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REVISED MASTER DRAINAGE PLAN

TONTO VERDE

May 1993

for

RIO VERDE SERVICES, INC.

by

BROOKS, HERSEY & ASSOCIATES, INC.

BROOKS, HERSEY & ASSOC., INC.
5246 South 40th Street
PHOENIX, ARIZONA 85040
PH (602) 437-3733
FAX (602) 437-3424

LETTER OF TRANSMITTAL

DATE	JOB NO.
5/20/93	519-01-TM

ATTENTION: Cora Fernandez

RE: Tonto Verde

TO Mar. Co. Flood Control

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			Revised Drainage Plan w/ HEC1 & HEC 2
1			Flopy of HEC1 & HEC 2 Data Files

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☒ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

FLOOD CONTROL DISTRICT
RECEIVED
MAY 21 1993

CH ENG		P & PM	
DEP		HYDRO	
ADMIN		LMGT	
FINANCE		FILE	
C & O	/	CGF	
ENGR			

REMARKS

COPY TO _____

SIGNED: Mike O'Neill

s are not as noted, kindly notify us at once.

INTRODUCTION

Tonto Verde is a master planned community located in Northeast Maricopa County, South of Rio Verde Drive in Sections 31 and 36, Township 5 North, Ranges 5 and 6 East, of the Gila and Salt River Base and Meridian. The area is relatively flat sloping from West to East at 2% to 2½%. Areas 14, 15 and 16 are the first parcels to be developed in Tonto Verde and are located at the Southern portion of the community.

TONTO VERDE MASTER DRAINAGE PLAN

A master drainage plan for Tonto Verde has been prepared by Wiley and Associates in July 1992 to address drainage patterns and potential runoff in this watershed area.

After the review of contour maps and aerial photographs obtained by Brooks, Hersey & Associates, Inc. for the design of the first phase of Tonto Verde, it became apparent that further definition of existing offsite drainage patterns was required.

The contributing offsite drainage patterns to Tonto Verde were further defined by a field reconnaissance of the effected areas and by obtaining and studying larger scale topographic maps. These were used to redefine the drainage map as shown.

Additionally, a diversion structure was found to be needed in the "Verde River" planned community to adequately balance the flow of storm water in conformance with the existing Tonto Verde Drainage Master Plan (see *Fig. A1*).

Design storm water flows for the drainage areas were recalculated for the pre- and post-development 6-hour and 24-hour, 100-year storm.

Since the changes to the drainage areas were relatively minor, rainfall loss coefficients were not revised. In addition, only minor changes in the storm water runoff factors were made since the HEC-1 input files were created by utilizing the Maricopa County Flood Control District's "MCUHP1" computer program instead of assembling the input files manually.

The results of the new runoff calculations and a revised Master Plan Drainage Map (*Fig. A2*) showing revised runoff flows are attached.

WATER SURFACE PROFILES

Water surface profiles were calculated on FIRM 10, FIRM 11 and the unnamed wash Tributary to drainage area NA. The water surface profiles were determined using the HEC-2 computer program.

Channel and overbank roughness factors were chosen based upon field observation of the existing channels. The smaller washes, FIRM 11 and area NA were assigned a channel "n" of .035 to simulate an occasional tree or bush in the channel bottom. FIRM 10 channel is a broad clear bottom wash and was assigned a "n" of .030. The overbank areas are assigned and "n" of .050 to reflect the much denser vegetation in those areas.

Sub-critical and super-critical flows were calculated on FIRM 10 and FIRM 11.

The existing south bank of the FIRM 10 channel adjacent to RIO VERDE UNIT 12 will contain the 100-year, 24-hour flow. The developer will construct a 30" high reinforced masonry wall on the south side of the channel to provide freeboard protection. for freeboard

HEC-1 FILES

P6	=	Pre-development 100-year, 6-hour storm
P24	=	Pre-development 100-year, 24-hour storm
D6	=	Post-development 100-year, 6-hour storm
D24	=	Post-development 100-year, 24-hour storm

<u>FILE LIST</u>

P6Y.DAT
P24Y.DAT
D6Y.DAT
D24Y.DAT
P6NA.DAT
P24NA.DAT
D6NA.DAT
D24NA.DAT
P6NB.DAT
P24NB.DAT
D6NB.DAT
D24NB.DAT
P6R.DAT
P24R.DAT
D6R.DAT
D24R.DAT
P6AB.DAT
P24AB.DAT
D6AB.DAT
D24AB.DAT

HEC-2 FILES

TONTON.DAT	Wash in Area NA
TONTO10.DAT	FIRM 10 6-Hour Storm
TONTO10A.DAT	FIRM 10 24-Hour Storm
TONTO10D.DAT	FIRM 10 6-Hour Storm, Super-Critical Flow
TONTO10AD.DAT	FIRM 10 24-Hour Storm, Super-Critical Flow
TONTO11.DAT	FIRM 11 6-Hour Storm
TONTO11A.DAT	FIRM 11 24-Hour Storm
TONTO11D.DAT	FIRM 11 6-Hour Storm, Super-Critical Flow
TONTO11AD.DAT	FIRM 11 24-Hour Storm, Super-Critical Flow

BROOKS, HERSEY & ASSOCIATES, INC.
5246 South 40th Street
PHOENIX, ARIZONA 85040
(602) 437-3733

JOB FIRM 10 HEC 2

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

STA	100yr 6hr WS Elev	100yr 6hr SC WS Elev	100yr 24hr WS Elev	100yr 24hr S.C. WS Elev.
0+00	1586.34	1586.40	1586.56	1586.47
1+06	1586.93	1584.79	1587.13	1584.90
1+30	1587.83	1589.62	1587.92	1589.97
1+60	1587.70	1586.25	1587.71	1586.35
2+00	1588.43	1587.65	1588.91	1587.79
4+00	1592.74	1592.24	1593.22	1592.38
6+00	1597.02	1596.16	1597.33	1596.25
8+00	1601.55	1601.19	1602.04	1601.33
11+00	1606.11	1605.74	1606.48	1605.87
14+00	1610.54	1610.21	1610.94	1610.37
17+00	1615.03	1614.84	1615.45	1614.99
20+00	1618.54	1618.75	1618.94	1618.93
21+90	1621.41	1620.11	1621.68	1620.19
22+00	1626.15	1625.48	1626.36	1625.56
22+60	1628.06	1628.16	1628.28	1628.28
24+00	1629.42	1629.17	1629.63	1629.25

PRODUCT 204-1 (Single Sheets) 205-1 (Padded) NEBS® Inc., Groton, Mass. 01471. To Order PHONE TOLL FREE 1-800-225-6380

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(602) 437-3733

JOB FIRM 11 HEC 2
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

STA	11 (6hr) WS Elev	TW	11A (24hr) WS Elev	TW	11D (6hr SC) WS Elev	TW	11AD (24hr SC) WS Elev	TW
0+00	1586.21	316.37	1586.32	331.06	1586.21	316.47	1586.32	331.08
2+15	1589.33	130.39	1589.55	150.98	1588.90	98.04	1588.96	99.19
3+30	1592.24	43.41	1592.57	43.55	1591.30	43.00	1591.72	43.18
3+50	1594.10	125.49	1594.70	136.40	1594.67	135.76	1595.07	203.48
3+70	1593.66	43.60	1594.21	43.83	1593.02	43.33	1593.42	43.50
5+00	1596.03	179.11	1596.21	195.37	1595.48	128.24	1595.65	143.34
6+60	1599.47	135.47	1599.64	140.34	1599.46	135.21	1599.66	140.91
7+80	1601.28	198.10	1601.42	206.60	1600.95	177.52	1601.05	184.01
10+10	1605.21	120.65	1605.41	128.72	1605.20	120.03	1605.42	129.18
12+85	1610.77	92.79	1610.99	95.91	1610.05	82.76	1610.23	85.08
14+60	1615.61	75.98	1615.88	80.80	1615.61	75.99	1615.92	81.53
17+15	1618.88	127.90	1619.10	132.79	1618.14	111.91	1618.33	115.88
20+35	1627.15	97.45	1627.37	103.37	1626.80	88.06	1626.98	92.99
22+00	1631.34	75.52	1631.61	80.20	1630.83	66.60	1631.11	71.49
23+45	1635.17	92.16	1635.41	98.69	1634.89	84.48	1635.13	91.11
24+90	1638.88	110.27	1639.11	118.69	1638.35	90.95	1638.52	96.98
26+50	1644.70	95.94	1644.90	97.61	1644.15	91.28	1644.33	92.75
28+10	1648.82	118.17	1649.08	126.76	1648.77	115.92	1648.97	124.26
29+90	1651.89	129.69	1652.05	132.06	1651.84	128.94	1652.02	131.58
31+80	1656.84	175.21	1656.99	184.21	1656.46	152.39	1656.57	159.30
33+70	1661.61	189.67	1661.75	193.96	1661.62	189.80	1661.78	194.86
35+70	1666.17	224.04	1666.29	227.32	1665.63	204.57	1665.68	206.76
38+80	1673.62	137.70	1673.78	143.06	1673.60	137.33	1673.80	143.61
40+70	1676.95	216.75	1677.09	229.20	1676.48	192.52	1676.60	200.81
42+50	1681.20	192.32	1681.34	195.49	1681.20	192.44	1681.37	196.14

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1*****************************************
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 *                                      *                                                    *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:31:16 *                                                   *      ,    (916)
756-1104            *
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN Y,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       Y
  6           KM   SUB-BASIN Y
  7           KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
  9           BA    .683
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.280
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 1.85
 14           PC    .000    .009    .016    .025    .034    .042    .051    .059    .067    .076
 15           PC    .087    .100    .120    .159    .246    .440    .716    .848    .905    .940
 16           PC    .952    .964    .976    .988   1.000
 17           LG    .150    .350   3.700    .290    .000
 18           UC   1.125   1.431
 19           UA       0       3       5       8      12      20      43      75      90      96
 20           UA     100

 21           KK      RA
 22           KM      ROUTE 1
 23           RS      10    FLOW      -1
 24           RC     .05    .035     .05    2100    .024
```

```
          25          RX      0      18      35      52      72      86     100     110
          26          RY     40      38      37      36      36      37      38      40

          27          KK     Y1
          28          KM   SUB-BASIN Y1
          29          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          30          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          31          BA    .240
          32          LG    .150    .390   6.000    .170    .000
          33          UC    .329    .199
          34          UA      0       3       5       8      12      20      43      75      90      96
          35          UA    100

          36          KK     C1
          37          KM     COMBINE Y & Y1
          38          HC      2

          39          KK      B
          40          KM   SUB-BASIN B
          41          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          42          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          43          BA   1.036
          44          LG    .150    .350   3.700    .290    .000
          45          UC   1.500   2.260
          46          UA      0       3       5       8      12      20      43      75      90      96
          47          UA    100
1                                                HEC-1 INPUT
  PAGE  2

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

          48          KK     RB
          49          KM     ROUTE 2
          50          RS     15    FLOW      -1
          51          RC    .05    .035     .05    4120    .029
          52          RX      0      18      35      52      72      86     100     110
          53          RY     40      38      37      36      36      37      38      40

          54          KK     B1
          55          KM   SUB-BASIN B1
          56          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          57          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          58          BA    .050
          59          LG    .150    .390   6.000    .170    .000
          60          UC    .363    .542
          61          UA      0       3       5       8      12      20      43      75      90      96
          62          UA    100

          63          KK     C4
          64          KM     COMBINE B & B1
          65          HC      2

          66          KK     C2
          67          KM     COMBINE Y & B
          68          HC      2

          69          KK     RC
          70          KM     ROUTE 3
          71          RS      2    FLOW      -1
          72          RC    .05    .035     .05    1900    .020
          73          RX      0      18      35      52      72      86     100     110
          74          RY     40      38      37      36      36      37      38      40

          75          KK     Y2
          76          KM   SUB-BASIN Y2
          77          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          78          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          79          BA    .140
          80          LG    .150    .390   6.000    .170    .000
          81          UC    .233    .100
          82          UA      0       3       5       8      12      20      43      75      90      96
          83          UA    100

          84          KK     C3
          85          KM     COMBINE Y & Y2
          86          HC      2
          87          ZZ
1*****************************************
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 *                                        *                                                                    *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990             *                                                                    *    HYDROLOGIC
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 *              VERSION 4.0               *                                                                    *          609
SECOND STREET           *
 *                                        *                                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  14:31:16 *                                                                   *          (916)
756-1104             *
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 ****************************************
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TONTO VERDE BASIN Y,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                        PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN     MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW     PEAK                                          AREA      STAGE
   MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                              Y       314.    4.92        108.        28.         27.        .68

         ROUTED TO
+                             RA       315.    5.00        108.        28.         27.        .68
+                                                                                                      37.26
     5.00

         HYDROGRAPH AT
+                             Y1       359.    4.17         41.        10.         10.        .24

         2 COMBINED AT
+                             C1       381.    4.25        148.        38.         36.        .92

         HYDROGRAPH AT
+                              B       330.    5.33        152.        42.         40.       1.04

         ROUTED TO
+                             RB       330.    5.42        151.        42.         40.       1.04
+                                                                                                      37.23
```

```
     5.42
          HYDROGRAPH AT
+                         B1      48.   4.25      9.      2.      2.     .05
          2 COMBINED AT
+                         C4     339.   5.42    157.     44.     42.    1.09
          2 COMBINED AT
+                         C2     631.   5.17    302.     82.     79.    2.01
          ROUTED TO
+                         RC     631.   5.25    302.     82.     79.    2.01
+                                                                        ,    37.81
     5.25
          HYDROGRAPH AT
+                         Y2     248.   4.08     24.      6.      6.     .14
          2 COMBINED AT
+                         C3     631.   5.25    324.     88.     84.    2.15

*** NORMAL END OF HEC-1 ***
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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
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 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:32:28 *                                                   *       '   (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
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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.

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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASINY,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       Y
  6           KM   SUB-BASIN Y
  7           KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
  9           BA    .683
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.280
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 1.85
 14           PC    .000    .009    .016    .025    .034    .042    .051    .059    .067    .076
 15           PC    .087    .100    .120    .159    .246    .440    .716    .848    .905    .940
 16           PC    .952    .964    .976    .988   1.000
 17           LG    .150    .350   3.700    .290    .000
 18           UC   1.125   1.431
 19           UA       0       3       5       8      12      20      43      75      90      96
 20           UA     100

 21           KK      RA
 22           KM      ROUTE 1
 23           RS      10    FLOW      -1
 24           RC     .05    .035     .05    2100    .024
```

```
          25          RX      0      18      35      52      72      86     100     110
          26          RY     40      38      37      36      36      37      38      40

          27          KK      Y1
          28          KM   SUB-BASIN Y1
          29          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          30          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          31          BA    .240
          32          LG    .130    .390   6.000    .170  13.000
          33          UC    .225    .131
          34          UA      0       5      16      30      65      77      84      90      94      97
          35          UA    100

          36          KK      C1
          37          KM      COMBINE Y & Y1
          38          HC       2

          39          KK       B
          40          KM   SUB-BASIN B
          41          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          42          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          43          BA   1.036
          44          LG    .150    .350   3.700    .290    .000
          45          UC   1.500   2.260
          46          UA      0       3       5       8      12      20      43      75      90      96
          47          UA    100
1                                                HEC-1 INPUT
  PAGE  2

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

          48          KK      RB
          49          KM      ROUTE 2
          50          RS      15    FLOW      -1
          51          RC     .05    .035     .05    4120    .024
          52          RX      0      18      35      52      72      86     100     110
          53          RY     40      38      37      36      36      37      38      40

          54          KK      B1
          55          KM   SUB-BASIN B1
          56          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          57          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          58          BA    .050
          59          LG    .160    .390   6.000    .170   2.000
          60          UC    .246    .352
          61          UA      0       5      16      30      65      77      84      90      94      97
          62          UA    100

          63          KK      C4
          64          KM      COMBINE B & B1
          65          HC       2

          66          KK      C2
          67          KM      COMBINE Y & B
          68          HC       2

          69          KK      RC
          70          KM      ROUTE 3
          71          RS       2    FLOW      -1
          72          RC     .05    .035     .05    1900    .020
          73          RX      0      18      35      52      72      86     100     110
          74          RY     40      38      37      36      36      37      38      40

          75          KK      Y2
          76          KM   SUB-BASIN Y2
          77          KM   6-HOUR RAINFALL, PATTERN NO. 1.85 WAS USED TO FIND TC & R FOR THIS BASIN
          78          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .979
          79          BA    .140
          80          LG    .130    .390   6.000    .170  15.000
          81          UC    .167    .069
          82          UA      0       5      16      30      65      77      84      90      94      97
          83          UA    100

          84          KK      C3
          85          KM      COMBINE Y & Y2
          86          HC       2
          87          ZZ
1*****************************************
*****************************************
```

```
 *                                        *                                                        *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                                                        *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990             *                                                        *    HYDROLOGIC
ENGINEERING CENTER     *
 *               VERSION 4.0              *                                                        *          609
SECOND STREET           *
 *                                        *                                                        *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  14:32:28 *                                                        *          (916)
756-1104             *
 *                                        *                                                        *
                    *
 ****************************************
****************************************
```

TONTO VERDE BASINY,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
        OPERATION       STATION      FLOW     PEAK                                          AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            Y       314.    4.92        108.        28.         27.        .68

        ROUTED TO
+                           RA       315.    5.00        108.        28.         27.        .68
+                                                                                                   37.26
     5.00

        HYDROGRAPH AT
+                           Y1       409.    4.00         47.        12.         11.        .24

        2 COMBINED AT
+                           C1       414.    4.08        151.        39.         38.        .92

        HYDROGRAPH AT
+                            B       330.    5.33        152.        42.         40.       1.04

        ROUTED TO
+                           RB       330.    5.42        151.        42.         40.       1.04
+                                                                                                   37.29
```

```
     5.42
         HYDROGRAPH AT
+                          B1      60.    4.08        9.        2.        2.      .05
         2 COMBINED AT
+                          C4     333.    5.42      155.       44.       42.     1.09
         2 COMBINED AT
+                          C2     619.    5.25      304.       83.       80.     2.01
         ROUTED TO
+                          RC     618.    5.33      304.       83.       80.     2.01
+                                                                                      37.79
     5.33
         HYDROGRAPH AT
+                          Y2     272.    4.00       28.        7.        7.      .14
         2 COMBINED AT
+                          C3     698.    4.08      329.       90.       87.     2.15

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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:31:58 *                                                   *      '    (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN Y,100 YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       Y
  6           KM   SUB-BASIN Y
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA    .683
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.32 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.234
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .350   3.700    .290    .000
 20           UC   1.112   1.413
 21           UA       0       3       5       8      12      20      43      75      90      96
 22           UA     100

 23           KK      RA
 24           KM      ROUTE 1
```

```
 25          RS      10    FLOW      -1
 26          RC     .05    .035     .05    2100    .024
 27          RX       0      18      35      52      72      86     100     110
 28          RY      40      38      37      36      36      37      38      40

 29          KK      Y1
 30          KM   SUB-BASIN Y1
 31          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 32          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 33          BA    .240
 34          LG    .150    .390   6.000    .170    .000
 35          UC    .313    .188
 36          UA       0       3       5       8      12      20      43      75      90      96
 37          UA     100

 38          KK      C1
 39          KM      COMBINE Y & Y1
 40          HC       2

 41          KK       B
 42          KM   SUB-BASIN B
 43          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 44          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 45          BA   1.036
 46          LG    .150    .350   3.700    .290    .000
 47          UC   1.500   2.260
 48          UA       0       3       5       8      12      20      43      75      90      96
 49          UA     100
```


HEC-1 INPUT

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

 50          KK      RB
 51          KM      ROUTE 2
 52          RS      15    FLOW      -1
 53          RC     .05    .035     .05    4120    .029
 54          RX       0      18      35      52      72      86     100     110
 55          RY      40      38      37      36      36      37      38      40

 56          KK      B1
 57          KM   SUB-BASIN B1
 58          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 59          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 60          BA    .050
 61          LG    .150    .390   6.000    .170    .000
 62          UC    .342    .508
 63          UA       0       3       5       8      12      20      43      75      90      96
 64          UA     100

 65          KK      C4
 66          KM      COMBINE B & B1
 67          HC       2

 68          KK      C2
 69          KM      COMBINE Y & B
 70          HC       2

 71          KK      RC
 72          KM      ROUTE 3
 73          RS       2    FLOW      -1
 74          RC     .05    .035     .05    1900    .020
 75          RX       0      18      35      52      72      86     100     110
 76          RY      40      38      37      36      36      37      38      40

 77          KK      Y2
 78          KM   SUB-BASIN Y2
 79          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 80          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 81          BA    .140
 82          LG    .150    .390   6.000    .170    .000
 83          UC    .229    .098
 84          UA       0       3       5       8      12      20      43      75      90      96
 85          UA     100

 86          KK      C3
 87          KM      COMBINE Y & Y2
 88          HC       2
 89          ZZ
```

```
1*****************************************
*****************************************
 *                                       *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                       *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:31:58 *                                                   *           (916)
756-1104             *
 *                                       *                                                    *
                    *
 *****************************************
*****************************************
```

TONTO VERDE BASIN Y,100 YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                    RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                            TIME IN HOURS,  AREA IN SQUARE MILES

                                        PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION       STATION       FLOW     PEAK                                          AREA      STAGE
  MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            Y       295.   12.83          96.         24.         24.        .68

        ROUTED TO
+                           RA       295.   12.83          96.         24.         24.        .68
+                                                                                                     37.22
    12.83

        HYDROGRAPH AT
+                           Y1       361.   12.08          37.          9.          9.        .24

        2 COMBINED AT
+                           C1       387.   12.17         132.         34.         32.        .92

        HYDROGRAPH AT
+                            B       300.   13.17         135.         37.         36.       1.04

        ROUTED TO
```

```
+                          RB      300.   13.25        135.        37.        36.      1.04
+                                                                                              37.18
    13.25

        HYDROGRAPH AT
+                          B1       50.   12.17          8.         2.         2.       .05

        2 COMBINED AT
+                          C4      308.   13.25        140.        39.        38.      1.09

        2 COMBINED AT
+                          C2      576.   13.08        270.        73.        70.      2.01

        ROUTED TO
+                          RC      574.   13.17        270.        73.        70.      2.01
+                                                                                              37.73
    13.17

        HYDROGRAPH AT
+                          Y2      240.   12.00         22.         5.         5.       .14

        2 COMBINED AT
+                          C3      628.   12.08        290.        78.        75.      2.15


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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:32:56 *                                                   *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN Y,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       Y
  6           KM   SUB-BASIN Y
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA    .683
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.32 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.234
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .350   3.700    .290    .000
 20           UC   1.112   1.413
 21           UA      0       3       5       8      12      20      43      75      90      96
 22           UA    100

 23           KK      RA
 24           KM      ROUTE 1
 25           RS      10    FLOW      -1
```

```
          26          RC     .05    .035     .05    2100    .024
          27          RX       0      18      35      52      72      86     100     110
          28          RY      40      38      37      36      36      37      38      40

          29          KK      Y1
          30          KM   SUB-BASIN Y1
          31          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          32          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          33          BA    .240
          34          LG    .130    .390   6.000    .170  13.000
          35          UC    .221    .128
          36          UA       0       5      16      30      65      77      84      90      94      97
          37          UA     100

          38          KK      C1
          39          KM      COMBINE Y & Y1
          40          HC       2

          41          KK       B
          42          KM   SUB-BASIN B
          43          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          44          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          45          BA   1.036
          46          LG    .150    .350   3.700    .290    .000
          47          UC   1.500   2.260
          48          UA       0       3       5       8      12      20      43      75      90      96
          49          UA     100
1                                                HEC-1 INPUT
  PAGE  2

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

          50          KK      RB
          51          KM      ROUTE 2
          52          RS      15    FLOW      -1
          53          RC     .05    .035     .05    4120    .029
          54          RX       0      18      35      52      72      86     100     110
          55          RY      40      38      37      36      36      37      38      40

          56          KK      B1
          57          KM   SUB-BASIN B1
          58          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          59          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          60          BA    .050
          61          LG    .160    .390   6.000    .170   2.000
          62          UC    .246    .352
          63          UA       0       5      16      30      65      77      84      90      94      97
          64          UA     100

          65          KK      C4
          66          KM      COMBINE B & B1
          67          HC       2

          68          KK      C2
          69          KM      COMBINE Y & B
          70          HC       2

          71          KK      RC
          72          KM      ROUTE 3
          73          RS       2    FLOW      -1
          74          RC     .05    .035     .05    1900    .020
          75          RX       0      18      35      52      72      86     100     110
          76          RY      40      38      37      36      36      37      38      40

          77          KK      Y2
          78          KM   SUB-BASIN Y2
          79          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          80          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          81          BA    .140
          82          LG    .130    .390   6.000    .170  15.000
          83          UC    .162    .067
          84          UA       0       5      16      30      65      77      84      90      94      97
          85          UA     100

          86          KK      C3
          87          KM      COMBINE Y & Y2
          88          HC       2
          89          ZZ
1*****************************************
```

```
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:32:56 *                                                   *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

TONTO VERDE BASIN Y,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                    RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                            TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW     PEAK                                         AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                            Y       295.   12.83          96.         24.         24.       .68

         ROUTED TO
+                           RA       295.   12.83          96.         24.         24.       .68
+                                                                                                    37.22
    12.83

         HYDROGRAPH AT
+                           Y1       415.   12.00          42.         12.         11.       .24

         2 COMBINED AT
+                           C1       420.   12.00         137.         36.         35.       .92

         HYDROGRAPH AT
+                            B       300.   13.17         135.         37.         36.      1.04

         ROUTED TO
+                           RB       300.   13.25         135.         37.         36.      1.04
```

```
+                                                                                                                    37.18
    13.25
        HYDROGRAPH AT
+                                B1       62.   12.08          8.          2.          2.        .05
        2 COMBINED AT
+                                C4      303.   13.25        139.         39.         38.       1.09
        2 COMBINED AT
+                                C2      571.   13.08        274.         75.         72.       2.01
        ROUTED TO
+                                RC      570.   13.17        273.         75.         72.       2.01
+                                                                                                                    37.72
    13.17
        HYDROGRAPH AT
+                                Y2      253.   12.00         25.          7.          7.        .14
        2 COMBINED AT
+                                C3      714.   12.00        297.         82.         79.       2.15
```

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

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1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  08:54:11 *                                                   *      ,    (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NA,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/12/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.195
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.49
 14           PC    .000    .012    .018    .027    .041    .052    .063    .074    .086    .097
 15           PC    .110    .125    .147    .192    .277    .461    .682    .817    .884    .925
 16           PC    .948    .962    .974    .988   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.212    .635
 19           UA       0       3       5       8      12      20      43      75      90      96
 20           UA     100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2092    2789
```

```
 25          DQ      0     592    1186    1778    2370

 26          KK      R1
 27          KM      ROUTE 1
 28          RS       7    FLOW      -1
 29          RC     .05    .035     .05   18220    .027
 30          RX       0      45      90      97     104     110     155     200
 31          RY     100      95      90      90      90      90      95     100

 32          KK      NA
 33          KM   SUB-BASIN BASIN NA
 34          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 35          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 36          BA   1.029
 37          LG    .150    .390   6.300    .160    .000
 38          UC   1.513   1.902
 39          UA       0       3       5       8      12      20      43      75      90      96
 40          UA     100

 41          KK      C1
 42          KM      COMBINE NA & D1
 43          HC       2

 44          KK      R2
 45          KM      ROUTE 2
 46          RS       2    FLOW      -1
 47          RC     .05    .035     .05    2430    .023
 48          RX       0      45      90      97     104     110     155     200
 49          RY     100      95      90      90      90      90      95     100
1                                                HEC-1 INPUT
 PAGE  2

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

 50          KK     NA1
 51          KM   SUB-BASIN NA1
 52          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 53          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 54          BA    .110
 55          LG    .150    .390   6.000    .170    .000
 56          UC    .287    .175
 57          UA       0       3       5       8      12      20      43      75      90      96
 58          UA     100

 59          KK      C2
 60          KM      COMBINE NA & NA1
 61          HC       2

 62          KK      R3
 63          KM      ROUTE 3
 64          RS       1    FLOW      -1
 65          RC     .05    .035     .05    1700    .020
 66          RX       0      45      90      97     104     110     155     200
 67          RY     100      95      90      90      90      90      95     100

 68          KK     NA2
 69          KM   SUB-BASIN NA2
 70          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 72          BA    .060
 73          LG    .150    .390   6.000    .170    .000
 74          UC    .254    .162
 75          UA       0       3       5       8      12      20      43      75      90      96
 76          UA     100

 77          KK      C3
 78          KM      COMBINE NA & NA2
 79          HC       2

 80          KK      R4
 81          KM      ROUTE 4
 82          RS       1    FLOW      -1
 83          RC     .05    .035     .05    1950    .021
 84          RX       0      45      90      97     104     110     155     200
 85          RY     100      95      90      90      90      90      95     100

 86          KK     NA3
 87          KM   SUB-BASIN NA3
 88          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
```

