.72 - 164.57

CHECK

SUMMARY HEC 2 DATA

POND 2 - DISCHARGE CURVE THRU DBL 6'x3' RCBC

POND WS

Q	W.S.	AREA	VOLUME
20	162.43		
40			
60	163.08		
80			
100	163.53		
120			
140	163.89		
160			
180	164.20		
200			
220	164.47		
240			
260	164.72		

DBL 6'x3' RCBC TAILWATER

Q	

POND 2 THROUGH DSL 6' x 3' RCBC

	RCBC		
Q	DSEL	USEL	POND EL.
20	161.97	161.97	162.53
60	162.49	162.69	163.32
100	162.88	163.20	163.76
140	163.16	163.65	164.25
180	163.39	164.06	164.71
220	163.57	164.45	165.15
260	163.71	165.25	165.86

FILE BRADR

POND 1 THROUGH 8' x 3' RCBC

	RCBC		
Q	DS EL	US EL	POND EL.
20	163.28	163.64	164.09
60	163.75	164.56	165.02
100	164.19	165.30	165.91
140	164.61	165.93	166.5

FILE BRAD-R1

	INLET CONTROL	DBL 10 X 3'	OUTLET CONTROL
1602	0		
1603	27.2		
1604	99.4		
1605	185		
1606	209		230

INLET CONTROL		8' x 5' RCBC	OUTLET CONTROL
ELEV	Q		
162	0		
163	24		
164	64		
165	120		
166	164		150

INFLOW TO POND 1 230 cfs
OUTFLOW FROM POND 1 125 cfs

ROUTE Q_{100} THROUGH POND 2 DA = 0.082 SQ MI

CN FUTURE CONDITION

		CN	
OPEN AREA	1.9	61	116
1/4 AC LOTS	30.2	75	2265
IMPERVIOUS AREA	14.5	100	1450
POND	2.1	100	210
	48.7		4041

CN = 84.3

$$L = 0.49 \left[\frac{.43}{114} \right]^{0.5} 0.39^{-.57} = 0.284$$

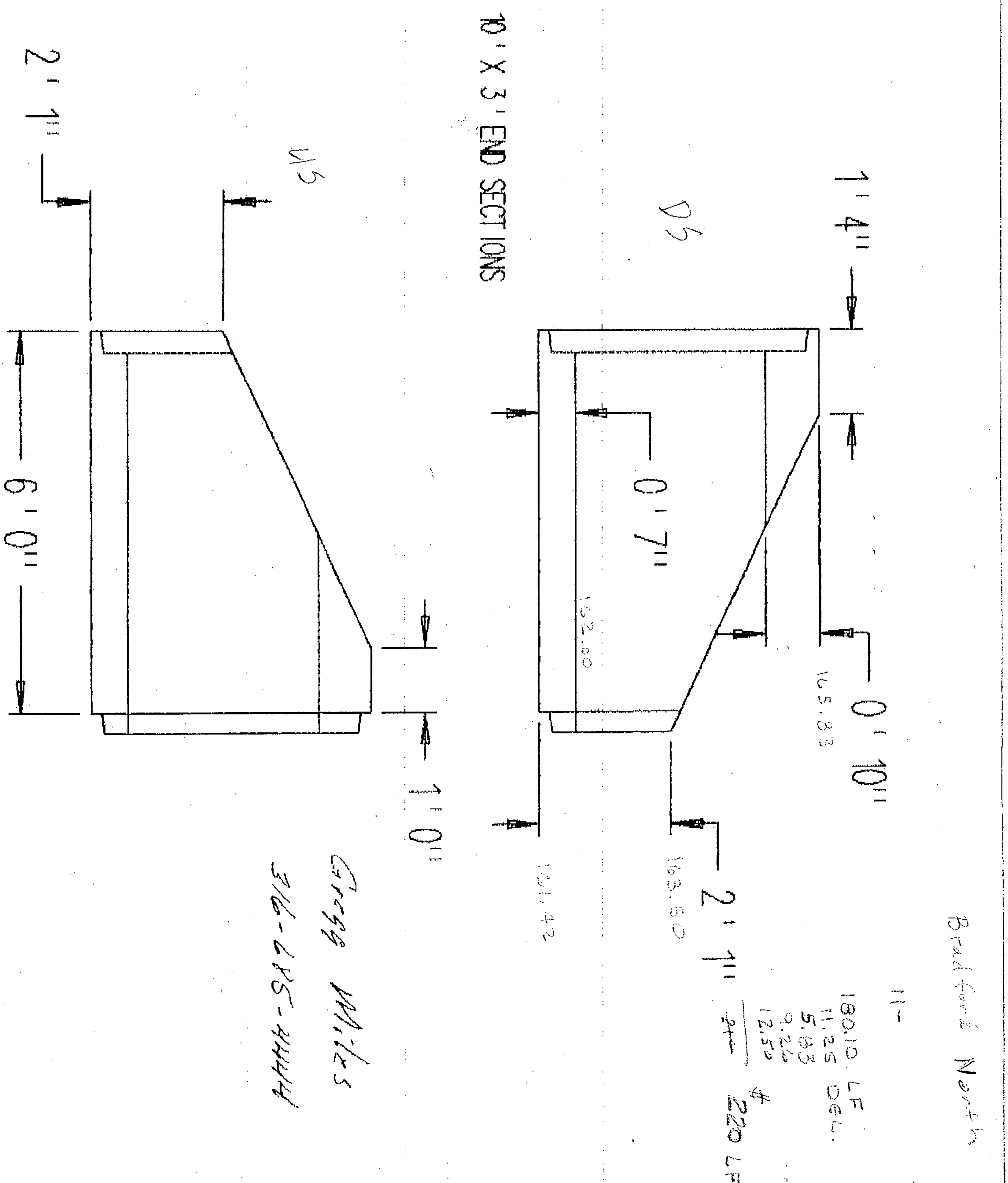
POND STORAGE

162.0	2.1
⋮	
166.0	3.0

10.2 AC FT

