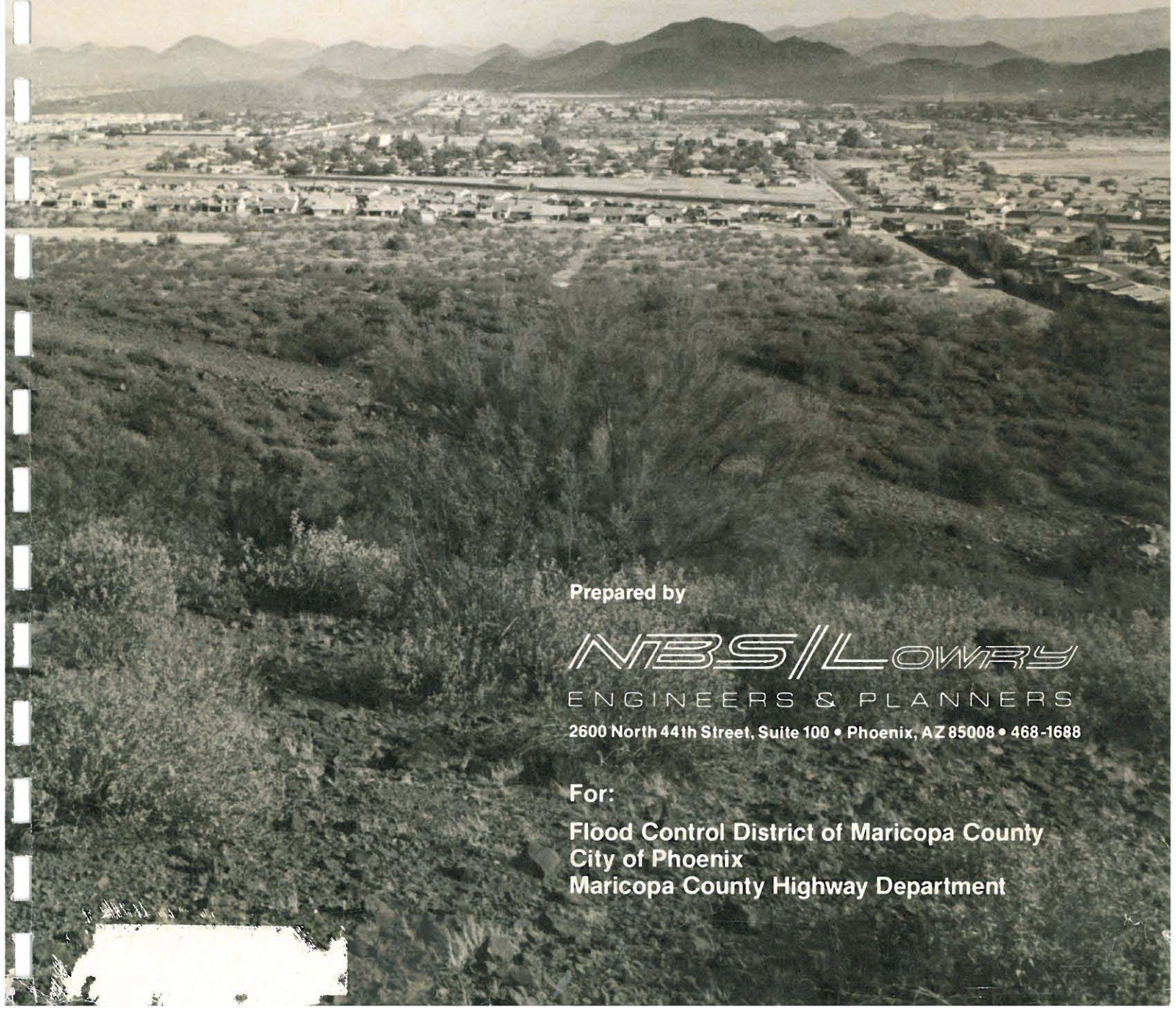
24CAVNBS 10 87

WATERSHED MANAGEMENT LIBRARY

UPPER EAST FORK CAVE CREEK

AREA DRAINAGE MASTER STUDY
(APPENDICES) VOLUME 2



Prepared by

NBS/LOWRY
ENGINEERS & PLANNERS
2600 North 44th Street, Suite 100 • Phoenix, AZ 85008 • 468-1688

For:

Flood Control District of Maricopa County
City of Phoenix
Maricopa County Highway Department

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

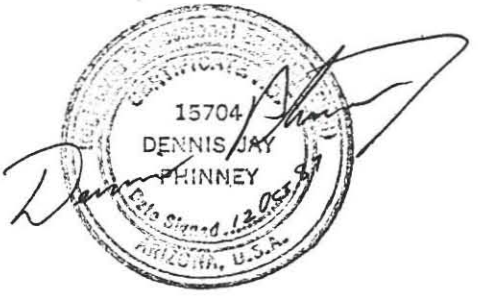
UPPER EAST FORK CAVE CREEK AREA DRAINAGE MASTER STUDY (APPENDICES)

PREPARED FOR:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CITY OF PHOENIX

MARICOPA COUNTY HIGHWAY DEPARTMENT



PREPARED BY:

NBS/LOWRY

OCTOBER 1987

LIST OF APPENDICES

VOLUME 1

APPENDIX	TITLE
A	DIFFUSION MODEL
B	TR-20 COMPUTER MODEL RESULTS

VOLUME 2

APPENDIX	TITLE
C	HEC-2
D	HYDRAULIC GRADE LINE CALCULATIONS
E	MISCELLANEOUS CALCULATIONS
F	LETTER FROM CITY OF PHOENIX, PARK AND RECREATION DEPARTMENT

APPENDIX C

HEC-2

```
*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED MAY 1984                                 *
*  IBM-PC-XT VERSION AUGUST 1985                    *
*  RUN DATE  06-30-87   TIME  08:23:43               *
*****************************************************
```

```
*************************************************
*  U.S. ARMY CORPS OF ENGINEERS                 *
*  THE HYDROLOGIC ENGINEERING CENTER            *
*  609 SECOND STREET, SUITE D                   *
*  DAVIS, CALIFORNIA 95616                      *
*  (916) 440-2105 (FTS) 448-2105                *
*************************************************
```

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

THIS RUN EXECUTED 06-30-87

```
**************************************************
  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 UPPER EAST FORK CAVE CREEK ADMS
T2 ALT. 4 - MULTI-USE ALTERNATIVE
T3 20th ST. CHANNEL GREENWAY CHANNEL TO GROVERS DET. BASIN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	.000000	00	.0	0.	1408.410	.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1.000	.000	-1.000	.000	.000	.000	.000	.000	.000	.000

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38.000	43.000	26.000	1.000	8.000	42.000	.000	.000	.000	.000

NC	.045	.045	.030	.100	.300	.000	.000	.000	.000	.000
QT	1.000	1575.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	71.000	4.000	9925.000	10075.000	.000	.000	.000	.000	.000	.000
GR	1406.000	9889.000	1400.000	9925.000	1400.000	10075.000	1406.000	10111.000	.000	.000
X1	74.000	.000	.000	.000	300.000	300.000	300.000	.000	.150	.000
X1	74.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	74.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	74.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	74.700	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	80.000	.000	.000	.000	530.000	530.000	530.000	.000	.265	.000
X1	80.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	80.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	80.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000

X1	80.700	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	84.000	.000	.000	.000	330.000	330.000	330.000	.000	.165	.000
X1	90.000	.000	.000	.000	600.000	600.000	600.000	.000	.300	.000
X1	90.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	90.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	90.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	90.700	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	94.000	.000	.000	.000	330.000	330.000	330.000	.000	.165	.000
X1	98.000	.000	.000	.000	400.000	400.000	400.000	.000	.200	.000
X1	98.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	98.500	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
NC	.012	.012	.012	.000	.000	.000	.000	.000	.000	.000
QT	1.000	1330.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	99.400	48.000	9931.000	10069.400	90.000	90.000	90.000	.000	.000	.000
GR	1421.500	9931.000	1415.500	9931.000	1415.500	9941.000	1421.500	9941.000	1421.500	9942.700
GR	1415.500	9942.700	1415.500	9952.700	1421.500	9952.700	1421.500	9954.300	1415.500	9954.300
GR	1415.500	9964.300	1421.500	9964.300	1421.500	9966.000	1415.500	9966.000	1415.500	9976.000
GR	1421.500	9976.000	1421.500	9977.700	1415.500	9977.700	1415.500	9987.700	1421.500	9987.700
GR	1421.500	9989.400	1415.500	9989.400	1415.500	9999.400	1421.500	9999.400	1421.500	10001.000
GR	1415.500	10001.000	1415.500	10011.000	1421.500	10011.000	1421.500	10012.700	1415.500	10012.700
GR	1415.500	10022.700	1421.500	10022.700	1421.500	10024.400	1415.500	10024.400	1415.500	10034.400
GR	1421.500	10034.400	1421.500	10036.000	1415.500	10036.000	1415.500	10046.000	1421.500	10046.000
GR	1421.500	10047.700	1415.500	10047.700	1415.500	10057.700	1421.500	10057.700	1421.500	10059.400
GR	1415.500	10059.400	1415.500	10069.400	1421.500	10069.400	.000	.000	.000	.000
X1	100.500	.000	.000	.000	110.000	110.000	110.000	.000	.000	.000
NC	.045	.045	.030	.000	.000	.000	.000	.000	.000	.000
X1	100.860	4.000	9925.000	10075.000	36.000	36.000	36.000	.000	15.493	.000
GR	1406.000	9889.000	1400.000	9925.000	1400.000	10075.000	1406.000	10111.000	.000	.000
X1	102.000	.000	.000	.000	114.000	114.000	114.000	.000	.057	.000
X1	102.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000

X1	102.500	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	106.000	.000	.000	.000	350.000	350.000	350.000	.000	.175	.000
X1	112.000	.000	.000	.000	600.000	600.000	600.000	.000	.300	.000
X1	112.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	112.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	112.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	112.700	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
QT	1.000	1280.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	116.000	.000	.000	.000	330.000	330.000	330.000	.000	.165	.000
X1	124.000	.000	.000	.000	800.000	800.000	800.000	.000	.400	.000
X1	124.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	124.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	124.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	124.400	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	124.410	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	124.900	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	128.000	.000	.000	.000	310.000	310.000	310.000	.000	.155	.000
X1	130.000	.000	.000	.000	200.000	200.000	200.000	.000	.100	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        GLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CONAR     TOPWID      ENDST

#PROF 1

CCHV=     100 CEHV=     .300
#SECNO 71.000
3280 CROSS SECTION     71.00 EXTENDED      2.41 FEET

    71.00      8.41  1408.41       .00  1408.41  1408.43       .02       .00       .00  1400.00
    1575.      100.   1375.      100.     195.    1262.      195.        0.        0    1400.00
      .00       .51    1.09       .51     .045     .030      .045      .000  1400.00  9889.00
  .000028       0.      0.        0.        0        0         0       .00   227.00 10111.00

#SECNO 74.000
3280 CROSS SECTION     74.00 EXTENDED      2.27 FEET

    74.00      8.27  1408.42       .00       .00  1408.44       .02       .01       .00  1400.15
    1575.       99.   1377.       99.     190.    1240.      190.       11.        2.    1400.15
      .08       .52    1.11       .52     .045     .030      .045      .000  1400.15  9889.00
  .000030      300.    300.      300.        0        0         0       .00   222.00 10111.00

#SECNO 74.010
3280 CROSS SECTION     74.01 EXTENDED       .26 FEET

    74.01      6.26  1408.41       .00       .00  1408.44       .03       .00       .00  1402.15
    1575.       76.   1423.       76.     117.     939.      117.       11.        2.    1402.15
      .08       .64    1.52       .64     .045     .030      .045      .000  1402.15  9889.00
  .000081        0.      0.        0.        1        0         0       .00   222.00 10111.00

#SECNO 74.200
3280 CROSS SECTION     74.20 EXTENDED       .25 FEET

    74.20      6.25  1408.41       .00       .00  1408.44       .03       .00       .00  1402.16
    1575.       76.   1424.       76.     117.     937.      117.       12.        2.    1402.16
      .08       .65    1.52       .65     .045     .030      .045      .000  1402.16  9889.00
  .000082       20.     20.       20.        0        0         0       .00   227.00 10111.00

#SECNO 74.210

3301 HV CHANGED MORE THAN HVINS
```

```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICOUNT    CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=      60.000
    74.21      3.74  1407.90      .00       .00  1408.66      .77       .00       .22100000.00
    1575.        0.    1575.       0.        0.     224.       0.       12.        2. 100000.00
      .03       .00     7.03      .00      .045     .030      045      .000  1404.16  9970.00
  .004059        0.       0.       0.         3        0        0       .00    60.00 10030.00

#SECNO 74.700

3301 HV CHANGED MORE THAN HVINS

    74.70      4.51  1408.70      .00       .00  1408.76      .07       .03       .07  1404.19
    1575.       55.    1465.      55.       61.     677.      61.       12.        2.   1404.19
      .09       .90     2.16      .90      .045     .030     .045      .000  1404.19  9897.93
  .000256       50.      50.      50.         2        0        0       .00   204.15 10102.07

#SECNO 80.000
    80.00      4.39  1408.84      .00       .00  1408.91      .07       .14       .00  1404.45
    1575.       54.    1468.      54.       58.     658.      58.       22.        4.   1404.45
      .16       .93     2.23      .93      .045     .030     .045      .000  1404.45  9898.70
  .000283      530.     530.     530.         2        0        0       .00   202.60 10101.30

#SECNO 80.010
    80.01      2.22  1408.67      .00       .00  1408.98      .31       .00       .07  1406.45
    1575.       28.    1519.      28.       15.     333.      15.       22.        4.   1406.45
      .16      1.90     4.56     1.90      .045     .030     .045      000  1406.45  9911.69
  .002934        0.       0.       0.         2        0        0       .00   176.62 10088.31

#SECNO 80.200
    80.20      2.28  1408.74      .00       00  1409.04      .30       .06       .00  1406.46
    1575.       29.    1517.      29.       16.     342.      16.       22.        4    1406.46
      .16      1.84     4.43     1.84      .045     .030     .045      .000  1406.46  9911.30
  .002661       20.      20.      20.         2        0        0       .00   177.40 10088.70

#SECNO 80.210

3301 HV CHANGED MORE THAN HVINS
```