```
            89          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
            90          BA    .080
            91          LG    .150    .390   6.000    .170    .000
            92          UC    .271    .165
            93          UA       0       3       5       8      12      20      43      75      90      96
            94          UA     100
1                                                   HEC-1 INPUT
  PAGE  3

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


            95          KK      C4
            96          KM      COMBINE NA & NA3
            97          HC       2
            98          ZZ
1****************************************
*************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990             *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *              VERSION 4.0               *                                                    *          609
SECOND STREET           *
 *                                        *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  08:54:11 *                                                  *          (916)
756-1104             *
 *                                        *                                                    *
                    *
 ****************************************
*************************************
```

```
                        TONTO VERDE BASIN NA,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/12/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                    RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                            TIME IN HOURS,  AREA IN SQUARE MILES

                                        PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION       STATION       FLOW     PEAK                                          AREA      STAGE
  MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            M      3501.    4.92         803.        201.        193.       5.26
```

```
          DIVERSION TO
+                          D1      2975.    4.92        682.       170.       164.       5.26
          HYDROGRAPH AT
+                          D1       526.    4.92        121.        30.        29.       5.26
          ROUTED TO
+                          R1       486.    5.42        121.        30.        29.       5.26
+                                                                                                91.75
     5.42
          HYDROGRAPH AT
+                          NA       345.    5.33        149.        40.        38.       1.03
          2 COMBINED AT
+                          C1       828.    5.42        269.        70.        67.       6.29
          ROUTED TO
+                          R2       826.    5.50        269.        70.        67.       6.29
+                                                                                                92.39
     5.50
          HYDROGRAPH AT
+                          NA1      134.    4.17         17.         4.         4.        .11
          2 COMBINED AT
+                          C2       826.    5.50        283.        74.        71.       6.40
          ROUTED TO
+                          R3       820.    5.58        282.        74.        71.       6.40
+                                                                                                92.48
     5.58
          HYDROGRAPH AT
+                          NA2       74.    4.08          9.         2.         2.        .06
          2 COMBINED AT
+                          C3       820.    5.58        291.        76.        74.       6.46
          ROUTED TO
+                          R4       818.    5.58        290.        76.        74.       6.46
+                                                                                                92.44
     5.58
          HYDROGRAPH AT
+                          NA3       98.    4.17         12.         3.         3.        .08
          2 COMBINED AT
+                          C4       819.    5.58        302.        79.        76.       6.54

*** NORMAL END OF HEC-1 ***
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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  08:54:52 *                                                   *       ,   (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NA,100YR 6HR POST-DEVELOPMENT,MJO'N 5/12/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.195
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.49
 14           PC    .000    .012    .018    .027    .041    .052    .063    .074    .086    .097
 15           PC    .110    .125    .147    .192    .277    .461    .682    .817    .884    .925
 16           PC    .948    .962    .974    .988   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.212    .635
 19           UA       0      .3       5       8      12      20      43      75      90      96
 20           UA     100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2092    2789
```

```
 25          DQ      0     592    1186    1778    2370

 26          KK     R1
 27          KM     ROUTE 1
 28          RS      7    FLOW      -1
 29          RC    .05    .035     .05   18220    .027
 30          RX      0      45      90      97     104     110     155     200
 31          RY    100      95      90      90      90      90      95     100

 32          KK     NA
 33          KM   SUB-BASIN BASIN NA
 34          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 35          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 36          BA   1.029
 37          LG    .150    .390   6.300    .160    .000
 38          UC   1.513   1.902
 39          UA      0       3       5       8      12      20      43      75      90      96
 40          UA    100

 41          KK     C1
 42          KM     COMBINE NA & D1
 43          HC      2

 44          KK     R2
 45          KM     ROUTE 2
 46          RS      2    FLOW      -1
 47          RC    .05    .035     .05    2430    .023
 48          RX      0      45      90      97     104     110     155     200
 49          RY    100      95      90      90      90      90      95     100
1                                                HEC-1 INPUT
  PAGE  2

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

 50          KK    NA1
 51          KM   SUB-BASIN NA1
 52          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 53          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 54          BA    .110
 55          LG    .140    .390   6.000    .170  11.000
 56          UC    .200    .117
 57          UA      0       5      16      30      65      77      84      90      94      97
 58          UA    100

 59          KK     C2
 60          KM     COMBINE NA & NA1
 61          HC      2

 62          KK     R3
 63          KM     ROUTE 3
 64          RS      1    FLOW      -1
 65          RC    .05    .035     .05    1700    .020
 66          RX      0      45      90      97     104     110     155     200
 67          RY    100      95      90      90      90      90      95     100

 68          KK    NA2
 69          KM   SUB-BASIN NA2
 70          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
 71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
 72          BA    .060
 73          LG    .140    .390   6.000    .170  10.000
 74          UC    .637    .448
 75          UA      0       5      16      30      65      77      84      90      94      97
 76          UA    100

 77          KK     C3
 78          KM     COMBINE NA & NA2
 79          HC      2

 80          KK     R4
 81          KM     ROUTE 4
 82          RS      1    FLOW      -1
 83          RC    .05    .035     .05    1950    .021
 84          RX      0      45      90      97     104     110     155     200
 85          RY    100      95      90      90      90      90      95     100

 86          KK    NA3
 87          KM   SUB-BASIN NA3
 88          KM   6-HOUR RAINFALL, PATTERN NO. 2.49 WAS USED TO FIND TC & R FOR THIS BASIN
```

```
            89          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .954
            90          BA    .080
            91          LG    .120    .390   6.000    .170  17.000
            92          UC    .188    .110
            93          UA      0       5      16      30      65      77      84      90      94      97
            94          UA    100
1                                                   HEC-1 INPUT
  PAGE  3

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


            95          KK      C4
            96          KM      COMBINE NA & NA3
            97          HC       2
            98          ZZ
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  08:54:52 *                                                 *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
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```

```
                        TONTO VERDE BASIN NA,100YR 6HR POST-DEVELOPMENT,MJO'N 5/12/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                   RUNOFF SUMMARY
                                             FLOW IN CUBIC FEET PER SECOND
                                           TIME IN HOURS,  AREA IN SQUARE MILES

                                      PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION       STATION      FLOW     PEAK                                         AREA      STAGE
  MAX STAGE
+                                                      6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                           M      3501.    4.92         803.        201.        193.       5.26
```

```
          DIVERSION TO
+                          D1      2975.    4.92        682.       170.       164.       5.26

          HYDROGRAPH AT
+                          D1       526.    4.92        121.        30.        29.       5.26

          ROUTED TO
+                          R1       486.    5.42        121.        30.        29.       5.26
+                                                                                                91.75
     5.42

          HYDROGRAPH AT
+                          NA       345.    5.33        149.        40.        38.       1.03

          2 COMBINED AT
+                          C1       828.    5.42        269.        70.        67.       6.29

          ROUTED TO
+                          R2       826.    5.50        269.        70.        67.       6.29
+                                                                                                92.39
     5.50

          HYDROGRAPH AT
+                         NA1       151.    4.00         19.         5.         5.        .11

          2 COMBINED AT
+                          C2       827.    5.50        283.        75.        72.       6.40

          ROUTED TO
+                          R3       822.    5.58        283.        75.        72.       6.40
+                                                                                                92.48
     5.58

          HYDROGRAPH AT
+                         NA2        52.    4.33         10.         3.         2.        .06

          2 COMBINED AT
+                          C3       830.    5.50        293.        77.        74.       6.46

          ROUTED TO
+                          R4       827.    5.58        292.        77.        74.       6.46
+                                                                                                92.45
     5.58

          HYDROGRAPH AT
+                         NA3       113.    4.00         15.         4.         4.        .08

          2 COMBINED AT
+                          C4       829.    5.58        305.        81.        78.       6.54


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


1*****************************************
*****************************************
 *                                     *                                                  *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                  *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990             *                                                  *   HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0               *                                                  *         609
SECOND STREET          *
 *                                       *                                                  *      DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  08:55:55 *                                                 *          (916)
756-1104            *
 *                                       *                                                  *
                    *
 *****************************************
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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  16:30:59 *                                                  *      ,   (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NA,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/12/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA      0       3       5       8      12      20      43      75      90      96
 22           UA    100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
          25          DT      D1
          26          DI       0     697    1395    2092    2789
          27          DQ       0     592    1186    1778    2370

          28          KK      R1
          29          KM      ROUTE 1
          30          RS       7    FLOW      -1
          31          RC     .05    .035     .05   18220    .027
          32          RX       0      45      90      97     104     110     155     200
          33          RY     100      95      90      90      90      90      95     100

          34          KK      NA
          35          KM   SUB-BASIN BASIN NA
          36          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          37          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          38          BA   1.029
          39          LG    .150    .390   6.000    .160    .000
          40          UC   1.250   1.540
          41          UA       0       3       5       8      12      20      43      75      90      96
          42          UA     100

          43          KK      C1
          44          KM      COMBINE NA & D1
          45          HC       2
1                                                HEC-1 INPUT
  PAGE  2

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

          46          KK      R2
          47          KM      ROUTE 2
          48          RS       2    FLOW      -1
          49          RC     .05    .035     .05    2430    .023
          50          RX       0      45      90      97     104     110     155     200
          51          RY     100      95      90      90      90      90      95     100

          52          KK     NA1
          53          KM   SUB-BASIN NA1
          54          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          55          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          56          BA    .110
          57          LG    .150    .390   6.000    .170    .000
          58          UC    .250    .150
          59          UA       0       3       5       8      12      20      43      75      90      96
          60          UA     100

          61          KK      C2
          62          KM      COMBINE NA & NA1
          63          HC       2

          64          KK      R3
          65          KM      ROUTE 3
          66          RS       1    FLOW      -1
          67          RC     .05    .035     .05    1700    .020
          68          RX       0      45      90      97     104     110     155     200
          69          RY     100      95      90      90      90      90      95     100

          70          KK     NA2
          71          KM   SUB-BASIN NA2
          72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          74          BA    .060
          75          LG    .150    .390   6.000    .170    .000
          76          UC    .221    .138
          77          UA       0       3       5       8      12      20      43      75      90      96
          78          UA     100

          79          KK      C3
          80          KM      COMBINE NA & NA2
          81          HC       2

          82          KK      R4
          83          KM      ROUTE 4
          84          RS       1    FLOW      -1
          85          RC     .05    .035     .05    1950    .021
          86          RX       0      45      90      97     104     110     155     200
          87          RY     100      95      90      90      90      90      95     100
1                                                HEC-1 INPUT
  PAGE  3
```

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

            88          KK     NA3
            89          KM   SUB-BASIN NA3
            90          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
            91          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
            92          BA    .080
            93          LG    .150    .390   6.000    .170    .000
            94          UC    .233    .140
            95          UA       0       3       5       8      12      20      43      75      90      96
            96          UA     100

            97          KK      C4
            98          KM      COMBINE NA & NA3
            99          HC       2
           100          ZZ
1****************************************
****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  16:30:59 *                                                   *          (916)
756-1104            *
 *                                    *                                                    *
                    *
 ****************************************
****************************************
```

TONTO VERDE BASIN NA,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/12/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW     PEAK                                          AREA      STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR
```

```
                HYDROGRAPH AT
+                                M      4359.  12.67     828.     207.     199.     5.26
                DIVERSION TO
+                                D1     3704.  12.67     703.     176.     169.     5.26
                HYDROGRAPH AT
+                                D1      656.  12.67     124.      31.      30.     5.26
                ROUTED TO
+                                R1      580.  13.25     124.      31.      30.     5.26
+                                                                                          91.92
        13.25
                HYDROGRAPH AT
+                                NA      448.  12.92     160.      41.      40.     1.03
                2 COMBINED AT
+                                C1      993.  13.17     284.      72.      70.     6.29
                ROUTED TO
+                                R2      989.  13.25     284.      72.      70.     6.29
+                                                                                          92.64
        13.25
                HYDROGRAPH AT
+                               NA1      182.  12.08      17.       4.       4.      .11
                2 COMBINED AT
+                                C2      990.  13.25     300.      77.      74.     6.40
                ROUTED TO
+                                R3      982.  13.33     300.      77.      74.     6.40
+                                                                                          92.71
        13.33
                HYDROGRAPH AT
+                               NA2      101.  12.08       9.       2.       2.      .06
                2 COMBINED AT
+                                C3      982.  13.33     309.      79.      76.     6.46
                ROUTED TO
+                                R4      979.  13.33     308.      79.      76.     6.46
+                                                                                          92.68
        13.33
                HYDROGRAPH AT
+                               NA3      134.  12.08      13.       3.       3.      .08
                2 COMBINED AT
+                                C4      979.  13.33     320.      82.      79.     6.54

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

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1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  15:56:13 *                                                   *       ,   (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NA,100YR 24HR POST-DEVELOPMENT,MJO'N 5/12/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA       0       3       5       8      12      20      43      75      90      96
 22           UA     100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
          25          DT      D1
          26          DI       0     697    1395    2092    2789
          27          DQ       0     592    1186    1778    2370

          28          KK      R1
          29          KM      ROUTE 1
          30          RS       7    FLOW      -1
          31          RC     .05    .035     .05   18220    .027
          32          RX       0      45      90      97     104     110     155     200
          33          RY     100      95      90      90      90      90      95     100

          34          KK      NA
          35          KM   SUB-BASIN NA
          36          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          37          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          38          BA   1.029
          39          LG    .150    .390   6.300    .160    .000
          40          UC   1.258   1.551
          41          UA       0       3       5       8      12      20      43      75      90      96
          42          UA     100

          43          KK      C1
          44          KM      COMBINE NA & D1
          45          HC       2
1                                                HEC-1 INPUT
  PAGE  2

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

          46          KK      R2
          47          KM      ROUTE 2
          48          RS       2    FLOW      -1
          49          RC     .05    .035     .05    2430    .023
          50          RX       0      45      90      97     104     110     155     200
          51          RY     100      95      90      90      90      90      95     100

          52          KK     NA1
          53          KM   SUB-BASIN NA1
          54          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          55          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          56          BA    .110
          57          LG    .140    .390   6.000    .170  11.000
          58          UC    .175    .101
          59          UA       0       5      16      30      65      77      84      90      94      97
          60          UA     100

          61          KK      C2
          62          KM      COMBINE NA & NA1
          63          HC       2

          64          KK      R3
          65          KM      ROUTE 3
          66          RS       1    FLOW      -1
          67          RC     .05    .035     .05    1700    .020
          68          RX       0      45      90      97     104     110     155     200
          69          RY     100      95      90      90      90      90      95     100

          70          KK     NA2
          71          KM   SUB-BASIN NA2
          72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          74          BA    .060
          75          LG    .140    .390   6.000    .170  10.000
          76          UC    .154    .093
          77          UA       0       5      16      30      65      77      84      90      94      97
          78          UA     100

          79          KK      C3
          80          KM      COMBINE NA & NA2
          81          HC       2

          82          KK      R4
          83          KM      ROUTE 4
          84          RS       1    FLOW      -1
          85          RC     .05    .035     .05    1950    .021
          86          RX       0      45      90      97     104     110     155     200
          87          RY     100      95      90      90      90      90      95     100
1                                                HEC-1 INPUT
  PAGE  3
```

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

            88          KK     NA3
            89          KM   SUB-BASIN NA3
            90          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
            91          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
            92          BA    .080
            93          LG    .120    .390   6.000    .170  17.000
            94          UC    .162    .094
            95          UA      0       5      16      30      65      77      84      90      94      97
            96          UA    100

            97          KK      C4
            98          KM      COMBINE NA & NA3
            99          HC       2
           100          ZZ
1*****************************************
****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  15:56:13 *                                                 *           (916)
756-1104            *
 *                                      *                                                    *
                    *
 *****************************************
****************************************
```

TONTO VERDE BASIN NA,100YR 24HR POST-DEVELOPMENT,MJO'N 5/12/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN           5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2    0  ENDING DATE
                       NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW    PEAK                                          AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR
```

```
          HYDROGRAPH AT
+                                M      4359.   12.67       828.       207.       199.      5.26
          DIVERSION TO
+                                D1     3704.   12.67       703.       176.       169.      5.26
          HYDROGRAPH AT
+                                D1      656.   12.67       124.        31.        30.      5.26
          ROUTED TO
+                                R1      580.   13.25       124.        31.        30.      5.26
+                                                                                                 91.92
     13.25
          HYDROGRAPH AT
+                                NA      442.   12.92       158.        41.        39.      1.03
          2 COMBINED AT
+                                C1      988.   13.17       283.        72.        69.      6.29
          ROUTED TO
+                                R2      985.   13.25       282.        72.        69.      6.29
+                                                                                                 92.63
     13.25
          HYDROGRAPH AT
+                               NA1      199.   12.00        19.         5.         5.       .11
          2 COMBINED AT
+                                C2      986.   13.25       300.        77.        74.      6.40
          ROUTED TO
+                                R3      979.   13.33       299.        77.        74.      6.40
+                                                                                                 92.71
     13.33
          HYDROGRAPH AT
+                               NA2      109.   12.00        10.         3.         3.       .06
          2 COMBINED AT
+                                C3      980.   13.33       309.        80.        77.      6.46
          ROUTED TO
+                                R4      977.   13.33       309.        80.        77.      6.46
+                                                                                                 92.68
     13.33
          HYDROGRAPH AT
+                               NA3      147.   12.00        15.         4.         4.       .08
          2 COMBINED AT
+                                C4      979.   13.33       323.        84.        81.      6.54

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

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1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  13:25:41 *                                                   *       '    (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NB,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.202
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.44
 14           PC    .000    .012    .018    .027    .040    .051    .062    .073    .084    .095
 15           PC    .108    .123    .144    .189    .275    .460    .683    .819    .886    .927
 16           PC    .948    .962    .974    .988   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.204    .630
 19           UA      0       3       5       8      12      20      43      75      90      96
 20           UA    100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2789
```

```
          25          DQ      0     453     907    1813

          26          KK     R1
          27          KM     ROUTE 1
          28          RS      7    FLOW      -1
          29          RC    .05    .035    .027   18220    .027
          30          RX      0      45      90      97     104     110     155     200
          31          RY    100      95      90      90      90      90      95     100

          32          KK     NB
          33          KM   SUB-BASIN NB
          34          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          35          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          36          BA    .571
          37          LG    .150    .390   6.300    .160    .000
          38          UC   1.188   1.660
          39          UA      0       3       5       8      12      20      43      75      90      96
          40          UA    100

          41          KK     C1
          42          KM     COMBINE NB & D1
          43          HC      2

          44          KK     R2
          45          KM     ROUTE 2
          46          RS      2    FLOW      -1
          47          RC    .05    .035    .027    4170    .022
          48          RX      0      45      90      97     104     110     155     200
          49          RY    100      95      90      90      90      90      95     100
1                                                HEC-1 INPUT
  PAGE  2

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

          50          KK    NB1
          51          KM   SUB-BASIN NB1
          52          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          53          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          54          BA    .130
          55          LG    .150    .390   6.000    .170    .000
          56          UC    .383    .338
          57          UA      0       3       5       8      12      20      43      75      90      96
          58          UA    100

          59          KK     C2
          60          KM     COMBINE NB & NB1
          61          HC      2

          62          KK     R3
          63          KM     ROUTE 3
          64          RS      1    FLOW      -1
          65          RC    .05    .035    .027    2000    .017
          66          RX      0      45      90      97     104     110     155     200
          67          RY    100      95      90      90      90      90      95     100

          68          KK    NB2
          69          KM   SUB-BASIN NB2
          70          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          72          BA    .050
          73          LG    .150    .390   6.000    .170    .000
          74          UC    .296    .243
          75          UA      0       3       5       8      12      20      43      75      90      96
          76          UA    100

          77          KK     C3
          78          KM     COMBINE NB & NB2
          79          HC      2
          80          ZZ
1*****************************************
*****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
```

```
 *                                        *                                                        *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  13:25:41 *                                                    *          (916)
756-1104            *
 *                                        *                                                        *
                     *
 ****************************************
****************************************
```

TONTO VERDE BASIN NB,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93 ,

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                        PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION        STATION      FLOW     PEAK                                         AREA     STAGE
   MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                                M      3562.    4.92        812.        203.        196.      5.26

         DIVERSION TO
+                               D1      2315.    4.92        528.        132.        127.      5.26

         HYDROGRAPH AT
+                               D1      1247.    4.92        284.         71.         68.      5.26

         ROUTED TO
+                               R1      1192.    5.33        284.         71.         68.      5.26
+                                                                                                92.60
     5.33

         HYDROGRAPH AT
+                               NB       219.    5.08         86.         22.         21.       .57

         2 COMBINED AT
+                               C1      1399.    5.25        370.         93.         90.      5.83

         ROUTED TO
+                               R2      1389.    5.42        369.         93.         90.      5.83
+                                                                                                92.92
     5.42

         HYDROGRAPH AT
+                              NB1       129.    4.25         20.          5.          5.       .13
```

```
          2 COMBINED AT
+                          C2      1401.    5.33        388.        98.        95.        5.96
          ROUTED TO
+                          R3      1399.    5.42        388.        98.        95.        5.96
+                                                                                                  93.13
     5.42
          HYDROGRAPH AT
+                          NB2       56.    4.17          8.         2.         2.         .05
          2 COMBINED AT
+                          C3      1400.    5.42        395.       100.        97.        6.01
```

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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  13:26:27 *                                                 *          (916)
756-1104             *
 *                                      *                                                    *     ,
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NB,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.202
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.44
 14           PC    .000    .012    .018    .027    .040    .051    .062    .073    .084    .095
 15           PC    .108    .123    .144    .189    .275    .460    .683    .819    .886    .927
 16           PC    .948    .962    .974    .988   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.204    .630
 19           UA      0       3       5       8      12      20      43      75      90      96
 20           UA    100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2789
 25           DQ       0     453     907    1813
```

```
          26          KK      R1
          27          KM      ROUTE 1
          28          RS       7    FLOW      -1
          29          RC     .05    .035    .027   18220    .027
          30          RX       0      45      90      97     104     110     155     200
          31          RY     100      95      90      90      90      90      95     100

          32          KK      NB
          33          KM   SUB-BASIN BASIN NB
          34          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          35          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          36          BA    .571
          37          LG    .150    .390   6.300    .160    .000
          38          UC   1.188   1.660
          39          UA       0       3       5       8      12      20      43      75      90      96
          40          UA     100

          41          KK      C1
          42          KM      COMBINE NB & D1
          43          HC       2

          44          KK      R2
          45          KM      ROUTE 2
          46          RS       2    FLOW      -1
          47          RC     .05    .035    .027    4170    .022
          48          RX       0      45      90      97     104     110     155     200
          49          RY     100      95      90      90      90      90      95     100
1                                                   HEC-1 INPUT
  PAGE  2

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

          50          KK     NB1
          51          KM   SUB-BASIN NB1
          52          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          53          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          54          BA    .130
          55          LG    .130    .390   6.000    .170   8.000
          56          UC    .262    .222
          57          UA       0       5      16      30      65      77      84      90      94      97
          58          UA     100

          59          KK      C2
          60          KM      COMBINE NB & NB1
          61          HC       2

          62          KK      R3
          63          KM      ROUTE 3
          64          RS       1    FLOW      -1
          65          RC     .05    .035    .027    2000    .017
          66          RX       0      45      90      97     104     110     155     200
          67          RY     100      95      90      90      90      90      95     100

          68          KK     NB2
          69          KM   SUB-BASIN NB2
          70          KM   6-HOUR RAINFALL, PATTERN NO. 2.44 WAS USED TO FIND TC & R FOR THIS BASIN
          71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .956
          72          BA    .050
          73          LG    .140    .390   6.000    .170  11.000
          74          UC    .204    .161
          75          UA       0       5      16      30      65      77      84      90      94      97
          76          UA     100

          77          KK      C3
          78          KM      COMBINE NB & NB2
          79          HC       2
          80          ZZ
1*****************************************
*****************************************
 *                                  *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                 *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990           *                                                 *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                 *          609
SECOND STREET           *
 *                                      *                                                 *       DAVIS,
CALIFORNIA 95616        *
```

```
 *  RUN DATE  05/19/1993  TIME  13:26:27 *                                                    *          (916)
756-1104            *
 *                                    *                                                        *
                    *
 ****************************************
*****************************************
```

TONTO VERDE BASIN NB,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93

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

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1   0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2   0  ENDING DATE
                      NDTIME       0055  ENDING TIME
                      ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                    RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                            TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW    PEAK                                          AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                            M      3562.    4.92        812.        203.        196.       5.26

         DIVERSION TO
+                           D1      2315.    4.92        528.        132.        127.       5.26

         HYDROGRAPH AT
+                           D1      1247.    4.92        284.         71.         68.       5.26

         ROUTED TO
+                           R1      1192.    5.33        284.         71.         68.       5.26
+                                                                                                92.60
     5.33

         HYDROGRAPH AT
+                           NB       219.    5.08         86.         22.         21.        .57

         2 COMBINED AT
+                           C1      1399.    5.25        370.         93.         90.       5.83

         ROUTED TO
+                           R2      1389.    5.42        369.         93.         90.       5.83
+                                                                                                92.92
     5.42

         HYDROGRAPH AT
+                          NB1       155.    4.08         22.          6.          5.        .13

         2 COMBINED AT
+                           C2      1392.    5.42        389.         99.         95.       5.96
```

```
          ROUTED TO
+                                R3      1391.    5.42        388.        99.        95.      5.96
+                                                                                                     93.12
     5.42

          HYDROGRAPH AT
+                                NB2       65.    4.00          9.         2.         2.       .05

          2 COMBINED AT
+                                C3      1391.    5.42        396.       101.        97.      6.01

*** NORMAL END OF HEC-1 ***
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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  16:36:05 *                                                  *      ,    (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NB,100YR 24HR PRE-DEVELOPMEMT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA       0       3       5       8      12      20      43      75      90      96
 22           UA     100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
          25          DT      D1
          26          DI       0     697    1395    2789
          27          DQ       0     453     907    1813

          28          KK      R1
          29          KM      ROUTE 1
          30          RS       7    FLOW      -1
          31          RC     .05    .035     .05   18220    .027
          32          RX       0      45      90      97     104     110     155     200
          33          RY     100      95      90      90      90      90      95     100

          34          KK      NB
          35          KM   SUB-BASIN NB
          36          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN ,
          37          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          38          BA    .571
          39          LG    .150    .390   6.300    .160    .000
          40          UC   1.083   1.499
          41          UA       0       3       5       8      12      20      43      75      90      96
          42          UA     100

          43          KK      C1
          44          KM      COMBINE NB & D1
          45          HC       2
1                                                HEC-1 INPUT
  PAGE  2

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


          46          KK      R2
          47          KM      ROUTE 2
          48          RS       2    FLOW      -1
          49          RC     .05    .035     .05    4170    .022
          50          RX       0      45      90      97     104     110     155     200
          51          RY     100      95      90      90      90      90      95     100

          52          KK     NB1
          53          KM   SUB-BASIN NB1
          54          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          55          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          56          BA    .130
          57          LG    .150    .390   6.000    .170    .000
          58          UC    .325    .282
          59          UA       0       3       5       8      12      20      43      75      90      96
          60          UA     100

          61          KK      C2
          62          KM      COMBINE NB & NB1
          63          HC       2

          64          KK      R3
          65          KM      ROUTE 3
          66          RS       1    FLOW      -1
          67          RC     .05    .035     .05    2000    .017
          68          RX       0      45      90      97     104     110     155     200
          69          RY     100      95      90      90      90      90      95     100

          70          KK     NB2
          71          KM   SUB-BASIN NB2
          72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          74          BA    .050
          75          LG    .150    .390   6.000    .170    .000
          76          UC    .083    .060
          77          UA       0       3       5       8      12      20      43      75      90      96
          78          UA     100

          79          KK      C3
          80          KM      COMBINE NB & NB2
          81          HC       2
          82          ZZ
1*****************************************
*************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
```

```
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  16:36:05 *                                                  *          (916)
756-1104            *
 *                                      *                                                    *
                       *
 ****************************************
****************************************
```

TONTO VERDE BASIN NB,100YR 24HR PRE-DEVELOPMEMT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                   RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW    PEAK                                          AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                            M       4359.   12.67        828.        207.        199.      5.26

         DIVERSION TO
+                           D1       2834.   12.67        538.        134.        130.      5.26

         HYDROGRAPH AT
+                           D1       1526.   12.67        290.         72.         70.      5.26

         ROUTED TO
+                           R1       1397.   13.17        290.         72.         70.      5.26
+                                                                                                93.00
    13.17

         HYDROGRAPH AT
+                           NB        256.   12.83         88.         23.         22.       .57

         2 COMBINED AT
+                           C1       1622.   13.08        378.         95.         92.      5.83

         ROUTED TO
+                           R2       1605.   13.25        378.         95.         92.      5.83
+                                                                                                93.37
    13.25

         HYDROGRAPH AT
```

```
+                          NB1      178.   12.17        20.        5.        5.       .13
        2 COMBINED AT
+                          C2      1611.   13.25       397.      100.       96.      5.96
        ROUTED TO
+                          R3      1597.   13.25       397.      100.       96.      5.96
+                                                                                          93.58
    13.25
        HYDROGRAPH AT
+                          NB2       90.   12.00         8.        2.        2.       .05
        2 COMBINED AT
+                          C3      1597.   13.25       404.      102.       98.      6.01

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