DSE RBL 8' x 5' RCBC DOUBLE ABOVE FLOWS

316-241-4363


10' X 3' END SECTIONS
US
DS
2' 1"
6' 0"
1' 0"
1' 4"
0' 7"
0' 10"
2' 1"
162.00
165.83
161.42
163.50
Gregg Wilkes
316-685-4444
Bradford North
11-
180.10 LF
11.25 Del.
5.83
9.26
12.50
#
220 LF

AFFIDAVIT

STATE OF KANSAS, COUNTY OF SEDGWICK: ss.

Michael E. Lindebak, P.E., City Engineer for the City of Wichita, Kansas, being first duly sworn, on oath states:

I have examined the recorded plat of Bradford North Addition to Wichita, Sedgwick County Kansas, and have found that four street names should be changed as follows:

N BROOKRIDGE ST, from N Keith St curving northeast; ending at N Keith St; adjacent to lots 3-16 Block 2; 1 & 8-11 Block 1; 25-29 Block 1; 33-34 Block 1 should be changed to **W RYAN ST**.

N BROOKRIDGE CT; adjacent to lots 1-7 Block 1 should be changed to **W RYAN CT**.

N BROOKRIDGE CT; adjacent to lots 11-24 Block 1 should be changed to **W RYAN CT**.

N BROOKRIDGE CT; adjacent to lots 30-33 Block 1 should be changed to **W RYAN CT**.

FURTHER AFFIANT SAITH NOT.

Michael E. Lindebak, P.E.

Dated this 16th day of June, 1997

(Seal)

ATTEST:

Taylor Levins, Office of Central Inspection
Permits Examiner

Lori Wilkerson, City of Wichita
Address Subcommittee Chairperson

STATE OF KANSAS, COUNTY OF SEDGWICK: ss.