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

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    80.21      2.77  1411.23  1411.23       .00  1412.62      1.40       .00        33100000.00
    1575.        0.    1575.       0.        0.     166.       0.       22.        4. 100000.00
      .16       .00     9.49      .00      .045     .030     .045      .000  1408.46   9970.00
  .010634        0.       0.       0.        20       11        0       .00    60.00 10030.00


*SECNO 80.700

3301 HV CHANGED MORE THAN HVINS

    80.70      4.24  1412.72      .00       .00  1412.80      .08       .05       .13  1408.49
    1575.       52.    1471.      52.       54.     636.      54.       23.       4.    1408.49
      .17       .96     2.31      .96      .045     .030     .045      .000  1408.49   9899.55
  .000317       50.      50.      50.         2        0        0       .00   200.89 10100.45


*SECNO 84.000
    84.00      4.18  1412.83      .00       .00  1412.91      .08       .11       .00  1408.65
    1575.       51.    1473.      51.       52.     627.      52.       28.       6.    1408.65
      .21       .98     2.35      .98      .045     .030     .045      .000  1408.65   9899.91
  .000333      330.     330.     330.         2        0        0       .00   200.18 10100.09


*SECNO 90.000
    90.00      4.09  1413.04      .00       .00  1413.12      .09       .21       .00  1408.95
    1575.       50.    1475.      50.       50.     612.      50.       38.       9.    1408.95
      .28      1.00     2.41     1.00      .045     .030     .045      .000  1408.95   9900.52
  .000363      600.     600.     600.         1        0        0       .00   198.96 10099.48


*SECNO 90.010
    90.01      1.81  1412.76      .00       .00  1413.24      .48       .00       .12  1410.95
    1575.       23.    1529.      23.       10.     271.      10.       38.       9.    1410.95
      .28      2.34     5.63     2.34      .045     .030     .045      .000  1410.95   9914.15
  .005870        0.       0.       0.         3        0        0       .00   171.71 10085.85
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COWAR     TOPWID     ENDST

#SECNO 90.200
    90.20      2.00  1412.96       .00       .00  1413.35       .39       .10        01  1410.96
    1575.       25.     1524.      25.       12.      300.      12.       38.        9.   1410.96
      .28      2.11      5.07     2.11      .045      .030      .045      .000  1410.96  9912.99
  .004159       20.       20.      20.         2         0         0       .00   174.03 10087.01

#SECNO 90.210

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    90.21      2.77  1415.73  1415.73       .00  1417.12      1.40       .00       .30100000.00
    1575.        0.     1575.       0.        0.      166.       0.       38.        9. 100000.00
      .28       .00      9.48      .00      .045      .030      .045      .000  1412.96  9970.00
  .010601        0.        0.       0.        20        11         0       .00    60.00 10030.00

#SECNO 90.700

3301 HV CHANGED MORE THAN HVINS

    90.70      4.24  1417.22       .00       .00  1417.30       .08       .05       .13  1412.99
    1575.       52.     1471.      52.       54.      636.      54.       39.        9.   1412.99
      .29       .96      2.31      .96      .045      .030      .045      .000  1412.99  9899.56
  .000318       50.       50.      50.         2         0         0       .00   200.89 10100.44

#SECNO 94.000
    94.00      4.18  1417.33       .00       .00  1417.41       .08       .11       .00  1413.15
    1575.       51.     1473.      51.       52.      627.      52.       44.       11.   1413.15
      .33       .98      2.35      .98      .045      .030      .045      .000  1413.15  9899.91
  .000334      330.      330.     330.         2         0         0       .00   200.17 10100.09

#SECNO 98.000
    98.00      4.11  1417.46       .00       .00  1417.55       .08       .14       .00  1413.35
    1575.       50.     1474.      50.       51.      616.      51.       51.       12.   1413.35
      .38      1.00      2.39     1.00      045       .030      .045      .000  1413.35  9900.34
  .000354      400.      400.     400.         0         0         0       .00   199.32 10099.66
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN      ·ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CONAR     TOPWID       ENDST

#SECNO 98.010

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    98.01      2.77  1418.12  1418.12       .00  1419.51     1.40       .00       .39100000.00
    1575.        0.     1575       0.        0.     166.       0.       51.       12. 100000.00
      .38       .00     9.48       .00      .045     .030     .045      .000  1415.35  9970.00
  .010598        0.       0.        0.       20       14        0       .00    60.00 10030.00

#SECNO 98.500

3301 HV CHANGED MORE THAN HVINS

    98.50      4.24  1419.61       .00       .00  1419.69       .08       .05       .13  1415.38
    1575.       52.     1471.      52.       54.     636.      54.       52.       12.   1415.38
      .38       .96     2.31       .96      .045     .030     .045      000  1415.38  9899.56
  .000318       50.       50.      50.        2        0        0       .00   200.89 10100.44

#SECNO 99.400

3265 DIVIDED FLOW

    99.40      4.11  1419.61       .00       .00  1419.72       .11       .02       .01  1421.50
    1330.        0.     1330.       0.        0.     493.       0.       53.       13.   1421.50
      .39       .00     2.70       .00      .012     .012     .012      .000  1415.50  9931.00
  .000160       90.       90.      90.        2        0        0       .00   120.00 10069.40

#SECNO 100.500

3265 DIVIDED FLOW

   100.50      4.13  1419.63       .00       .00  1419.74       .11       .02       .00  1421.50
    1330.        0.     1330.       0.        0.     496.       0.       54.       13.   1421.50
      .40       .00     2.68       .00      .012     .012     .012      .000  1415.50  9931.00
  .000157      110.      110.     110.        0        0        0       .00   120.00 10069.40
```

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

*SECNO 100.860
   100.86     4.20  1419.70       .00       .00  1419.75       .06       .01       .01  1415.49
    1330.      43.    1243.       43.       53.     630.       53.       55.       13    1415.49
      .41      .82     1.97       .82      .045     .030      .045      .000  1415.49  9899.78
  .000234      36.      36.       36.         2        0         0       .00   200.43 10100.22

*SECNO 102.000
   102.00     4.17  1419.72       .00       .00  1419.78       .06       .03       .00  1415.55
    1330.      43.    1244.       43.       52.     625.       52.       57.       14.   1415.55
      .42      .83     1.99       .83      .045     .030      .045      .000  1415.55  9899.99
  .000240     114.     114.      114.         0        0         0       .00   200.02 10100.01

*SECNO 102.010

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
   102.01     2.47  1420.02  1420.02       .00  1421.27     1.25       .00       .36100000.00
    1330.       0.    1330.       0.        0.     148.       0.       57.       14. 100000.00
      .42      .00     8.97       .00      .045     .030      .045      .000  1417.55  9970.00
  .010898       0.       0.       0.        20       14         0       .00    60.00 10030.00

*SECNO 102.500

3301 HV CHANGED MORE THAN HVINS

   102.50     3.79  1421.37       .00       .00  1421.44       .07       .05       .12  1417.58
    1330.      39.    1251.       39.       43.     569.       43.       57.       14.   1417.58
      .43      .92     2.20       .92      .045     .030      .045      .000  1417.58  9902.26
  .000334      50.      50.       50.         2        0         0       .00   195.48 10097.74

*SECNO 106.000
   106.00     3.73  1421.48       .00       .00  1421.56       .07       .12       .00  1417.75
    1330.      39.    1252.       39.       42.     560.       42.       62.       15.   1417.75
      .48      .93     2.24       .93      .045     .030      .045      .000  1417.75  9902.61
  .000352     350.     350.      350.         2        0         0       .00   194.79 10097.39
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COKAR     TOPWID     ENDST

#SECNO 112.000
   112.00      3.65  1421.70       .00       .00  1421.78       .08       .22       .00  1418.05
    1330.       38.     1254.       38.       40.      547.       40.       71.       18.   1418.05
      .55        95      2.29       95      .045      .030      .045      .000  1418.05  9903.13
  .000382      600.      600.      600.         1         0         0       .00   193.74 10096.87

#SECNO 112.010

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   112.01      1.33  1421.38  1421.38       .00  1422.03       .65       .00       .17  1420.05
    1330.       14.     1301.       14.        5.      199.        5.       71.       18.   1420.05
      .55      2.72      6.53      2.72      045       .030      .045      000  1420.05  9917.03
  .011881        0.        0.        0.       20        18         0       .00   165.95 10082.97

#SECNO 112.200
   112.20      1.78  1421.84       .00       .00  1422.20       .36       .14       .03  1420.06
    1330.       19.     1292.       19.        9.      267.        9.       71.       18.   1420.06
      .55      2.02      4.84      2.02      .045      .030      .045      .000  1420.06  9914.33
  .004437       20.       20.       20.         3         0         0        00   171.34 10085.67

#SECNO 112.210

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0    10030.0  TYPE=      1  TARGET=       60.000
   112.21      2.47  1424.53  1424.53       .00  1425.78      1.25       .00       .27100000.00
    1330.        0.     1330.        0.        0.      148.        0.       71.       18. 100000.00
      .55       .00      8.96       .00      .045      .030      .045      .000  1422.06  9970.00
  .010863        0.        0.        0.       20        11         0        00    60.00 10030.00
```

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

*SECNO 112.700

3301 HV CHANGED MORE THAN HVINS

   112.70      3.79  1425.88       .00       .00  1425.95       .07       .05       .12  1422.09
    1330.       39.     1251.       39.       43.     568.       43.       72.       18.  1422.09
      .56       .92      2.20       .92      045      .030      .045      .000  1422.09  9902.26
  .000334       50.       50.       50.         2         0         0       .00   196.48 10097.74

*SECNO 116.000
   116.00      3.74  1425.99       .00       .00  1426.06       .07       .11       .00  1422.25
    1280.       37.     1205.       37.       42.     561.       42.       76.       20.  1422.25
      .60       .89      2.15       .89      .045      .030      .045      .000  1422.25  9902.58
  .000325      330.      330.      330.         2         0         0       .00   194.85 10097.42

*SECNO 124.000
   124.00      3.61  1426.26       .00       .00  1426.33       .07       .28       .00  1422.65
    1280.       36.     1208.       36.       39.     540.       39.       88.       23.  1422.65
      .71       .93      2.24       .93      .045      .030      .045      .000  1422.65  9903.40
  .000369      800.      800.      800.         0         0         0       .00   193.21 10096.60

*SECNO 124.010

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   124.01      1.30  1425.95  1425.95       .00  1426.58       .63       .00       .17  1424.65
    1280.       14.     1253.       14        5.     195.        5.       88.       23.  1424.65
      .71      2.68      6.44      2.68      .045      .030      .045      .000  1424.65  9917.21
  .011932        0.        0.        0.       20        18         0       .00   165.57 10082.79