```
1****************************************
****************************************
 *                                      *                                                  *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                  *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                  *          609
SECOND STREET          *
 *                                      *                                                  *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  14:00:54 *                                                *      ,    (916)
756-1104            *
 *                                      *                                                  *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN NB,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                   300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA      0       3       5       8      12      20      43      75      90      96
 22           UA    100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
          25          DT      D1
          26          DI       0     697    1395    2789
          27          DQ       0     453     907    1813

          28          KK      R1
          29          KM      ROUTE 1
          30          RS       7    FLOW      -1
          31          RC     .05    .035     .05   18220    .027
          32          RX       0      45      90      97     104     110     155     200
          33          RY     100      95      90      90      90      90      95     100

          34          KK      NB
          35          KM   SUB-BASIN NB
          36          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN ,
          37          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          38          BA    .571
          39          LG    .150    .390   6.300    .160    .000
          40          UC   1.083   1.499
          41          UA       0       3       5       8      12      20      43      75      90      96
          42          UA     100

          43          KK      C1
          44          KM      COMBINE NB & D1
          45          HC       2
1                                                HEC-1 INPUT
  PAGE  2

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


          46          KK      R2
          47          KM      ROUTE 2
          48          RS       2    FLOW      -1
          49          RC     .05    .035     .05    4170    .022
          50          RX       0      45      90      97     104     110     155     200
          51          RY     100      95      90      90      90      90      95     100

          52          KK     NB1
          53          KM   SUB-BASIN BASIN NB1
          54          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          55          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          56          BA    .130
          57          LG    .130    .390   6.000    .170   8.000
          58          UC    .229    .191
          59          UA       0       5      16      30      65      77      84      90      94      97
          60          UA     100

          61          KK      C2
          62          KM      COMBINE NB & NB1
          63          HC       2

          64          KK      R3
          65          KM      ROUTE 3
          66          RS       1    FLOW      -1
          67          RC     .05    .035     .05    2000    .017
          68          RX       0      45      90      97     104     110     155     200
          69          RY     100      95      90      90      90      90      95     100

          70          KK     NB2
          71          KM   SUB-BASIN NB2
          72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
          73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
          74          BA    .050
          75          LG    .140    .390   6.000    .170  11.000
          76          UC    .179    .140
          77          UA       0       5      16      30      65      77      84      90      94      97
          78          UA     100

          79          KK      C3
          80          KM      COMBINE NB & NB2
          81          HC       2
          82          ZZ
1*****************************************
*****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
```

```
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 * RUN DATE  05/19/1993  TIME  14:00:54 *                                                  *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

TONTO VERDE BASIN NB,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION        STATION      FLOW    PEAK                                        AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
+                              M      4359.   12.67        828.        207.        199.      5.26

         DIVERSION TO
+                             D1      2834.   12.67        538.        134.        130.      5.26

         HYDROGRAPH AT
+                             D1      1526.   12.67        290.         72.         70.      5.26

         ROUTED TO
+                             R1      1397.   13.17        290.         72.         70.      5.26
+                                                                                                93.00
     13.17

         HYDROGRAPH AT
+                             NB       256.   12.83         88.         23.         22.       .57

         2 COMBINED AT
+                             C1      1622.   13.08        378.         95.         92.      5.83

         ROUTED TO
+                             R2      1624.   13.17        378.         95.         92.      5.83
+                                                                                                93.39
     13.17

         HYDROGRAPH AT
```

```
+                          NB1      208.   12.00        22.        6.        6.       .13
        2 COMBINED AT
+                          C2      1627.   13.17       399.      101.       97.      5.96
        ROUTED TO
+                          R3      1627.   13.17       399.      101.       97.      5.96
+                                                                                          93.62
    13.17
        HYDROGRAPH AT
+                          NB2       87.   12.00         9.        2.        2.       .05
        2 COMBINED AT
+                          C3      1628.   13.17       408.      103.      100.      6.01

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

```
1*****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  09:25:26 *                                                   *      ,    (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

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

1 HEC-1 INPUT
PAGE 1

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

  1           ID   TONTO VERDE BASIN R,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.171
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.63
 14           PC    .000    .013    .019    .028    .043    .055    .067    .078    .091    .103
 15           PC    .117    .133    .154    .200    .285    .464    .679    .811    .880    .922
 16           PC    .947    .961    .974    .987   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.233    .647
 19           UA       0       3       5       8      12      20      43      75      90      96
 20           UA     100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2092    2789
```

```
25          DQ      0     348     698    1046    1394

26          KK     RO
27          KM     ROUTE1
28          RS     13    FLOW      -1
29          RC    .05    .035     .05   29570    .021
30          RX      0      45      90      97     104     110     155     200
31          RY    100      95      90      90      90      90      95     100

32          KK     L
33          KM     SUB-BASIN L
34          BA   2.597
35          LG    .150    .300   8.100    .080    .000
36          UC   1.467   1.304
37          UA      0       3       5       8      12      20      43      75      90      96
38          UA    100

39          KK     C1
40          KM     COMBINE L & D1
41          HC      2

42          KK     OP
43          KM     SUB-BASIN OPQ
44          BA    .117
45          LG    .170    .390   6.300    .160    .180
46          UC    .217    .173
47          UA      0       5      16      30      65      77      84      90      94      97
48          UA    100
```



```
                                                HEC-1 INPUT

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

49          KK     C2
50          KM     COMBINE OPQ & L
51          HC      2

52          KK     RT
53          KM     ROUTE 2
54          RS      2    FLOW      -1
55          RC    .05    .030     .05    3700    .026
56          RX      0      45      90      97     104     110     155     200
57          RY    100      95      90      90      90      90      95     100

58          KK     L1
59          KM     SUB-BASIN L1
60          BA    .090
61          LG    .110    .350    7.50    .100    .190
62          UC    .217    .181
63          UA      0       5      16      30      65      77      84      90      94      97
64          UA    100

65          KK     C3
66          KM     COMBINE AT L1
67          HC      2

68          KK      R
69          KM   SUB-BASIN R
70          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
72          BA    .110
73          LG    .150    .390   6.000    .170    .000
74          UC    .463    .486
75          UA      0       3       5       8      12      20      43      75      90      96
76          UA    100

77          KK     RH
78          KM     ROUTE 3
79          RS      3    FLOW      -1
80          RC    .05    .035     .05    3540    .022
81          RX      0      18      35      52      72      86     100     110
82          RY     40      38      37      36      36      37      38      40

83          KK     R1
84          KM   SUB-BASIN R1
85          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
86          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
87          BA    .100
88          LG    .150    .390   6.000    .170    .000
```

```
            89          UC    .358    .319
            90          UA      0       3       5       8      12      20      43      75      90      96
            91          UA    100
1                                                   HEC-1 INPUT
  PAGE  3

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

            92          KK      C4
            93          KM      COMBINE R & R1
            94          HC       2

            95          KK      C8
            96          KM      COMBINE R & L
            97          HC       2

            98          KK      RF
            99          KM      ROUTE 4
           100          RS       1    FLOW      -1
           101          RC     .05    .035     .05     680    .021
           102          RX       0      45      90      97     104     110     155     200
           103          RY     100      95      90      90      90      90      95     100

           104          KK      R2
           105          KM   SUB-BASIN R2
           106          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
           107          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
           108          BA    .010
           109          LG    .150    .390   6.000    .170    .000
           110          UC    .179    .139
           111          UA       0       3       5       8      12      20      43      75      90      96
           112          UA     100

           113          KK      C5
           114          KM      COMBINE R2
           115          HC       2

           116          KK      RS
           117          KM      ROUTE 5
           118          RS       1    FLOW      -1
           119          RC     .05    .030     .05    2000    .022
           120          RX       0      45      90      97     104     110     155     200
           121          RY     100      95      90      90      90      90      95     100

           122          KK      R3
           123          KM   SUB-BASIN R3
           124          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
           125          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
           126          BA    .040
           127          LG    .150    .390   6.000    .170    .000
           128          UC    .296    .277
           129          UA       0       3       5       8      12      20      43      75      90      96
           130          UA     100

           131          KK      C6
           132          KM      COMBINE R3
           133          HC       2
           134          ZZ
1*****************************************
*****************************************
 *                                       *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990             *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0               *                                                    *          609
SECOND STREET          *
 *                                       *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  09:25:26 *                                                   *          (916)
756-1104            *
 *                                       *                                                    *
                    *
 *****************************************
*****************************************
```

TONTO VERDE BASIN R,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

   IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1   0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2   0  ENDING DATE
                    NDTIME       0055  ENDING TIME
                     ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN     MAXIMUM
   TIME OF
        OPERATION        STATION      FLOW    PEAK                                          AREA      STAGE
   MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            M      3328.    4.92         779.        195.        188.      5.26

        DIVERSION TO
+                           D1      1663.    4.92         390.         97.         94.      5.26

        HYDROGRAPH AT
+                           D1      1665.    4.92         390.         97.         94.      5.26

        ROUTED TO
+                           RO      1540.    5.67         389.         97.         94.      5.26
+                                                                                                93.34
     5.67

        HYDROGRAPH AT
+                            L      1331.    5.25         488.        124.        120.      2.60

        2 COMBINED AT
+                           C1      2718.    5.58         874.        222.        214.      7.86

        HYDROGRAPH AT
+                           OP       137.    4.08          17.          4.          4.       .12

        2 COMBINED AT
+                           C2      2718.    5.58         889.        226.        218.      7.98

        ROUTED TO
+                           RT      2709.    5.67         888.        226.        218.      7.98
+                                                                                                93.99
     5.67

        HYDROGRAPH AT
+                           L1       115.    4.08          16.          4.          4.       .09

        2 COMBINED AT
+                           C3      2709.    5.67         902.        230.        222.      8.07

        HYDROGRAPH AT
+                            R        87.    4.33          16.          4.          4.       .11
```

```
                ROUTED TO
+                               RH      85.   4.58      16.      4.      4.     .11
+                                                                                      36.68
      4.58
                HYDROGRAPH AT
+                               R1      97.   4.25      15.      4.      4.     .10
                2 COMBINED AT
+                               C4     165.   4.42      31.      8.      7.     .21
                2 COMBINED AT
+                               C8    2730.   5.67     932.    238.    229.    8.28
                ROUTED TO
+                               RF    2727.   5.67     932.    238.    229.    8.28
+                                                                                      94.39
      5.67
                HYDROGRAPH AT
+                               R2      13.   4.08       1.      0.      0.     .01
                2 COMBINED AT
+                               C5    2727.   5.67     934.    238.    230.    8.29
                ROUTED TO
+                               RS    2720.   5.75     933.    238.    230.    8.29
+                                                                                      94.17
      5.75
                HYDROGRAPH AT
+                               R3      41.   4.17       6.      1.      1.     .04
                2 COMBINED AT
+                               C6    2720.   5.75     939.    240.    231.    8.33

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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/19/1993  TIME  08:53:18 *                                                   *      ,    (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

```
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.

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NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN R,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
  9           BA   5.263
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.171
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 2.63
 14           PC    .000    .013    .019    .028    .043    .055    .067    .078    .091    .103
 15           PC    .117    .133    .154    .200    .285    .464    .679    .811    .880    .922
 16           PC    .947    .961    .974    .987   1.000
 17           LG    .150    .390   6.000    .170    .000
 18           UC   1.233    .647
 19           UA      0       3       5       8      12      20      43      75      90      96
 20           UA    100

 21           KK      D1
 22           KM      DIVERSION D1
 23           DT      D1
 24           DI       0     697    1395    2092    2789
```

```
 25          DQ      0     348     698    1046    1394

 26          KK     RO
 27          KM     ROUTE 1
 28          RS     13    FLOW      -1
 29          RC    .05    .035     .05   29570    .021
 30          RX      0      45      90      97     104     110     155     200
 31          RY    100      95      90      90      90      90      95     100

 32          KK      L
 33          KM     SUB-BASIN L
 34          BA   2.597
 35          LG    .150    .300   8.100    .080    .000
 36          UC   1.467   1.304
 37          UA      0       3       5       8      12      20      43      75      90      96
 38          UA    100

 39          KK     C1
 40          KM     COMBINE L & D1
 41          HC      2

 42          KK     OP
 43          KM     SUB-BASIN OPQ
 44          BA    .117
 45          LG    .170    .390   6.300    .160    .180
 46          UC    .217    .173
 47          UA      0       5      16      30      65      77      84      90      94      97
 48          UA    100
```



```
                                                HEC-1 INPUT

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

 49          KK     C2
 50          KM     COMBINE OPQ & L
 51          HC      2

 52          KK     RT
 53          KM     ROUTE 2
 54          RS      2    FLOW      -1
 55          RC    .05    .030     .05    3700    .026
 56          RX      0      45      90      97     104     110     155     200
 57          RY    100      95      90      90      90      90      95     100

 58          KK     L1
 59          KM     SUB-BASIN L1
 60          BA    .110
 61          LG    .110    .350   7.500    .100    .190
 62          UC    .217    .181
 63          UA      0       5      16      30      65      77      84      90      94      97
 64          UA    100

 65          KK     C3
 66          KM     COMBINE AT L1
 67          HC      2

 68          KK      R
 69          KM   SUB-BASIN R
 70          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
 71          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
 72          BA    .110
 73          LG    .150    .390   6.000    .170    .000
 74          UC    .463    .486
 75          UA      0       3       5       8      12      20      43      75      90      96
 76          UA    100

 77          KK     RH
 78          KM     ROUTE 3
 79          RS      3    FLOW      -1
 80          RC    .05    .035     .05    3540    .022
 81          RX      0      18      35      52      72      86     100     110
 82          RY     40      38      37      36      36      37      38      40

 83          KK     R1
 84          KM   SUB-BASIN BASIN R1
 85          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
 86          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
 87          BA    .100
 88          LG    .130    .390   6.000    .170  15.000
```

```
            89          UC    .246    .210
            90          UA       0       5      16      30      65      77      84      90      94      97
            91          UA     100
1                                                   HEC-1 INPUT
  PAGE  3

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


            92          KK      C4
            93          KM      COMBINE R & R1
            94          HC       2

            95          KK      C8
            96          KM      COMBINE R & L
            97          HC       2

            98          KK      RF
            99          KM      ROUTE 4
           100          RS       1    FLOW      -1
           101          RC     .05    .030     .05     680    .021
           102          RX       0      45      90      97     104     110     155     200
           103          RY     100      95      90      90      90      90      95     100

           104          KK      R2
           105          KM   SUB-BASIN R2
           106          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
           107          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
           108          BA    .010
           109          LG    .150    .390   6.000    .170   6.000
           110          UC    .125    .093
           111          UA       0       5      16      30      65      77      84      90      94      97
           112          UA     100

           113          KK      C5
           114          KM      COMBINE R2
           115          HC       2

           116          KK      RS
           117          KM      ROUTE 5
           118          RS       1    FLOW      -1
           119          RC     .05    .030     .05    2000    .022
           120          RX       0      45      90      97     104     110     155     200
           121          RY     100      95      90      90      90      90      95     100

           122          KK      R3
           123          KM   SUB-BASIN BASIN R3
           124          KM   6-HOUR RAINFALL, PATTERN NO. 2.63 WAS USED TO FIND TC & R FOR THIS BASIN
           125          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .947
           126          BA    .040
           127          LG    .130    .390   6.000    .170  13.000
           128          UC    .204    .183
           129          UA       0       5      16      30      65      77      84      90      94      97
           130          UA     100

           131          KK      C6
           132          KM      COMBINE R3
           133          HC       2
           134          ZZ
1*****************************************
*****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  08:53:18 *                                                 *          (916)
756-1104             *
 *                                      *                                                    *
                    *
 *****************************************
*****************************************
```

TONTO VERDE BASIN R,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93

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

   IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1   0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2   0  ENDING DATE
                    NDTIME       0055  ENDING TIME
                     ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE   24.92 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
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                      TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION        STATION     FLOW    PEAK                                          AREA     STAGE
  MAX STAGE
+                                                      6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            M      3328.   4.92        779.        195.        188.      5.26

        DIVERSION TO
+                           D1      1663.   4.92        390.         97.         94.      5.26

        HYDROGRAPH AT
+                           D1      1665.   4.92        390.         97.         94.      5.26

        ROUTED TO
+                           RO      1540.   5.67        389.         97.         94.      5.26
+                                                                                                93.34
     5.67

        HYDROGRAPH AT
+                            L      1331.   5.25        488.        124.        120.      2.60

        2 COMBINED AT
+                           C1      2718.   5.58        874.        222.        214.      7.86

        HYDROGRAPH AT
+                           OP       137.   4.08         17.          4.          4.       .12

        2 COMBINED AT
+                           C2      2718.   5.58        889.        226.        218.      7.98

        ROUTED TO
+                           RT      2709.   5.67        888.        226.        218.      7.98
+                                                                                                93.99
     5.67

        HYDROGRAPH AT
+                           L1       140.   4.08         20.          5.          5.       .11

        2 COMBINED AT
+                           C3      2709.   5.67        905.        231.        223.      8.09

        HYDROGRAPH AT
+                            R        87.   4.33         16.          4.          4.       .11
```

```
          ROUTED TO
+                                RH       85.    4.58        16.        4.        4.       .11
+                                                                                                36.68
     4.58
          HYDROGRAPH AT
+                                R1      118.    4.08        18.        4.        4.       .10
          2 COMBINED AT
+                                C4      157.    4.33        34.        9.        8.       .21
          2 COMBINED AT
+                                C8     2730.    5.67       937.      240.      231.      8.30
          ROUTED TO
+                                RF     2727.    5.67       937.      240.      231.      8.30
+                                                                                                94.22
     5.67
          HYDROGRAPH AT
+                                R2       14.    4.00         2.        0.        0.       .01
          2 COMBINED AT
+                                C5     2727.    5.67       938.      240.      231.      8.31
          ROUTED TO
+                                RS     2719.    5.75       938.      240.      231.      8.31
+                                                                                                94.17
     5.75
          HYDROGRAPH AT
+                                R3       48.    4.08         7.        2.        2.       .04
          2 COMBINED AT
+                                C6     2720.    5.75       944.      242.      233.      8.35

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

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1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  13:23:48 *                                                   *       ,   (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN R,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA      0       3       5       8      12      20      43      75      90      96
 22           UA    100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
 25          DT      D1
 26          DI       0     697    1395    2092    2789
 27          DQ       0     348     698    1046    1394

 28          KK      RO
 29          KM      ROUTE 1
 30          RS      13    FLOW      -1
 31          RC     .05    .035     .05   29570    .021
 32          RX       0      45      90      97     104     110     155     200
 33          RY     100      95      90      90      90      90      95     100

 34          KK      L
 35          KM      SUB-BASIN L
 36          BA   2.597
 37          LG    .150    .300   8.100    .080    .000
 38          UC   1.467   1.304
 39          UA       0       3       5       8      12      20      43      75      90      96
 40          UA     100

 41          KK      C1
 42          KM      COMBINE L & D1
 43          HC       2

 44          KK      OP
 45          KM      SUB-BASIN OPQ
 46          BA    .117
 47          LG    .170    .390   6.300    .160    .180
 48          UC    .217    .173
 49          UA       0       5      16      30      65      77      84      90      94      97
1                                                HEC-1 INPUT
 PAGE  2

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

 50          UA     100

 51          KK      C2
 52          KM      COMBINE OPQ & L
 53          HC       2

 54          KK      RT
 55          KM      ROUTE 2
 56          RS       2    FLOW      -1
 57          RC     .05    .030     .05    3700    .026
 58          RX       0      45      90      97     104     110     155     200
 59          RY     100      95      90      90      90      90      95     100

 60          KK      L1
 61          KM      SUB-BASIN L1
 62          BA    .090
 63          LG    .110    .350   7.500    .100    .190
 64          UC    .217    .181
 65          UA       0       5      16      30      65      77      84      90      94      97
 66          UA     100

 67          KK      C3
 68          KM      COMBINE AT L1
 69          HC       2

 70          KK       R
 71          KM   SUB-BASIN R
 72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 74          BA    .110
 75          LG    .150    .390   6.000    .170    .000
 76          UC    .379    .390
 77          UA       0       3       5       8      12      20      43      75      90      96
 78          UA     100

 79          KK      RH
 80          KM      ROUTE 3
 81          RS       3    FLOW      -1
 82          RC     .05    .035     .05    3540    .022
 83          RX       0      18      35      52      72      86     100     110
 84          RY      40      38      37      36      36      37      38      40

 85          KK      R1
 86          KM   SUB-BASIN R1
 87          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 88          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
```

```
          89          BA    .100
          90          LG    .150    .390   6.000    .170    .000
          91          UC    .300    .262
          92          UA      0       3       5       8      12      20      43      75      90      96
          93          UA     100
1                                                HEC-1 INPUT
  PAGE  3

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


          94          KK      C4
          95          KM      COMBINE R & R1
          96          HC       2

          97          KK      C8
          98          KM      COMBINE R & L
          99          HC       2

         100          KK      RF
         101          KM      ROUTE 4
         102          RS       1    FLOW      -1
         103          RC     .05    .035     .05     680    .021
         104          RX       0      45      90      97     104     110     155     200
         105          RY     100      95      90      90      90      90      95     100

         106          KK      R2
         107          KM   SUB-BASIN R2
         108          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
         109          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
         110          BA    .010
         111          LG    .150    .390   6.000    .170    .000
         112          UC    .154    .118
         113          UA       0       3       5       8      12      20      43      75      90      96
         114          UA     100

         115          KK      C5
         116          KM      COMBINE R2
         117          HC       2

         118          KK      RS
         119          KM      ROUTE 5
         120          RS       1    FLOW      -1
         121          RC     .05    .030     .05    2000    .022
         122          RX       0      45      90      97     104     110     155     200
         123          RY     100      95      90      90      90      90      95     100

         124          KK      R3
         125          KM   SUB-BASIN R3
         126          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
         127          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
         128          BA    .040
         129          LG    .150    .390   6.000    .170    .000
         130          UC    .254    .234
         131          UA       0       3       5       8      12      20      43      75      90      96
         132          UA     100

         133          KK      C6
         134          KM      COMBINE R3
         135          HC       2
         136          ZZ
1*****************************************
*****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *              SEPTEMBER 1990          *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *               VERSION 4.0            *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  13:23:48 *                                                   *          (916)
756-1104             *
 *                                      *                                                    *
                    *
 *****************************************
*****************************************
```

TONTO VERDE BASIN R,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

  IT            HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE     1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     2    0  ENDING DATE
                     NDTIME       0055  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 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
1
                                          RUNOFF SUMMARY
                                   FLOW IN CUBIC FEET PER SECOND
                                 TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD    BASIN    MAXIMUM
  TIME OF
        OPERATION        STATION       FLOW    PEAK                                        AREA     STAGE
  MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            M       4359.   12.67         828.        207.        199.      5.26

        DIVERSION TO
+                           D1       2178.   12.67         414.        103.        100.      5.26

        HYDROGRAPH AT
+                           D1       2181.   12.67         414.        103.        100.      5.26

        ROUTED TO
+                           RO       1927.   13.42         414.        103.        100.      5.26
+                                                                                                93.73
    13.42

        HYDROGRAPH AT
+                           L        1411.   13.08         494.        126.        121.      2.60

        2 COMBINED AT
+                           C1       3207.   13.42         906.        229.        221.      7.86

        HYDROGRAPH AT
+                           OP        191.   12.00          19.          5.          4.       .12

        2 COMBINED AT
+                           C2       3207.   13.42         922.        234.        225.      7.98

        ROUTED TO
+                           RT       3188.   13.42         921.        234.        225.      7.98
+                                                                                                94.32
    13.42

        HYDROGRAPH AT
+                           L1        154.   12.00          16.          4.          4.       .09

        2 COMBINED AT
+                           C3       3188.   13.42         936.        238.        229.      8.07
```

```
          HYDROGRAPH AT
+                                R      127.   12.17        17.        4.        4.       .11
          ROUTED TO
+                                RH     119.   12.33        17.        4.        4.       .11
+                                                                                                36.82
     12.33
          HYDROGRAPH AT
+                                R1     140.   12.17        16.        4.        4.       .10
          2 COMBINED AT
+                                C4     230.   12.25        33.        8.        8.       .21
          2 COMBINED AT
+                                C8    3207.   13.42       969.      246.      237.      8.28
          ROUTED TO
+                                RF    3206.   13.50       969.      246.      237.      8.28
+                                                                                                94.75
     13.50
          HYDROGRAPH AT
+                                R2      17.   12.00         2.        0.        0.       .01
          2 COMBINED AT
+                                C5    3206.   13.50       970.      246.      237.      8.29
          ROUTED TO
+                                RS    3203.   13.50       970.      246.      237.      8.29
+                                                                                                94.50
     13.50
          HYDROGRAPH AT
+                                R3      59.   12.08         6.        2.        2.       .04
          2 COMBINED AT
+                                C6    3203.   13.50       976.      248.      239.      8.33

*** NORMAL END OF HEC-1 ***
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1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  15:20:23 *                                                  *       ,   (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

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

1 HEC-1 INPUT
PAGE 1

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

  1           ID   TONTO VERDE BASIN R,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK       M
  6           KM   SUB-BASIN BASIN M
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
  9           BA   5.263
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.302
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .150    .390   6.000    .170    .000
 20           UC   1.096    .568
 21           UA       0       3       5       8      12      20      43      75      90      96
 22           UA     100

 23           KK      D1
 24           KM      DIVERSION D1
```

```
 25          DT      D1
 26          DI       0     697    1395    2092    2789
 27          DQ       0     348     698    1046    1394

 28          KK      RO
 29          KM      ROUTE 1
 30          RS      13    FLOW      -1
 31          RC     .05    .035     .05   29570    .021
 32          RX       0      45      90      97     104     110     155     200
 33          RY     100      95      90      90      90      90      95     100

 34          KK      L
 35          KM      SUB-BASIN L
 36          BA   2.597
 37          LG    .150    .300   8.100    .080    .000
 38          UC   1.467   1.304
 39          UA       0       3       5       8      12      20      43      75      90      96
 40          UA     100

 41          KK      C1
 42          KM      COMBINE L & D1
 43          HC       2

 44          KK      OP
 45          KM      SUB-BASIN OPQ
 46          BA    .117
 47          LG    .170    .390   6.300    .160    .180
 48          UC    .217    .173
 49          UA       0       5      16      30      65      77      84      90      94      97
1                                                HEC-1 INPUT
PAGE  2

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

 50          UA     100

 51          KK      C2
 52          KM      COMBINE OPQ & L
 53          HC       2

 54          KK      RT
 55          KM      ROUTE 2
 56          RS       2    FLOW      -1
 57          RC     .05    .030     .05    3700    .026
 58          RX       0      45      90      97     104     110     155     200
 59          RY     100      95      90      90      90      90      95     100

 60          KK      L1
 61          KM      SUB-BASIN L1
 62          BA    .090
 63          LG    .110    .350   7.500    .100    .190
 64          UC    .217    .181
 65          UA       0       5      16      30      65      77      84      90      94      97
 66          UA     100

 67          KK      C3
 68          KM      COMBINE AT L1
 69          HC       2

 70          KK       R
 71          KM   SUB-BASIN R
 72          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 73          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
 74          BA    .110
 75          LG    .150    .390   6.000    .170    .000
 76          UC    .379    .390
 77          UA       0       3       5       8      12      20      43      75      90      96
 78          UA     100

 79          KK      RH
 80          KM      ROUTE 3
 81          RS       3    FLOW      -1
 82          RC     .05    .035     .05    3540    .022
 83          RX       0      18      35      52      72      86     100     110
 84          RY      40      38      37      36      36      37      38      40

 85          KK      R1
 86          KM   SUB-BASIN R1
 87          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 88          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
```

```
            89          BA    .100
            90          LG    .130    .390   6.000    .170  15.000
            91          UC    .213    .179
            92          UA      0       5      16      30      65      77      84      90      94      97
            93          UA    100
1                                                   HEC-1 INPUT
  PAGE  3

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


            94          KK      C4
            95          KM      COMBINE R & R1
            96          HC       2

            97          KK      C8
            98          KM      COMBINE R & L
            99          HC       2

           100          KK      RF
           101          KM      ROUTE 4
           102          RS       1    FLOW      -1
           103          RC     .05    .030     .05     680    .021
           104          RX       0      45      90      97     104     110     155     200
           105          RY     100      95      90      90      90      90      95     100

           106          KK      R2
           107          KM   SUB-BASIN R2
           108          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
           109          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
           110          BA    .010
           111          LG    .150    .390   6.000    .170   6.000
           112          UC    .108    .079
           113          UA       0       5      16      30      65      77      84      90      94      97
           114          UA     100

           115          KK      C5
           116          KM      COMBINE R2
           117          HC       2

           118          KK      RS
           119          KM      ROUTE 5
           120          RS       1    FLOW      -1
           121          RC     .05    .030     .05    2000    .022
           122          RX       0      45      90      97     104     110     155     200
           123          RY     100      95      90      90      90      90      95     100

           124          KK      R3
           125          KM   SUB-BASIN R3
           126          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
           127          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .980
           128          BA    .040
           129          LG    .130    .390   6.000    .170  13.000
           130          UC    .179    .158
           131          UA       0       5      16      30      65      77      84      90      94      97
           132          UA     100

           133          KK      C6
           134          KM      COMBINE R3
           135          HC       2
           136          ZZ
1*****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  15:20:23 *                                                  *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 *****************************************
****************************************
```