Be it remembered that on this 16th, day of June, 1997, before me a notary public in and for said County and State, came Michael E. Lindebak, to me known to be the same person who executed the foregoing instrument duly acknowledged by me. In testimony whereof, I have hereunto set my hand and affixed my Notarial Seal the day and year above written.

JACK L LOVE
Notary Public - State of Kansas
My Appt. Expires 1-5-99

My Appointment Expires 1/5/99

SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 5

December 7, 1995

STAFF REPORT

(Revised Preliminary Plat Approved 4/20/95, Original Preliminary Plat Approved 5/12/94)
(Final Plat)

CASE NUMBER: S/D 93-78 BRADFORD NORTH ADDITION

OWNER/APPLICANT: 3AH, Inc., P. O. Box 9007, Wichita, KS 67277

SURVEYOR/ENGINEER: Yung Design Group, c/o Terry Smythe, 4912 East 29th Street North, Wichita, KS 67220
and Poe and Associates, c/o Ken Hill, 434 N. Oliver, Wichita, KS 67208

LOCATION: Southwest corner of 29th Street North and Tyler Road

SITE SIZE: 75 Acres

NUMBER OF LOTS

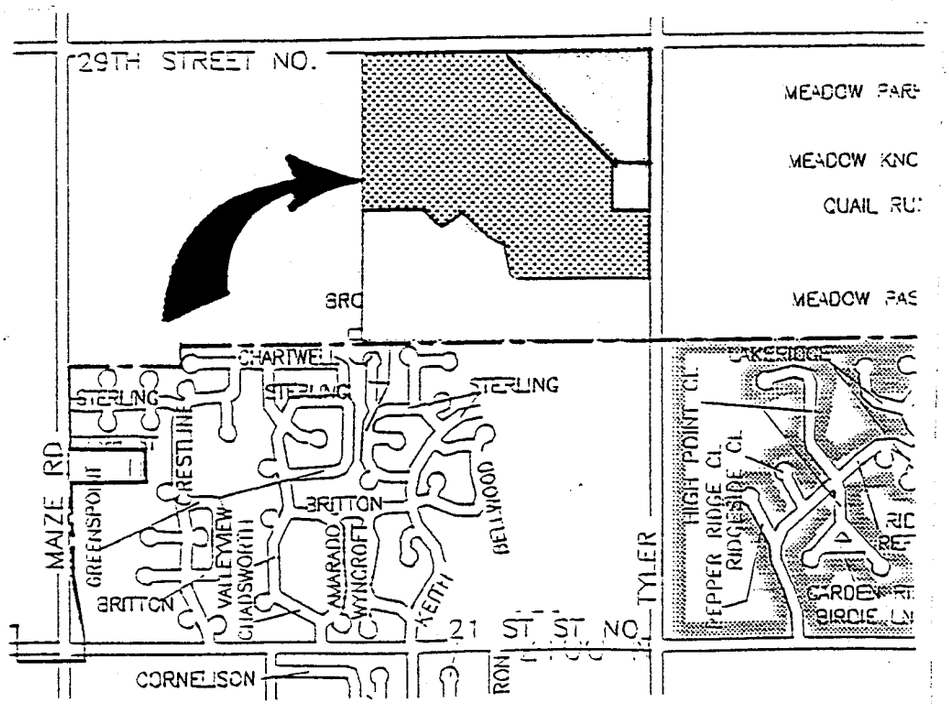
Residential:	240
Office:	
Commercial:	
Industrial:	
Total:	240

MINIMUM LOT AREA: ± 8,000 sq. ft.