*SECNO 124.200
   124.20      1.74  1426.40       00        .00  1426.75       34        .14       .03  1424.66
    1280.       18.     1244.       18.        9.     261.        9.       88        24.  1424.66
      .71      1.98      4.77      1.98      045       .030      .045      .000  1424.66  9914.56
  .004428       20.       20.       20.         3         0         0       .00   170.88 10085.44
```

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

#SECNO 124.210
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   124.21      1.29  1427.95  1427.95       .00  1428.59       .64       .00       .09  1426.66
    1280.       13.    1253.       13.        5.     194.        5.       88.       24.   1426.66
      .71      2.69     6.45      2.69      .045      .030      .045      .000  1426.66  9917.23
  .012031        0.       0.        0.        20        15         0       .00   165.53 10082.77

#SECNO 124.400
   124.40      1.74  1428.41       .00       .00  1428.76       .34       .14       .03  1426.67
    1280.       18.    1244.       18.        9.     261.        9.       88.       24.   1426.67
      .71      1.98     4.76      1.98      .045      .030      .045      .000  1426.67  9914.56
  .004419       20.      20.       20.         3         0         0       .00   170.89 10085.44

#SECNO 124.410

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
   124.41      2.41  1431.08  1431.08       .00  1432.30      1.21       .00       .26100000.00
    1280.        0.    1280.        0.        0.     145.        0.       88.       24. 100000.00
      .71       .00     8.84       .00      .045      .030      .045      .000  1428.67  9970.00
  .010927        0.       0.        0.        20        11         0       .00    60.00 10030.00

#SECNO 124.900

3301 HV CHANGED MORE THAN HVINS

   124.90      3.70  1432.39       .00       .00  1432.46       .07       .05       .11  1428.70
    1280.       37.    1206.       37.       41.     554.       41.       89.       24.   1428.70
      .71       .91     2.18       .91      .045      .030      .045      .000  1428.70  9902.83
  .000338       50.      50.       50.         2         0         0       .00   194.33 10097.17
```

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

#SECNO 128.000
   128.00     3.65   1432.50       .00       .00  1432.57       .07       .11       .00   1428.85
    1280.      37.     1207.       37.       40.     547.       40.       93.       25.    1428.85
      .76      .92      2.21       .92      .045     .030      .045      000   1428.85   9903.13
  .000354     310.      310.      310.         2        0         0       .00    193.75  10096.88

#SECNO 130.000
   130.00     3.62   1432.57       .00       .00  1432.64       .07       .07       .00   1428.95
    1280.      36.     1207.       36.       39.     542.       39.       96.       26.    1428.95
      .78      .93      2.23       .93      .045     .030      .045      .000   1428.95   9903.31
  .000364     200.      200.      200.         0        0         0       .00    193.38  10096.69
```

THIS RUN EXECUTED 06-30-87

```
*************************************************
  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
*************************************************
```

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

20th ST. CHANNEL

SUMMARY PRINTOUT

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
	71.000	1575.00	1.09	1408.41	8.41	1400.00
	74.000	1575.00	1.11	1408.42	8.27	1400.15
	74.010	1575.00	1.52	1408.41	6.26	1402.15
	74.200	1575.00	1.52	1408.41	6.25	1402.16
	74.210	1575.00	7.03	1407.90	3.74	1404.16
	74.700	1575.00	2.16	1408.70	4.51	1404.19
	80.000	1575.00	2.23	1408.84	4.39	1404.45
	80.010	1575.00	4.56	1408.67	2.22	1406.45
	80.200	1575.00	4.43	1408.74	2.28	1406.46
*	80.210	1575.00	9.49	1411.23	2.77	1408.46
	80.700	1575.00	2.31	1412.72	4.24	1408.49
	84.000	1575.00	2.35	1412.83	4.18	1408.65
	90.000	1575.00	2.41	1413.04	4.09	1408.95
	90.010	1575.00	5.63	1412.76	1.81	1410.95
	90.200	1575.00	5.07	1412.96	2.00	1410.96
*	90.210	1575.00	9.48	1415.73	2.77	1412.96
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
	94.000	1575.00	2.35	1417.33	4.18	1413.15
	98.000	1575.00	2.39	1417.46	4.11	1413.35
*	98.010	1575.00	9.48	1418.12	2.77	1415.35
	98.500	1575.00	2.31	1419.61	4.24	1415.38
	99.400	1330.00	2.70	1419.61	4.11	1415.50
	100.500	1330.00	2.68	1419.63	4.13	1415.50
	100.860	1330.00	1.97	1419.70	4.20	1415.49
	102.000	1330.00	1.99	1419.72	4.17	1415.55
*	102.010	1330.00	8.97	1420.02	2.47	1417.55
	102.500	1330.00	2.20	1421.37	3.79	1417.58
	106.000	1330.00	2.24	1421.48	3.73	1417.75
	112.000	1330.00	2.29	1421.70	3.65	1418.05
*	112.010	1330.00	6.53	1421.38	1.33	1420.05
	112.200	1330.00	4.84	1421.84	1.78	1420.06
*	112.210	1330.00	8.96	1424.53	2.47	1422.06
	112.700	1330.00	2.20	1425.88	3.79	1422.09
	116.000	1280.00	2.15	1425.99	3.74	1422.25
	124.000	1280.00	2.24	1426.26	3.61	1422.65
*	124.010	1280.00	6.44	1425.95	1.30	1424.65
	124.200	1280.00	4.77	1426.40	1.74	1424.66
*	124.210	1280.00	6.45	1427.95	1.29	1426.66
	124.400	1280.00	4.76	1428.41	1.74	1426.67
*	124.410	1280.00	8.84	1431.08	2.41	1428.67
	124.900	1280.00	2.18	1432.39	3.70	1428.70
	128.000	1280.00	2.21	1432.50	3.65	1428.85
	130.000	1280.00	2.23	1432.57	3.62	1428.95

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION  SECNO=    80.210  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    80.210  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    80.210  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    90.210  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    90.210  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    90.210  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    98.010  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    98.010  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    98.010  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   102.010  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   102.010  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   102.010  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   112.010  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   112.010  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   112.010  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   112.210  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   112.210  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   112.210  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   124.010  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   124.010  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   124.010  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   124.210  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   124.210  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   124.210  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   124.410  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   124.410  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   124.410  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

THIS RUN EXECUTED 06-30-87

```
*****************************************************
  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 UPPER EAST FORK CAVE CREEK ADMS
T2 ALT. 4 - MULTI-USE ALTERNATIVE
T3 EAST FORK CHANNEL CAVE CREEK RD. TO BEARDSLEY DET. BASIN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	.000000	.00	.0	0.	1408.410	.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1.000	.000	-1.000	.000	.000	.000	.000	.000	.000	.000

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38.000	43.000	26.000	1.000	8.000	42.000	.000	.000	.000	.000

NC	.035	.019	.035	.100	.300	.000	.000	.000	.000	.000
QT	1.000	1310.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	.000	4.000	9830.000	10310.000	.000	.000	.000	.000	.000	.000
GR	1450.800	9830.000	1448.800	9975.000	1448.300	10000.000	1451.000	10310.000	.000	.000
X1	.800	4.000	9935.000	10280.000	80.000	80.000	80.000	.000	.000	.000
GR	1452.400	9935.000	1446.100	9960.000	1446.200	10265.000	1451.200	10280.000	.000	.000
X1	3.000	4.000	9950.000	10185.000	220.000	75.000	190.000	.000	.000	.000
GR	1451.300	9950.000	1446.300	9970.000	1446.300	10165.000	1451.300	10185.000	.000	.000
X1	6.000	8.000	9975.000	10102.000	300.000	280.000	295.000	.000	.000	.000
GR	1451.700	9975.000	1446.700	9985.000	1446.700	10017.000	1448.700	10021.000	1448.700	10047.000
GR	1450.200	10053.000	1450.200	10098.000	1451.200	10102.000	.000	.000	.000	.000
X1	8.000	9.000	9982.000	10050.000	200.000	200.000	200.000	.000	.000	.000
GR	1461.000	9972.000	1455.000	9972.000	1449.400	9982.000	1449.400	10014.000	1451.400	10018.000
GR	1451.400	10047.000	1452.900	10050.000	1452.900	10098.000	1453.900	10102.000	.000	.000
X1	11.000	9.000	9983.000	10052.000	300.000	300.000	300.000	.000	.000	.000
GR	1463.500	9972.000	1457.450	9972.000	1451.620	9983.000	1451.620	10015.000	1453.620	10019.000
GR	1453.600	10049.000	1455.120	10052.000	1455.120	10096.000	1457.120	10104.000	.000	.000
X1	18.000	9.000	9982.000	10053.000	700.000	700.000	700.000	.000	.000	.000
GR	1468.800	9971.000	1462.800	9971.000	1457.000	9982.000	1457.000	10014.000	1459.000	10018.000

X1	22.000	7.000	10001.300	10067.000	400.000	400.000	400.000	.000	.000	.000
GR	1465.800	9987.000	1458.650	10001.300	1458.650	10057.300	1462.000	10064.000	1463.500	10067.000
GR	1463.500	10114.000	1464.500	10119.000	.000	.000	.000	.000	.000	.000
X1	23.600	8.000	9997.400	10111.000	160.000	160.000	160.000	.000	.000	.000
GR	1467.000	9982.000	1459.300	9997.400	1459.300	10057.400	1463.200	10065.200	1463.200	10103.000
GR	1464.700	10111.000	1464.700	10160.000	1465.200	10160.100	.000	.000	.000	.000
X1	25.500	8.000	9976.000	10153.000	200.000	200.000	200.000	.000	.000	.000
X3	.000	.000	.000	9990.000	1465.000	10068.200	1465.000	.000	.000	.000
GR	1468.400	9955.000	1460.100	9976.000	1460.100	10068.200	1464.770	10077.500	1464.770	10153.000
GR	1466.300	10156.000	1466.300	10209.000	1466.900	10209.100	.000	.000	.000	.000
NC	.012	.012	.012	.300	.500	.000	.000	.000	.000	.000
X1	25.700	44.000	9964.700	10042.500	10.000	10.000	10.000	.000	-2.000	.000
GR	1466.700	9964.700	1462.100	9964.700	1462.100	9970.700	1466.100	9970.700	1466.100	9971.300
GR	1462.100	9971.900	1462.100	9977.900	1466.100	9977.900	1466.100	9979.100	1462.100	9979.100
GR	1462.100	9985.100	1466.100	9985.100	1466.100	9986.200	1462.100	9986.200	1462.100	9992.200
GR	1466.100	9992.200	1466.100	9993.400	1462.100	9993.400	1462.100	9999.400	1466.100	9999.400
GR	1466.100	10000.600	1462.100	10000.600	1462.100	10006.600	1466.100	10006.600	1466.100	10007.800
GR	1462.100	10007.800	1462.100	10013.800	1466.100	10013.800	1466.100	10014.900	1462.100	10014.900
GR	1462.100	10020.900	1466.100	10020.900	1466.100	10022.100	1462.100	10022.100	1462.100	10028.100
GR	1466.100	10028.100	1466.100	10029.300	1462.100	10029.300	1462.100	10035.300	1466.100	10035.300
GR	1466.100	10036.500	1462.100	10036.500	1462.100	10042.500	1466.700	10042.500	.000	.000
X1	27.750	.000	.000	.000	225.000	225.000	225.000	.000	.450	.000
X2	.000	.000	.000	1464.550	1465.130	.000	.000	.000	.000	.000
NC	.045	.045	.030	.100	.300	.000	.000	.000	.000	.000
X1	27.800	4.000	9940.000	10060.000	5.000	5.000	5.000	.000	.000	.000
X3	.000	.000	.000	9965.000	1465.000	10042.500	1465.000	.000	.000	.000
GR	1466.000	9907.500	1460.600	9940.000	1460.600	10060.000	1466.000	10092.500	.000	.000
X1	28.000	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	30.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
X1	32.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
X1	34.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
X1	36.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
X1	38.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
X1	40.000	.000	.000	.000	200.000	200.000	200.000	.000	.080	.000
QT	1.000	1287.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	41.700	.000	.000	.000	170.000	170.000	170.000	.000	.068	.000
X3	.000	.000	.000	9983.300	1472.000	10016.700	1472.000	.000	.000	.000