TONTO VERDE BASIN R,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93

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

   IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1   0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2   0  ENDING DATE
                    NDTIME       0055  ENDING TIME
                     ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE   24.92 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
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                      TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD    BASIN    MAXIMUM
   TIME OF
        OPERATION       STATION       FLOW    PEAK                                         AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            M      4359.   12.67        828.        207.        199.      5.26

        DIVERSION TO
+                           D1      2178.   12.67        414.        103.        100.      5.26

        HYDROGRAPH AT
+                           D1      2181.   12.67        414.        103.        100.      5.26

        ROUTED TO
+                           RO      1927.   13.42        414.        103.        100.      5.26
+                                                                                                93.73
    13.42

        HYDROGRAPH AT
+                           L       1411.   13.08        494.        126.        121.      2.60

        2 COMBINED AT
+                           C1      3207.   13.42        906.        229.        221.      7.86

        HYDROGRAPH AT
+                           OP       191.   12.00         19.          5.          4.       .12

        2 COMBINED AT
+                           C2      3207.   13.42        922.        234.        225.      7.98

        ROUTED TO
+                           RT      3188.   13.42        921.        234.        225.      7.98
+                                                                                                94.32
    13.42

        HYDROGRAPH AT
+                           L1       154.   12.00         16.          4.          4.       .09

        2 COMBINED AT
+                           C3      3188.   13.42        936.        238.        229.      8.07
```

```
          HYDROGRAPH AT
+                                R      127.   12.17        17.        4.         4.       .11
          ROUTED TO
+                                RH     119.   12.33        17.        4.         4.       .11
+                                                                                                36.82
    12.33
          HYDROGRAPH AT
+                                R1     166.   12.00        18.        5.         5.       .10
          2 COMBINED AT
+                                C4     208.   12.08        36.        9.         9.       .21
          2 COMBINED AT
+                                C8    3208.   13.42       970.      247.       238.      8.28
          ROUTED TO
+                                RF    3207.   13.50       970.      247.       238.      8.28
+                                                                                                94.56
    13.50
          HYDROGRAPH AT
+                                R2      18.   12.00         2.        0.         0.       .01
          2 COMBINED AT
+                                C5    3207.   13.50       972.      248.       239.      8.29
          ROUTED TO
+                                RS    3205.   13.50       971.      248.       239.      8.29
+                                                                                                94.50
    13.50
          HYDROGRAPH AT
+                                R3      69.   12.00         7.        2.         2.       .04
          2 COMBINED AT
+                                C6    3205.   13.50       978.      250.       240.      8.33

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

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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *             SEPTEMBER 1990           *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0             *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 * RUN DATE  05/19/1993  TIME  08:55:21 *                                                   *      ,    (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN AB,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK      AB
  6           KM   SUB-BASIN BASIN AB
  7           KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
  9           BA    .040
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.35 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.346
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 1.00
 14           PC    .000    .008    .016    .025    .033    .041    .050    .058    .066    .074
 15           PC    .087    .099    .118    .138    .216    .377    .834    .911    .931    .950
 16           PC    .962    .972    .983    .991   1.000
 17           LG    .100    .390   6.000    .170  25.000
 18           UC    .121    .073
 19           UA       0       5      16      30      65      77      84      90      94      97
 20           UA     100

 21           KK      R1
 22           KM      ROUTE 1
 23           RS       1    FLOW      -1
 24           RC     .05    .035     .05    1320    .018
```

```
25          RX      0      18      35      52      72      86     100     110
26          RY     40      38      37      36      36      37      38      40

27          KK     AB1
28          KM   SUB-BASIN AB1
29          KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
30          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
31          BA    .050
32          LG    .150    .390   6.000    .170    .000
33          UC    .204    .161
34          UA      0       3       5       8      12      20      43      75      90      96
35          UA     100

36          KK      C1                                                                  ,
37          KM      COMBINE AB & AB1
38          HC       2
39          ZZ
1****************************************
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 *                                      *                                                  *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                  *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990             *                                                  *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0               *                                                  *          609
SECOND STREET          *
 *                                      *                                                  *       DAVIS,
CALIFORNIA 95616       *
 * RUN DATE  05/19/1993  TIME  08:55:21 *                                                 *          (916)
756-1104            *
 *                                      *                                                  *
                    *
 ****************************************
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                    TONTO VERDE BASIN AB,100YR 6HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

     IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION       STATION      FLOW     PEAK                                        AREA      STAGE
  MAX STAGE
+                                                      6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
```

```
+                                AB      139.    4.00        10.         2.          2.          .04
          ROUTED TO
+                                R1      120.    4.08        10.         2.          2.          .04
+                                                                                                          36.86
     4.08
          HYDROGRAPH AT
+                                AB1     133.    4.08        10.         2.          2.          .05
          2 COMBINED AT
+                                C1      254.    4.08        19.         5.          5.          .09

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

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1****************************************
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 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 * RUN DATE  05/19/1993  TIME  08:55:55 *                                                   *          (916)
756-1104            *
 *                                      *                                                    *    ,
                    *
 ****************************************
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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

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN AB,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK      AB
  6           KM   SUB-BASIN BASIN AB
  7           KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
  9           BA    .040
 10           IN      15
 11           KM   RAINFALL DEPTH OF 3.55 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   3.546
 13           KM   THE FOLLOWING PC RECORD USED A 6-HOUR STORM WITH A PATTERN No. OF 1.00
 14           PC    .000    .008    .016    .025    .033    .041    .050    .058    .066    .074
 15           PC    .087    .099    .118    .138    .216    .377    .834    .911    .931    .950
 16           PC    .962    .972    .983    .991   1.000
 17           LG    .100    .390   6.000    .170  25.000
 18           UC    .117    .070
 19           UA       0       5      16      30      65      77      84      90      94      97
 20           UA     100

 21           KK      R1
 22           KM      ROUTE 1
 23           RS       1    FLOW      -1
 24           RC     .05    .035     .05    1320    .018
 25           RX       0      18      35      52      72      86     100     110
 26           RY      40      38      37      36      36      37      38      40
```

```
27          KK     AB1
28          KM   SUB-BASIN BASIN AB1
29          KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
30          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
31          BA    .050
32          LG    .150    .390   6.000    .170   5.000
33          UC    .142    .108
34          UA      0       5      16      30      65      77      84      90      94      97
35          UA     100

36          KK      C1
37          KM      COMBINE AB & AB1
38          HC       2
39          ZZ                                                                              ,
1*****************************************
*****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *             SEPTEMBER 1990             *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *              VERSION 4.0               *                                                    *          609
SECOND STREET           *
 *                                        *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/19/1993  TIME  08:55:55 *                                                  *          (916)
756-1104             *
 *                                        *                                                    *
                    *
 *****************************************
*****************************************
```

TONTO VERDE BASIN AB,100YR 6HR POST-DEVELOPMENT,MJO'N 5/13/93

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

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME       0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                    RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                            TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
        OPERATION       STATION      FLOW     PEAK                                        AREA      STAGE
   MAX STAGE
+                                                     6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                            AB      150.    4.00        10.          3.          2.        .04
```

```
          ROUTED TO
+                          R1      131.    4.00        10.        3.        2.       .04
+                                                                                            36.90
     4.00

          HYDROGRAPH AT
+                          AB1     165.    4.00        11.        3.        3.       .05

          2 COMBINED AT
+                          C1      296.    4.00        21.        5.        5.       .09


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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY
CORPS OF ENGINEERS      *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER     *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET           *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616        *
 *  RUN DATE  05/18/1993  TIME  14:38:46 *                                                  *      ,    (916)
756-1104             *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

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

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN AB,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK      AB
  6           KM   SUB-BASIN BASIN AB
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF1.000
  9           BA    .040
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.390
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .100    .390   6.000    .170  25.000
 20           UC    .150    .093
 21           UA       0       5      16      30      65      77      84      90      94      97
 22           UA     100

 23           KK      R1
 24           KM      ROUTE 1
```

```
25          RS      1    FLOW      -1
26          RC    .05    .035     .05    1320    .018
27          RX      0      18      35      52      72      86     100     110
28          RY     40      38      37      36      36      37      38      40

29          KK    AB1
30          KM   SUB-BASIN BASIN AB1
31          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
32          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF1.000
33          BA    .050
34          LG    .150    .390   6.000    .170    .000
35          UC    .250    .202
36          UA      0       3       5       8      12      20      43      75      90      96
37          UA    100

38          KK     C1
39          KM     COMBINE AB & AB1
40          HC      2
41          ZZ
1****************************************
*************************************
 *                                  *                                          *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                      *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                      *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                      *          609
SECOND STREET          *
 *                                      *                                      *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:38:46 *                                     *          (916)
756-1104            *
 *                                      *                                      *
                    *
 ****************************************
*************************************
```

TONTO VERDE BASIN AB,100YR 24HR PRE-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN           5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2    0  ENDING DATE
                       NDTIME        0055  ENDING TIME
                        ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
  TIME OF
        OPERATION       STATION      FLOW     PEAK                                        AREA      STAGE
  MAX STAGE
+                                                     6-HOUR     24-HOUR     72-HOUR
```

```
          HYDROGRAPH AT
+                          AB        76.   12.00          8.          2.          2.        .04
          ROUTED TO
+                          R1        75.   12.00          8.          2.          2.        .04
+                                                                                                    36.67
     12.00
          HYDROGRAPH AT
+                          AB1       80.   12.08          8.          2.          2.        .05
          2 COMBINED AT
+                          C1       150.   12.00         16.          4.          4.        .09


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

```
1****************************************
****************************************
 *                                      *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:41:34 *                                                 *           (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

```
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.

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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

PAGE 1

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

  1           ID   TONTO VERDE BASIN AB,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93
  2           ID
  3           IT       5                    300
  4           IO       5

  5           KK      AB
  6           KM   SUB-BASIN BASIN AB
  7           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
  8           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF1.000
  9           BA    .040
 10           IN      30
 11           KM   RAINFALL DEPTH OF 4.39 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 12           PB   4.390
 13           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 14           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 15           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 16           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 17           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 18           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 19           LG    .100    .390   6.000    .170  25.000
 20           UC    .150    .093
 21           UA       0       5      16      30      65      77      84      90      94      97
 22           UA     100

 23           KK      R1
 24           KM      ROUTE 1
 25           RS       1    FLOW      -1
 26           RC     .05    .035     .05    1320    .018
```

```
27          RX      0      18      35      52      72      86     100     110
28          RY     40      38      37      36      36      37      38      40

29          KK    AB1
30          KM   SUB-BASIN BASIN AB1
31          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
32          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF1.000
33          BA    .050
34          LG    .150    .390   6.000    .170   5.000
35          UC    .175    .136
36          UA      0       5      16      30      65      77      84      90      94      97
37          UA    100

38          KK     C1
39          KM     COMBINE AB & AB1
40          HC      2
41          ZZ
1****************************************
****************************************
 *                                    *                                                    *
                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY
CORPS OF ENGINEERS     *
 *            SEPTEMBER 1990            *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
 *             VERSION 4.0              *                                                    *          609
SECOND STREET          *
 *                                      *                                                    *       DAVIS,
CALIFORNIA 95616       *
 *  RUN DATE  05/18/1993  TIME  14:41:34 *                                                   *          (916)
756-1104            *
 *                                      *                                                    *
                    *
 ****************************************
****************************************
```

TONTO VERDE BASIN AB,100YR 24HR POST-DEVELOPMENT,MJO'N 5/13/93

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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 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
1
                                                  RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                       PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM
   TIME OF
         OPERATION       STATION      FLOW    PEAK                                          AREA     STAGE
   MAX STAGE
+                                                        6-HOUR     24-HOUR     72-HOUR

         HYDROGRAPH AT
```

```
+                                AB        76.   12.00          8.          2.          2.        .04
          ROUTED TO
+                                R1        75.   12.00          8.          2.          2.        .04
+                                                                                                          36.67
     12.00
          HYDROGRAPH AT
+                                AB1       89.   12.00          9.          2.          2.        .05
          2 COMBINED AT
+                                C1       164.   12.00         17.          5.          4.        .09
```

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

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-20-93   TIME  13:28:52                *
 *****************************************************
```

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

```
1
 05-20-93     13:28:52
```

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
*************************************************

T1      TONTO VERDE PHASE ONE FIRM 10 WITH FOREST RD CBC 100YR 6HR
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO10.DAT5/10/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

       0.        0.        0.        0. -1.000000       .00        .0     2709.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

      1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC       .050      .050      .030      .100      .300      .000
X1       .000    14.000      .000   225.000      .000      .000
GR   1586.000      .000   1585.000    11.000   1584.000    26.000    1584
GR   1585.500   120.000   1585.000   158.000   1585.000   188.000    1584
GR   1582.500   208.000   1583.000   214.000   1584.000   216.000    1585

X1    106.000    12.000    189.000   277.000    103.000   116.000     106
```

X3	10.000	.000	.000	.000	.000	.000	
GR	1588.000	.000	1587.300	22.000	1587.500	72.000	1588
GR	1587.000	189.000	1582.800	190.000	1582.800	276.000	1587
GR	1586.000	317.000	1587.000	345.000	.000	.000	
SB	1.050	1.800	2.850	.000	85.800	5.800	320
X1	130.000	7.000	71.000	159.000	24.000	24.000	24
X2	.000	.000	1.000	1587.770	1588.160	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-7.000	.000	1588.700	.000	47.000	1588.160	
BT	.000	72.000	1588.500	.000	158.000	1588.500	
BT	.000	420.000	1588.160	.000	.000	.000	
GR	1588.700	.000	1588.160	47.000	1588.160	71.000	1583
GR	1588.200	159.000	1588.160	420.000	.000	.000	
X1	160.000	6.000	28.000	117.000	30.000	30.000	30
GR	1589.000	.000	1588.000	28.000	1584.000	30.000	1584
GR	1589.000	140.000	.000	.000	.000	.000	

X1	200.000	6.000	40.000	110.000	40.000	40.000	40
GR	1590.000	.000	1588.000	38.000	1584.800	40.000	1584
GR	1589.500	148.000	.000	.000	.000	.000	
X1	400.000	6.000	8.000	83.000	198.000	202.000	200
GR	1593.000	.000	1592.000	8.000	1589.200	10.000	1589
GR	1593.000	110.000	.000	.000	.000	.000	
X1	600.000	6.000	34.000	109.000	200.000	200.000	200
GR	1596.000	.000	1595.000	34.000	1593.600	36.000	1593
GR	1596.000	118.000	.000	.000	.000	.000	
X1	800.000	6.000	110.000	185.000	200.000	200.000	200
GR	1603.000	.000	1602.000	78.000	1601.000	110.000	1598
GR	1601.000	185.000	.000	.000	.000	.000	
X1	1100.000	6.000	4.000	77.000	275.000	320.000	300
GR	1606.000	.000	1605.000	4.000	1602.500	5.000	1602
GR	1606.000	93.000	.000	.000	.000	.000	
X1	1400.000	6.000	7.000	80.000	307.000	290.000	300
GR	1613.000	.000	1612.000	7.000	1607.000	8.000	1607
GR	1613.000	91.000	.000	.000	.000	.000	
X1	1700.000	10.000	9.000	82.000	300.000	300.000	300
GR	1617.000	.000	1616.000	3.000	1615.000	7.000	1614
GR	1611.500	81.000	1615.000	82.000	1616.000	85.000	1617
X1	2000.000	7.000	9.000	82.000	287.000	315.000	300
GR	1620.000	.000	1619.000	9.000	1615.000	10.000	1615
GR	1622.000	85.000	1623.000	105.000	.000	.000	
X1	2190.000	7.000	20.000	149.000	195.000	180.000	195
GR	1626.000	.000	1625.000	16.000	1624.000	20.000	1619
GR	1624.000	149.000	1625.000	155.000	.000	.000	
X1	2200.000	8.000	8.000	165.000	7.000	22.000	10

```
GR   1626.000       .000   1625.000       8.000   1624.000      12.000    1623
GR   1624.000     80.000   1625.000     165.000   1626.000     230.000

X1   2260.000     12.000    112.000     255.000     65.000      45.000      60
GR   1630.000       .000   1629.000      25.000   1628.000      48.000    1627
GR   1625.000    120.000   1625.000     138.000   1626.000     208.000    1627
GR   1629.000    330.000   1630.000     340.000       .000        .000

X1   2400.000      8.000       .000     255.000    160.000     115.000     140
GR   1630.000       .000   1627.500       1.000   1628.000      90.000    1628
GR   1627.000    137.000   1628.000     255.000   1629.000     300.000
EJ       .000       .000       .000        .000       .000        .000
1
 05-20-93     13:28:52

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     .100 CEHV=     .300
*SECNO  .000
3280 CROSS SECTION        .00 EXTENDED      1.34 FEET

3720 CRITICAL DEPTH ASSUMED
      .00      3.84  1586.34  1586.34  1587.00  1587.14      .80      .00      .
    2709.        0.    2709.       0.       0.     377.       0.       0.
      .00       .00     7.18      .00     .050     .030     .050     .000  1582.
  .010713        0.       0.       0.        0        9        0      .00   225.
0
*SECNO 106.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1587.00 ELREA=     1587.00

   106.00      4.13  1586.93  1585.93      .00  1587.81      .88      .65      .
    2709.        0.    2709.       0.       0.     359.       0.       1.
      .00       .00     7.55      .00     .050     .030     .050     .000  1582.
  .003918      103.     106.     116.        4       12        0      .00    87.
0

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS
     1.05      1.80      2.85       .00     85.80      5.80    320.00      .00

*SECNO 130.000
PRESSURE AND WEIR FLOW


 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      EL
                                                                 AREA
   1588.93   1588.24       .33      233.     2459.      320.      358.      1587
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1588.16 ELREA=     1588.20

   130.00      4.50  1587.83       .00       .00  1588.58       .74       .77        .
    2709.        0.    2709.        0.        0.     391.        0.        1.
      .00       .00     6.93       .00      .000     .030      .000      .000   1583.
  .002969       24.      24.       24.         3        0         2       .00     87.
0
1
 05-20-93     13:28:52

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 160.000
   160.00      3.70  1587.70  1587.13       .00  1588.80      1.10       .12        .
    2709.        0.    2709.        0.        0.     322.        0.        1.
      .01       .00     8.41       .00      .050     .030      .050      .000   1584.
  .005533       30.      30.       30.         2       19         0       .00     88.
0
*SECNO 200.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   200.00      3.63  1588.43  1588.43       .00  1590.14      1.72       .27        .
    2709.       13.    2682.       14.        6.     254.        6.        2.
      .01      2.26    10.57      2.17      .050     .030      .050      .000   1584.
  .008170       40.      40.       40.         0        8         0       .00     92.
0
*SECNO 400.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   400.00      3.54  1592.74  1592.74       .00  1594.40      1.66      1.69        .
    2709.        3.    2695.       11.        2.     260.        7.        3.
      .01      1.43    10.36      1.44      .050     .030      .050      .000   1589.
  .008773      198.     200.      202.         0        5         0       .00    100.
0
*SECNO 600.000
3280 CROSS SECTION    600.00 EXTENDED      1.02 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   600.00      3.42  1597.02  1597.02       .00  1598.41      1.39      1.66        .
    2709.      176.    2489.       44.       52.     254.       14.        4.
      .02      3.41     9.82      3.23      .050     .030      .050      .000   1593.
  .007860      200.     200.      200.         0        8         0       .00    118.
0
*SECNO 800.000
3280 CROSS SECTION    800.00 EXTENDED       .55 FEET

7185 MINIMUM SPECIFIC ENERGY
1
 05-20-93     13:28:52
```

```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW


3720 CRITICAL DEPTH ASSUMED
   800.00      3.55    1601.55    1601.55        .00    1603.22       1.67       1.67          .
    2709.        6.     2703.         0.         5.      260.         0.         6.
      .02      1.19      10.39        .00       .050       .030       .050       .000      1598.
  .008932      200.       200.       200.          0          8          0        .00       92.
0
*SECNO 1100.000
3280 CROSS SECTION    1100.00 EXTENDED        .11 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1100.00      3.61    1606.11    1606.11        .00    1607.74       1.63       2.59          .
    2709.        5.     2685.        19.         2.      261.        10.         7.
      .03      1.89      10.28       1.95       .050       .030       .050       .000      1602.
  .008355      275.       300.       320.          0          5          0        .00       93.
0
*SECNO 1400.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1400.00      3.54    1610.54    1610.54        .00    1612.31       1.76       2.69          .
    2709.        0.     2709.         0.         0.      254.         0.         9.
      .04       .00      10.66        .00       .050       .030       .050       .000      1607.
  .009628      307.       300.       290.          0          8          0        .00       72.
0
*SECNO 1700.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1700.00      3.53    1615.03    1615.03        .00    1616.78       1.75       2.85          .
    2709.        2.     2707.         0.         1.      255.         0.        11.
      .05      1.75      10.62        .03       .050       .030       .050       .000      1611.
  .009369      300.       300.       300.          0          5          0        .00       75.
0
*SECNO 2000.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2000.00      3.54    1618.54    1618.54        .00    1620.30       1.76       2.85          .
    2709.        0.     2709.         0.         0.      254.         0.        13.
      .06       .00      10.65        .00       .050       .030       .050       .000      1615.
  .009616      287.       300.       315.          0          5          0        .00       72.
0
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 05-20-93      13:28:52


   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW


*SECNO 2190.000
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3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2190.00      2.41  1621.41  1621.41      .00  1622.62      1.21      1.94       .
    2709.        0.    2709.       0.       0.     307.        0.       14.
      .06       .00     8.82      .00     .050     .030      .050      .000  1619.
  .010284      195.     195.     180.        0       14         0       .00   127.
0
*SECNO 2200.000
3280 CROSS SECTION   2200.00 EXTENDED       .15 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2200.00      3.15  1626.15  1626.15      .00  1627.06       .91       .10       .
    2709.       11.    2609.      89.       5.     334.       42.       14.
      .06      2.08     7.80     2.11     .050     .030      .050      .000  1623.
  .009077        7.      10.      22.        0       11         0       .00   230.
0
*SECNO 2260.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2260.00      3.06  1628.06  1628.06      .00  1628.92       .86       .51       .
    2709.      128.    2522.      59.      50.     328.       33.       15.
      .06      2.57     7.70     1.80     .050     .030      .050      .000  1625.
  .008001       65.      60.      45.        0        8         0       .00   268.
0
*SECNO 2400.000
3280 CROSS SECTION   2400.00 EXTENDED       .42 FEET

  2400.00      2.42  1629.42  1629.08      .00  1629.89       .47       .93       .
    2709.        0.    2622.      87.       0.     471.       41.       16.
      .07       .00     5.56     2.09     .050     .030      .050      .000  1627.
  .005592      160.     140.     115.        2       19         0       .00   299.
0
1
 05-20-93     13:28:52



**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************

ER


   UNEXPECTED END OF FILE ABORT IN SUBROUTINE  H2MAIN
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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-20-93   TIME  13:29:26                *
 *****************************************************
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X     X  XXXXXXX   XXXXX
X     X  X         X     X
X     X  X         X
XXXXXXX  XXXX      X          XXXXX
X     X  X         X
X     X  X         X     X
X     X  XXXXXXX   XXXXX
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 05-20-93     13:29:26
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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
*************************************************
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T1      TONTO VERDE PHASE ONE FIRM 10 WITH FOREST RD CBC 100YR 24HR
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO10.DAT5/10/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        0. -1.000000       .00        .0     3188.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC      .050      .050      .030      .100      .300      .000
X1      .000    14.000      .000   225.000      .000      .000
GR   1586.000      .000   1585.000    11.000  1584.000    26.000    1584
GR   1585.500   120.000   1585.000   158.000  1585.000   188.000    1584
GR   1582.500   208.000   1583.000   214.000  1584.000   216.000    1585

X1    106.000    12.000    189.000   277.000   103.000   116.000     106
```

X3	10.000	.000	.000	.000	.000	.000	
GR	1588.000	.000	1587.300	22.000	1587.500	72.000	1588
GR	1587.000	189.000	1582.800	190.000	1582.800	276.000	1587
GR	1586.000	317.000	1587.000	345.000	.000	.000	
SB	1.050	1.800	2.850	.000	85.800	5.800	320
X1	130.000	7.000	71.000	159.000	24.000	24.000	24
X2	.000	.000	1.000	1587.770	1588.160	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-7.000	.000	1588.700	.000	47.000	1588.160	
BT	.000	72.000	1588.500	.000	158.000	1588.500	
BT	.000	420.000	1588.160	.000	.000	.000	
GR	1588.700	.000	1588.160	47.000	1588.160	71.000	1583
GR	1588.200	159.000	1588.160	420.000	.000	.000	
X1	160.000	6.000	28.000	117.000	30.000	30.000	30
GR	1589.000	.000	1588.000	28.000	1584.000	30.000	1584
GR	1589.000	140.000	.000	.000	.000	.000	

X1	200.000	6.000	40.000	110.000	40.000	40.000	40
GR	1590.000	.000	1588.000	38.000	1584.800	40.000	1584
GR	1589.500	148.000	.000	.000	.000	.000	
X1	400.000	6.000	8.000	83.000	198.000	202.000	200
GR	1593.000	.000	1592.000	8.000	1589.200	10.000	1589
GR	1593.000	110.000	.000	.000	.000	.000	
X1	600.000	6.000	34.000	109.000	200.000	200.000	200
GR	1596.000	.000	1595.000	34.000	1593.600	36.000	1593
GR	1596.000	118.000	.000	.000	.000	.000	
X1	800.000	6.000	110.000	185.000	200.000	200.000	200
GR	1603.000	.000	1602.000	78.000	1601.000	110.000	1598
GR	1601.000	185.000	.000	.000	.000	.000	
X1	1100.000	6.000	4.000	77.000	275.000	320.000	300
GR	1606.000	.000	1605.000	4.000	1602.500	5.000	1602
GR	1606.000	93.000	.000	.000	.000	.000	
X1	1400.000	6.000	7.000	80.000	307.000	290.000	300
GR	1613.000	.000	1612.000	7.000	1607.000	8.000	1607
GR	1613.000	91.000	.000	.000	.000	.000	
X1	1700.000	10.000	9.000	82.000	300.000	300.000	300
GR	1617.000	.000	1616.000	3.000	1615.000	7.000	1614
GR	1611.500	81.000	1615.000	82.000	1616.000	85.000	1617
X1	2000.000	7.000	9.000	82.000	287.000	315.000	300
GR	1620.000	.000	1619.000	9.000	1615.000	10.000	1615
GR	1622.000	85.000	1623.000	105.000	.000	.000	
X1	2190.000	7.000	20.000	149.000	195.000	180.000	195
GR	1626.000	.000	1625.000	16.000	1624.000	20.000	1619
GR	1624.000	149.000	1625.000	155.000	.000	.000	
X1	2200.000	8.000	8.000	165.000	7.000	22.000	10

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GR   1626.000       .000   1625.000      8.000   1624.000     12.000    1623
GR   1624.000     80.000   1625.000    165.000   1626.000    230.000

X1   2260.000     12.000    112.000    255.000     65.000     45.000      60
GR   1630.000       .000   1629.000     25.000   1628.000     48.000    1627
GR   1625.000    120.000   1625.000    138.000   1626.000    208.000    1627
GR   1629.000    330.000   1630.000    340.000       .000       .000

X1   2400.000      8.000       .000    255.000    160.000    115.000     140
GR   1630.000       .000   1627.500      1.000   1628.000     90.000    1628
GR   1627.000    137.000   1628.000    255.000   1629.000    300.000
EJ       .000       .000       .000       .000       .000       .000
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 05-20-93     13:29:26

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=    .100 CEHV=    .300
*SECNO  .000
3280 CROSS SECTION        .00 EXTENDED      1.56 FEET

3720 CRITICAL DEPTH ASSUMED
      .00      4.06  1586.56  1586.56  1587.00  1587.43      .86      .00      .
    3188.        0.    3188.       0.       0.     427.       0.       0.
      .00       .00     7.46      .00     .050     .030     .050     .000  1582.
  .009813        0.       0.       0.        0        9        0      .00   225.
0
*SECNO 106.000
3280 CROSS SECTION    106.00 EXTENDED       .14 FEET

   106.00      4.33  1587.13  1586.27      .00  1588.12      .99      .66      .
    3188.        5.    3066.     117.      11.     377.      62.       1.
      .00       .51     8.12     1.89     .050     .030     .050     .000  1582.
  .004255      103.     106.     116.        3       14        0      .00   235.
0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1585.76 ,NOT   1587.13 HYDRAULIC JUMP OCCURS DOWNSTRE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS
     1.05      1.80      2.85       .00     85.80      5.80    320.00      .00

*SECNO 130.000
PRESSURE AND WEIR FLOW


 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      EL
                                                                  AREA
   1589.91   1588.96      .00       642.     2553.      320.      358.      1587
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1588.16 ELREA= 1588.20

1
05-20-93 13:29:26

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW
130.00	4.59	1587.92	.00	.00	1588.91	.99	.79	.
3188.	0.	3188.	0.	0.	399.	0.	1.	
.00	.00	7.99	.00	.000	.030	.000	.000	1583.
.003867	24.	24.	24.	2	0	3	.00	87.