CURRENT ZONING: "AA" City One Family Dwelling and ""LC" Light Commercial

---

VICINITY MAP:



NOTE: When the preliminary plat for this site was reviewed, the triangular area to the northeast was included as one large lot. That single lot was approximately 34 acres in size and would have carried split zoning with "C" at the street intersection of Tyler and 29th Street North with the remainder still being residential. The applicant either intended to rezone all of the site "LC" or residential and until that situation was resolved, it was recommended that platting be deferred. In the event residential uses are determined as the appropriate zoning for the site, this plat has platted a street stub into the unplatted area in order to allow for the residential areas to function together.

STAFF COMMENTS:

A. In order to plat the lot sizes being indicated by this Addition, this site was required to be annexed to the City of Wichita. Such annexation has been completed.

B. The applicant shall guarantee the extension of sanitary sewer to serve the lots being platted.

C. The applicant shall guarantee the extension of City water to serve the lots being platted. This guarantee shall also provide for any needed water line extensions along Tyler Road and 29th Street North adjacent to this site.

D. The applicant shall guarantee any drainage improvements required by the platting of this property.

E. The applicant shall guarantee construction of the storm sewers required by this plat.

F. The applicant shall guarantee the paving of the proposed interior streets.

G. The applicant shall provide a guarantee for the paving of Tyler Road and 29th Street North adjacent to this site. Prior to submitting the final plat tracing, the applicant shall meet with City Engineering in order to determine the extent of and the means for providing such a guarantee. As noted by Section 8-103 of the Subdivision Regulations, all streets serving urban, residential subdivisions are to be paved. Further, this section also notes that off-site improvements, which includes street construction shall also be provided.

H. As indicated by Traffic Engineering, the applicant shall guarantee left-turn lanes in Tyler Road for the entrance into this site and at the intersection with 29th Street North.

I. The applicant shall, except for the cul-de-sac type streets, guarantee sidewalks along one side of each continuous or looped type street. Because of the length of Keith/Meadow Knoll and the expected volume of traffic on this street, sidewalk on both sides of this street shall be provided. The applicant was advised that an alternate sidewalk could be considered, but apparently no such plan has been submitted.

J. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.

K. Based upon the Comprehensive Plan, this area was intended to be developed with lot sizes of one (1) acre or larger. Approval of this plat by the Planning Commission therefore also should

be considered as approving an amendment of the Comprehensive Plan as to the density of development being proposed by this plat.

L. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities. This covenant shall also provide for the homeowners' association to maintain the "parking strip" areas between the perimeter of this plat and the driving surfaces of 29th Street North and Tyler Road.

M. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the City, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by a method similar to special assessments.

N. The applicant shall submit a covenant which provides for four (4) off-street parking spaces per dwelling unit on each lot which abuts a 58-foot street. The covenant shall inventory the affected lots by lot and block number and shall state that the covenant runs with the land and is binding on future owners and assigns.

O. Prior to a final plat being submitted to the City Council for review, a letter shall be submitted to Planning indicating that any buildings or structures presently located in dedicated street rights-of-way (Wedgewood, Wedgewood Ct.), have been removed. If the applicant desires to leave these structures temporarily in the street rights-of-way, they shall meet with the City's Law Department to determine if an acceptable agreement could be provided to allow this.

P. On the final plat tracing, as shown on the preliminary plat each separate, noncontiguous Reserve needs to be provided a separate letter designation. That is each of the Reserve areas now shown as a Reserve A or B shall be individually lettered. The plattor's text shall consequently also be revised to note each such Reserve and precisely note the uses to be allowed in each Reserve.

Q. The plattor's text shall also clearly note that utilities within the Reserves are confined to easements. As now written, all of the Reserve area, in addition to indicated easements could be used for utilities. In such a situation, no structures could be allowed in the Reserves since utility conflicts could be involved.

R. If the "recreation" facilities noted for one of the Reserves (b) is intended to include a swimming pool and associated facilities, not only should the plattor's 's text clearly state this, but a site plan must be submitted to Planning for review and approval.

S. The plattor's text shall also be amended to indicate the platting of the wall easement and that utilities may cross this easement.