NC	.012	.012	.012	.300	.500	.000	.000	.000	.000	.000
X1	41.800	12.000	9983.300	10016.700	10.000	10.000	10.000	.000	.658	.000
GR	1472.000	9983.300	1460.500	9983.300	1460.500	9993.300	1466.500	9993.300	1466.500	9995.000
GR	1460.500	9995.000	1460.500	10005.000	1466.500	10005.000	1466.500	10006.700	1460.500	10006.700
GR	1460.500	10016.700	1472.000	10016.700	.000	.000	.000	.000	.000	.000
X1	42.600	.000	.000	.000	80.000	80.000	80.000	.000	.032	.000
X2	.000	.000	.000	1467.190	1472.000	.000	.000	.000	.000	.000
NC	.045	.045	.030	.100	.300	.000	.000	.000	.000	.000
X1	42.700	4.000	9925.000	10075.000	10.000	10.000	10.000	.000	.592	.000
GR	1466.600	9889.000	1460.600	9925.000	1460.600	10075.000	1466.600	10111.000	.000	.000
X1	43.100	.000	.000	.000	40.000	40.000	40.000	.000	.016	.000
X1	43.600	.000	.000	.000	50.000	50.000	50.000	.000	.020	.000
X1	43.610	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	43.800	.000	.000	.000	20.000	20.000	20.000	.000	.008	.000
X1	43.810	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	44.300	.000	.000	.000	50.000	50.000	50.000	.000	.020	.000
X1	46.000	.000	.000	.000	170.000	170.000	170.000	.000	.068	.000
X1	47.900	.000	.000	.000	190.000	190.000	190.000	.000	.076	.000
X1	47.910	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	48.100	.000	.000	.000	20.000	20.000	20.000	.000	.008	.000
X1	48.110	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	48.600	.000	.000	.000	50.000	50.000	50.000	.000	.020	.000
X1	50.000	.000	.000	.000	140.000	140.000	140.000	.000	.056	.000
X1	52.300	.000	.000	.000	230.000	230.000	230.000	.000	.092	.000
X1	52.310	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9970.000	.000	10030.000	.000	.000	.000	.000
X1	52.800	.000	.000	.000	50.000	50.000	50.000	.000	.020	.000

X1	54.000	.000	.000	.000	120.000	120.000	120.000	.000	.048	.000
NC	.012	.012	.012	.300	.500	.000	.000	.000	.000	.000
QT	1.000	483.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	56.700	4.000	9994.000	10006.000	270.000	270.000	270.000	.000	.103	.000
GR	1477.700	9994.000	1471.740	9994.000	1471.740	10006.000	1477.740	10006.000	.000	.000
X1	57.500	.000	.000	.000	80.000	80.000	80.000	.000	.032	.000
NC	.045	.045	.030	.100	.300	.000	.000	.000	.000	.000
X1	58.000	4.000	9992.500	10007.500	50.000	50.000	50.000	.000	.000	.000
GR	1478.400	9953.000	1471.800	9992.500	1471.800	10007.500	1478.400	10047.000	.000	.000
X1	58.900	.000	.000	.000	90.000	90.000	90.000	.000	.045	.000
X1	58.910	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	59.100	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	59.110	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9992.500	.000	10007.500	.000	.000	.000	.000
X1	59.600	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	62.000	.000	.000	.000	240.000	240.000	240.000	.000	.120	.000
X1	64.000	.000	.000	.000	200.000	200.000	200.000	.000	.100	.000
X1	64.010	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	64.200	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	64.210	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9992.500	.000	10007.500	.000	.000	.000	.000
X1	64.700	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	66.000	.000	.000	.000	130.000	130.000	130.000	.000	.065	.000
X1	68.000	.000	.000	.000	200.000	200.000	200.000	.000	.100	.000
X1	69.400	.000	.000	.000	140.000	140.000	140.000	.000	.070	.000
X1	69.410	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9992.500	.000	10007.500	.000	.000	.000	.000
X1	70.000	.000	.000	.000	60.000	60.000	60.000	.000	.030	.000

X1	72.000	.000	.000	.000	200.000	200.000	200.000	.000	100	.000
X1	74.400	.000	.000	.000	240.000	240.000	240.000	.000	.120	.000
X1	74.410	.000	.000	.000	.000	.000	000	.000	2.000	.000
X1	74.600	.000	.000	.000	20.000	20.000	20.000	000	010	.000
X1	74.610	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9992.500	000	10007.500	.000	.000	000	.000
X1	75.100	.000	.000	.000	50.000	50.000	50.000	.000	.025	000
X1	76.000	.000	.000	.000	90.000	90.000	90.000	.000	.045	000
X1	78.000	.000	.000	.000	200.000	200.000	200.000	.000	.100	.000
X1	79.900	.000	.000	.000	190.000	190.000	190.000	.000	.095	.000
X1	79.910	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X1	80.100	.000	.000	.000	20.000	20.000	20.000	.000	.010	.000
X1	80.110	.000	.000	.000	.000	.000	.000	.000	2.000	.000
X3	.000	.000	.000	9992.500	.000	10007.500	.000	.000	.000	.000
X1	80.600	.000	.000	.000	50.000	50.000	50.000	.000	.025	.000
X1	82.000	.000	.000	.000	140.000	140.000	140.000	.000	.070	.000
X1	84.000	.000	.000	.000	200.000	200.000	200.000	.000	.100	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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

#PROF 1

CCHV=     .100 CEHV=     .300
#SECNO  .000
3720 CRITICAL DEPTH ASSUMED
      .00      1.70  1450.00  1450.00  1408.41  1450.41       .42       .00       .00  1450.80
    1310.        0.    1310.       0.       0.     253.        0.        0.        0.   1451.00
      .00       .00     5.18       .00      .035     .035      .019      .000  1448.30  9888.30
  .019183        0.       0.       0.        0        14         0       .00    306.40 10194.71

#SECNO  .800
      .80      4.36  1450.46       .00       .00  1450.47       .01       .02       .04  1452.40
    1310.        0.    1310.       0.       0.    1379.        0.        1.        1.   1451.20
      .02       .00      .95       .00      .035     .035      .019      .000  1446.10  9942.71
  .000076       80.      80.      80.        2        0         0       .00    335.07 10277.77

#SECNO 3.000
     3.00      4.17  1450.47       .00       .00  1450.50       .03       .02       .01  1451.30
    1310.        0.    1310.       0.       0.     883.        0.        6.        2.   1451.30
      .06       .00     1.48       .00      .035     .035      .019      .000  1446.30  9953.32
  .000203      220.     190.      75.        2        0         0       .00    228.36 10181.68

#SECNO 6.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     6.00      3.53  1450.23  1450.23       .00  1451.04       .81       .19       .23  1451.70
    1310.        0.    1310.       0.       0.     182.        0.       10.        3.   1451.20
      .07       .00     7.21       .00      .035     .035      .019      .000  1446.70  9977.93
  .016903      300.     295.     280.        3        12         0       .00    120.20 10098.13

#SECNO 8.000
     8.00      3.41  1452.81       .00       .00  1453.72       .91      2.65       .03  1449.40
    1310.       59.    1251.       0.      10.     161.        0.       11.        3.   1452.90
      .08      5.71     7.75       .00      .035     .035      .019      .000  1449.40  9975.92
  .010651      200.     200.     200.        3        0         0       .00     73.90 10049.81
```

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

*SECNO 11.000
    11.00      3.83   1455.45       .00       .00   1456.03       .58      2.28       03   1451.62
    1310.       63.     1207.       41.       14.      192.       15.       12.        4.    1455.12
      .09      4.54      6.28      2.78      .035      .035      .019      .000   1451.62   9975.78
  .005675      300.      300.      300.         3         0         0       .00    121.53  10097.31

*SECNO 18.000
    18.00      3.42   1460.42   1460.19       .00   1461.27       .84      5.16       .08   1457.00
    1310.       62.     1246.        2.       11.      167.        2.       15.        6.    1460.30
      .12      5.59      7.45      1.23      .035      .035      .019      .000   1457.00   9975.50
  .009961      700.      700.      700.         6        10         0       .00    104.97  10080.48

*SECNO 22.000
    22.00      4.05   1462.70       .00       .00   1463.11       .40      1.80       .04   1458.65
    1310.       52.     1258.        0.       16.      244.        0.       17.        7.    1463.50
      .14      3.19      5.16       .00      .035      .035      .019      .000   1458.65   9993.19
  .002546      400.      400.      400.         3         0         0       .00     72.22  10065.41

*SECNO 23.600
    23.60      3.97   1463.27       .00       .00   1463.63       .36       .52       .00   1459.30
    1310.       64.     1246.        0.       16.      258.        0.       18.        7.    1464.70
      .15      4.06      4.83       .00      .035      .035      .019      .000   1459.30   9989.44
  .004238      160.      160.      160.         2         0         0       .00    118.72  10108.16

*SECNO 25.500

3470 ENCROACHMENT STATIONS=    9990.0   10068.2  TYPE=     1  TARGET=      78.200
 ELENCL=    1465.00  ELENCR=   1465.00
    25.50      3.80   1463.90       .00       .00   1464.21       .30       .57       01   1465.00
    1310.        0.     1310.        0.        0.      298.        0.       20.        8.    1465.00
      .16       .00      4.40       .00      .035      .035      .019      .000   1460.10   9990.00
  .002049      200.      200.      200.         2         0         0       .00     78.20  10068.20

CCHV=     .300 CEHV=     .500
*SECNO 25.700

3265 DIVIDED FLOW
```

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

   25.70      3.75  1463.85       .00       .00  1464.29       .43       .01       .07  1464.70
   1310.        0.    1310.        0.        0.     248.        0.      20.        8.   1464.70
     .16       .00     5.29       .00      .012     .012      .012      .000  1460.10  9964.70
 .000924       10.      10.       10.         2        0         0       .00    66.00 10042.50

#SECNO 27.750

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD=  0 MIN ELTRD= 1465.13 MAX ELLC= 1464.55

   27.75      3.50  1464.05       .00       .00  1464.55       .50       .23       .03  1465.15
   1310.        0.    1310.        0.        0.     231.        0.      21.        8.   1465.15
     .17       .00     5.68       .00      .012     .012      .012      .000  1460.55  9964.70
 .001110      225.     225.      225.         2        0         0       .00    66.00 10042.50

CCHV=     .100 CEHV=     .300
#SECNO 27.800

3470 ENCROACHMENT STATIONS=    9965.0   10042.5  TYPE=      1  TARGET=      77.500
 ELENCL=    1465.00  ELENCR=   1465.00
   27.80      3.63  1464.23       .00       .00  1464.57       .34       .01       .02  1465.00
   1310.        0.    1310.        0.        0.     282.        0.      21.        8.   1465.00
     .17       .00     4.65       .00      .045     .030      .045      .000  1460.60  9965.00
 .001776        5.       5.        5.         2        0         0       .00    77.50 10042.50

#SECNO 28.000
   28.00      3.90  1464.51       .00       .00  1464.61       .10       .02       .02  1460.61
   1310.       49.    1211.       49.       46.     468.       46.      21.        8.   1460.61
     .18      1.08     2.59      1.08      .045     .030      .045      .000  1460.61  9916.51
 .000444       20.      20.       20.         2        0         0       .00   166.98 10083.49