0
*SECNO 160.000

3301 HV CHANGED MORE THAN HVINS

160.00	3.71	1587.71	1587.49	.00	1589.23	1.52	.16	.
3188.	0.	3188.	0.	0.	322.	0.	2.	
.01	.00	9.89	.00	.050	.030	.050	.000	1584.
.007639	30.	30.	30.	3	15	0	.00	88.

0
*SECNO 200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

200.00	4.11	1588.91	1588.91	.00	1590.72	1.81	.30	.
3188.	27.	3130.	30.	13.	288.	15.	2.	
.01	2.12	10.88	2.03	.050	.030	.050	.000	1584.
.007325	40.	40.	40.	0	8	0	.00	113.

0
*SECNO 400.000
3280 CROSS SECTION 400.00 EXTENDED .22 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

400.00	4.02	1593.22	1593.22	.00	1594.94	1.72	1.50	.
3188.	12.	3136.	41.	6.	296.	19.	3.	
.01	2.05	10.60	2.09	.050	.030	.050	.000	1589.
.007719	198.	200.	202.	0	5	0	.00	110.

0
*SECNO 600.000
3280 CROSS SECTION 600.00 EXTENDED 1.33 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

600.00	3.73	1597.33	1597.33	.00	1598.88	1.56	1.56	.
3188.	239.	2890.	59.	62.	277.	16.	5.	
.02	3.85	10.44	3.59	.050	.030	.050	.000	1593.
.007914	200.	200.	200.	0	11	0	.00	118.

0
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05-20-93 13:29:26

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW


*SECNO 800.000
3280 CROSS SECTION     800.00 EXTENDED       1.04 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   800.00      4.04   1602.04   1602.04       .00   1603.78      1.74       1.58        .
    3188.       31.     3157.       0.        17.     297.        0.         6.
      .02      1.75     10.62      .00       .050     .030      .050       .000   1598.
  .007887      200.      200.     200.         0        8         0        .00    110.
0
*SECNO 1100.000
3280 CROSS SECTION    1100.00 EXTENDED        .48 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1100.00      3.98   1606.48   1606.48       .00   1608.29      1.81       2.41        .
    3188.       10.     3137.      41.        4.     288.       16.         9.
      .03      2.42     10.89     2.61      .050     .030      .050       .000   1602.
  .008220      275.      300.     320.         0        5         0        .00     93.
0
*SECNO 1400.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1400.00      3.94   1610.94   1610.94       .00   1612.91      1.98       2.64        .
    3188.        0.     3188.       0.         0.     283.        0.        11.
      .04       .00     11.28      .00      .050     .030      .050       .000   1607.
  .009481      307.      300.     290.         0        5         0        .00     72.
0
*SECNO 1700.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1700.00      3.95   1615.45   1615.45       .00   1617.38      1.93       2.76        .
    3188.        5.     3183.       0.         2.     285.        0.        13.
      .05      2.25     11.16     1.00      .050     .030      .050       .000   1611.
  .008913      300.      300.     300.         0        5         0        .00     78.
0
*SECNO 2000.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
1
 05-20-93      13:29:26


   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW


  2000.00      3.94   1618.94   1618.94       .00   1620.91      1.97       2.75        .
    3188.        0.     3188.       0.         0.     283.        0.        15.
      .05       .00     11.26      .00      .050     .030      .050       .000   1615.
  .009422      287.      300.     315.         0        5         0        .00     72.
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0
*SECNO 2190.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2190.00      2.68  1621.68  1621.68      .00  1623.03      1.35      1.89       .
    3188.        0.    3188.       0.       0.     342.        0.       16.
      .06       .00     9.32      .00     .050     .030      .050      .000  1619.
  .009979      195.     195.     180.        0       14         0       .00   128.
0
*SECNO 2200.000
3280 CROSS SECTION   2200.00 EXTENDED       .36 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2200.00      3.36  1626.36  1626.36      .00  1627.37      1.01       .10       .
    3188.       17.    3030.     141.       7.     368.       56.       16.
      .06      2.45     8.24     2.53     .050     .030      .050      .000  1623.
  .008914        7.      10.      22.        0       11         0       .00   230.
0
*SECNO 2260.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2260.00      3.28  1628.28  1628.28      .00  1629.21       .93       .50       .
    3188.      183.    2903.     102.      65.     359.       46.       17.
      .06      2.82     8.08     2.20     .050     .030      .050      .000  1625.
  .007804       65.      60.      45.        0        8         0       .00   276.
0
*SECNO 2400.000
3280 CROSS SECTION   2400.00 EXTENDED       .64 FEET

  2400.00      2.63  1629.63  1629.25      .00  1630.14       .51       .89       .
    3188.        0.    3069.     119.       0.     526.       51.       18.
      .07       .00     5.83     2.34     .050     .030      .050      .000  1627.
  .005309      160.     140.     115.        2       19         0       .00   299.
0
1
 05-20-93     13:29:26



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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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ER


   UNEXPECTED END OF FILE ABORT IN SUBROUTINE  H2MAIN
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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-10-93   TIME  14:53:44                *
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X     X  XXXXXXX   XXXXX
X     X  X         X     X
X     X  X         X
XXXXXXX  XXXX      X          XXXXX
X     X  X         X
X     X  X         X     X
X     X  XXXXXXX   XXXXX
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 05-10-93     14:53:44
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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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T1      TONTO VERDE PHASE ONE FIRM 10 WITH FOREST RD CBC
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO10D.DAT 5/10/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        1. -1.000000       .00        .0     2964.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC       .050       .050       .030       .100       .300       .000
X1   2400.000      8.000       .000    255.000    160.000    115.000     140
GR   1630.000       .000   1627.500      1.000   1628.000     90.000    1628
GR   1627.000    137.000   1628.000    255.000   1629.000    300.000

X1   2260.000     12.000    112.000    255.000     65.000     45.000      60
GR   1630.000       .000   1629.000     25.000   1628.000     48.000    1627
```

GR	1625.000	120.000	1625.000	138.000	1626.000	208.000	1627
GR	1629.000	330.000	1630.000	340.000	.000	.000	
X1	2200.000	8.000	8.000	165.000	7.000	22.000	10
GR	1626.000	.000	1625.000	8.000	1624.000	12.000	1623
GR	1624.000	80.000	1625.000	165.000	1626.000	230.000	
X1	2190.000	7.000	20.000	149.000	195.000	180.000	195
GR	1626.000	.000	1625.000	16.000	1624.000	20.000	1619
GR	1624.000	149.000	1625.000	155.000	.000	.000	
X1	2000.000	7.000	9.000	82.000	287.000	315.000	300
GR	1620.000	.000	1619.000	9.000	1615.000	10.000	1615
GR	1622.000	85.000	1623.000	105.000	.000	.000	
X1	1700.000	10.000	9.000	82.000	300.000	300.000	300
GR	1617.000	.000	1616.000	3.000	1615.000	7.000	1614
GR	1611.500	81.000	1615.000	82.000	1616.000	85.000	1617

X1	1400.000	6.000	7.000	80.000	307.000	290.000	300
GR	1613.000	.000	1612.000	7.000	1607.000	8.000	1607
GR	1613.000	91.000	.000	.000	.000	.000	
X1	1100.000	6.000	4.000	77.000	275.000	320.000	300
GR	1606.000	.000	1605.000	4.000	1602.500	5.000	1602
GR	1606.000	93.000	.000	.000	.000	.000	
X1	800.000	6.000	110.000	185.000	200.000	200.000	200
GR	1603.000	.000	1602.000	78.000	1601.000	110.000	1598
GR	1601.000	185.000	.000	.000	.000	.000	
X1	600.000	6.000	34.000	109.000	200.000	200.000	200
GR	1596.000	.000	1595.000	34.000	1593.600	36.000	1593
GR	1596.000	118.000	.000	.000	.000	.000	
X1	400.000	6.000	8.000	83.000	198.000	202.000	200
GR	1593.000	.000	1592.000	8.000	1589.200	10.000	1589
GR	1593.000	110.000	.000	.000	.000	.000	
X1	200.000	6.000	40.000	110.000	40.000	40.000	40
GR	1590.000	.000	1588.000	38.000	1584.800	40.000	1584
GR	1589.500	148.000	.000	.000	.000	.000	
X1	160.000	6.000	28.000	117.000	30.000	30.000	30
GR	1589.000	.000	1588.000	28.000	1584.000	30.000	1584
GR	1589.000	140.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	85.800	5.800	320
X1	130.000	7.000	71.000	159.000	24.000	24.000	24
X2	.000	.000	1.000	1587.770	1588.160	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-7.000	.000	1588.700	.000	47.000	1588.160	
BT	.000	72.000	1588.500	.000	158.000	1588.500	
BT	.000	420.000	1588.160	.000	.000	.000	
GR	1588.700	.000	1588.160	47.000	1588.160	71.000	1583
GR	1588.200	159.000	1588.160	420.000	.000	.000	

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X1     106.000      12.000     189.000     277.000     103.000     116.000     106
X3      10.000        .000        .000        .000        .000        .000
GR    1588.000        .000    1587.300      22.000    1587.500      72.000    1588
GR    1587.000     189.000    1582.800     190.000    1582.800     276.000    1587
GR    1586.000     317.000    1587.000     345.000        .000        .000

X1        .000      14.000        .000     225.000        .000        .000
GR    1586.000        .000    1585.000      11.000    1584.000      26.000    1584
GR    1585.500     120.000    1585.000     158.000    1585.000     188.000    1584
GR    1582.500     208.000    1583.000     214.000    1584.000     216.000    1585
EJ        .000        .000        .000        .000        .000        .000
1
 05-10-93      14:53:44

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     .100 CEHV=     .300
*SECNO 2400.000
3280 CROSS SECTION   2400.00 EXTENDED       .17 FEET

3720 CRITICAL DEPTH ASSUMED
  2400.00      2.17  1629.17  1629.17  1629.20  1629.94      .77      .00       .
    2964.        0.    2892.      72.       0.     408.      30.       0.
      .00       .00     7.10     2.38     .050     .030     .050     .000   1627.
  .011035        0.       0.       0.        0        4        0      .00    299.
0
*SECNO 2260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2260.00      3.16  1628.16  1628.16      .00  1629.08      .91     1.31       .
    2964.      154.    2730.      79.      57.     343.      39.       1.
      .01      2.72     7.96     2.02     .050     .030     .050     .000   1625.
  .008061      160.     140.     115.       20       14        0      .00    272.
0
*SECNO 2200.000

3301 HV CHANGED MORE THAN HVINS

  2200.00      2.48  1625.48  1626.26      .00  1628.00     2.52      .92       .
    2964.        2.    2944.      18.       1.     231.       8.       2.
      .01      2.30    12.77     2.31     .050     .030     .050     .000   1623.
  .039928       65.      60.      45.        6        8        0      .00    192.
0
*SECNO 2190.000

3301 HV CHANGED MORE THAN HVINS

  2190.00      1.11  1620.11  1621.55      .00  1626.87     6.75      .71       .
```

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   2964.       0.     2964.       0.       0.     142.       0.       2.
     .01      .00     20.86      .00     .050     .030     .050     .000  1619.
 .156257       7.       10.      22.       10        8        0      .00   127.
0
1
 05-10-93     14:53:44

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

 *SECNO 2000.000

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
  2000.00     3.75  1618.75  1618.75      .00  1620.62     1.88     4.78      1.
   2964.       0.     2964.       0.       0.     270.       0.       3.
     .01      .00     10.99      .00     .050     .030     .050     .000  1615.
 .009532     195.      195.     180.        2       20        0      .00    72.
0
 *SECNO 1700.000
  1700.00     3.34  1614.84  1615.26      .00  1617.19     2.35     3.38      .
   2964.       1.     2963.       0.       1.     241.       0.       5.
     .02     1.80     12.31      .00     .050     .030     .050     .000  1611.
 .013555     287.      300.     315.        4        5        0      .00    74.
0
 *SECNO 1400.000
  1400.00     3.21  1610.21  1610.76      .00  1612.79     2.57     4.38      .
   2964.       0.     2964.       0.       0.     230.       0.       6.
     .02      .00     12.87      .00     .050     .030     .050     .000  1607.
 .015804     300.      300.     300.        5        8        0      .00    72.
0
 *SECNO 1100.000
  1100.00     3.24  1605.74  1606.33      .00  1608.20     2.46     4.55      .
   2964.       2.     2954.       8.       1.     234.       4.       8.
     .03     1.81     12.61     1.85     .050     .030     .050     .000  1602.
 .014561     307.      300.     290.        5        8        0      .00    87.
0
 *SECNO 800.000
 3280 CROSS SECTION    800.00 EXTENDED       .19 FEET

   800.00     3.19  1601.19  1601.80      .00  1603.70     2.51     4.50      .
   2964.       0.     2964.       0.       1.     233.       0.       9.
     .04      .76     12.72      .00     .050     .030     .050     .000  1598.
 .015452     275.      300.     320.        6        8        0      .00    80.
0
 *SECNO 600.000
1
 05-10-93     14:53:44

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW
```

3280 CROSS SECTION 600.00 EXTENDED .16 FEET

3301 HV CHANGED MORE THAN HVINS

600.00	2.56	1596.16	1597.19	.00	1599.57	3.42	4.03	.
2964.	84.	2858.	22.	23.	189.	6.	10.	
.04	3.73	15.09	3.68	.050	.030	.050	.000	1593.
.027437	200.	200.	200.	5	8	0	.00	118.

0

*SECNO 400.000

3301 HV CHANGED MORE THAN HVINS

400.00	3.04	1592.24	1593.06	.00	1595.00	2.76	4.38	.
2964.	0.	2963.	1.	0.	222.	1.	12.	
.05	.96	13.33	.96	.050	.030	.050	.000	1589.
.017880	200.	200.	200.	6	14	0	.00	83.

0

*SECNO 200.000

3301 HV CHANGED MORE THAN HVINS

200.00	2.85	1587.65	1588.68	.00	1591.00	3.35	3.94	.
2964.	9.	2945.	9.	3.	200.	3.	12.	
.05	3.65	14.73	3.65	.050	.030	.050	.000	1584.
.021823	198.	200.	202.	4	11	0	.00	73.

0

*SECNO 160.000

160.00	2.25	1586.25	1587.33	.00	1589.89	3.63	1.08	.
2964.	0.	2964.	0.	0.	194.	0.	13.	
.05	.00	15.30	.00	.050	.030	.050	.000	1584.
.034341	40.	40.	40.	7	8	0	.00	87.

0

1

05-10-93 14:53:44

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW

SPECIAL BRIDGE

5290 UPSTREAM ELEV IS 1587.78 ,NOT 1586.25 NEW BACKWATER REQUIRED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS
	1.05	1.80	2.85	.00	85.80	5.80	320.00	.00

*SECNO 130.000
6870 D.S. ENERGY OF 1589.89 HIGHER THAN COMPUTED ENERGY OF 1588.45
3280 CROSS SECTION 130.00 EXTENDED 1.46 FEET

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	EL
1588.45	1588.33	.00	131.	2837.	320.	358.	1587

```
   130.00      6.29  1589.62       .00       .00  1589.89       .26       .00       .
    2964.       91.    2470.      404.       91.     549.      376.       13.
      .05       .99     4.50      1.07      .050      .030      .050      .000  1583.
  .000806       30.      30.       30.         4         0         5       .00   420.
0
*SECNO 106.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1587.00 ELREA=     1587.00

   106.00      1.99  1584.79  1586.10       .00  1589.39      4.60       .06       .
    2964.        0.    2964.       0.        0.     172.        0.       13.
      .05       .00    17.21       .00      .050      .030      .050      .000  1582.
  .050855       24.      24.       24.         7        11         0       .00    86.
0
*SECNO  .000
3280 CROSS SECTION        .00 EXTENDED      1.40 FEET

1
 05-10-93     14:53:44
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW

```
3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
       .00      3.90  1586.40  1586.40       .00  1587.29       .90      2.24      1.
    2964.        0.    2964.       0.        0.     390.        0.       14.
      .06       .00     7.60       .00      .050      .030      .050      .000  1582.
  .011498      103.     106.      116.        20        14         0       .00   225.
0
1
 05-10-93     14:53:44
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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IBM-PC-XT VERSION AUGUST 1985
****

ER

UNEXPECTED END OF FILE ABORT IN SUBROUTINE H2MAIN

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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-20-93   TIME  13:27:16                *
 *****************************************************
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X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
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1
 05-20-93     13:27:16
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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T1      TONTO VERDE PHASE ONE FIRM 10 WITH FOREST RD CBC 100YR 24HR
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO10D.DAT 5/10/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        1. -1.000000       .00        .0     3188.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0


NC       .050       .050       .030       .100       .300       .000
X1   2400.000      8.000       .000    255.000    160.000    115.000     140
GR   1630.000       .000   1627.500      1.000   1628.000     90.000    1628
GR   1627.000    137.000   1628.000    255.000   1629.000    300.000

X1   2260.000     12.000    112.000    255.000     65.000     45.000      60
GR   1630.000       .000   1629.000     25.000   1628.000     48.000    1627
```

GR	1625.000	120.000	1625.000	138.000	1626.000	208.000	1627
GR	1629.000	330.000	1630.000	340.000	.000	.000	
X1	2200.000	8.000	8.000	165.000	7.000	22.000	10
GR	1626.000	.000	1625.000	8.000	1624.000	12.000	1623
GR	1624.000	80.000	1625.000	165.000	1626.000	230.000	
X1	2190.000	7.000	20.000	149.000	195.000	180.000	195
GR	1626.000	.000	1625.000	16.000	1624.000	20.000	1619
GR	1624.000	149.000	1625.000	155.000	.000	.000	
X1	2000.000	7.000	9.000	82.000	287.000	315.000	300
GR	1620.000	.000	1619.000	9.000	1615.000	10.000	1615
GR	1622.000	85.000	1623.000	105.000	.000	.000	
X1	1700.000	10.000	9.000	82.000	300.000	300.000	300
GR	1617.000	.000	1616.000	3.000	1615.000	7.000	1614
GR	1611.500	81.000	1615.000	82.000	1616.000	85.000	1617

X1	1400.000	6.000	7.000	80.000	307.000	290.000	300
GR	1613.000	.000	1612.000	7.000	1607.000	8.000	1607
GR	1613.000	91.000	.000	.000	.000	.000	
X1	1100.000	6.000	4.000	77.000	275.000	320.000	300
GR	1606.000	.000	1605.000	4.000	1602.500	5.000	1602
GR	1606.000	93.000	.000	.000	.000	.000	
X1	800.000	6.000	110.000	185.000	200.000	200.000	200
GR	1603.000	.000	1602.000	78.000	1601.000	110.000	1598
GR	1601.000	185.000	.000	.000	.000	.000	
X1	600.000	6.000	34.000	109.000	200.000	200.000	200
GR	1596.000	.000	1595.000	34.000	1593.600	36.000	1593
GR	1596.000	118.000	.000	.000	.000	.000	
X1	400.000	6.000	8.000	83.000	198.000	202.000	200
GR	1593.000	.000	1592.000	8.000	1589.200	10.000	1589
GR	1593.000	110.000	.000	.000	.000	.000	
X1	200.000	6.000	40.000	110.000	40.000	40.000	40
GR	1590.000	.000	1588.000	38.000	1584.800	40.000	1584
GR	1589.500	148.000	.000	.000	.000	.000	
X1	160.000	6.000	28.000	117.000	30.000	30.000	30
GR	1589.000	.000	1588.000	28.000	1584.000	30.000	1584
GR	1589.000	140.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	85.800	5.800	320
X1	130.000	7.000	71.000	159.000	24.000	24.000	24
X2	.000	.000	1.000	1587.770	1588.160	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-7.000	.000	1588.700	.000	47.000	1588.160	
BT	.000	72.000	1588.500	.000	158.000	1588.500	
BT	.000	420.000	1588.160	.000	.000	.000	
GR	1588.700	.000	1588.160	47.000	1588.160	71.000	1583
GR	1588.200	159.000	1588.160	420.000	.000	.000	

```
X1     106.000      12.000     189.000     277.000     103.000     116.000     106
X3      10.000        .000        .000        .000        .000        .000
GR    1588.000        .000    1587.300      22.000    1587.500      72.000    1588
GR    1587.000     189.000    1582.800     190.000    1582.800     276.000    1587
GR    1586.000     317.000    1587.000     345.000        .000        .000

X1        .000      14.000        .000     225.000        .000        .000
GR    1586.000        .000    1585.000      11.000    1584.000      26.000    1584
GR    1585.500     120.000    1585.000     158.000    1585.000     188.000    1584
GR    1582.500     208.000    1583.000     214.000    1584.000     216.000    1585
EJ        .000        .000        .000        .000        .000        .000
1
 05-20-93      13:27:16

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     .100 CEHV=     .300
*SECNO 2400.000
3280 CROSS SECTION   2400.00 EXTENDED       .25 FEET

3720 CRITICAL DEPTH ASSUMED
  2400.00      2.25  1629.25  1629.25  1629.20  1630.05      .80      .00      .
    3188.        0.    3102.      86.       0.     428.      34.       0.
      .00       .00     7.25     2.54     .050     .030     .050     .000  1627.
  .010782        0.       0.       0.        0        7        0      .00   299.
0
*SECNO 2260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2260.00      3.28  1628.28  1628.28      .00  1629.21      .93     1.27      .
    3188.      183.    2903.     103.      65.     359.      47.       1.
      .01      2.82     8.07     2.20     .050     .030     .050     .000  1625.
  .007781      160.     140.     115.       20       11        0      .00   276.
0
*SECNO 2200.000

3301 HV CHANGED MORE THAN HVINS

  2200.00      2.56  1625.56  1626.36      .00  1628.16     2.59      .89      .
    3188.        3.    3159.      26.       1.     243.      10.       2.
      .01      2.50    12.98     2.51     .050     .030     .050     .000  1623.
  .038443       65.      60.      45.        6        8        0      .00   198.
0
*SECNO 2190.000

3301 HV CHANGED MORE THAN HVINS

  2190.00      1.19  1620.19  1621.68      .00  1627.06     6.87      .67      .
```

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   3188.        0.     3188.        0.        0.      152.        0.        2.
     .01       .00     21.03       .00      .050      .030      .050      .000  1619.
 .145952        7.       10.       22.        10         8         0       .00   127.
0
1
 05-20-93      13:27:16

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

 *SECNO 2000.000

 3301 HV CHANGED MORE THAN HVINS

  2000.00      3.93  1618.93  1618.94       .00  1620.90      1.97      4.69      1.
   3188.        0.     3188.        0.        0.      283.        0.        3.
     .01       .00     11.27       .00      .050      .030      .050      .000  1615.
 .009456      195.      195.      180.         2        20         0       .00    72.
0
 *SECNO 1700.000

 3301 HV CHANGED MORE THAN HVINS

  1700.00      3.49  1614.99  1615.45       .00  1617.48      2.49      3.37       .
   3188.        2.     3186.        0.        1.      251.        0.        5.
     .02      2.01     12.67       .00      .050      .030      .050      .000  1611.
 .013576      287.      300.      315.         4         5         0       .00    74.
0
 *SECNO 1400.000
  1400.00      3.37  1610.37  1610.95       .00  1613.08      2.71      4.38       .
   3188.        0.     3188.        0.        0.      241.        0.        7.
     .02       .00     13.21       .00      .050      .030      .050      .000  1607.
 .015749      300.      300.      300.         5         8         0       .00    72.
0
 *SECNO 1100.000
  1100.00      3.37  1605.87  1606.50       .00  1608.49      2.62      4.56       .
   3188.        3.     3172.       13.        2.      244.        6.        8.
     .03      2.03     13.01      2.07      .050      .030      .050      .000  1602.
 .014675      307.      300.      290.         5         8         0       .00    90.
0
 *SECNO 800.000
 3280 CROSS SECTION    800.00 EXTENDED       .33 FEET

   800.00      3.33  1601.33  1602.04       .00  1603.98      2.65      4.50       .
   3188.        2.     3186.        0.        2.      244.        0.       10.
     .04      1.11     13.07       .00      .050      .030      .050      .000  1598.
 .015359      275.      300.      320.         6        11         0       .00    85.
0
1
 05-20-93      13:27:16

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW
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*SECNO 600.000
3280 CROSS SECTION    600.00 EXTENDED       .26 FEET

3301 HV CHANGED MORE THAN HVINS

   600.00      2.65  1596.25  1597.34      .00  1599.85      3.60      4.03      .
    3188.      106.    3055.      27.      26.     197.        7.       11.
      .04      4.09    15.54     4.02     .050     .030      .050      .000  1593.
  .027646      200.     200.     200.        5        8         0       .00   118.
0
*SECNO 400.000

3301 HV CHANGED MORE THAN HVINS

   400.00      3.18  1592.38  1593.23      .00  1595.28      2.90      4.36      .
    3188.        1.    3185.       3.       1.     233.        2.       12.
      .04      1.30    13.66     1.31     .050     .030      .050      .000  1589.
  .017644      200.     200.     200.        6       14         0       .00    88.
0
*SECNO 200.000

3301 HV CHANGED MORE THAN HVINS

   200.00      2.99  1587.79  1588.91      .00  1591.32      3.53      3.90      .
    3188.       10.    3167.      10.       3.     209.        3.       13.
      .05      3.74    15.12     3.74     .050     .030      .050      .000  1584.
  .021613      198.     200.     202.        5       11         0       .00    73.
0
*SECNO 160.000
   160.00      2.35  1586.35  1587.50      .00  1590.21      3.86      1.08      .
    3188.        0.    3188.       0.       0.     202.        0.       13.
      .05       .00    15.76      .00     .050     .030      .050      .000  1584.
  .034526       40.      40.      40.        7        8         0       .00    87.
0
1
 05-20-93     13:27:16

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


SPECIAL BRIDGE

5290 UPSTREAM ELEV IS   1588.00 ,NOT   1586.35 NEW BACKWATER REQUIRED

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS
     1.05      1.80      2.85       .00     85.80      5.80    320.00      .00

*SECNO 130.000
6870 D.S. ENERGY OF 1590.21 HIGHER THAN COMPUTED ENERGY OF 1588.65
3280 CROSS SECTION    130.00 EXTENDED      1.81 FEET
```

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	EL
1588.65	1588.48	.00	311.	2903.	320.	358.	1587

130.00	6.64	1589.97	.00	.00	1590.21	.24	.00	.
3188.	126.	2522.	540.	116.	580.	468.	14.	
.05	1.08	4.35	1.16	.050	.030	.050	.000	1583.
.000701	30.	30.	30.	4	0	4	.00	420.

0

*SECNO 106.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1587.00 ELREA= 1587.00

106.00	2.10	1584.90	1586.27	.00	1589.70	4.80	.05	.
3188.	0.	3188.	0.	0.	181.	0.	14.	
.05	.00	17.58	.00	.050	.030	.050	.000	1582.
.049733	24.	24.	24.	7	11	0	.00	87.

0

*SECNO .000
3280 CROSS SECTION .00 EXTENDED 1.47 FEET

1

05-20-93 13:27:16

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW

3301 HV CHANGED MORE THAN HVINS

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

.00	3.97	1586.47	1586.47	.00	1587.43	.96	2.24	1.
3188.	0.	3188.	0.	0.	406.	0.	15.	
.06	.00	7.85	.00	.050	.030	.050	.000	1582.
.011604	103.	106.	116.	20	20	0	.00	225.

0
1

05-20-93 13:27:16

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HEC2 RELEASE DATED NOV 76 UPDATED MAY 1984

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  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
*************************************************

ER

   UNEXPECTED END OF FILE ABORT IN SUBROUTINE  H2MAIN
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1*****************************************************
 *  WATER SURFACE PROFILES                            *
 *  VERSION OF NOVEMBER 1976                          *
 *  UPDATED MAY 1984                                  *
 *  IBM-PC-XT VERSION AUGUST 1985                     *
 *  RUN DATE  04-09-93   TIME  08:46:11                 *
 *****************************************************
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X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
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1
 04-09-93     08:46:11
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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T1      TONTO VERDE PHASE ONE FIRM 11   100yr 6hr
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO11.DAT 4/6/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        0. -1.000000       .00        .0     1404.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC      .050      .050      .035      .100      .300      .000
X1      .000    14.000      .000   523.000      .000      .000
GR   1587.600      .000   1586.400    72.000  1586.000   100.000    1586
GR   1586.200   165.000   1586.000   190.000  1585.000   240.000    1584
GR   1585.000   348.000   1586.000   390.000  1587.000   448.000    1587

X1    215.000    10.000      .000   220.000   180.000   233.000     215
```