T. City Engineering needs to confirm both the acceptability of the minimum pad elevations and the

note restricting issuance of permits for certain lots involved in a possible FEMA flood map revision.

U. On the final plat tracing, the following changes shall be made:

- The cul-de-sac serving Lots 34 thru 41, Block 1 shall be renamed Keith Ct.
- The cul-de-sac Wedgewood serving Lots 4 through 18, Block 5 shall be designated a Circle.
- The MAPC signature block shall be amended to indicate Susan Osborne-Howes as Chair(man).
- The MAPC approval date will most likely still occur this year and the noted date should therefore still be shown as 1995.
- The County Clerk's signature block shall be amended to indicate Susan E. Crockett-Spoon.
- The street segments where Keith is shown as meeting the Bradford South Addition shall use dashed lines to indicate where the street intersects that Addition. Solid lines are used to indicate private streets.

V. As noted in the platting binder, the final plat tracing shall provide signatures for any entity holding a mortgage on this site (Bank of Colwich). Also, prior to releasing this plat for recording, proof shall be provided that all applicable 1995 property taxes have been paid for this site.

W. The representatives from the utility companies should be prepared to comment on the need for utility easements to be platted on this property. In particular it should be noted that KG&E-Electric requested a number of easements during review of the preliminary plat, but which have not been shown on this final plat. KG&E needs to verify if these easements are no longer required.

X. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations.

Y. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

Z. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (phone 316-946-4527) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

AA. The applicant is advised that various State and Federal requirements [specifically but not limited

to the Army Corps of Engineers, David Hibbs, Kanopolis Project Office, Rt. 1, Box 30, Marquette, KS 67464 (913-546-2294) or Ron Little, Kansas Department of Wildlife and Parks, P. O. Box 317, Valley Center, KS 67147] for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.

The applicant is particularly advised that a letter (April 24, 1995) from the Sedgwick County Conservation District has indicated that the likelihood of this site being involved with hydric soils and therefore wetland concerns is quite high.

BB. Perimeter closure computations shall be submitted with the final plat tracing. Section 5-101(c).

CC. Recording of the plat within 30 days after approval by the City Council.

DD. The representatives from **City Engineering** should be prepared to comment on the status of the applicant's drainage plan.

SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 4

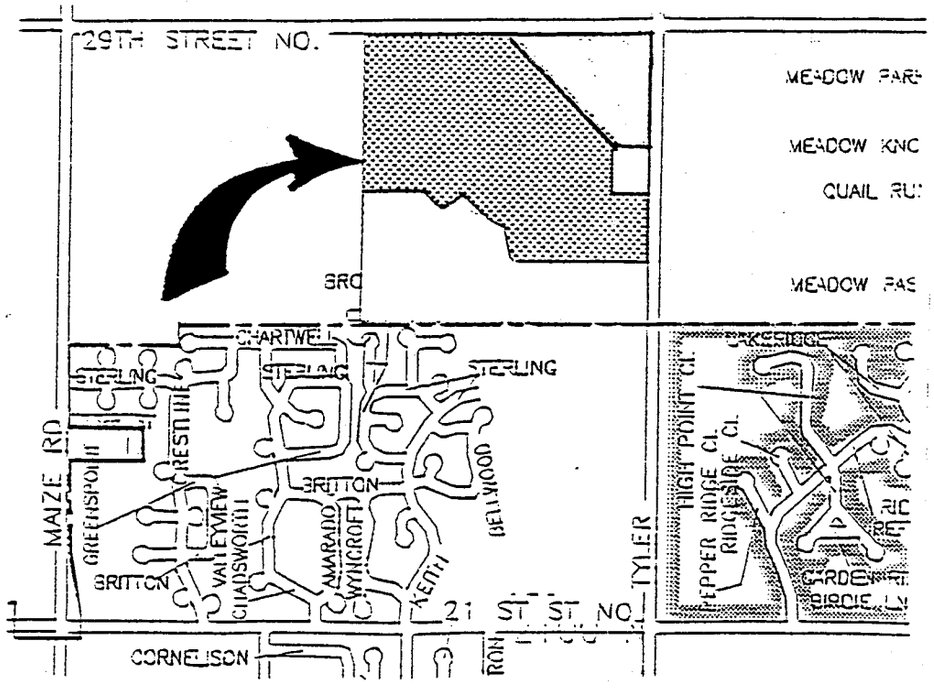
December 21, 1995

STAFF REPORT

(Revised Preliminary Plat Approved 4/20/95, Original Preliminary Plat Approved 5/12/94)
(Final Plat Deferred 12/7/95)

CASE NUMBER:	S/D 93-78 BRADFORD NORTH ADDITION
OWNER/APPLICANT:	3AH, Inc., P. O. Box 9007, Wichita, KS 67277
SURVEYOR/ENGINEER:	Yung Design Group, c/o Terry Smythe, 4912 East 29th Street North, Wichita, KS 67220
and	Poe and Associates, c/o Ken Hill, 434 N. Oliver, Wichita, KS 67208
LOCATION:	Southwest corner of 29th Street North and Tyler Road
SITE SIZE:	75 Acres
NUMBER OF LOTS	
Residential:	240
Office:	
Commercial:	
Industrial:	
Total:	240
MINIMUM LOT AREA:	± 8,000 sq. ft.
CURRENT ZONING:	"AA" City One Family Dwelling and ""LC" Light Commercial

VICINITY MAP:



NOTE: When the preliminary plat for this site was reviewed, the triangular area to the northeast was included as one large lot. That single lot was approximately 34 acres in size and would have carried split zoning with "C" at the street intersection of Tyler and 29th Street North with the remainder still being residential. The applicant either intended to rezone all of the site "LC" or residential and until that situation was resolved, it was recommended that platting be deferred. In the event residential uses are determined as the appropriate zoning for the site, this plat has platted a street stub into the unplatted area in order to allow for the residential areas to function together.

STAFF COMMENTS:

A. In order to plat the lot sizes being indicated by this Addition, this site was required to be annexed to the City of Wichita. Such annexation has been completed.

B. The applicant shall guarantee the extension of sanitary sewer to serve the lots being platted.

C. The applicant shall guarantee the extension of City water to serve the lots being platted. This guarantee shall also provide for any needed water line extensions along Tyler Road and 29th Street North adjacent to this site.

D. The applicant shall guarantee any drainage improvements required by the platting of this property.

E. The applicant shall guarantee construction of the storm sewers required by this plat.

F. The applicant shall guarantee the paving of the proposed interior streets.

G. The applicant shall provide a guarantee for the paving of Tyler Road and 29th Street North adjacent to this site. Prior to submitting the final plat tracing, the applicant shall meet with City Engineering in order to determine the extent of and the means for providing such a guarantee. As noted by Section 8-103 of the Subdivision Regulations, all streets serving urban, residential subdivisions are to be paved. Further, this section also notes that off-site improvements, which includes street construction shall also be provided.

H. As indicated by Traffic Engineering, the applicant shall guarantee left-turn lanes in Tyler Road for the entrance into this site and at the intersection with 29th Street North.

I. The applicant shall, except for the cul-de-sac type streets, guarantee sidewalks along one side of each continuous or looped type street. Because of the length of Keith/Meadow Knoll and the expected volume of traffic on this street, sidewalk on both sides of this street shall be provided. The applicant was advised that an alternate sidewalk could be considered, but apparently no such plan has been submitted.

J. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.

K. Based upon the Comprehensive Plan, this area was intended to be developed with lot sizes of one (1) acre or larger. Approval of this plat by the Planning Commission therefore also should

note restricting issuance of permits for certain lots involved in a possible FEMA flood map revision.