#SECNO 30.000
   30.00      3.91  1464.60       .00       .00  1464.70       .10       .09       .00  1460.69
   1310.       49.    1211.       49.       46.     469.       46.      24.        9.   1460.69
     .20      1.07     2.58      1.07      .045     .030      .045      000  1460.69  9916.46
 .000441      200.     200.      200         2        0         0       .00   167.07 10083.54
```

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

*SECNO 32.000
    32.00      3.92  1464.69       .00       .00  1464.79       .10       .09       .00  1460.77
    1310.       50.     1211.       50.       46.     470.       46.       26.       10.   1460.77
      .22      1.07      2.57      1.07      .045     .030      .045      .000  1460.77  9916.41
  .000437      200.      200.      200.         0        0         0       .00    167.18 10083.59

*SECNO 34.000
    34.00      3.93  1464.78       .00       .00  1464.87       .10       .09       .00  1460.85
    1310.       50.     1211.       50.       46.     471.       46.       29.       10.   1460.85
      .24      1.07      2.57      1.07      .045     .030      .045      .000  1460.85  9916.37
  .000434      200.      200.      200.         0        0         0       .00    167.27 10083.63

*SECNO 36.000
    36.00      3.93  1464.86       .00       .00  1464.96       .10       .09       .00  1460.93
    1310.       50.     1211.       50.       47.     472.       47.       32.       11.   1460.93
      .27      1.07      2.56      1.07      .045     .030      .045      .000  1460.93  9916.32
  .000432      200.      200.      200.         0        0         0       .00    167.35 10083.68

*SECNO 38.000
    38.00      3.94  1464.95       .00       .00  1465.05       .10       .09       .00  1461.01
    1310.       50.     1210.       50.       47.     473.       47.       34.       12.   1461.01
      .29      1.07      2.56      1.07      .045     .030      .045      .000  1461.01  9916.29
  .000429      200.      200.      200.         0        0         0       .00    167.43 10083.71

*SECNO 40.000
    40.00      3.95  1465.04       .00       .00  1465.13       .10       .09       .00  1461.09
    1310.       50.     1210.       50.       47.     474.       47.       37.       13.   1461.09
      .31      1.06      2.56      1.06      .045     .030      .045      .000  1461.09  9916.25
  .000427      200.      200.      200.         0        0         0       .00    167.50 10083.75

*SECNO 41.700

3301 HV CHANGED MORE THAN HVINS

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

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


3470 ENCROACHMENT STATIONS=    9983.3   10016.7  TYPE=      1  TARGET=      33.400
 ELENCL=    1472.00  ELENCR=   1472.00
    41.70      3.57  1464.73  1464.73       .00  1466.54      1.81       .20       .51  1472.00
    1287.        0.    1287.       0.        0.     119.        0.       38.       13.   1472.00
      .32       .00    10.78       .00      .045     .030      .045      .000  1461.16  9983.30
  .011231      170.     170.      170.       20       11         0       .00     33.40 10016.70


CCHV=     .300 CEHV=     .500
*SECNO 41.800

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    41.80      3.84  1465.00  1465.00       .00  1466.94      1.94       .05       .07  1472.66
    1287.        0.    1287.       0.        0.     115.        0.       38.       13.   1472.66
      .32       .00    11.17       .00      .012     .012      .012      .000  1461.16  9983.30
  .002895       10.      10.       10.       20        8         0       .00     30.00 10016.70


*SECNO 42.600

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


3370 NORMAL BRIDGE,NRD=  0 MIN ELTRD= 1472.00 MAX ELLC= 1467.19

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
    42.60      5.01  1466.20  1465.04       .00  1467.33      1.13       .16       .24  1472.69
    1287.        0.    1287.       0.        0.     151.        0.       38.       13.   1472.69
      .32       .00     8.55       .00      .012     .012      .012      .000  1461.19  9983.30
  .001401       80.      80.       80.       21       16         0       .00     30.00 10016.70


CCHV=     .100 CEHV=     .300
*SECNO 42.700
```

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

3280 CROSS SECTION     42.70 EXTENDED        .23 FEET

3301 HV CHANGED MORE THAN HVINS

    42.70      6.23  1467.42       .00       .00  1467.45       .02       .00        11  1461.19
    1287.       62.    1164.       62.      116.     935.      116.      39.       13.   1461.19
      .32       .53     1.24       .53      .045     .030      .045      .000  1461 19  9889.00
  .000055       10.      10.       10.         2        0         0       .00   222.00 10111.00

#SECNO 43.100
3280 CROSS SECTION     43.10 EXTENDED        .22 FEET

    43.10      6.22  1467.43       .00       .00  1467.45       .02       .00       .00  1461.21
    1287.       61.    1164.       61.      116.     933.      116.      40.       13.   1461.21
      .33       .53     1.25       .53      .045     .030      .045      .000  1461 21  9889.00
  .000056       40.      40.       40.         2        0         0       .00   222.00 10111.00

#SECNO 43.600
3280 CROSS SECTION     43.60 EXTENDED        .20 FEET

    43.60      6.20  1467.43       .00       .00  1467.45       .02       .00       .00  1461.23
    1287.       61.    1165.       61.      115.     930.      115.      41.       14.   1461.23
      .34       .53     1.25       .53      .045     .030      .045      .000  1461.23  9889.00
  .000056       50.      50.       50.         0        0         0       .00   222 00 10111.00

#SECNO 43.610
    43.61      4.18  1467.41       .00       .00  1467.46       .05       .00       .01  1463.23
    1287.       42.    1203.       42.       52.     627.       52.      41.       14.   1463.23
      .34       .80     1.92       .80      .045     .030      .045      .000  1463.23  9899.93
  .000223        0.       0.        0.         2        0         0       .00   200.14 10100.07

#SECNO 43.800
    43.80      4.17  1467.41       .00       .00  1467.47       .05       .00       .00  1463.24
    1287.       42.    1203.       42.       52.     626.       52.      41.       14.   1463.24
      .35       .80     1.92       .80      .045     .030      .045      .000  1463.24  9899.96
  .000224       20.      20.       20.         0        0         0       .00   200.08 10100.04
```

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

#SECNO 43.810

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    43.81      2.42  1467.66  1467.66       .00  1468.88      1.22       .00       .35100000.00
    1287.        0.    1287.       0.        0.     145.       0.       41.       14. 100000.00
      .35       .00     8.85       .00      .045     .030      .045      .000  1465.24  9970.00
  .010866        0.       0.       0.        20       11         0       .00    60.00 10030.00

#SECNO 44.300

3301 HV CHANGED MORE THAN HVINS

    44.30      3.71  1468.97       .00       .00  1469.04       .07       .05       .11  1465.26
    1287.       37.    1212.       37.       41.     557.       41.       42.       14.  1465.26
      .35       .91     2.18       .91      .045     .030      .045      .000  1465.26  9902.72
  .000336       50.      50.       50.         2        0         0       .00   194.55 10097.28

#SECNO 46.000
    46.00      3.70  1469.03       .00       .00  1469.10       .07       .06       .00  1465.32
    1287.       37.    1212.       37.       41.     556.       41.       44.       15.  1465.32
      .37       .91     2.18       .91      .045     .030      .045      .000  1465.32  9902.77
  .000338      170.     170.      170.         2        0         0       .00   194.46 10097.23

#SECNO 47.900
    47.90      3.69  1469.09       .00       .00  1469.16       .07       .06       .00  1465.40
    1287.       37.    1213.       37.       41.     554.       41.       47.       15.  1465.40
      .40       .91     2.19       .91      .045     .030      .045      .000  1465.40  9902.86
  .000343      190.     190.      190.         0        0         0       .00   194.28 10097.14

#SECNO 47.910

3301 HV CHANGED MORE THAN HVINS
```

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    47.91      1.30  1468.70  1468.70       .00  1469.34       .64       .00       .17  1467.40
    1287.       14.    1260.      14.        5.     195.        5.       47.       15.   1467.40
      .40      2.69     6.47     2.69      .045      .030      .045      .000  1467.40  9917.22
  .012079        0.       0.       0.         3        22         0       .00   165.57 10082.78

*SECNO 48.100
    48.10      1.75  1469.16      .00       .00  1469.50       .34       .14       .03  1467.41
    1287.       18.    1251.      18.        9.     262.        9.       47.       15.   1467.41
      .40      1.98     4.77     1.98      .045      .030      .045      .000  1467.41  9914.50
  .004390       20.      20.      20.         3         0         0       .00   170.99 10085.50

*SECNO 48.110

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    48.11      2.42  1471.83  1471.83       .00  1473.05      1.22       .00       .26100000.00
    1287.        0.    1287.       0.        0.     145.        0.       47.       15. 100000.00
      .40       .00     8.86      .00      .045      .030      .045      .000  1469.41  9970.00
  .010911        0.       0.       0.        20        11         0       .00    60.00 10030.00

*SECNO 48.600

3301 HV CHANGED MORE THAN HVINS

    48.60      3.71  1473.14      .00       .00  1473.21       .07       .05       .11  1469.43
    1287.       37.    1212.      37.       41.     557.       41.       48.       16.   1469.43
      .41       .91     2.18      .91      .045      .030      .045      .000  1469.43  9902.72
  .000336       50.      50.      50.         2         0         0       .00   194.56 10097.28

*SECNO 50.000
    50.00      3.70  1473.19      .00       .00  1473.26       .07       .05       .00  1469.48
    1287.       37.    1212.      37.       41.     556.       41.       50.       16.   1469.48
      .43       .91     2.18      .91      .045      .030      .045      .000  1469.48  9902.76
  .000338      140.     140.     140.         2         0         0       .00   194.48 10097.24
```

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

*SECNO 52.300
    52.30      3.69  1473.27       .00       .00  1473.34       .07       .08       .00  1469.58
    1287.       37.    1213.       37.       41.     553.       41.       53.       17.   1469.58
      .46       .91     2.19       .91      .045      .030      .045      .000  1469.58  9902.86
  .000343      230.     230.      230.         0         0         0       .00    194.28 10097.14

*SECNO 52.310

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9970.0   10030.0  TYPE=      1  TARGET=       60.000
    52.31      2.42  1473.99  1473.99       .00  1475.22     1.22       .00       .35100000.00
    1287.        0.    1287.       0.        0.     145.       0.       53.       17. 100000.00
      .46       .00     8.87       .00      .045      .030      .045      .000  1471.58  9970.00
  .010973        0.       0.        0.       20        14         0       .00    60.00 10030.00

*SECNO 52.800

3301 HV CHANGED MORE THAN HVINS

    52.80      3.71  1475.31       .00       .00  1475.38       .07       .05       .12  1471.60
    1287.       37.    1212.       37.       41.     557.       41.       53.       17.   1471.60
      .46       .91     2.18       .91      .045      .030      .045      .000  1471.60  9902.72
  .000335       50.      50.       50.         2         0        .0       .00    194.56 10097.28

*SECNO 54.000
    54.00      3.71  1475.35       .00       .00  1475.42       .07       .04       .00  1471.64
    1287.       37.    1212.       37.       41.     556.       41.       55.       18.   1471.64
      .48       .91     2.18       .91      .045      .030      .045      .000  1471.64  9902.75
  .000337      120.     120.      120.         2         0         0       .00    194.50 10097.25

CCHV=     .300 CEHV=     .500
*SECNO 56.700
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      INDSS


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    56.70      3.68  1475.52  1475.52       .00  1477.39      1.86       .13       .90  1477.81
     483.        0.     483.       0.        0.      44.        0.       57.       19.   1477.85
      .48       .00     10.95      .00      .012     .017      .012      .000  1471.85  9994.00
  .002605      270.     270.     270.        20        5         0       .00     12.00 10006.00

#SECNO 57.500

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
    57.50      4.78  1476.66  1475.56       .00  1477.75      1.10       .14       .23  1477.84
     483.        0.     483.       0.        0.      57.        0.       57.       19.   1477.88
      .49       .00      8.41      .00      .012     .012      .012      .000  1471.88  9994.00
  .001250       80.      80.      80.        22        5         0       .00     12.00 10006.00

CCHV=     .100 CEHV=     .300
#SECNO 58.000

3301 HV CHANGED MORE THAN HVINS

    58.00      6.02  1477.82       .00       .00  1477.88       .07       .02       .10  1471.80
     483.       121.     242.      121.      108.      90.      108.       58.       19.   1471.80
      .49      1.11      2.68      1.11      .045     .030      .045      .000  1471.80  9956.49
  .000267       50.      50.       50.         3        0         0       .00     87.02 10043.51

#SECNO 58.900
    58.90      6.00  1477.84       .00       .00  1477.91       .07       .02       .00  1471.85
     483.       120.     242.      120.      108.      90.      108.       58.       19.   1471.85
      .51      1.12      2.69      1.12      .045     .030      .045      .000  1471.85  9956.62
  .000271       90.      90.       90.         2        0         0       .00     86.77 10043.38

#SECNO 58.910
    58.91      3.85  1477.70       .00       .00  1477.97       .27       .00       .06  1473.85
     483.        94.     295.       94.       44.      58.       44.       58.       19.   1473.85
      .51      2.12      5.10      2.12      .045     .030      .045      .000  1473.85  9969.45
  .001756        0.       0.        0.         2        0         0       .00     61.19 10030.55
```

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

*SECNO 59.100
    59.10     3.88   1477.74       .00       .00   1478.00       .27       .03       .00   1473.86
     483.      95.      294.      95.       45.       58.       45.       58.       19.    1473.86
      .51     2.10      5.04      2.10      .045      .030      .045      .000   1473.86   9969.26
  .001699      20.       20.       20.        2         0         0       .00     61.47  10030.74

*SECNO 59.110

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9992.5   10007.5  TYPE=      1  TARGET=       15.000
    59.11     3.17   1479.03   1479.03       .00   1480.63      1.60       .00       .40   1475.86
     483.       0.      483.       0.        0.       48.        0.       58.       19.  100000.00
      .51      .00     10.16       .00      .045      .030      .045      .000   1475.86   9992.50
  .014452       0.        0.        0.       20        15         0       .00     15.00  10007.50

*SECNO 59.600

3301 HV CHANGED MORE THAN HVINS

    59.60     4.85   1480.73       .00       .00   1480.87       .13       .09       .15   1475.88
     483.     108.      267.     108.       70.       73.       70.       58.       19.    1475.88
      .51     1.53      3.67      1.53      .045      .030      .045      .000   1475.88   9963.46
  .000670      50.       50.       50.        3         0         0       .00     73.08  10036.54