GR	1590.000	.000	1590.100	15.000	1590.000	28.000	1589
GR	1587.000	102.000	1587.000	165.000	1588.000	175.000	1589
X1	330.000	6.000	50.000	93.000	128.000	100.000	115
X3	10.000	.000	.000	.000	.000	.000	
GR	1594.500	.000	1593.600	50.000	1589.000	51.000	1589
GR	1594.500	165.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	42.500	2.500	160
X1	350.000	6.000	250.000	290.000	20.000	20.000	20
X2	.000	.000	1.000	1593.800	1594.630	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-6.000	.000	1596.000	.000	200.000	1594.900	
BT	.000	290.000	1594.230	.000	340.000	1594.900	
GR	1596.000	.000	1594.900	200.000	1589.400	250.000	1589
GR	1596.000	540.000	.000	.000	.000	.000	

1

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X1	375.000	6.000	50.000	93.000	45.000	45.000	45
GR	1595.300	.000	1594.630	50.000	1589.800	51.000	1589
GR	1595.300	160.000	.000	.000	.000	.000	
X1	500.000	10.000	80.000	162.000	125.000	125.000	125
GR	1597.000	.000	1596.000	52.000	1595.000	80.000	1594
GR	1593.500	150.000	1594.000	155.000	1595.000	162.000	1596
X1	660.000	13.000	78.000	200.000	180.000	140.000	160
GR	1602.000	.000	1601.000	18.000	1600.000	50.000	1599
GR	1597.000	134.000	1597.000	155.000	1598.000	172.000	1598
GR	1598.000	231.000	1599.000	235.000	1600.000	270.000	
X1	780.000	10.000	47.000	228.000	130.000	110.000	120
GR	1604.000	.000	1603.000	10.000	1602.000	32.000	1601
GR	1599.000	112.000	1599.000	135.000	1600.000	195.000	1601
X1	1010.000	9.000	28.000	165.000	230.000	225.000	230
GR	1607.000	.000	1606.000	12.000	1605.000	28.000	1604
GR	1602.000	100.000	1604.000	115.000	1606.000	165.000	1607
X1	1285.000	13.000	118.000	228.000	290.000	250.000	275
GR	1618.000	.000	1617.000	13.000	1616.000	20.000	1615
GR	1614.000	85.000	1612.000	118.000	1610.000	128.000	1608
GR	1610.000	210.000	1612.000	228.000	1613.000	275.000	
X1	1460.000	12.000	87.000	170.000	165.000	178.000	170
GR	1621.000	.000	1620.000	22.000	1619.000	30.000	1618
GR	1614.000	103.000	1612.000	118.000	1612.000	138.000	1614
GR	1618.000	203.000	1620.000	210.000	.000	.000	
X1	1715.000	9.000	20.000	172.000	290.000	230.000	255
GR	1622.000	.000	1621.000	15.000	1620.000	20.000	1618
GR	1616.000	123.000	1618.000	154.000	1620.000	172.000	1621
X1	2035.000	15.000	65.000	185.000	340.000	320.000	320
GR	1630.000	.000	1629.000	28.000	1628.000	50.000	1628
GR	1624.000	148.000	1624.000	167.000	1626.000	175.000	1628
GR	1626.000	330.000	1624.000	365.000	1624.000	380.000	1626

X1	2200.000	14.000	8.000	95.000	120.000	310.000	165
GR	1634.000	.000	1632.000	8.000	1630.000	30.000	1628
GR	1630.000	82.000	1632.000	95.000	1634.000	187.000	1634
GR	1632.000	315.000	1632.000	325.000	1633.000	335.000	1634
X1	2345.000	17.000	.000	115.000	125.000	165.000	145
GR	1636.000	.000	1634.000	30.000	1632.000	42.000	1632
GR	1636.000	115.000	1637.000	150.000	1637.000	230.000	1636
GR	1637.000	280.000	1636.000	285.000	1636.000	290.000	1637
GR	1636.000	390.000	1637.000	405.000	.000	.000	

X1	2490.000	19.000	20.000	205.000	140.000	160.000	145
GR	1642.000	.000	1641.000	20.000	1640.000	32.000	1638
GR	1636.000	110.000	1638.000	140.000	1641.000	205.000	1641
GR	1640.000	300.000	1641.000	310.000	1641.000	365.000	1640
GR	1640.000	420.000	1640.000	470.000	1641.000	575.000	1642
X1	2650.000	15.000	125.000	230.000	165.000	145.000	160
GR	1647.000	.000	1646.000	12.000	1645.000	20.000	1645
GR	1647.000	80.000	1646.000	125.000	1644.000	140.000	1642
GR	1644.000	230.000	1642.000	260.000	1642.000	280.000	1644
X1	2810.000	11.000	100.000	320.000	160.000	150.000	160
GR	1652.000	.000	1651.000	30.000	1650.000	47.000	1649
GR	1646.000	115.000	1646.000	135.000	1647.000	235.000	1647
GR	1649.000	350.000	.000	.000	.000	.000	
X1	2990.000	11.000	134.000	295.000	185.000	180.000	180
GR	1655.000	.000	1654.000	14.000	1654.000	104.000	1653
GR	1651.000	148.000	1650.000	186.000	1650.000	247.000	1651
GR	1653.000	340.000	.000	.000	.000	.000	
X1	3180.000	10.000	35.000	220.000	210.000	175.000	190
GR	1660.000	.000	1659.000	12.000	1658.000	25.000	1657
GR	1655.000	106.000	1655.000	170.000	1656.000	200.000	1657
X1	3370.000	7.000	52.000	212.000	200.000	190.000	190
GR	1663.000	.000	1662.000	20.000	1661.000	52.000	1660
GR	1661.000	212.000	1661.500	222.000	.000	.000	
X1	3570.000	9.000	41.000	260.000	200.000	200.000	200
GR	1670.000	.000	1669.000	12.000	1668.000	20.000	1667
GR	1665.000	60.000	1665.000	240.000	1666.000	260.000	1666
X1	3880.000	7.000	32.000	150.000	190.000	190.000	190
GR	1674.000	.000	1673.000	32.000	1672.000	40.000	1671
GR	1672.000	95.000	1673.000	150.000	.000	.000	
X1	4070.000	17.000	78.000	160.000	180.000	195.000	190
GR	1679.000	.000	1678.000	33.000	1677.000	61.000	1676
GR	1674.000	115.000	1674.000	118.000	1675.000	122.000	1675
GR	1676.500	200.000	1676.000	222.000	1675.000	228.000	1675
GR	1677.000	280.000	1677.500	320.000	.000	.000	
X1	4250.000	13.000	80.000	165.000	150.000	190.000	180

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GR   1682.000        .000   1681.000      12.000    1680.000      30.000    1680
GR   1680.000      95.000   1679.000     103.000    1678.000     116.000    1678
GR   1680.000     165.000   1681.000     200.000    1681.500     205.000
EJ       .000        .000       .000        .000        .000        .000
1
 04-09-93      08:46:11

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO  .000
3720 CRITICAL DEPTH ASSUMED
      .00      2.11  1586.21  1586.21  1586.00  1586.65      .44      .00      .
    1404.        0.    1404.       0.       0.     264.       0.       0.
      .00       .00     5.32      .00     .050     .035     .050     .000  1584.
  .019982        0.       0.       0.        0       13        0      .00   316.
0
*SECNO 215.000
   215.00      2.48  1589.48  1589.33      .00  1590.11      .63     3.41      .
    1404.        0.    1404.       0.       0.     220.       0.       1.
      .01       .00     6.38      .00     .050     .035     .050     .000  1587.
  .012886      180.     215.     233.        3        8        0      .00   144.
0
*SECNO 330.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1593.60 ELREA=     1589.00

   330.00      3.24  1592.24  1592.24      .00  1593.86     1.62     1.50      .
    1404.        0.    1402.       2.       0.     137.       1.       2.
      .01       .00    10.22     1.68     .050     .035     .050     .000  1589.
  .013237      128.     115.     100.        0       11        0      .00    43.
0

SPECIAL BRIDGE

1
 04-09-93      08:46:11

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW
```

5227 DOWNSTREAM ELEV IS 1591.68 ,NOT 1592.24 HYDRAULIC JUMP OCCURS DOWNSTRE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS
	1.05	1.80	2.85	.00	42.50	2.50	160.00	.00

*SECNO 350.000

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	EL
1594.39	1594.36	.00	0.	1404.	160.	160.	1593

350.00	4.69	1594.09	.00	.00	1594.39	.30	.53	.
1404.	224.	956.	224.	100.	188.	100.	2.	
.01	2.24	5.09	2.24	.050	.035	.050	.000	1589.
.001828	20.	20.	20.	2	0	0	.00	125.

0

*SECNO 375.000

3301 HV CHANGED MORE THAN HVINS

375.00	3.85	1593.65	1593.04	.00	1594.79	1.14	.15	.
1404.	0.	1402.	2.	0.	163.	2.	2.	
.02	.00	8.58	1.38	.050	.035	.050	.000	1589.
.007526	45.	45.	45.	3	14	0	.00	43.

0

*SECNO 500.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

500.00	2.53	1596.03	1596.03	.00	1596.77	.74	1.06	.
1404.	29.	1308.	68.	15.	183.	35.	3.	
.02	1.92	7.14	1.92	.050	.035	.050	.000	1593.
.009691	125.	125.	125.	0	14	0	.00	179.

0

*SECNO 660.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1

04-09-93 08:46:11

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW

660.00	2.29	1599.29	1599.29	.00	1599.97	.68	1.92	.
1404.	1.	1251.	152.	1.	182.	40.	3.	
.03	1.02	6.89	3.84	.050	.035	.050	.000	1597.
.015498	180.	160.	140.	0	11	0	.00	175.

0

*SECNO 780.000

780.00	2.16	1601.16	1601.06	.00	1601.69	.54	1.71	.
1404.	0.	1404.	0.	0.	239.	1.	4.	

```
      .03       .63      5.87       .63      .050      .035      .050      .000  1599.
  .013222      130.      120.      110.         1        15         0       .00   190.
0
*SECNO 1010.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1010.00      3.20   1605.20   1605.20       .00   1606.04       .84      3.29      .
    1404.        0.     1404.        0.        0.     191.        0.        5.
      .04       .79      7.34       .00      .050      .035      .050      .000  1602.
  .015550      230.      230.      225.         0        14         0       .00   120.
0
*SECNO 1285.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1285.00      2.77   1610.77   1610.77       .00   1611.74       .97      4.16      .
    1404.        0.     1404.        0.        0.     177.        0.        6.
      .05       .00      7.92       .00      .050      .035      .050      .000  1608.
  .014746      290.      275.      250.         0        15         0       .00    92.
0
*SECNO 1460.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1460.00      3.61   1615.61   1615.61       .00   1616.72      1.11      2.45      .
    1404.        0.     1404.        0.        0.     166.        0.        7.
      .06       .00      8.46       .00      .050      .035      .050      .000  1612.
  .014122      165.      170.      178.         0        11         0       .00    75.
0
*SECNO 1715.000
1
 04-09-93     08:46:11

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


3301 HV CHANGED MORE THAN HVINS

  1715.00      2.88   1618.88   1618.46       .00   1619.39       .51      2.61      .
    1404.        0.     1404.        0.        0.     244.        0.        8.
      .07       .00      5.75       .00      .050      .035      .050      .000  1616.
  .007765      290.      255.      230.         3        19         0       .00   127.
0
*SECNO 2035.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2035.00      2.31   1626.31   1626.31       .00   1626.98       .66      3.65      .
    1404.        0.      790.      614.        0.     108.      114.       10.
      .08       .00      7.30      5.39      .050      .035      .050      .000  1624.
  .018358      340.      320.      320.         0        15         0       .00   168.
0
*SECNO 2200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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  2200.00      3.35  1631.35  1631.35      .00  1632.46      1.10      3.13       .
    1404.        0.    1404.       0.       0.     167.        0.       11.
      .09       .00     8.43      .00     .050     .035      .050      .000   1628.
  .013936      120.     165.     310.        0       11         0       .00     75.
0
*SECNO 2345.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2345.00      3.17  1635.17  1635.17      .00  1636.15       .98      2.08       .
    1404.        0.    1404.       0.       0.     177.        0.       11.
      .09       .00     7.93      .00     .050     .035      .050      .000   1632.
  .014700      125.     145.     165.        0       11         0       .00     92.
0
*SECNO 2490.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2490.00      2.90  1638.90  1638.90      .00  1639.77       .87      2.18       .
    1404.        0.    1404.       0.       0.     188.        0.       12.
      .10       .00     7.48      .00     .050     .035      .050      .000   1636.
  .015411      140.     145.     160.        0       11         0       .00    110.
0
1
 04-09-93      08:46:11

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 2650.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2650.00      1.86  1643.86  1643.86      .00  1644.43       .57      2.83       .
    1404.        0.     725.     679.       0.     103.      141.       13.
      .11       .00     7.05     4.81     .050     .035      .050      .000   1642.
  .021595      165.     160.     145.        0       14         0       .00    217.
0
*SECNO 2810.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2810.00      1.81  1647.81  1647.81      .00  1648.36       .55      3.04       .
    1404.        0.    1404.       0.       0.     236.        0.       14.
      .11       .00     5.96      .00     .050     .035      .050      .000   1646.
  .017297      160.     160.     150.        0        8         0       .00    213.
0
*SECNO 2990.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2990.00      1.85  1651.85  1651.85      .00  1652.54       .69      3.03       .
    1404.        0.    1404.       0.       0.     211.        0.       15.       1
      .12       .00     6.65      .00     .050     .035      .050      .000   1650.
  .016338      185.     180.     180.        0        8         0       .00    155.
0
*SECNO 3180.000
7185 MINIMUM SPECIFIC ENERGY
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3720 CRITICAL DEPTH ASSUMED
  3180.00      1.83  1656.83  1656.83      .00  1657.47      .64      3.16       .
    1404.        0.    1404.       0.       0.     219.       0.       16.       1
      .13       .00     6.42      .00     .050     .035     .050      .000   1655.
  .016926      210.     190.     175.        0        5        0       .00    174.
0
*SECNO 3370.000
3280 CROSS SECTION   3370.00 EXTENDED       .11 FEET

7185 MINIMUM SPECIFIC ENERGY
1
 04-09-93     08:46:11


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


3720 CRITICAL DEPTH ASSUMED
  3370.00      1.61  1661.61  1661.61      .00  1662.25      .63      3.07       .
    1404.       10.    1387.       7.       6.     216.       4.       17.       1
      .14      1.68     6.43     1.86     .050     .035     .050      .000   1660.
  .015406      200.     190.     190.        0       11        0       .00    189.
0
*SECNO 3570.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3570.00      1.17  1666.17  1666.17      .00  1666.72      .54      3.26       .
    1404.        0.    1404.       0.       0.     238.       0.       18.       1
      .15       .77     5.90      .77     .050     .035     .050      .000   1665.
  .017328      200.     200.     200.        0       15        0       .00    224.
0
*SECNO 3880.000
3280 CROSS SECTION   3880.00 EXTENDED       .62 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3880.00      2.62  1673.62  1673.62      .00  1674.40      .79      3.01       .
    1404.       10.    1394.       0.       6.     195.       0.       19.       1
      .16      1.64     7.14      .00     .050     .035     .050      .000   1671.
  .014581      190.     190.     190.        0       17        0       .00    137.
0
*SECNO 4070.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4070.00      2.95  1676.95  1676.95      .00  1677.56      .61      2.73       .
    1404.       16.     978.     410.       8.     138.     108.       20.       1
      .16      2.14     7.09     3.81     .050     .035     .050      .000   1674.
  .014018      180.     190.     195.        0        8        0       .00    216.
0
*SECNO 4250.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4250.00      3.20  1681.20  1681.20      .00  1681.87      .67      2.31       .
    1404.      185.    1157.      62.      60.     163.      25.       21.       1
      .17      3.08     7.11     2.53     .050     .035     .050      .000   1678.
  .011834      150.     180.     190.        0        8        0       .00    192.
0
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04-09-93 08:46:11

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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-07-93   TIME  13:35:02                *
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X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
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1
 05-07-93     13:35:02
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
*************************************************
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T1      TONTO VERDE PHASE ONE FIRM 11 100 YEAR 24HR
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO11A.DAT 5/6/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        0. -1.000000       .00        .0     1626.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC       .025       .025       .020       .100       .300       .000
X1       .000     14.000       .000    523.000       .000       .000
GR   1587.600       .000   1586.400     72.000   1586.000    100.000    1586
GR   1586.200    165.000   1586.000    190.000   1585.000    240.000    1584
GR   1585.000    348.000   1586.000    390.000   1587.000    448.000    1587

NC       .050       .050       .035       .100       .300       .000
```

X1	215.000	10.000	.000	220.000	180.000	233.000	215
GR	1590.000	.000	1590.100	15.000	1590.000	28.000	1589
GR	1587.000	102.000	1587.000	165.000	1588.000	175.000	1589
X1	330.000	6.000	50.000	93.000	128.000	100.000	115
X3	10.000	.000	.000	.000	.000	.000	
GR	1594.500	.000	1593.600	50.000	1589.000	51.000	1589
GR	1594.500	165.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	42.500	2.500	160
X1	350.000	6.000	250.000	290.000	20.000	20.000	20
X2	.000	.000	1.000	1593.800	1594.630	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-6.000	.000	1596.000	.000	200.000	1594.900	
BT	.000	290.000	1594.230	.000	340.000	1594.900	
GR	1596.000	.000	1594.900	200.000	1589.400	250.000	1589
GR	1596.000	540.000	.000	.000	.000	.000	

X1	375.000	6.000	50.000	93.000	45.000	45.000	45
GR	1595.300	.000	1594.630	50.000	1589.800	51.000	1589
GR	1595.300	160.000	.000	.000	.000	.000	
X1	500.000	10.000	80.000	162.000	125.000	125.000	125
GR	1597.000	.000	1596.000	52.000	1595.000	80.000	1594
GR	1593.500	150.000	1594.000	155.000	1595.000	162.000	1596
X1	660.000	10.000	78.000	200.000	180.000	140.000	160
GR	1602.000	.000	1601.000	18.000	1600.000	50.000	1599
GR	1597.000	134.000	1597.000	155.000	1598.000	172.000	1599
X1	780.000	10.000	47.000	228.000	130.000	110.000	120
GR	1604.000	.000	1603.000	10.000	1602.000	32.000	1601
GR	1599.000	112.000	1599.000	135.000	1600.000	195.000	1601
X1	1010.000	9.000	28.000	165.000	230.000	225.000	230
GR	1607.000	.000	1606.000	12.000	1605.000	28.000	1604
GR	1602.000	100.000	1604.000	115.000	1606.000	165.000	1607
X1	1285.000	13.000	118.000	228.000	290.000	250.000	275
GR	1618.000	.000	1617.000	13.000	1616.000	20.000	1615
GR	1614.000	85.000	1612.000	118.000	1610.000	128.000	1608
GR	1610.000	210.000	1612.000	228.000	1613.000	275.000	
X1	1460.000	12.000	87.000	170.000	165.000	178.000	170
GR	1621.000	.000	1620.000	22.000	1619.000	30.000	1618
GR	1614.000	103.000	1612.000	118.000	1612.000	138.000	1614
GR	1618.000	203.000	1620.000	210.000	.000	.000	
X1	1715.000	9.000	20.000	172.000	290.000	230.000	255
GR	1622.000	.000	1621.000	15.000	1620.000	20.000	1618
GR	1616.000	123.000	1618.000	154.000	1620.000	172.000	1621
X1	2035.000	11.000	65.000	185.000	340.000	320.000	320
GR	1630.000	.000	1629.000	28.000	1628.000	50.000	1628
GR	1624.000	148.000	1624.000	167.000	1626.000	175.000	1628
GR	1630.000	211.000	.000	.000	.000	.000	

X1	2200.000	8.000	8.000	95.000	120.000	310.000	165
GR	1634.000	.000	1632.000	8.000	1630.000	30.000	1628
GR	1630.000	82.000	1632.000	95.000	1634.000	187.000	
X1	2345.000	7.000	.000	115.000	125.000	165.000	145
GR	1636.000	.000	1634.000	30.000	1632.000	42.000	1632
GR	1636.000	115.000	1637.000	150.000	.000	.000	
X1	2490.000	9.000	62.000	140.000	140.000	160.000	145
GR	1642.000	.000	1641.000	20.000	1640.000	32.000	1638
GR	1636.000	110.000	1638.000	140.000	1641.000	205.000	1642

X1	2650.000	12.000	125.000	230.000	165.000	145.000	160
GR	1647.000	.000	1646.000	12.000	1645.000	20.000	1645
GR	1647.000	80.000	1646.000	125.000	1644.000	140.000	1642
GR	1644.000	230.000	1646.000	232.000	.000	.000	
X1	2810.000	9.000	100.000	185.000	160.000	150.000	160
GR	1652.000	.000	1651.000	30.000	1650.000	47.000	1649
GR	1646.000	115.000	1646.000	135.000	1648.000	185.000	1650
X1	2990.000	10.000	134.000	265.000	185.000	180.000	180
GR	1655.000	.000	1654.000	14.000	1654.000	104.000	1653
GR	1651.000	148.000	1650.000	186.000	1650.000	247.000	1651
X1	3180.000	10.000	35.000	220.000	210.000	175.000	190
GR	1660.000	.000	1659.000	12.000	1658.000	25.000	1657
GR	1655.000	106.000	1655.000	170.000	1656.000	200.000	1657
X1	3370.000	7.000	52.000	212.000	200.000	190.000	190
GR	1663.000	.000	1662.000	20.000	1661.000	52.000	1660
GR	1661.000	212.000	1661.500	222.000	.000	.000	
X1	3570.000	9.000	41.000	260.000	200.000	200.000	200
GR	1670.000	.000	1669.000	12.000	1668.000	20.000	1667
GR	1665.000	60.000	1665.000	240.000	1666.000	260.000	1666
X1	3880.000	7.000	32.000	150.000	190.000	190.000	190
GR	1674.000	.000	1673.000	32.000	1672.000	40.000	1671
GR	1672.000	95.000	1673.000	150.000	.000	.000	
X1	4070.000	17.000	78.000	160.000	180.000	195.000	190
GR	1679.000	.000	1678.000	33.000	1677.000	61.000	1676
GR	1674.000	115.000	1674.000	118.000	1675.000	122.000	1675
GR	1676.500	200.000	1676.000	222.000	1675.000	228.000	1675
GR	1677.000	280.000	1677.500	320.000	.000	.000	
X1	4250.000	13.000	80.000	165.000	150.000	190.000	180
GR	1682.000	.000	1681.000	12.000	1680.000	30.000	1680
GR	1680.000	95.000	1679.000	103.000	1678.000	116.000	1678
GR	1680.000	165.000	1681.000	200.000	1681.500	205.000	
EJ	.000	.000	.000	.000	.000	.000	

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=    .100 CEHV=    .300
*SECNO  .000
3720 CRITICAL DEPTH ASSUMED
      .00      2.22  1586.32  1586.32  1586.00  1586.77      .45      .00       .
    1626.        0.    1626.       0.       0.     301.       0.       0.
      .00       .00     5.40      .00     .025     .020     .025     .000   1584.
  .005994        0.       0.       0.        0       14        0      .00    331.
0
CCHV=    .100 CEHV=    .300
*SECNO 215.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   215.00      2.55  1589.55  1589.55      .00  1590.32      .77     1.97       .
    1626.        0.    1626.       0.       0.     231.       0.       1.
      .01       .00     7.04      .00     .050     .035     .050     .000   1587.
  .015619      180.     215.     233.        0        8        0      .00    150.
0
*SECNO 330.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1593.60 ELREA=     1589.00

   330.00      3.57  1592.57  1592.57      .00  1594.35     1.78     1.63       .
    1626.        0.    1624.       2.       0.     152.       1.       2.
      .01       .00    10.71     1.77     .050     .035     .050     .000   1589.
  .012864      128.     115.     100.        0       11        0      .00     43.
0
1
 05-07-93     13:35:02

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1591.95 ,NOT   1592.57 HYDRAULIC JUMP OCCURS DOWNSTRE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS
     1.05      1.80      2.85       .00     42.50      2.50    160.00       .00
```

*SECNO 350.000

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	EL
1595.46	1594.81	.00	153.	1485.	160.	160.	1593

350.00	5.30	1594.70	.00	.00	1594.98	.28	.63	.
1626.	281.	1063.	281.	128.	212.	128.	2.	
.01	2.20	5.01	2.20	.050	.035	.050	.000	1589.
.001508	20.	20.	20.	2	0	3	.00	136.

0

*SECNO 375.000

3301 HV CHANGED MORE THAN HVINS

375.00	4.41	1594.21	1593.37	.00	1595.37	1.17	.12	.
1626.	0.	1623.	3.	0.	187.	2.	2.	
.01	.00	8.67	1.40	.050	.035	.050	.000	1589.
.006516	45.	45.	45.	3	14	0	.00	43.

0

*SECNO 500.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

500.00	2.71	1596.21	1596.21	.00	1596.99	.78	.98	.
1626.	47.	1471.	109.	21.	198.	48.	3.	
.02	2.22	7.44	2.28	.050	.035	.050	.000	1593.
.009507	125.	125.	125.	0	14	0	.00	195.

0

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05-07-93 13:35:02

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOS
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMI
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPW

*SECNO 660.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

660.00	2.64	1599.64	1599.64	.00	1600.49	.85	1.84	.
1626.	9.	1616.	0.	6.	218.	0.	4.	
.03	1.65	7.43	1.12	.050	.035	.050	.000	1597.
.014171	180.	160.	140.	0	8	0	.00	140.

0

*SECNO 780.000

780.00	2.42	1601.42	1601.19	.00	1601.92	.50	1.39	.
1626.	1.	1620.	4.	1.	286.	4.	5.	
.03	1.03	5.67	1.03	.050	.035	.050	.000	1599.
.009685	130.	120.	110.	1	15	0	.00	206.