U. On the final plat tracing, the following changes shall be made:

- The cul-de-sac serving Lots 34 thru 41, Block 1 shall be renamed Keith Ct.
- The cul-de-sac Wedgewood serving Lots 4 through 18, Block 5 shall be designated a Circle.
- The MAPC signature block shall be amended to indicate Susan Osborne-Howes as Chair(man).
- The MAPC approval date will most likely still occur this year and the noted date should therefore still be shown as 1995.
- The County Clerk's signature block shall be amended to indicate Susan E. Crockett-Spoon.
- The street segments where Keith is shown as meeting the Bradford South Addition shall use dashed lines to indicate where the street intersects that Addition. Solid lines are used to indicate private streets.

V. As noted in the platting binder, the final plat tracing shall provide signatures for any entity holding a mortgage on this site (Bank of Colwich). Also, prior to releasing this plat for recording, proof shall be provided that all applicable 1995 property taxes have been paid for this site.

W. The representatives from the utility companies should be prepared to comment on the need for utility easements to be platted on this property. In particular it should be noted that KG&E-Electric requested a number of easements during review of the preliminary plat, but which have not been shown on this final plat. KG&E needs to verify if these easements are no longer required.

X. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations.

Y. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

Z. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (phone 316-946-4527) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

AA. The applicant is advised that various State and Federal requirements [specifically but not limited

be considered as approving an amendment of the Comprehensive Plan as to the density of development being proposed by this plat.

L. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities. This covenant shall also provide for the homeowners' association to maintain the "parking strip" areas between the perimeter of this plat and the driving surfaces of 29th Street North and Tyler Road.

M. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the City, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by a method similar to special assessments.

N. The applicant shall submit a covenant which provides for four (4) off-street parking spaces per dwelling unit on each lot which abuts a 58-foot street. The covenant shall inventory the affected lots by lot and block number and shall state that the covenant runs with the land and is binding on future owners and assigns.

O. Prior to a final plat being submitted to the City Council for review, a letter shall be submitted to Planning indicating that any buildings or structures presently located in dedicated street rights-of-way (Wedgewood, Wedgewood Ct.), have been removed. If the applicant desires to leave these structures temporarily in the street rights-of-way, they shall meet with the City's Law Department to determine if an acceptable agreement could be provided to allow this.

P. On the final plat tracing, as shown on the preliminary plat each separate, noncontiguous Reserve needs to be provided a separate letter designation. That is each of the Reserve areas now shown as a Reserve A or B shall be individually lettered. The plattor's text shall consequently also be revised to note each such Reserve and precisely note the uses to be allowed in each Reserve.

Q. The plattor's text shall also clearly note that utilities within the Reserves are confined to easements. As now written, all of the Reserve area, in addition to indicated easements could be used for utilities. In such a situation, no structures could be allowed in the Reserves since utility conflicts could be involved.

R. If the "recreation" facilities noted for one of the Reserves (b) is intended to include a swimming pool and associated facilities, not only should the plattor's 's text clearly state this, but a site plan must be submitted to Planning for review and approval.

S. The plattor's text shall also be amended to indicate the platting of the wall easement and that utilities may cross this easement.

T. City Engineering needs to confirm both the acceptability of the minimum pad elevations and the

to the Army Corps of Engineers, David Hibbs, Kanopolis Project Office, Rt. 1, Box 30, Marquette, KS 67464 (913-546-2294) or Ron Little, Kansas Department of Wildlife and Parks, P. O. Box 317, Valley Center, KS 67147] for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.

The applicant is particularly advised that a letter (April 24, 1995) from the Sedgwick County Conservation District has indicated that the likelihood of this site being involved with hydric soils and therefore wetland concerns is quite high.

BB. Perimeter closure computations shall be submitted with the final plat tracing. Section 5-101(c).

CC. Recording of the plat within 30 days after approval by the City Council.

DD. The representatives from **City Engineering** should be prepared to comment on the status of the applicant's drainage plan.