*SECNO 62.000
    62.00     4.89   1480.89       .00       .00   1481.02       .13       .16       .00   1476.00
     483.     108.      266.     108.       72.       73.       72.       60.       19.    1476.00
      .54     1.51      3.63      1.51      .045      .030      .045      .000   1476.00   9963.21
  .000646     240.      240.      240.        3         0         0       .00     73.59  10036.79

*SECNO 64.000
    64.00     4.92   1481.02       .00       .00   1481.15       .13       .13       .00   1476.10
     483.     109.      266.     109.       73.       74.       73.       61.       20.    1476.10
      .56     1.50      3.60      1.50      .045      .030      .045      .000   1476.10   9963.02
  .000629     200.      200.      200.        0         0         0       .00     73.96  10036.98
```

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

*SECNO 64.010

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    64.01      2.55  1480.65  1480.65       .00  1481.57       .92       .00       .24  1478.10
     483.       72.     339.      72.       20.      38.       20.       61.       20.   1478.10
      .56      3.68      8.85     3.68      .045     .030      .045      .000  1478.10  9977.21
  .009139        0.        0.       0.        20       11         0       .00     45.58 10022.79


*SECNO 64.200
    64.20      3.09  1481.20       .00       .00  1481.73       .53       .12       .04  1478.11
     483.       82.     319.      82.       29.      46.       29.       61.       20.   1478.11
      .56      2.87      6.89     2.87      .045     .030      .045      .000  1478.11  9974.01
  .004298       20.       20.      20.         4        0         0       .00     51.98 10025.99


*SECNO 64.210

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9992.5   10007.5  TYPE=      1  TARGET=       15.000
    64.21      3.17  1483.28  1483.28       .00  1484.88      1.60       .00       .32  1480.11
     483.        0.      483.       0.        0.      48.        0.       61.       20. 100000.00
      .56       .00     10.16      .00      .045     .030      .045      .000  1480.11  9992.50
  .014459        0.        0.       0.        20        8         0       .00     15.00 10007.50


*SECNO 64.700

3301 HV CHANGED MORE THAN HVINS

    64.70      4.85  1484.99       .00       .00  1485.12       .13       .09       .15  1480.14
     483.      108.     267.     108.       70.      73.       70.       61.       20.   1480.14
      .57      1.53      3.67     1.53      .045     .030      .045      .000  1480.14  9963.46
  .000670       50.       50.      50.         3        0         0       .00     73.08 10036.54
```

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

*SECNO 66.000
    66.00      4.88  1485.08       .00       .00  1485.21       .13       .09       .00  1480.20
     483.      108.      267.     108.       71.      73.       71.       61.       20.   1480.20
       58      1.51      3.64     1.51      .045     .030      .045      .000  1480.20  9963.27
  .000652      130.      130.     130.         2        0         0       .00    73.46 10036.73

*SECNO 68.000
    68.00      4.91  1485.21       .00       .00  1485.34       .13       .13       .00  1480.30
     483.      108.      266.     108.       72.      74.       72.       62.       20.   1480.30
      .60      1.50      3.61     1.50      .045     .030      .045      .000  1480.30  9963.12
  .000638      200.      200.     200.         0        0         0       .00    73.76 10036.88

*SECNO 69.400
    69.40      4.93  1485.30       .00       .00  1485.42       .13       .09       .00  1480.37
     483.      109.      266.     109.       73.      74.       73.       63.       21.   1480.37
      .62      1.50      3.59     1.50      .045     .030      .045      .000  1480.37  9963.00
  .000627      140.      140.     140.         0        0         0       .00    73.99 10037.00

*SECNO 69.410

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9992.5   10007.5  TYPE=     1  TARGET=      15.000
    69.41      3.17  1485.54  1485.54       .00  1487.14      1.60       .00       .44  1482.37
     483.        0.      483.       0.        0.      48.        0.       63.       21. 100000.00
      .62       .00     10.16      .00      .045     .030      .045      .000  1482.37  9992.50
  .014437        0.        0.       0.        20       14         0       .00    15.00 10007.50

*SECNO 70.000

3301 HV CHANGED MORE THAN HVINS

    70.00      4.87  1487.27       .00       .00  1487.40       .13       .11       .15  1482.40
     483.      108.      267.     108.       71.      73.       71.       63.       21.   1482.40
      .62      1.52      3.65     1.52      .045     .030      .045      .000  1482.40  9963.34
  .000659       60.       60.      60.         2        0         0       .00    73.32 10036.66
```

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

#SECNO 72.000
   72.00      4.90  1487.40       .00       .00  1487.53       .13       .13       .00  1482.50
    483.      108.     266.      108.      72.      73.       72.       64.       21.   1482.50
     .64      1.51     3.62      1.51     .045     .030      .045      .000  1482.50  9963.18
 .000644      200.     200.      200.        3        0         0       .00    73.64 10036.82

#SECNO 74.400
   74.40      4.93  1487.55       .00       .00  1487.68       .13       .15       .00  1482.62
    483.      109.     265.      109.      73.      74.       73.       66.       21.   1482.62
     .67      1.49     3.59      1.49     .045     .030      .045      .000  1482.62  9962.96
 .000624      240.     240.      240.        0        0         0       .00    74.07 10037.04

#SECNO 74.410

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   74.41      2.55  1487.17  1487.17       .00  1488.09       .92       .00       .24  1484.62
    483.       72.     339.       72.      20.      38.       20.       66.       21.   1484.62
     .67      3.68     8.85      3.68     .045     .030      .045      .000  1484.62  9977.22
 .009155        0.       0.        0.       20       11         0       .00    45.57 10022.78

#SECNO 74.600
   74.60      3.09  1487.72       .00       .00  1488.25       .53       .12       .04  1484.63
    483.       82.     319.       82.      29.      46.       29.       66.       21.   1484.63
     .67      2.87     6.89      2.87     .045     .030      .045      .000  1484.63  9974.01
 .004297       20.      20.       20.        4        0         0       .00    51.98 10025.99

#SECNO 74.610

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9992.5   10007.5  TYPE=     1  TARGET=      15.000
```

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

   74.61      3.17  1489.80   1489.80       .00  1491.40      1.60       .00       .32   1486.63
   483.        0.     483.        0.        0.     48.        0.       66.       21.  100000.00
     .67      .00     10.16       .00      .045     .030      .045      .000   1486.63   9992.50
  .014447      0.        0.        0.        20        8         0       .00     15.00  10007.50

#SECNO 75.100

3301 HV CHANGED MORE THAN HVINS

   75.10      4.85  1491.51       .00       .00  1491.64       .13       .09       .15   1486.66
   483.      108.     267.      108.      70.     73.       70.       66.       21.    1486.66
     .67      1.53     3.67      1.53      .045     .030      .045      .000   1486.66   9963.46
  .000670     50.      50.       50.        3        0         0       .00     73.08  10036.54

#SECNO 76.000
   76.00      4.87  1491.57       .00       .00  1491.70       .13       .06       .00   1486.70
   483.      108.     267.      108.      71.     73.       71.       66.       22.    1486.70
     .68      1.52     3.65      1.52      .045     .030      .045      .000   1486.70   9963.33
  .000657     90.      90.       90.        2        0         0       .00     73.34  10036.67

#SECNO 78.000
   78.00      4.90  1491.70       .00       .00  1491.83       .13       .13       .00   1486.80
   483.      108.     266.      108.      72.     74.       72.       67.       22.    1486.80
     .70      1.51     3.62      1.51      .045     .030      .045      .000   1486.80   9963.16
  .000642    200.     200.      200.        0        0         0       .00     73.68  10036.84

#SECNO 79.900
   79.90      4.93  1491.83       .00       .00  1491.95       .13       .12       .00   1486.90
   483.      109.     266.      109.      73.     74.       73.       68.       22.    1486.90
     .72      1.49     3.59      1.49      .045     .030      .045      .000   1486.90   9962.99
  .000626    190.     190.      190.        0        0         0       .00     74.02  10037.01

#SECNO 79.910

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
```

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

3720 CRITICAL DEPTH ASSUMED
    79.91      2.55   1491.45   1491.45       .00   1492.37       .92       .00       .24   1488.90
     483.       72.      339.      72.       20.       38.       20.       68.       22.    1488.90
      .72      3.68      8.86      3.68      .045      .030      .045      .000   1488.90   9977.22
  .009156        0.        0.        0.        20        11         0       .00     45.57  10022.78

#SECNO 80.100
    80.10      3.09   1492.00       .00       .00   1492.53       .53       .12       .04   1488.91
     483.       82.      319.      82.       29.       46.       29.       68.       22.    1488.91
      .72      2.87      6.89      2.87      .045      .030      .045      .000   1488.91   9974.01
  .004296       20.       20.       20.         4         0         0       .00     51.98  10025.99

#SECNO 80.110

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=    9992.5   10007.5  TYPE=      1  TARGET=       15.000
    80.11      3.17   1494.08   1494.08       .00   1495.68      1.60       .00       .32   1490.91
     483.        0.       483.       0.        0.       48.        0.       68.       22.  100000.00
      .72       .00     10.16       .00      .045      .030      .045      .000   1490.91   9992.50
  .014447        0.        0.        0.        20         8         0       .00     15.00  10007.50

#SECNO 80.600

3301 HV CHANGED MORE THAN HVINS

    80.60      4.85   1495.78       .00       .00   1495.92       .13       .09       .15   1490.93
     483.      108.      267.     108.       70.       73.       70.       68.       22.    1490.93
      .73      1.53      3.67      1.53      .045      .030      045       .000   1490.93   9963.46
  .000670       50.       50.       50.         3         0         0       .00     73.08  10036.54

#SECNO 82.000
    82.00      4.88   1495.88       .00       .00   1496.01       .13       .09       .00   1491.00
     483.      108.      267.     108.       71.       73.       71.       69.       23.    1491.00
      .74      1.51      3.64      1.51      .045      .030      .045      .000   1491.00   9963.25
  .000650      140.      140.      140.         2         0         0       .00     73.49  10036.75
```

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

```
*SECNO 84.000
   84.00      4.91  1496.01       .00       .00  1496.14       .13       .13       .00  1491.10
    483.      108.      266.      108.       72.       74.       72.       70.       23.   1491.10
     .77      1.50      3.61      1.50      .045      .030      .045      .000  1491.10  9963.11
 .000637      200.      200.      200.         0         0         0       .00     73.78 10036.89
```

THIS RUN EXECUTED 06-30-87

```
*****************************************************
  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
*****************************************************
```

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

EAST FORK CHANNEL

SUMMARY PRINTOUT

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
*	.000	1310.00	5.18	1450.00	1.70	1448.30
	.800	1310.00	.95	1450.46	4.36	1446.10
	3.000	1310.00	1.48	1450.47	4.17	1446.30
*	6.000	1310.00	7.21	1450.23	3.53	1446.70
	8.000	1310.00	7.75	1452.81	3.41	1449.40
	11.000	1310.00	6.28	1455.45	3.83	1451.62
	18.000	1310.00	7.45	1460.42	3.42	1457.00
	22.000	1310.00	5.16	1462.70	4.05	1458.65
	23.600	1310.00	4.83	1463.27	3.97	1459.30
	25.500	1310.00	4.40	1463.90	3.80	1460.10
	25.700	1310.00	5.29	1463.85	3.75	1460.10
	27.750	1310.00	5.68	1464.05	3.50	1460.55
	27.800	1310.00	4.65	1464.23	3.63	1460.60
	28.000	1310.00	2.59	1464.51	3.90	1460.61
	30.000	1310.00	2.58	1464.60	3.91	1460.69
	32.000	1310.00	2.57	1464.69	3.92	1460.77
	34.000	1310.00	2.57	1464.78	3.93	1460.85