0

*SECNO 1010.000

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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1010.00      3.41  1605.41  1605.41       .00  1606.28       .88      2.71       .
    1626.        2.    1624.       0.        1.     216.        0.        6.
      .04      1.24     7.51      .00      .050     .035      .050      .000  1602.
  .014658      230.     230.     225.         0       11         0       .00   128.
0
*SECNO 1285.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1285.00      2.99  1610.99  1610.99       .00  1612.04      1.04      3.97       .
    1626.        0.    1626.       0.        0.     198.        0.        7.
      .05       .00     8.20      .00      .050     .035      .050      .000  1608.
  .014213      290.     275.     250.         0       11         0       .00    95.
0
*SECNO 1460.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1460.00      3.88  1615.88  1615.88       .00  1617.05      1.17      2.38       .
    1626.        0.    1626.       0.        0.     187.        0.        8.
      .05       .00     8.70      .00      .050     .035      .050      .000  1612.
  .013819      165.     170.     178.         0       11         0       .00    80.
0
1
 05-07-93      13:35:02

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 1715.000

3301 HV CHANGED MORE THAN HVINS

  1715.00      3.10  1619.10  1618.64       .00  1619.65       .55      2.53       .
    1626.        0.    1626.       0.        0.     274.        0.        9.
      .07       .00     5.94      .00      .050     .035      .050      .000  1616.
  .007471      290.     255.     230.         2       19         0       .00   132.
0
*SECNO 2035.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2035.00      3.37  1627.37  1627.37       .00  1628.37      1.00      3.25       .
    1626.        0.    1626.       0.        0.     203.        0.       11.
      .08       .00     8.01      .00      .050     .035      .050      .000  1624.
  .014577      340.     320.     320.         0        8         0       .00   103.
0
*SECNO 2200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2200.00      3.61  1631.61  1631.61       .00  1632.79      1.18      2.34       .
    1626.        0.    1626.       0.        0.     187.        0.       12.
      .08       .00     8.72      .00      .050     .035      .050      .000  1628.
  .013826      120.     165.     310.         0        8         0       .00    80.
0
*SECNO 2345.000
7185 MINIMUM SPECIFIC ENERGY
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3720 CRITICAL DEPTH ASSUMED
  2345.00      3.41  1635.41  1635.41      .00  1636.44      1.03      2.05       .
    1626.        0.    1626.       0.       0.     200.        0.       12.
      .09       .00     8.14      .00     .050     .035      .050      .000   1632.
  .014456      125.     145.     165.        0       11         0       .00     98.
0
*SECNO 2490.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2490.00      3.11  1639.11  1639.11      .00  1640.15      1.04      1.89       .
    1626.       20.    1577.      29.       9.     190.       13.       13.
      .09      2.17     8.32     2.18     .050     .035      .050      .000   1636.
  .011777      140.     145.     160.        0       11         0       .00    118.
0
1
 05-07-93     13:35:02

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 2650.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2650.00      2.90  1644.90  1644.90      .00  1645.94      1.04      2.07       .
    1626.        0.    1625.       1.       0.     199.        0.       14.
      .10       .00     8.19     1.65     .050     .035      .050      .000   1642.
  .014283      165.     160.     145.        0        8         0       .00     97.
0
*SECNO 2810.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2810.00      3.08  1649.08  1649.08      .00  1650.04       .96      2.05       .
    1626.       51.    1574.       2.      23.     197.        1.       15.
      .10      2.22     7.99     1.88     .050     .035      .050      .000   1646.
  .011590      160.     160.     150.        0        8         0       .00    126.
0
*SECNO 2990.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2990.00      2.05  1652.05  1652.05      .00  1652.90       .85      2.38       .
    1626.        0.    1626.       0.       0.     220.        0.       16.
      .11       .04     7.39      .93     .050     .035      .050      .000   1650.
  .015200      185.     180.     180.        0       14         0       .00    132.
0
*SECNO 3180.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3180.00      1.99  1656.99  1656.99      .00  1657.66       .67      2.99       .
    1626.        0.    1626.       0.       0.     247.        0.       17.
      .12       .00     6.58      .00     .050     .035      .050      .000   1655.
  .016252      210.     190.     175.        0        8         0       .00    184.
0
*SECNO 3370.000
3280 CROSS SECTION   3370.00 EXTENDED       .25 FEET

7185 MINIMUM SPECIFIC ENERGY
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3720 CRITICAL DEPTH ASSUMED
  3370.00      1.75  1661.75  1661.75       .00  1662.44       .69      2.95       .
    1626.       17.    1598.      11.        9.     237.        5.       18.       1
      .13      1.88     6.73     2.24      .050     .035      .050      .000   1660.
  .014870      200.     190.     190.         0       11         0       .00    193.
0
1
 05-07-93      13:35:02

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 3570.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3570.00      1.29  1666.29  1666.29       .00  1666.88       .60      3.15       .
    1626.        0.    1625.       1.        0.     262.        1.       19.       1
      .14      1.05     6.19     1.05      .050     .035      .050      .000   1665.
  .016728      200.     200.     200.         0       15         0       .00    227.
0
*SECNO 3880.000
3280 CROSS SECTION   3880.00 EXTENDED       .78 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3880.00      2.78  1673.78  1673.78       .00  1674.64       .86      2.91       .
    1626.       19.    1607.       0.       10.     215.        0.       20.       1
      .14      1.89     7.48      .00      .050     .035      .050      .000   1671.
  .014099      190.     190.     190.         0       17         0       .00    143.
0
*SECNO 4070.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4070.00      3.09  1677.09  1677.09       .00  1677.74       .65      2.64       .
    1626.       25.    1104.     498.       10.     150.      125.       21.       1
      .15      2.42     7.37     3.97      .050     .035      .050      .000   1674.
  .013571      180.     190.     195.         0        8         0       .00    229.
0
*SECNO 4250.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4250.00      3.34  1681.34  1681.34       .00  1682.07       .72      2.27       .
    1626.      236.    1305.      85.       70.     175.       30.       22.       1
      .16      3.36     7.46     2.84      .050     .035      .050      .000   1678.
  .011823      150.     180.     190.         0        8         0       .00    195.
0
1
 05-07-93      13:35:02


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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
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MODIFICATION - 50,51,52,53,54,55,56
IBM-PC-XT VERSION AUGUST 1985
****

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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-07-93   TIME  08:59:23                *
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X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
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 05-07-93     08:59:23
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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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T1      TONTO VERDE PHASE ONE FIRM 11 100 YEAR 6HR SC FLOW
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO11D.DAT 5/6/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0.        0.        0.        1. -1.000000       .00        .0     1404.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

     1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC      .050      .050      .035      .100      .300      .000
X1   4250.000    13.000    80.000   165.000   150.000   190.000     180
GR   1682.000      .000  1681.000    12.000  1680.000    30.000    1680
GR   1680.000    95.000  1679.000   103.000  1678.000   116.000    1678
GR   1680.000   165.000  1681.000   200.000  1681.500   205.000

X1   4070.000    17.000    78.000   160.000   180.000   195.000     190
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GR	1679.000	.000	1678.000	33.000	1677.000	61.000	1676
GR	1674.000	115.000	1674.000	118.000	1675.000	122.000	1675
GR	1676.500	200.000	1676.000	222.000	1675.000	228.000	1675
GR	1677.000	280.000	1677.500	320.000	.000	.000	
X1	3880.000	7.000	32.000	150.000	190.000	190.000	190
GR	1674.000	.000	1673.000	32.000	1672.000	40.000	1671
GR	1672.000	95.000	1673.000	150.000	.000	.000	
X1	3570.000	9.000	41.000	260.000	200.000	200.000	200
GR	1670.000	.000	1669.000	12.000	1668.000	20.000	1667
GR	1665.000	60.000	1665.000	240.000	1666.000	260.000	1666
X1	3370.000	7.000	52.000	212.000	200.000	190.000	190
GR	1663.000	.000	1662.000	20.000	1661.000	52.000	1660
GR	1661.000	212.000	1661.500	222.000	.000	.000	

X1	3180.000	10.000	35.000	220.000	210.000	175.000	190
GR	1660.000	.000	1659.000	12.000	1658.000	25.000	1657
GR	1655.000	106.000	1655.000	170.000	1656.000	200.000	1657
X1	2990.000	10.000	134.000	265.000	185.000	180.000	180
GR	1655.000	.000	1654.000	14.000	1654.000	104.000	1653
GR	1651.000	148.000	1650.000	186.000	1650.000	247.000	1651
X1	2810.000	9.000	100.000	185.000	160.000	150.000	160
GR	1652.000	.000	1651.000	30.000	1650.000	47.000	1649
GR	1646.000	115.000	1646.000	135.000	1648.000	185.000	1650
X1	2650.000	12.000	125.000	230.000	165.000	145.000	160
GR	1647.000	.000	1646.000	12.000	1645.000	20.000	1645
GR	1647.000	80.000	1646.000	125.000	1644.000	140.000	1642
GR	1644.000	230.000	1646.000	232.000	.000	.000	
X1	2490.000	9.000	62.000	140.000	140.000	160.000	145
GR	1642.000	.000	1641.000	20.000	1640.000	32.000	1638
GR	1636.000	110.000	1638.000	140.000	1641.000	205.000	1642
X1	2345.000	7.000	.000	115.000	125.000	165.000	145
GR	1636.000	.000	1634.000	30.000	1632.000	42.000	1632
GR	1636.000	115.000	1637.000	150.000	.000	.000	
X1	2200.000	8.000	8.000	95.000	120.000	310.000	165
GR	1634.000	.000	1632.000	8.000	1630.000	30.000	1628
GR	1630.000	82.000	1632.000	95.000	1634.000	187.000	
X1	2035.000	11.000	65.000	185.000	340.000	320.000	320
GR	1630.000	.000	1629.000	28.000	1628.000	50.000	1628
GR	1624.000	148.000	1624.000	167.000	1626.000	175.000	1628
GR	1630.000	211.000	.000	.000	.000	.000	
X1	1715.000	9.000	20.000	172.000	290.000	230.000	255
GR	1622.000	.000	1621.000	15.000	1620.000	20.000	1618
GR	1616.000	123.000	1618.000	154.000	1620.000	172.000	1621
X1	1460.000	12.000	87.000	170.000	165.000	178.000	170

GR	1621.000	.000	1620.000	22.000	1619.000	30.000	1618
GR	1614.000	103.000	1612.000	118.000	1612.000	138.000	1614
GR	1618.000	203.000	1620.000	210.000	.000	.000	
X1	1285.000	13.000	118.000	228.000	290.000	250.000	275
GR	1618.000	.000	1617.000	13.000	1616.000	20.000	1615
GR	1614.000	85.000	1612.000	118.000	1610.000	128.000	1608
GR	1610.000	210.000	1612.000	228.000	1613.000	275.000	

X1	1010.000	9.000	28.000	165.000	230.000	225.000	230
GR	1607.000	.000	1606.000	12.000	1605.000	28.000	1604
GR	1602.000	100.000	1604.000	115.000	1606.000	165.000	1607
X1	780.000	10.000	47.000	228.000	130.000	110.000	120
GR	1604.000	.000	1603.000	10.000	1602.000	32.000	1601
GR	1599.000	112.000	1599.000	135.000	1600.000	195.000	1601
X1	660.000	10.000	78.000	200.000	180.000	140.000	160
GR	1602.000	.000	1601.000	18.000	1600.000	50.000	1599
GR	1597.000	134.000	1597.000	155.000	1598.000	172.000	1599
X1	500.000	10.000	80.000	162.000	125.000	125.000	125
GR	1597.000	.000	1596.000	52.000	1595.000	80.000	1594
GR	1593.500	150.000	1594.000	155.000	1595.000	162.000	1596
X1	375.000	6.000	50.000	93.000	45.000	45.000	45
GR	1595.300	.000	1594.630	50.000	1589.800	51.000	1589
GR	1595.300	160.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	42.500	2.500	160
X1	350.000	6.000	250.000	290.000	20.000	20.000	20
X2	.000	.000	1.000	1593.800	1594.630	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-6.000	.000	1596.000	.000	200.000	1594.900	
BT	.000	290.000	1594.230	.000	340.000	1594.900	
GR	1596.000	.000	1594.900	200.000	1589.400	250.000	1589
GR	1596.000	540.000	.000	.000	.000	.000	
X1	330.000	6.000	50.000	93.000	128.000	100.000	115
X3	10.000	.000	.000	.000	.000	.000	
GR	1594.500	.000	1593.600	50.000	1589.000	51.000	1589
GR	1594.500	165.000	.000	.000	.000	.000	
X1	215.000	10.000	.000	220.000	180.000	233.000	215
GR	1590.000	.000	1590.100	15.000	1590.000	28.000	1589
GR	1587.000	102.000	1587.000	165.000	1588.000	175.000	1589
X1	.000	14.000	.000	523.000	.000	.000	
GR	1587.600	.000	1586.400	72.000	1586.000	100.000	1586
GR	1586.200	165.000	1586.000	190.000	1585.000	240.000	1584
GR	1585.000	348.000	1586.000	390.000	1587.000	448.000	1587
EJ	.000	.000	.000	.000	.000	.000	

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     .100 CEHV=     .300
*SECNO 4250.000
3720 CRITICAL DEPTH ASSUMED
  4250.00      3.20   1681.20   1681.20   1681.20   1681.87       .67       .00        .
    1404.      186.     1156.       62.       60.      163.       25.        0.
      .00      3.07      7.08      2.52      .050      .035      .050      .000     1678.
  .011703        0.        0.        0.         0         4         0       .00      192.
0
*SECNO 4070.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

  4070.00      2.48   1676.48   1676.95       .00   1677.97      1.50      3.81        .
    1404.        5.     1063.      336.        2.       99.       55.        1.
      .01      2.55     10.73      6.16      .050      .035      .050      .000     1674.
  .049898      150.      180.      190.         6        12         0       .00      192.
0
*SECNO 3880.000
3280 CROSS SECTION    3880.00 EXTENDED        .60 FEET


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3880.00      2.60   1673.60   1673.60       .00   1674.40       .80      4.76        .
    1404.       10.     1394.        0.        6.      194.        0.        2.
      .01      1.64      7.20       .00      .050      .035      .050      .000     1671.
  .014952      180.      190.      195.        20         8         0       .00      137.
0
1
 05-07-93      08:59:23

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW


*SECNO 3570.000

3301 HV CHANGED MORE THAN HVINS

  3570.00       .63   1665.63   1666.17       .00   1667.71      2.09      6.56        .
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```
    1404.        0.     1404.        0.        0.      121.        0.        2.
     .02       .00     11.59       .00      .050      .035      .050      .000  1665.
  .149886      190.      190.      190.         5        14         0       .00   204.
0
 *SECNO 3370.000
 3280 CROSS SECTION   3370.00 EXTENDED       .12 FEET


 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
  3370.00      1.62  1661.62  1661.62       .00  1662.25       .63      7.00      5.
    1404.       10.     1387.       7.        6.     217.        4.        3.
     .03       1.68      6.41     1.87      .050      .035      .050      .000  1660.
  .015211      200.      200.      200.        20        17         0       .00   189.
0
 *SECNO 3180.000

 3301 HV CHANGED MORE THAN HVINS

  3180.00      1.46  1656.46  1656.84       .00  1657.68      1.23      4.50      .
    1404.        0.     1404.        0.        0.     158.        0.        4.
     .03       .00      8.90      .00      .050      .035      .050      .000  1655.
  .041934      200.      190.      190.         5         8         0       .00   152.
0
 *SECNO 2990.000
  2990.00      1.84  1651.84  1651.89       .00  1652.67       .83      4.90      .
    1404.        0.     1404.        0.        0.     192.        0.        5.
     .04       .00      7.32      .04      .050      .035      .050      .000  1650.
  .017440      210.      190.      175.         2        11         0       .00   128.
0
1
 05-07-93     08:59:23

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


 *SECNO 2810.000
  2810.00      2.77  1648.77  1648.82       .00  1649.78      1.01      2.87      .
    1404.       21.     1382.       1.       11.     170.        0.        5.
     .05       1.89      8.13     1.67      .050      .035      .050      .000  1646.
  .014612      185.      180.      180.         1        14         0       .00   115.
0
 *SECNO 2650.000

 3301 HV CHANGED MORE THAN HVINS

  2650.00      2.15  1644.15  1644.70       .00  1646.00      1.85      3.69      .
    1404.        0.     1404.        0.        0.     129.        0.        6.
     .05       .00     10.91      .06      .050      .035      .050      .000  1642.
  .041833      160.      160.      150.         6         8         0       .00    91.
0
 *SECNO 2490.000
  2490.00      2.35  1638.35  1638.89       .00  1640.13      1.78      5.85      .
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   1404.        2.     1400.        2.        1.      131.        1.        7.
     .05      1.68     10.73      1.68      .050      .035      .050      .000  1636.
 .032198      165.      160.      145.         6        11         0       .00    90.
0
*SECNO 2345.000
 2345.00      2.89   1634.89   1635.17       .00   1636.21      1.32      3.79      .
   1404.        0.     1404.        0.        0.      152.        0.        7.
     .06       .00      9.22       .00      .050      .035      .050      .000  1632.
 .021600      140.      145.      160.         4        11         0       .00    84.
0
*SECNO 2200.000

3301 HV CHANGED MORE THAN HVINS

 2200.00      2.83   1630.83   1631.36       .00   1632.66      1.83      3.50      .
   1404.        0.     1404.        0.        0.      129.        0.        7.
     .06       .00     10.84       .00      .050      .035      .050      .000  1628.
 .027177      125.      145.      165.         5         8         0       .00    66.
0
*SECNO 2035.000
 2035.00      2.80   1626.80   1627.15       .00   1628.20      1.40      4.33      .
   1404.        0.     1404.        0.        0.      148.        0.        8.
     .07       .00      9.51       .00      .050      .035      .050      .000  1624.
 .025358      120.      165.      310.         4         8         0       .00    88.
0
1
 05-07-93     08:59:23

   SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL      OLOS
   Q         QLOB      QCH       QROB      ALOB       ACH      AROB       VOL       TWA
   TIME      VLOB      VCH       VROB      XNL        XNCH     XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC      ICONT     CORAR     TOPW

*SECNO 1715.000
 1715.00      2.14   1618.14   1618.47       .00   1619.41      1.27      8.75      .
   1404.        0.     1404.        0.        0.      155.        0.        9.
     .08       .00      9.06       .00      .050      .035      .050      .000  1616.
 .029553      340.      320.      320.         4        11         0       .00   111.
0
*SECNO 1460.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 1460.00      3.61   1615.61   1615.61       .00   1616.72      1.11      5.03      3.
   1404.        0.     1404.        0.        0.      166.        0.       10.
     .08       .00      8.46       .00      .050      .035      .050      .000  1612.
 .014103      290.      255.      230.        20        14         0       .00    75.
0
*SECNO 1285.000

3301 HV CHANGED MORE THAN HVINS

 1285.00      2.05   1610.05   1610.77       .00   1612.39      2.34      4.21      .
   1404.        0.     1404.        0.        0.      114.        0.       11.
     .09       .00     12.26       .00      .050      .035      .050      .000  1608.
 .054337      165.      170.      178.         5        15         0       .00    82.
0
*SECNO 1010.000
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3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1010.00      3.20  1605.20  1605.20       .00  1606.04       .84      7.29      6.
   1404.        0.    1404.       0.        0.     191.        0.       12.
     .10       .79     7.35      .00      .050     .035      .050      .000  1602.
  .015637      290.     275.     250.        20       14         0       .00   120.
0
*SECNO 780.000
   780.00      1.95  1600.95  1601.06       .00  1601.71       .75      4.30       .
   1404.        0.    1404.       0.        0.     201.        0.       13.       1
     .11       .00     6.97      .00      .050     .035      .050      .000  1599.
  .022776      230.     230.     225.         3       14         0       .00   177.
0
1
 05-07-93     08:59:23


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*SECNO 660.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   660.00      2.46  1599.46  1599.46       .00  1600.25       .79      2.20      1.
   1404.        4.    1400.       0.        3.     196.        0.       13.       1
     .11      1.37     7.15      .04      .050     .035      .050      .000  1597.
  .015122      130.     120.     110.        20       11         0       .00   135.
0
*SECNO 500.000

3301 HV CHANGED MORE THAN HVINS

   500.00      1.98  1595.48  1596.02       .00  1597.00      1.52      3.18       .
   1404.        7.    1382.      15.        3.     139.        8.       14.       1
     .12      1.93     9.95     1.93      .050     .035      .050      .000  1593.
  .027307      180.     160.     140.         5        5         0       .00   128.
0
*SECNO 375.000
   375.00      3.22  1593.02  1593.04       .00  1594.66      1.64      2.33       .
   1404.        0.    1402.       2.        0.     136.        1.       14.       1
     .12       .00    10.28     1.64      .050     .035      .050      .000  1589.
  .013496      125.     125.     125.         2       14         0       .00    43.
0

SPECIAL BRIDGE

5290 UPSTREAM ELEV IS   1594.06 ,NOT   1593.02 NEW BACKWATER REQUIRED

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS
     1.05      1.80      2.85       .00     42.50      2.50    160.00      .00

*SECNO 350.000
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 PRESS FLOW BECAUSE EGLWC OF   1605.06  EXCEEDS 1.5 DEPTH
6180 SUPERCRITICAL FLOW,PRESSURE FLOW

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

1
 05-07-93     08:59:23

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      EL
                                                                  AREA
   1595.17   1605.06       .00      111.     1305.      160.      160.      1593


   350.00      5.27  1594.67       .00       .00  1594.88       .21       .22       .
    1404.      242.     920.      242.      126.     211.      126.       15.       1
      .12      1.92     4.37      1.92      .050     .035      .050      .000   1589.
  .001155       45.      45.       45.         2        0         2       .00    135.
0
*SECNO 330.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1593.60 ELREA=     1589.00

   330.00      2.30  1591.30  1592.24       .00  1594.51      3.21       .07       .
    1404.        0.    1403.       1.        0.     97.        1.       15.       1
      .12       .00    14.39     2.33      .050     .035      .050      .000   1589.
  .040178       20.      20.       20.         5       14         0       .00     43.
0
*SECNO 215.000

3301 HV CHANGED MORE THAN HVINS

   215.00      1.90  1588.90  1589.33       .00  1590.23      1.33      3.72       .
    1404.        0.    1404.       0.        0.    152.        0.       15.       1
      .13       .00     9.25       .00      .050     .035      .050      .000   1587.
  .026588      128.     115.     100.         5        5         0       .00     98.
0
*SECNO  .000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
       .00      2.11  1586.21  1586.21       .00  1586.65       .44      4.92      1.
    1404.        0.    1404.       0.        0.    264.        0.       16.       1
      .14       .00     5.31       .00      .050     .035      .050      .000   1584.
  .019932      180.     215.     233.        20       14         0       .00    316.
```

0
1
05-07-93 08:59:23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************
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ER

UNEXPECTED END OF FILE ABORT IN SUBROUTINE H2MAIN

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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *  IBM-PC-XT VERSION AUGUST 1985                    *
 *  RUN DATE  05-07-93   TIME  09:04:53                *
 *****************************************************
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X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
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1
 05-07-93     09:04:53
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
*************************************************
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T1      TONTO VERDE PHASE ONE FIRM 11 100 YEAR 24HR SC FLOW
T2      BROOKS, HERSEY & ASSOC.
T3      TONTO11AD.DAT 5/6/93

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

       0.        0.        0.        1. -1.000000       .00        .0     1662.

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

      1.000      .000    -1.000      .000      .000      .000    -1.000      .0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0

NC       .050       .050       .035       .100       .300       .000
X1   4250.000     13.000     80.000    165.000    150.000    190.000     180
GR   1682.000       .000   1681.000     12.000   1680.000     30.000    1680
GR   1680.000     95.000   1679.000    103.000   1678.000    116.000    1678
GR   1680.000    165.000   1681.000    200.000   1681.500    205.000

X1   4070.000     17.000     78.000    160.000    180.000    195.000     190
```

GR	1679.000	.000	1678.000	33.000	1677.000	61.000	1676
GR	1674.000	115.000	1674.000	118.000	1675.000	122.000	1675
GR	1676.500	200.000	1676.000	222.000	1675.000	228.000	1675
GR	1677.000	280.000	1677.500	320.000	.000	.000	
X1	3880.000	7.000	32.000	150.000	190.000	190.000	190
GR	1674.000	.000	1673.000	32.000	1672.000	40.000	1671
GR	1672.000	95.000	1673.000	150.000	.000	.000	
X1	3570.000	9.000	41.000	260.000	200.000	200.000	200
GR	1670.000	.000	1669.000	12.000	1668.000	20.000	1667
GR	1665.000	60.000	1665.000	240.000	1666.000	260.000	1666
X1	3370.000	7.000	52.000	212.000	200.000	190.000	190
GR	1663.000	.000	1662.000	20.000	1661.000	52.000	1660
GR	1661.000	212.000	1661.500	222.000	.000	.000	

X1	3180.000	10.000	35.000	220.000	210.000	175.000	190
GR	1660.000	.000	1659.000	12.000	1658.000	25.000	1657
GR	1655.000	106.000	1655.000	170.000	1656.000	200.000	1657
X1	2990.000	10.000	134.000	265.000	185.000	180.000	180
GR	1655.000	.000	1654.000	14.000	1654.000	104.000	1653
GR	1651.000	148.000	1650.000	186.000	1650.000	247.000	1651
X1	2810.000	9.000	100.000	185.000	160.000	150.000	160
GR	1652.000	.000	1651.000	30.000	1650.000	47.000	1649
GR	1646.000	115.000	1646.000	135.000	1648.000	185.000	1650
X1	2650.000	12.000	125.000	230.000	165.000	145.000	160
GR	1647.000	.000	1646.000	12.000	1645.000	20.000	1645
GR	1647.000	80.000	1646.000	125.000	1644.000	140.000	1642
GR	1644.000	230.000	1646.000	232.000	.000	.000	
X1	2490.000	9.000	62.000	140.000	140.000	160.000	145
GR	1642.000	.000	1641.000	20.000	1640.000	32.000	1638
GR	1636.000	110.000	1638.000	140.000	1641.000	205.000	1642
X1	2345.000	7.000	.000	115.000	125.000	165.000	145
GR	1636.000	.000	1634.000	30.000	1632.000	42.000	1632
GR	1636.000	115.000	1637.000	150.000	.000	.000	
X1	2200.000	8.000	8.000	95.000	120.000	310.000	165
GR	1634.000	.000	1632.000	8.000	1630.000	30.000	1628
GR	1630.000	82.000	1632.000	95.000	1634.000	187.000	
X1	2035.000	11.000	65.000	185.000	340.000	320.000	320
GR	1630.000	.000	1629.000	28.000	1628.000	50.000	1628
GR	1624.000	148.000	1624.000	167.000	1626.000	175.000	1628
GR	1630.000	211.000	.000	.000	.000	.000	
X1	1715.000	9.000	20.000	172.000	290.000	230.000	255
GR	1622.000	.000	1621.000	15.000	1620.000	20.000	1618
GR	1616.000	123.000	1618.000	154.000	1620.000	172.000	1621
X1	1460.000	12.000	87.000	170.000	165.000	178.000	170

GR	1621.000	.000	1620.000	22.000	1619.000	30.000	1618
GR	1614.000	103.000	1612.000	118.000	1612.000	138.000	1614
GR	1618.000	203.000	1620.000	210.000	.000	.000	
X1	1285.000	13.000	118.000	228.000	290.000	250.000	275
GR	1618.000	.000	1617.000	13.000	1616.000	20.000	1615
GR	1614.000	85.000	1612.000	118.000	1610.000	128.000	1608
GR	1610.000	210.000	1612.000	228.000	1613.000	275.000	

X1	1010.000	9.000	28.000	165.000	230.000	225.000	230
GR	1607.000	.000	1606.000	12.000	1605.000	28.000	1604
GR	1602.000	100.000	1604.000	115.000	1606.000	165.000	1607
X1	780.000	10.000	47.000	228.000	130.000	110.000	120
GR	1604.000	.000	1603.000	10.000	1602.000	32.000	1601
GR	1599.000	112.000	1599.000	135.000	1600.000	195.000	1601
X1	660.000	10.000	78.000	200.000	180.000	140.000	160
GR	1602.000	.000	1601.000	18.000	1600.000	50.000	1599
GR	1597.000	134.000	1597.000	155.000	1598.000	172.000	1599
X1	500.000	10.000	80.000	162.000	125.000	125.000	125
GR	1597.000	.000	1596.000	52.000	1595.000	80.000	1594
GR	1593.500	150.000	1594.000	155.000	1595.000	162.000	1596
X1	375.000	6.000	50.000	93.000	45.000	45.000	45
GR	1595.300	.000	1594.630	50.000	1589.800	51.000	1589
GR	1595.300	160.000	.000	.000	.000	.000	
SB	1.050	1.800	2.850	.000	42.500	2.500	160
X1	350.000	6.000	250.000	290.000	20.000	20.000	20
X2	.000	.000	1.000	1593.800	1594.630	.000	
X3	10.000	.000	.000	.000	.000	.000	
BT	-6.000	.000	1596.000	.000	200.000	1594.900	
BT	.000	290.000	1594.230	.000	340.000	1594.900	
GR	1596.000	.000	1594.900	200.000	1589.400	250.000	1589
GR	1596.000	540.000	.000	.000	.000	.000	
X1	330.000	6.000	50.000	93.000	128.000	100.000	115
X3	10.000	.000	.000	.000	.000	.000	
GR	1594.500	.000	1593.600	50.000	1589.000	51.000	1589
GR	1594.500	165.000	.000	.000	.000	.000	
X1	215.000	10.000	.000	220.000	180.000	233.000	215
GR	1590.000	.000	1590.100	15.000	1590.000	28.000	1589
GR	1587.000	102.000	1587.000	165.000	1588.000	175.000	1589
X1	.000	14.000	.000	523.000	.000	.000	
GR	1587.600	.000	1586.400	72.000	1586.000	100.000	1586
GR	1586.200	165.000	1586.000	190.000	1585.000	240.000	1584
GR	1585.000	348.000	1586.000	390.000	1587.000	448.000	1587
EJ	.000	.000	.000	.000	.000	.000	

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=    .100 CEHV=    .300
*SECNO 4250.000
3720 CRITICAL DEPTH ASSUMED
  4250.00     3.37  1681.37  1681.37  1681.36  1682.10      .73      .00       .
    1662.     246.    1327.      90.      72.     177.      31.       0.
      .00     3.39     7.48     2.88     .050     .035     .050     .000   1678.
  .011658       0.       0.       0.        0        4        0      .00    196.
0
*SECNO 4070.000

3301 HV CHANGED MORE THAN HVINS

  4070.00     2.60  1676.60  1677.10      .00  1678.23     1.63     3.78       .
    1662.       9.    1233.     420.       3.     109.      67.       1.
      .00     2.93    11.33     6.24     .050     .035     .050     .000   1674.
  .049035     150.     180.     190.        6       15        0      .00    200.
0
*SECNO 3880.000
3280 CROSS SECTION   3880.00 EXTENDED       .80 FEET


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3880.00     2.80  1673.80  1673.80      .00  1674.68      .88     4.59       .
    1662.      20.    1642.       0.      10.     217.       0.       2.
      .01     1.93     7.57      .00     .050     .035     .050     .000   1671.
  .014268     180.     190.     195.       20        8        0      .00    143.
0
*SECNO 3570.000