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
	36.000	1310.00	2.56	1464.86	3.93	1460.93
	38.000	1310.00	2.56	1464.95	3.94	1461.01
	40.000	1310.00	2.56	1465.04	3.95	1461.09
*	41.700	1287.00	10.78	1464.73	3.57	1461.16
*	41.800	1287.00	11.17	1465.00	3.84	1461.16
*	42.600	1287.00	8.55	1466.20	5.01	1461.19
	42.700	1287.00	1.24	1467.42	6.23	1461.19
	43.100	1287.00	1.25	1467.43	6.22	1461.21
	43.600	1287.00	1.25	1467.43	6.20	1461.23
	43.610	1287.00	1.92	1467.41	4.18	1463.23
	43.800	1287.00	1.92	1467.41	4.17	1463.24
*	43.810	1287.00	8.85	1467.66	2.42	1465.24
	44.300	1287.00	2.18	1468.97	3.71	1465.26
	46.000	1287.00	2.18	1469.03	3.70	1465.32
	47.900	1287.00	2.19	1469.09	3.69	1465.40
*	47.910	1287.00	6.47	1468.70	1.30	1467.40
	48.100	1287.00	4.77	1469.16	1.75	1467.41
*	48.110	1287.00	8.86	1471.83	2.42	1469.41
	48.600	1287.00	2.18	1473.14	3.71	1469.43
	50.000	1287.00	2.18	1473.19	3.70	1469.48
	52.300	1287.00	2.19	1473.27	3.69	1469.58
*	52.310	1287.00	8.87	1473.99	2.42	1471.58
	52.800	1287.00	2.18	1475.31	3.71	1471.60
	54.000	1287.00	2.18	1475.35	3.71	1471.64
*	56.700	483.00	10.95	1475.52	3.68	1471.85
*	57.500	483.00	8.41	1476.66	4.78	1471.88

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
	58.000	483.00	2.68	1477.82	6.02	1471.80
	58.900	483.00	2.69	1477.84	6.00	1471.85
	58.910	483.00	5.10	1477.70	3.85	1473.85
	59.100	483.00	5.04	1477.74	3.88	1473.86
*	59.110	483.00	10.16	1479.03	3.17	1475.86
	59.600	483.00	3.67	1480.73	4.85	1475.88
	62.000	483.00	3.63	1480.89	4.89	1476.00
	64.000	483.00	3.60	1481.02	4.92	1476.10
*	64.010	483.00	8.85	1480.65	2.55	1478.10
	64.200	483.00	6.89	1481.20	3.09	1478.11
*	64.210	483.00	10.16	1483.28	3.17	1480.11
	64.700	483.00	3.67	1484.99	4.85	1480.14
	66.000	483.00	3.64	1485.08	4.88	1480.20
	68.000	483.00	3.61	1485.21	4.91	1480.30
	69.400	483.00	3.59	1485.30	4.93	1480.37
*	69.410	483.00	10.16	1485.54	3.17	1482.37
	70.000	483.00	3.65	1487.27	4.87	1482.40
	72.000	483.00	3.62	1487.40	4.90	1482.50
	74.400	483.00	3.59	1487.55	4.93	1482.62
*	74.410	483.00	8.85	1487.17	2.55	1484.62
	74.600	483.00	6.89	1487.72	3.09	1484.63
*	74.610	483.00	10.16	1489.80	3.17	1486.63
	75.100	483.00	3.67	1491.51	4.85	1486.66
	76.000	483.00	3.65	1491.57	4.87	1486.70
	78.000	483.00	3.62	1491.70	4.90	1486.80
	79.900	483.00	3.59	1491.83	4.93	1486.90

	SECNO	Q	VCH	CWSEL	DEPTH	ELMIN
*	79.910	483.00	8.86	1491.45	2.55	1488.90
	80.100	483.00	6.89	1492.00	3.09	1488.91
*	80.110	483.00	10.16	1494.08	3.17	1490.91
	80.600	483.00	3.67	1495.78	4.85	1490.93
	82.000	483.00	3.64	1495.88	4.88	1491.00
	84.000	483.00	3.61	1496.01	4.91	1491.10

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION  SECNO=      .000  PROFILE= 1  CRITICAL DEPTH ASSUMED

CAUTION  SECNO=     6.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=    41.700  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    41.700  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    41.700  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    41.800  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    41.800  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    41.800  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    42.600  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    43.810  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    43.810  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    43.810  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    47.910  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    47.910  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=    48.110  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    48.110  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    48.110  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    52.310  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    52.310  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    52.310  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    56.700  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    56.700  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    56.700  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    57.500  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    59.110  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    59.110  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    59.110  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    64.010  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    64.010  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    64.010  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    64.210  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    64.210  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    64.210  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    69.410  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    69.410  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    69.410  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

```
CAUTION  SECNO=    74.410  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    74.410  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    74.410  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    74.610  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    74.610  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    74.610  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    79.910  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    79.910  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    79.910  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    80.110  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    80.110  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    80.110  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

THIS RUN EXECUTED 06-30-87