3301 HV CHANGED MORE THAN HVINS

1
 05-07-93     09:04:53

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


  3570.00      .68  1665.68  1666.30      .00  1668.12     2.44     6.40       .
    1662.       0.    1662.       0.       0.     133.       0.       3.
      .02      .00    12.53      .00     .050     .035     .050     .000   1665.
  .157268     190.     190.     190.        5       14        0      .00    206.
```

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0
*SECNO 3370.000
3280 CROSS SECTION   3370.00 EXTENDED       .28 FEET


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3370.00      1.78  1661.78  1661.78       .00  1662.47       .70      6.85      5.
    1662.       18.    1631.       12.       10.     242.        5.        4.
      .02      1.91     6.75     2.30      .050     .035      .050      .000  1660.
  .014565      200.     200.     200.        20       17         0       .00   194.
0
*SECNO 3180.000

3301 HV CHANGED MORE THAN HVINS

  3180.00      1.57  1656.57  1657.01       .00  1657.96      1.39      4.44       .
    1662.        0.    1662.       0.        0.     176.        0.        4.
      .03       .00     9.46      .00      .050     .035      .050      .000  1655.
  .043528      200.     190.     190.         5        8         0       .00   159.
0
*SECNO 2990.000
  2990.00      2.02  1652.02  1652.08       .00  1652.94       .92      4.88       .
    1662.        0.    1662.       0.        0.     216.        0.        5.
      .04       .04     7.70      .96      .050     .035      .050      .000  1650.
  .016919      210.     190.     175.         2        11         0       .00   131.
0
*SECNO 2810.000
  2810.00      2.97  1648.97  1649.11       .00  1650.10      1.13      2.81       .
    1662.       40.    1620.       1.       18.     187.        1.        6.
      .04      2.21     8.65     1.95      .050     .035      .050      .000  1646.
  .014487      185.     180.     180.         3        14         0       .00   124.
0
1
 05-07-93     09:04:53

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*SECNO 2650.000

3301 HV CHANGED MORE THAN HVINS

  2650.00      2.33  1644.33  1644.91       .00  1646.38      2.05      3.63       .
    1662.        0.    1662.       0.        0.     145.        0.        7.
      .05       .00    11.50      .06      .050     .035      .050      .000  1642.
  .040504      160.     160.     150.         6         5         0       .00    92.
0
*SECNO 2490.000
  2490.00      2.52  1638.52  1639.15       .00  1640.57      2.05      5.81       .
    1662.        4.    1651.       6.        2.     143.        3.        7.
      .05      2.18    11.52     2.18      .050     .035      .050      .000  1636.
  .032760      165.     160.     145.         6        11         0       .00    96.
```

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0
*SECNO 2345.000

3301 HV CHANGED MORE THAN HVINS

  2345.00      3.13  1635.13  1635.45       .00  1636.56      1.43      3.82       .
    1662.        0.    1662.       0.        0.     173.        0.        8.
      .05       .00     9.58      .00      .050     .035      .050      .000  1632.
  .021685      140.     145.     160.         4       11         0       .00    91.
0
*SECNO 2200.000

3301 HV CHANGED MORE THAN HVINS

  2200.00      3.11  1631.11  1631.67       .00  1633.05      1.94      3.46       .
    1662.        0.    1662.       0.        0.     149.        0.        8.
      .06       .00    11.17      .00      .050     .035      .050      .000  1628.
  .026341      125.     145.     165.         5        8         0       .00    71.
0
*SECNO 2035.000
  2035.00      2.98  1626.98  1627.41       .00  1628.57      1.59      4.37       .
    1662.        0.    1662.       0.        0.     164.        0.        9.
      .06       .00    10.11      .00      .050     .035      .050      .000  1624.
  .026656      120.     165.     310.         4        8         0       .00    92.
0
1
 05-07-93     09:04:53

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 1715.000
  1715.00      2.33  1618.33  1618.68       .00  1619.71      1.38      8.80       .
    1662.        0.    1662.       0.        0.     176.        0.       10.
      .07       .00     9.44      .00      .050     .035      .050      .000  1616.
  .028386      340.     320.     320.         4       11         0       .00   115.
0
*SECNO 1460.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1460.00      3.92  1615.92  1615.92       .00  1617.10      1.18      4.88      3.
    1662.        0.    1662.       0.        0.     190.        0.       11.
      .08       .00     8.73      .00      .050     .035      .050      .000  1612.
  .013787      290.     255.     230.        20       14         0       .00    81.
0
*SECNO 1285.000

3301 HV CHANGED MORE THAN HVINS

  1285.00      2.23  1610.23  1611.02       .00  1612.83      2.60      4.13       .
    1662.        0.    1662.       0.        0.     128.        0.       12.
      .08       .00    12.94      .00      .050     .035      .050      .000  1608.
  .053893      165.     170.     178.         3       15         0       .00    85.
0
*SECNO 1010.000
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3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1010.00      3.42  1605.42  1605.42       .00  1606.32       .90      7.08      6.
    1662.        2.    1660.       0.        1.     218.        0.       13.
      .09      1.28     7.63      .00      .050      .035      .050      .000  1602.
  .015039      290.     275.     250.        20        14         0       .00   129.
0
*SECNO 780.000
   780.00      2.05  1601.05  1601.21       .00  1601.94       .89      4.37       .
    1662.        0.    1662.       0.        0.     219.        0.       14.       1
      .10       .05     7.59      .05      .050      .035      .050      .000  1599.
  .024819      230.     230.     225.         4        14         0       .00   184.
0
1
 05-07-93     09:04:53


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*SECNO 660.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   660.00      2.66  1599.66  1599.66       .00  1600.53       .87      2.21      1.
    1662.       10.    1652.       0.        6.     220.        0.       15.       1
      .11      1.69     7.51     1.14      .050      .035      .050      .000  1597.
  .014257      130.     120.     110.        20        11         0       .00   140.
0
*SECNO 500.000

3301 HV CHANGED MORE THAN HVINS

   500.00      2.15  1595.65  1596.24       .00  1597.36      1.71      3.09       .
    1662.       14.    1615.      33.        6.     152.       14.       16.       1
      .11      2.34    10.63     2.34      .050      .035      .050      .000  1593.
  .027570      180.     160.     140.         6         8         0       .00   143.
0
*SECNO 375.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   375.00      3.62  1593.42  1593.42       .00  1595.24      1.81      2.27      1.
    1662.        0.    1660.       2.        0.     154.        1.       16.       1
      .11       .00    10.81     1.73      .050      .035      .050      .000  1589.
  .012874      125.     125.     125.        20        14         0       .00    43.
0

SPECIAL BRIDGE

5290 UPSTREAM ELEV IS    1594.57 ,NOT    1593.42 NEW BACKWATER REQUIRED

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS
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    1.05      1.80      2.85       .00     42.50      2.50    160.00       .00

*SECNO 350.000
 PRESS FLOW BECAUSE EGLWC OF   1610.94  EXCEEDS 1.5 DEPTH
6180 SUPERCRITICAL FLOW,PRESSURE FLOW

3301 HV CHANGED MORE THAN HVINS

1
 05-07-93     09:04:53

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      EL
                                                              AREA
   1596.44   1610.94       .00      350.     1314.      160.      160.     1593

   350.00      5.67  1595.07       .00       .00  1595.31       .24       .07       .
    1662.      305.    1053.      305.      149.     227.      149.       16.       1
      .12      2.04     4.64      2.04      .050     .035      .050      .000   1589.
  .001179       45.      45.       45.         2        0         4       .00    203.
0
*SECNO 330.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1593.60 ELREA=     1589.00

   330.00      2.72  1591.72  1592.63       .00  1594.94      3.22       .07       .
    1662.        0.    1660.       2.        0.     115.        1.       17.       1
      .12       .00    14.42      2.35      .050     .035      .050      .000   1589.
  .032736       20.      20.       20.         5        8         0       .00     43.
0
*SECNO 215.000

3301 HV CHANGED MORE THAN HVINS

   215.00      1.96  1588.96  1589.59       .00  1590.69      1.73      3.81       .
    1662.        0.    1662.        0.        0.     157.        0.       17.       1
      .12       .00    10.55       .00      .050     .035      .050      .000   1587.
  .033467      128.     115.      100.         6        8         0       .00     99.
0
*SECNO  .000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
1
 05-07-93     09:04:53
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOS
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMI
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPW

3720 CRITICAL DEPTH ASSUMED
      .00       2.22   1586.32    1586.32        .00    1586.79        .47       5.34        2.
    1662.         0.     1662.         0.         0.      301.         0.        18.        1
      .13        .00      5.52        .00       .050       .035       .050       .000    1584.
  .019173       180.      215.       233.         20          8          0        .00     331.
0
1
 05-07-93      09:04:53



**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************

ER

   UNEXPECTED END OF FILE ABORT IN SUBROUTINE  H2MAIN
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1*****************************************************
 *  WATER SURFACE PROFILES                            *
 *  VERSION OF NOVEMBER 1976                          *
 *  UPDATED MAY 1984                                  *
 *  IBM-PC-XT VERSION AUGUST 1985                     *
 *  RUN DATE  04-09-93   TIME  15:24:19                 *
 *****************************************************


                                          X     X  XXXXXXX   XXXXX
                                          X     X  X        X     X
                                          X     X  X        X
                                          XXXXXXX  XXXX     X          XXXXX
                                          X     X  X        X
                                          X     X  X        X     X
                                          X     X  XXXXXXX   XXXXX
 1
  04-09-93     15:24:19


 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
   IBM-PC-XT VERSION AUGUST 1985
 ***************************************************

 T1      TONTO VERDE PHASE ONE NORTH WASH
 T2      BROOKS, HERSEY & ASSOC.
 T3      TONTON.DAT  4/9/93

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

       0.        0.        0.        0. -1.000000       .00        .0      895.

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

      1.000      .000    -1.000      .000      .000      .000    -1.000      .0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   200.000      .000      .000      .000      .000      .000      .0


 NC       .050       .050       .035       .100       .300       .000
 X1    100.000      8.000      .000    240.000       .000       .000
 GR   1628.000       .000   1626.000     35.000   1624.000     50.000    1622
 GR   1624.000    112.000   1626.000    145.000   1628.000    240.000

 X1    480.000      8.000      .000    130.000    305.000    450.000     380
 GR   1623.000       .000   1622.000     23.000   1620.000     50.000    1618
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GR	1620.000	108.000	1622.000	120.000	1624.000	130.000	
X1	700.000	11.000	70.000	198.000	260.000	180.000	220
GR	1630.000	.000	1628.000	30.000	1628.000	70.000	1626
GR	1622.000	120.000	1622.000	150.000	1624.000	170.000	1626
GR	1630.000	215.000	.000	.000	.000	.000	
X1	810.000	7.000	.000	90.000	40.000	150.000	110
GR	1630.000	.000	1628.000	20.000	1626.000	33.000	1625
GR	1628.000	80.000	1630.000	90.000	.000	.000	
X1	950.000	9.000	.000	72.000	180.000	125.000	140
GR	1634.000	.000	1634.000	35.000	1633.000	40.000	1632
GR	1631.000	60.000	1632.000	65.000	1633.000	68.000	1634
X1	1200.000	12.000	.000	195.000	230.000	250.000	250
GR	1640.000	.000	1639.000	75.000	1638.000	98.000	1638
GR	1637.000	150.000	1636.000	152.000	1636.000	158.000	1637
GR	1639.000	180.000	1640.000	195.000	.000	.000	

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X1	1390.000	9.000	65.000	116.000	180.000	190.000	190
GR	1645.000	.000	1644.000	65.000	1643.000	80.000	1642
GR	1642.000	95.000	1643.000	105.000	1644.000	116.000	1644
X1	1675.000	11.000	.000	55.000	285.000	285.000	285
GR	1650.000	.000	1649.000	25.000	1648.000	28.000	1647
GR	1645.600	38.000	1646.000	41.000	1647.000	42.000	1648
GR	1650.000	55.000	.000	.000	.000	.000	
X1	2042.000	9.000	.000	80.000	360.000	365.000	365
GR	1658.000	.000	1657.000	18.000	1656.000	26.000	1655
GR	1655.000	50.000	1656.000	60.000	1657.000	70.000	1658
X1	2265.000	19.000	117.000	175.000	240.000	210.000	225
GR	1663.800	.000	1663.000	30.000	1662.000	42.000	1661
GR	1662.000	65.000	1662.700	80.000	1662.000	117.000	1661
GR	1659.000	130.000	1658.000	132.000	1658.000	140.000	1659
GR	1661.000	164.000	1662.000	175.000	1663.000	185.000	1663
X1	2565.000	10.000	67.000	84.000	270.000	300.000	300
GR	1670.400	.000	1670.000	24.000	1669.000	50.000	1668
GR	1666.500	73.000	1667.000	78.000	1668.000	84.000	1669
X1	2840.000	20.000	138.000	225.000	280.000	270.000	275
GR	1677.000	.000	1676.000	16.000	1675.000	29.000	1674
GR	1673.000	74.000	1674.000	82.000	1675.000	97.000	1676
GR	1675.000	138.000	1674.000	162.000	1673.000	176.000	1672
GR	1672.000	184.000	1673.000	186.000	1674.000	188.000	1675
X1	3040.000	10.000	.000	100.000	200.000	200.000	200
GR	1681.000	.000	1680.000	12.000	1679.000	30.000	1678
GR	1677.000	55.000	1678.000	65.000	1679.000	78.000	1680
EJ	.000	.000	.000	.000	.000	.000	

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04-09-93 15:24:19

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=    .100 CEHV=    .300
*SECNO 100.000
3720 CRITICAL DEPTH ASSUMED
   100.00     2.36  1624.36  1624.36  1624.00  1625.21      .85      .00       .
     895.       0.     895.       0.       0.     121.       0.       0.
      .00      .00     7.42      .00     .050     .035     .050     .000  1622.
  .015025       0.       0.       0.        0        7        0      .00    70.
0
*SECNO 480.000
3280 CROSS SECTION    480.00 EXTENDED      2.42 FEET


3301 HV CHANGED MORE THAN HVINS

   480.00     7.42  1625.42  1620.45      .00  1625.44      .03      .15       .
     895.       0.     895.       0.       0.     668.       0.       3.
      .08      .00     1.34      .00     .050     .035     .050     .000  1618.
  .000118     305.     380.     450.        3        8        0      .00   130.
0
*SECNO 700.000
   700.00     3.28  1625.28  1624.32      .00  1625.61      .33      .07       .
     895.       0.     895.       0.       0.     194.       0.       6.
      .09      .00     4.60      .00     .050     .035     .050     .000  1622.
  .003749     260.     220.     180.        3       17        0      .00    82.
0
*SECNO 810.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   810.00     3.24  1628.24  1628.24      .00  1629.18      .94      .74       .
     895.       0.     895.       0.       0.     115.       0.       6.
      .10      .00     7.76      .00     .050     .035     .050     .000  1625.
  .015243      40.     110.     150.        0        5        0      .00    63.
0
1
 04-09-93     15:24:19


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*SECNO 950.000
3280 CROSS SECTION    950.00 EXTENDED       .66 FEET
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   950.00      3.66  1634.66  1634.66      .00  1635.51      .85      2.16       .
     895.        0.     895.       0.       0.     121.       0.        6.
      .10       .00     7.38      .00     .050     .035     .050      .000   1631.
  .015640      180.     140.     125.        0        8        0       .00     72.
0
*SECNO 1200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1200.00      3.29  1639.29  1639.29      .00  1639.88      .58      4.21       .
     895.        0.     895.       0.       0.     146.       0.        7.
      .11       .00     6.12      .00     .050     .035     .050      .000   1636.
  .018174      230.     250.     250.        0       15        0       .00    131.
0
*SECNO 1390.000
3280 CROSS SECTION   1390.00 EXTENDED       .81 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1390.00      3.31  1644.81  1644.81      .00  1645.31      .50      2.51       .
     895.       35.     640.     221.      21.      98.      86.        8.
      .12      1.63     6.55     2.57     .050     .035     .050      .000   1641.
  .010061      180.     190.     190.        0        5        0       .00    209.
0
*SECNO 1675.000
3280 CROSS SECTION   1675.00 EXTENDED       .36 FEET


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1675.00      4.76  1650.36  1650.36      .00  1651.42     1.05      3.57       .
     895.        0.     895.       0.       0.     109.       0.        9.
      .13       .00     8.24      .00     .050     .035     .050      .000   1645.
  .015989      285.     285.     285.        0       11        0       .00     55.
0
1
 04-09-93     15:24:19


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW


*SECNO 2042.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2042.00      3.58  1657.78  1657.78      .00  1658.61      .83      5.69       .
     895.        0.     895.       0.       0.     122.       0.       10.
      .15       .00     7.31      .00     .050     .035     .050      .000   1654.
  .015208      360.     365.     365.        0       16        0       .00     73.
0
*SECNO 2265.000

3265 DIVIDED FLOW
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2265.00      4.09  1662.09  1662.09       .00  1662.91       .82      3.13       .
     895.       47.     848.       0.       17.     114.        0.       11.
      .15      2.76     7.44      .03      .050     .035      .050      .000   1658.
  .012718      240.     225.     210.         0        8         0       .00     89.
0
*SECNO 2565.000
3280 CROSS SECTION   2565.00 EXTENDED       .65 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2565.00      4.15  1670.65  1670.65       .00  1671.41       .77      2.94       .
     895.      265.     525.     105.       77.      60.       30.       12.
      .17      3.44     8.72     3.50      .050     .035      .050      .000   1666.
  .008038      270.     300.     300.         0        5         0       .00    105.
0
*SECNO 2840.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2840.00      3.95  1674.95  1674.95       .00  1675.47       .52      3.46       .
     895.      420.     475.       0.       77.      79.        0.       13.
      .18      5.48     6.01      .00      .050     .035      .050      .000   1671.
  .022030      280.     275.     270.         0       10         0       .00    150.
0
1
 04-09-93     15:24:19

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOS
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMI
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPW

*SECNO 3040.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3040.00      3.10  1680.10  1680.10       .00  1680.89       .79      3.75       .
     895.        0.     895.       0.        0.     125.        0.       13.
      .19       .00     7.14      .00      .050     .035      .050      .000   1677.
  .016128      200.     200.     200.         0       15         0       .00     81.
0
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 04-09-93     15:24:19
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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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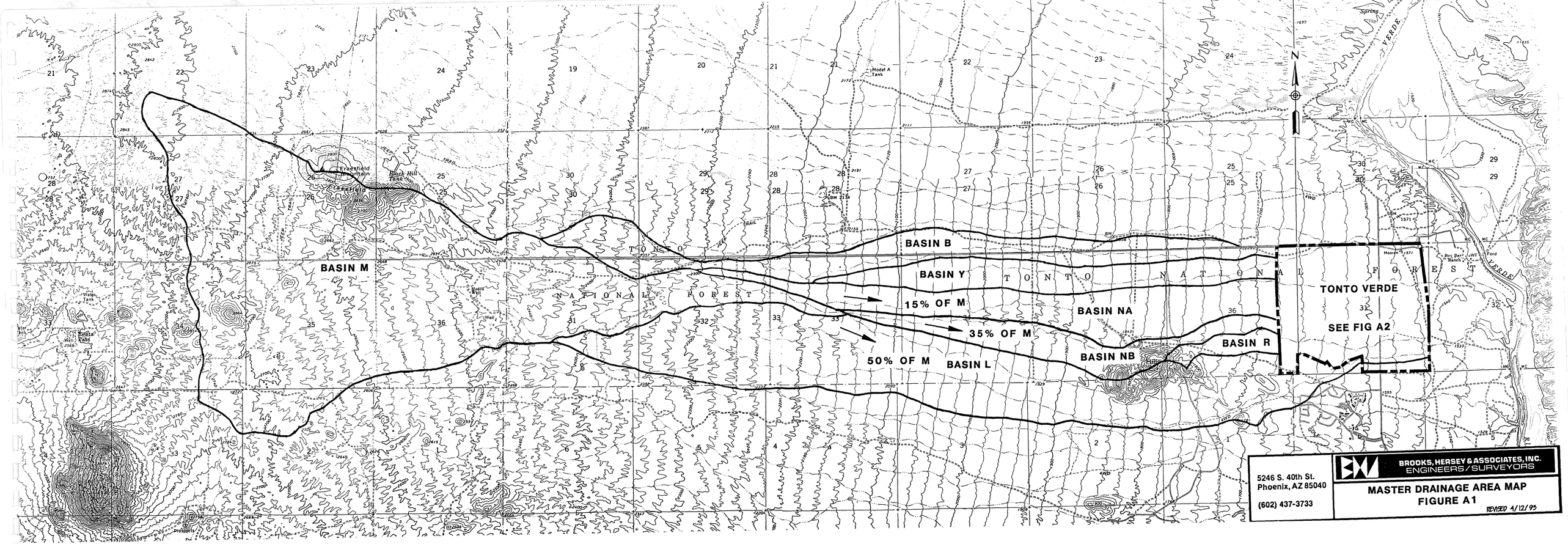


5246 S. 40th St.
Phoenix, AZ 85040

(602) 437-3733

BROOKS, HERSEY & ASSOCIATES, INC.
ENGINEERS / SURVEYORS

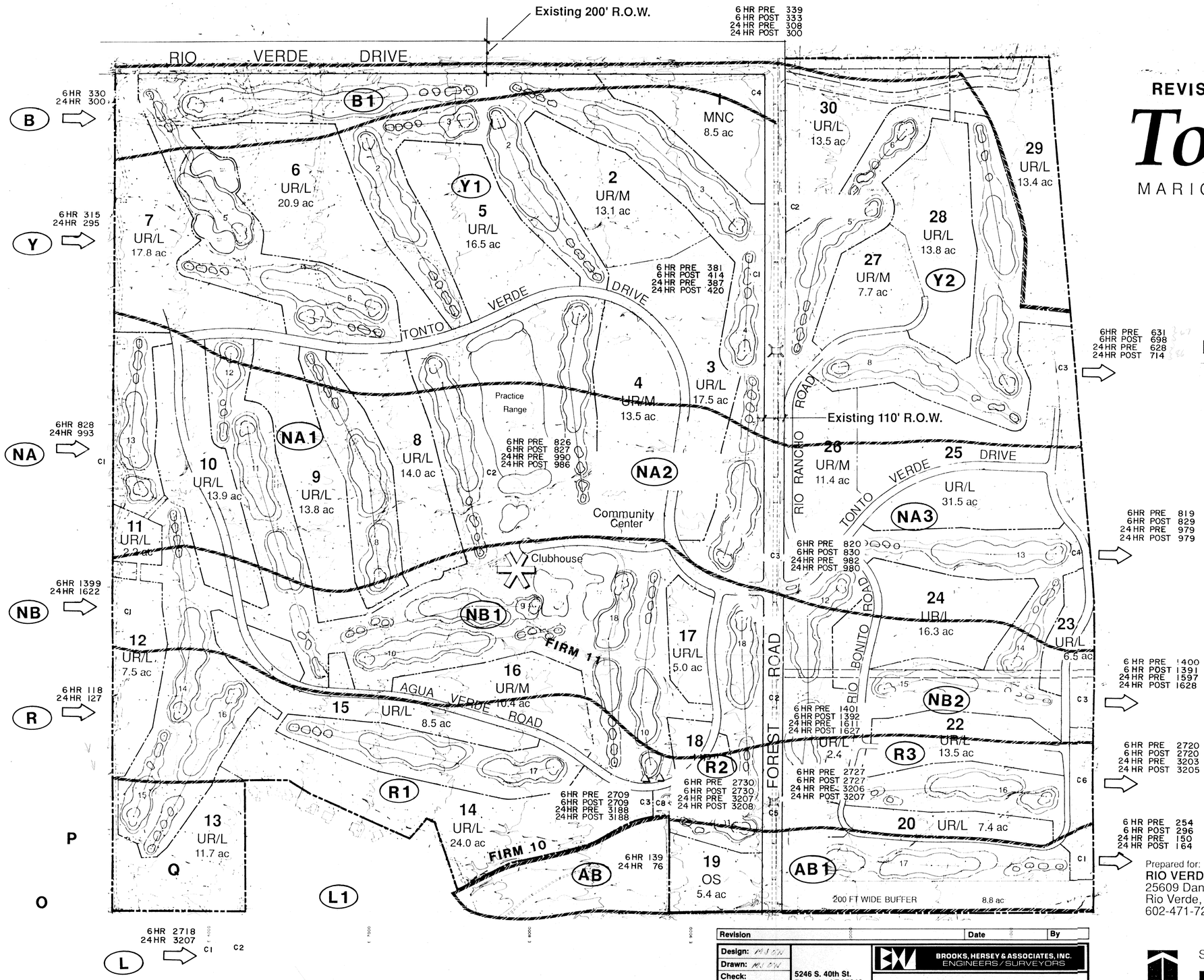
MASTER DRAINAGE AREA MAP
FIGURE A1

REVISED 4/12/95

REVISED DRAINAGE MASTER PLAN

Tonto Verde

MARICOPA COUNTY, ARIZONA



LEGEND

DRAINAGE BASIN

DRAINAGE AREA BOUNDARY

Prepared for:
RIO VERDE SERVICES, INC
25609 Danny Lane
Rio Verde, Az 85255
602-471-7247

Revision	Date	By

Design: MJ DN	5246 S. 40th St. Phoenix, AZ 85040 (602) 437-3733	BROOKS, HERSEY & ASSOCIATES, INC. ENGINEERS / SURVEYORS
Drawn: MJ DN		FIGURE A2
Check:		
Scale: 1" = 300'		
Date: 5/20/93	Job No. 519-01-TM-11	Sheet 1 of 1

NORTH

SCALE IN FEET 0 300 600

CORNOYER HEDRICK

DEVELOPMENT MASTER PLAN

Tonto Verde

MARICOPA COUNTY, ARIZONA

PREPARED FOR: RIO VERDE SERVICES, INC.
25609 DANNY LANE
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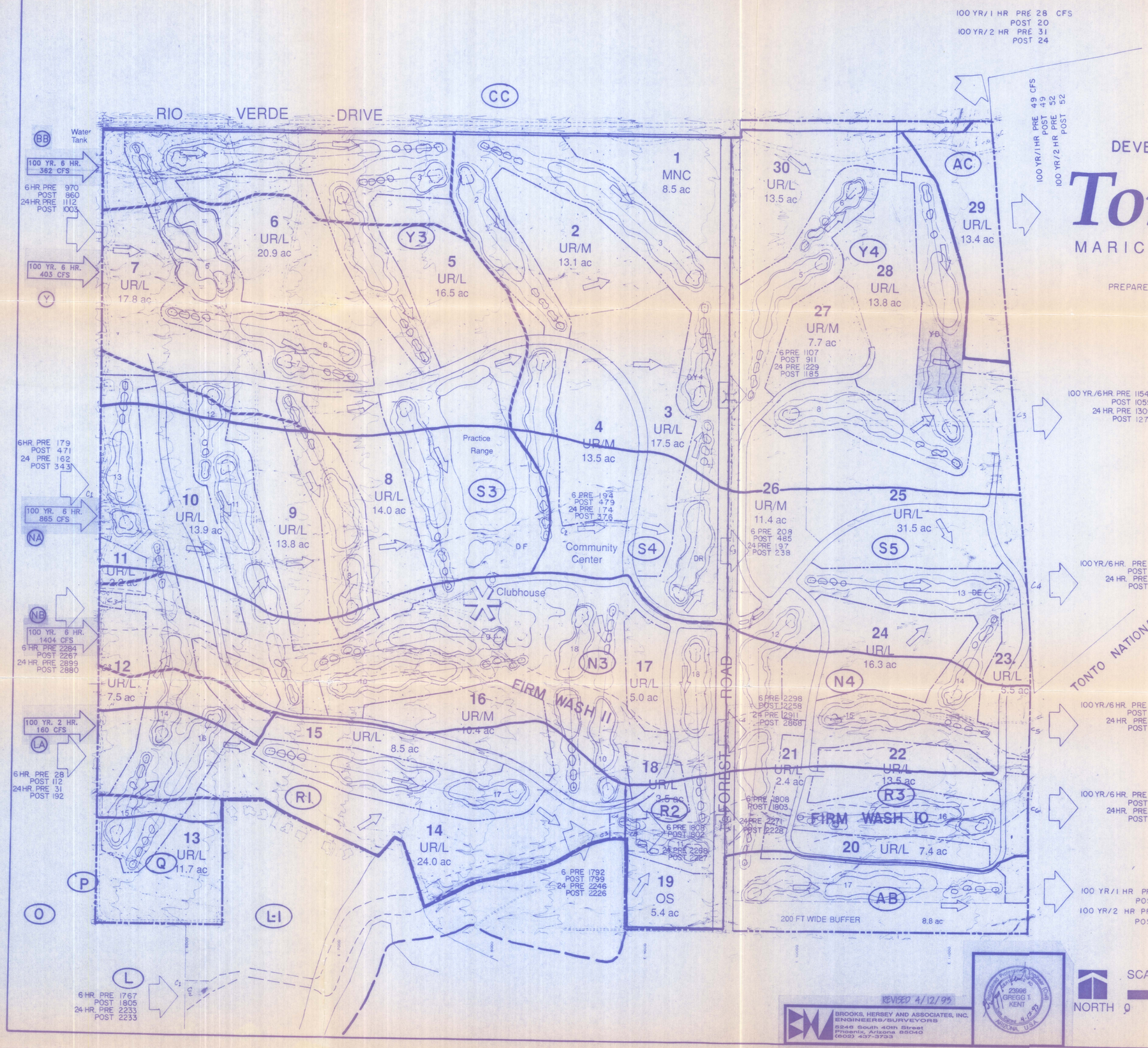

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REVISED 4/12/93

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(602) 437-3733

23996 GREGG T. KENT ARIZONA, U.S.A.

CORNOYER HEDRICK

Modified 9-8-92
Modified 7-31-92
Modified 10-20-92

WILEY & ASSOCIATES, INC.
SURVEYORS
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ENGINEERS
EARLE L. SNYDER
85251 LEONARD GOSTINSKI
L.S. P.E.

TONTO VERDE MASTER DRAINAGE PLAN 1992

DESIGN	CHECK	PROJECT NO	SHEET
DRAWN SG	DATE 7-92	3875-A	1 OF 1