```
**************************************************
  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
**************************************************
```

APPENDIX D

HYDRAULIC GRADE LINE CALCULATIONS

****
UPPER EAST FORK CAVE CREEK
UNION HILLS DRIVE--CAVE CREEK OUTLET
****

FROM: CENTRAL AVE. TO: 7TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY *	HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1399.60	1395.60	1399.60	1400.09
518.00	2650.00	2B12X4	46.00	5.63	0.00115	3.05	0.49	0.00120				
									1402.65	1398.78	1402.78	1403.15

****
UPPER EAST FORK CAVE CREEK
7TH STREET--GREENWAY CHANNEL OUTLET
****

FROM: GREENWAY CHANNEL TO: BELL ROAD

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1369.50	1362.00	1369.50	1371.89
548.00	1020.00	90	44.18	12.40	0.00434	4.43	2.39	0.00400				
									1373.93	1366.08	1373.58	1376.32

FROM: BELL ROAD TO: CAMPO BELLO

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1373.93	1366.58	1373.58	1376.32
440.00	1320.00	84	38.48	11.43	0.00404	5.34	2.03	0.00420				
									1379.26	1372.12	1379.12	1381.29

FROM: CAMPO BELLO TO: GROVERS AVE.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1379.26	1374.29	1379.12	1381.29
371.00	1320.00	E58X91	29.50	12.58	0.00614	8.11	2.46	0.00610				
									1387.37	1382.34	1387.18	1389.83

FROM: GROVERS AVE. TO: MICHIGAN ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1387.37	1382.76	1387.18	1389.83
284.00	1430.00	E53X83	24.80	11.45	0.00572	8.18	2.04	0.00570				
									1395.55	1390.91	1395.33	1397.59

****
UPPER EAST FORK CAVE CREEK
9TH STREET--GREENWAY CHANNEL OUTLET--CHANNEL TO DET. BASIN #5
****

FROM: GREENWAY CHANNEL TO: BELL RD.

DISCHARGE	LENGTH	* SIZE	* AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL	* INVERT	* SOFFIT	* EGL
									1377.80	1372.80	1378.80	1378.65
782.00	1200.00	2B9X6	52.88	7.39	0.00155	1.86	0.85	0.00045				
									1379.66	1373.34	1379.34	1380.51

FROM: BELL RD. TO: HELENA DR.

DISCHARGE	LENGTH	* SIZE	* AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL	* INVERT	* SOFFIT	* EGL
									1379.66	1375.34	1379.34	1380.51
610.00	1000.00	2B8X4	31.11	9.80	0.00404	4.04	1.49	0.00260				
									1383.70	1377.94	1381.94	1385.19

FROM: HELENA DR. TO: DETENTION BASIN

DISCHARGE	LENGTH	* SIZE	* AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL	* INVERT	* SOFFIT	* EGL
									1383.70	1377.94	1381.94	1385.19
610.00	400.00	2B6X4	23.32	13.08	0.00828	3.31	2.66	0.01100				
									1387.01	1382.34	1386.34	1389.67

****
UPPER EAST FORK CAVE CREEK
9TH STREET--GREENWAY CHANNEL OUTLET--GROVERS AVE. TO UNION HILLS DR.
****

FROM: DETENTION BASIN #5 TO: GROVERS AVE.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP *	HGL	* INVERT *	SOFFIT *	EGL *
									1387.80	1382.10	1386.10	1388.52
865.00	660.00	3B11X4	42.32	6.81	0.00173	1.14	0.72	0.00100				
									1388.94	1382.76	1386.76	1389.66

FROM: GROVERS AVE. TO: VILLA RITA DR.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP *	HGL	* INVERT *	SOFFIT *	EGL *
									1388.94	1382.76	1386.76	1389.66
619.00	1560.00	2B8X4	31.11	9.95	0.00416	6.49	1.54	0.00530				
									1395.43	1391.03	1395.03	1396.97

FROM: VILLA RITA DR. TO: DETENTION BASIN @ UNION HILLS DR.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP *	HGL	* INVERT *	SOFFIT *	EGL *
									1395.43	1391.03	1395.03	1396.97
619.00	400.00	B8X4	31.11	19.90	0.01664	6.66	6.16	0.01230				
									1402.09	1395.95	1399.95	1408.25

****
UPPER EAST FORK CAVE CREEK
BELL ROAD LATERAL I
****

FROM: 9TH ST. TO: 12TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1379.30	1373.30	1379.30	1381.21
313.00	2000.00	72	28.27	11.07	0.00465	9.31	1.91	0.00400				
									1388.61	1381.30	1387.30	1390.51

FROM: 12TH ST TO: 16TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1388.61	1381.30	1386.80	1390.51
313.00	1870.00	66	23.76	13.17	0.00740	13.84	2.70	0.00800				
									1402.45	1396.26	1401.76	1405.15

****
UPPER EAST FORK CAVE CREEK
CAMPO BELLO DRIVE--14TH STREET--GROVERS AVENUE LATERAL
****

FROM: 13TH ST. AND CAMPO BELLO TO: GROVERS AVE.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1398.40	1394.70	1398.70	1400.72
760.00	1320.00	2B8X4	31.11	12.21	0.00627	8.28	2.32	0.00500				
									1406.68	1401.30	1405.30	1409.00

FROM: GROVERS AVE. TO: 16TH STREET

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1406.68	1401.30	1405.30	1409.00
671.00	1320.00	2B7X4	27.11	12.38	0.00683	9.01	2.38	0.00520				
									1415.69	1408.16	1412.16	1418.07

****
UPPER EAST FORK CAVE CREEK
MORROW DRIVE LATERAL
****

FROM: 9TH ST TO: 12TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1407.70	1403.70	1407.70	1409.54
677.00	1350.00	2B8X4	31.11	10.88	0.00498	6.72	1.84	0.00300				
									1414.42	1407.75	1411.75	1416.26

FROM: 12TH ST TO: ROSEMONT DR

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1414.42	1407.75	1411.75	1416.26
677.00	350.00	2B8X4	31.11	10.88	0.00498	1.74	1.84	0.00300				
									1416.16	1408.80	1412.80	1418.00

FROM: ROSEMONT DR TO: 16TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1416.16	1408.80	1412.80	1418.00
481.00	2670.00	2B5X4	19.50	12.33	0.00814	21.73	2.36	0.01020				
									1437.89	1436.03	1440.03	1440.26

****
UPPER EAST FORK CAVE CREEK
BELL ROAD LATERAL II
****

FROM: EAST FORK CAVE CREEK TO: 22ND ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1417.30	1413.30	1417.30	1418.13
680.00	1120.00	3B8X4	31.11	7.29	0.00223	2.50	0.83	0.00010				
									1419.80	1413.41	1417.41	1420.62

FROM: 22ND ST. TO: CAVE CREEK RD.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1419.80	1413.41	1417.41	1420.62
510.00	1300.00	2B6X4	23.32	10.93	0.00579	7.53	1.86	0.00010				
									1427.33	1413.54	1417.54	1429.19

FROM: CAVE CREEK RD. TO: 26TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1427.33	1413.54	1417.54	1429.19
360.00	1340.00	2B5X4	19.50	9.23	0.00456	6.11	1.32	0.00560				
									1433.44	1421.05	1425.05	1434.76

FROM: 26TH ST. TO: 28TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1433.44	1421.05	1425.05	1434.76
301.00	1320.00	B7X4	27.11	11.10	0.00550	7.25	1.92	0.00680				
									1440.69	1430.02	1434.02	1442.61

****
UPPER EAST FORK CAVE CREEK
20TH ST LATERAL
****

FROM: EAST FORK CAVE CREEK TO: GROVERS AVE.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL *	INVERT	* SOFFIT	* EGL *
									1427.00	1422.00	1427.00	1428.12
167.00	900.00	60	19.63	8.51	0.00350	3.15	1.12	0.00100				
									1430.15	1422.90	1427.90	1431.28

FROM: GROVERS AVE. TO: MICHIGAN AVE.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL *	INVERT	* SOFFIT	* EGL *
									1430.15	1423.40	1427.90	1431.28
167.00	1200.00	54	15.90	10.50	0.00615	7.37	1.71	0.00700				
									1437.53	1431.80	1436.30	1439.24

FROM: MICHIGAN AVE. TO: UNION HILLS DR.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL *	INVERT	* SOFFIT	* EGL *
									1437.53	1431.80	1436.30	1439.24
167.00	1400.00	54	15.90	10.50	0.00615	8.60	1.71	0.01300				
									1446.13	1450.00	1454.50	1447.84

****
UPPER EAST FORK CAVE CREEK
GROVERS AVENUE LATERAL
****

FROM: DETENTION BASIN AT CAVE CREEK TO: 26TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1444.00	1437.60	1444.02	1445.32
483.00	1450.00	E77X121	52.40	9.22	0.00225	3.26	1.32	0.00100				
									1447.26	1439.05	1445.47	1448.58

FROM: 26TH ST. TO: 29TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1447.26	1440.22	1445.47	1448.58
282.00	2000.00	E63X98	34.60	8.15	0.00232	4.64	1.03	0.00200				
									1451.90	1444.22	1449.47	1452.93

****
UPPER EAST FORK CAVE CREEK
UTOPIA ROAD LATERAL
****

FROM: EAST FORK CAVE CREEK TO: 29TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1471.00	1467.00	1471.00	1473.08
532.00	1200.00	B12X4	46.00	11.57	0.00486	5.83	2.08	0.00390				
									1476.84	1471.68	1475.68	1478.91

FROM: 29TH ST TO: 30TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1476.84	1471.68	1475.68	1478.91
532.00	720.00	B12X4	46.00	11.57	0.00486	3.50	2.08	0.00630				
									1480.34	1476.22	1480.22	1482.42

FROM: 30TH ST TO: 31ST PL

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1480.34	1476.22	1480.22	1482.42
431.00	950.00	2B5X4	19.50	11.05	0.00653	6.21	1.90	0.00450				
									1486.54	1480.49	1484.49	1488.44

FROM: 31ST PL TO: 32ND ST WEST SIDE

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1486.54	1480.49	1484.49	1488.44
431.00	250.00	2B5X4	19.50	11.05	0.00653	1.63	1.90	0.01150				
									1488.18	1483.37	1487.37	1490.08

FROM: 32ND ST WEST SIDE TO: 32ND ST EAST SIDE

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1488.18	1483.37	1487.37	1490.08
431.00	250.00	2B5X4	19.50	11.05	0.00653	1.63	1.90	0.00320				
									1489.81	1484.17	1488.17	1491.71

****
UPPER EAST FORK CAVE CREEK
EAST AREA--GREENWAY CHANNEL OUTLET
****

FROM: PARADISE LANE TO: PHELPS RD.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL *	INVERT	* SOFFIT	* EGL *
									1432.00	1428.00	1432.00	1433.03
749.00	1700.00	2B12X4	46.00	8.14	0.00241	4.10	1.03	0.00100				
									1436.10	1429.70	1433.70	1437.13

FROM: PHELPS RD. TO: BELL RD.

DISCHARGE	LENGTH	* SIZE *	AREA	* VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD	* PIPE SLP	* HGL *	INVERT	* SOFFIT	* EGL *
									1436.10	1429.70	1433.70	1437.13
749.00	750.00	2B8X4	31.11	12.04	0.00609	4.57	2.25	0.00570				
									1440.67	1433.98	1437.98	1442.92

****
UPPER EAST FORK CAVE CREEK
EAST AREA--GREENWAY CHANNEL OUTLET & BELL ROAD LATERAL III
****

FROM: 29TH ST. TO: 32ND ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1441.10	1434.00	1438.00	1442.64
620.00	2000.00	2B8X4	31.11	9.96	0.00417	8.35	1.54	0.00500				
									1449.45	1444.00	1448.00	1450.99

FROM: 32ND ST. TO: 36TH ST.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1449.45	1444.00	1449.50	1450.99
187.00	2000.00	66	23.76	7.87	0.00264	5.28	0.96	0.00300				
									1454.73	1450.00	1455.50	1455.70

****
UPPER EAST FORK CAVE CREEK
EAST AREA--GREENWAY CHANNEL OUTLET
****

FROM: BELL RD. TO: ST. JOHN RD.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY *HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
								1450.00	1444.00	1450.00	1451.37
265.00	2400.00	72	28.27	9.37	0.00334	8.01	1.37	0.00370			
								1458.01	1452.88	1458.88	1459.37

FROM: ST. JOHN RD. TO: GROVERS AVE.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY *HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
								1458.01	1454.38	1458.88	1459.37
265.00	260.00	54	15.90	16.66	0.01547	4.02	4.32	0.01670			
								1462.03	1458.72	1463.22	1466.35

****
UPPER EAST FORK CAVE CREEK
PARADISE LANE LATERAL
****

FROM: 29TH STREET TO: 31ST ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1432.40	1428.00	1432.00	1433.45
378.00	1350.00	B12X4	46.00	8.22	0.00245	3.31	1.05	0.00150				
									1435.71	1430.03	1434.03	1436.76

FROM: 31ST ST TO: 32ND ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1435.71	1430.03	1434.03	1436.76
378.00	600.00	B12X4	46.00	8.22	0.00245	1.47	1.05	0.00570				
									1437.19	1433.45	1437.45	1438.24

FROM: 32ND ST TO: 33RD ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1437.19	1433.45	1437.45	1438.24
378.00	510.00	B12X4	46.00	8.22	0.00245	1.25	1.05	0.00200				
									1438.44	1434.47	1438.47	1439.49

****
UPPER EAST FORK CAVE CREEK
GREENWAY CHANNEL EXTENTION
****

FROM: DETENTION BASIN TO: 27TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1420.00	1414.00	1418.00	1421.09
771.00	1430.00	2B12X4	46.00	8.38	0.00255	3.65	1.09	0.00045				
									1423.65	1414.64	1418.64	1424.74

FROM: 27TH ST TO: 28TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1423.65	1414.64	1418.64	1424.74
508.00	750.00	2B11X4	42.32	6.00	0.00134	1.01	0.56	0.00045				
									1424.66	1414.98	1418.98	1425.22

FROM: 28TH ST TO: 29TH ST

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1424.66	1414.98	1418.98	1425.22
508.00	1050.00	2B11X4	42.32	6.00	0.00134	1.41	0.56	0.00550				
									1426.07	1420.76	1424.76	1426.63

****
UPPER EAST FORK CAVE CREEK
SOUTH AREA--GREENWAY CHANNEL OUTLET
****

FROM: WALTANN LN. TO: GREENWAY RD.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1418.00	1410.00	1418.00	1420.40
1953.00	1220.00	2B10X8	78.61	12.42	0.00330	4.02	2.40	0.00120				
									1422.02	1411.46	1419.46	1424.42

FROM: GREENWAY RD. TO: VISTA DR.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1422.02	1413.46	1419.46	1424.42
1503.00	1500.00	2B10X6	58.61	12.82	0.00440	6.60	2.56	0.00400				
									1428.62	1419.46	1425.46	1431.18

FROM: VISTA DR. TO: EVERETT DR.

DISCHARGE	LENGTH *	SIZE *	AREA *	VELOCITY	*HGL SLOPE*	HEADLOSS*	VEL.HEAD *	PIPE SLP *	HGL *	INVERT *	SOFFIT *	EGL *
									1428.62	1419.46	1425.46	1431.18
1173.00	1420.00	B12X6	70.00	16.76	0.00690	9.79	4.37	0.00670				
									1438.41	1429.98	1434.98	1442.78

APPENDIX E

MISCELLANEOUS CALCULATIONS

TR-20 RUNOFF VARIABLE CALC SHEETS

UPPER EAST FORK - CAVE CREEK ADMS WATERSHED CHARACTERISTICS PRESENT CONDITIONS

DRAINAGE AREA NO.	AREA [SQ. MI.]	RUNOFF CURVE NO.	TIME OF CONCENT. [HRS.]	To, OVERLAND FLOW					Tg, GUTTER FLOW			
				METHOD USED	REACH LENGTH [FT.]	PERCENT SLOPE, Y	VELOCITY [FPS]	To [HRS.]	REACH LENGTH [FT.]	PERCENT SLOPE, Y	VELOCITY [FPS]	Tg [HRS.]
1	0.148	95	0.30	U	4107	13.9	3.8	0.30	0	0	0	0.00
2	0.097	95	0.19	U	3107	19.8	4.5	0.19	0	0	0	0.00
3	0.047	77	0.36	U	1600	1.4	1.25	0.36				0.00
4	0.195	95	0.22	U	2770	11.4	3.5	0.22				0.00
5	0.125	77	0.56	U	2500	1.5	1.25	0.56				0.00
6	0.109	81	0.82	U	2400	0.67	0.81	0.82				0.00
7	0.117	77	0.69	U	2000	0.67	0.81	0.69				0.00
8	0.131	78	0.75	U	2200	0.67	0.81	0.75				0.00
9	0.198	77	0.93	U	3300	0.95	0.99	0.93				0.00
10	0.095	77	0.56	U	2000	0.95	0.99	0.56				0.00
11	0.234	77	0.84	U	3000	0.95	0.99	0.84				0.00
12	0.07	77	0.42	U	1500	0.95	0.99	0.42				0.00
13	0.125	82	0.61	U	1300	0.95	0.99	0.36	2000	0.45	2.3	0.24
14	0.177	83	0.39	G	0	0.67	0.83	0.00	3500	0.63	2.5	0.39
15	0.073	82	0.89	U	2700	0.68	0.84	0.89				0.00
16	0.119	86	0.54	U	1000	1.4	1.3	0.21	2500	0.4	2.1	0.33
17	0.059	95	0.09	U	1800	27.5	5.4	0.09				0.00
18	0.184	78	0.72	U	3900	2.3	1.5	0.72				0.00
19	0.022	95	0.14	U	1800	11.5	3.45	0.14				0.00
20	0.064	95	0.08	U	1650	29.6	5.5	0.08				0.00
21	0.189	83	0.58	U	4000	3.4	1.9	0.58				0.00
22	0.153	83	0.47	U	3800	4.8	2.25	0.47				0.00
23	0.091	95	0.23	U	3000	12.9	3.6	0.23				0.00
24	0.198	81	0.46	U	4000	5.5	2.4	0.46				0.00
25	0.089	83	0.43	U	2000	1.5	1.3	0.43				0.00
26	0.067	85	0.31	U	900	1.3	1.2	0.21	1100	1.1	3	0.10
27	0.188	80	1.20	U	3400	0.6	0.79	1.20				0.00
28	0.156	79	0.93	U	3000	0.8	0.9	0.93				0.00
29	0.25	78	1.03	U	3700	1	1	1.03				0.00
30	0.25	79	0.97	U	3500	1	1	0.97				0.00
31	0.084	77	0.58	U	2100	1	1	0.58				0.00
32	0.18	77	0.93	U	3000	0.8	0.9	0.93				0.00
33	0.234	77	1.14	U	3700	0.8	0.9	1.14				0.00
34	0.125	84	0.73	U	1000	0.6	0.79	0.35	3000	0.43	2.2	0.38
35	0.125	83	0.49	G	0	0.6	0.79	0.00	4000	0.5	2.25	0.49
36	0.125	83	0.48	G	0	0.6	0.79	0.00	3900	0.5	2.25	0.48
37	0.125	83	0.25	G	0	0.5	0.7	0.00	2000	0.5	2.25	0.25
38	0.125	79	0.44	U	500	1.1	1.1	0.13	2500	0.42	2.2	0.32
39	0.125	85	0.53	U	1000	1	1	0.28	2000	0.42	2.2	0.25
40	0.094	82	0.51	U	1200	1	1	0.33	1500	0.56	2.4	0.17
41	0.172	84	0.38	U	1400	5	2.25	0.17	2200	1	2.95	0.21
42	0.078	83	0.22	U	2000	6.1	2.5	0.22				0.00
43	0.047	86	0.08	U	1000	9.7	3.3	0.08				0.00
44	0.125	83	0.30	U	3000	7.2	2.75	0.30				0.00
45	0.125	86	0.51	U	1200	2	1.4	0.24	2800	0.87	2.85	0.27
46	0.125	82	0.29	G	0	1.5	1.25	0.00	3400	1.3	3.25	0.29
47	0.125	82	0.31	G	0	1.8	1.4	0.00	3800	1.5	3.4	0.31

48	0.125	79	0.60	U	2800	1.6	1.3	0.60				0.00
49	0.086	95	0.19	U	2700	15.5	4	0.19				0.00
50	0.134	77	0.57	U	3000	2	1.45	0.57				0.00
51	0.063	83	0.18	G	0	2	1.45	0.00	2150	1.3	3.25	0.18
52	0.063	79	0.56	U	1600	0.6	0.79	0.56				0.00
53	0.084	84	0.31	G	0	0.5	0.73	0.00	2500	0.5	2.25	0.31
54	0.061	79	0.23	G	0	0.7	0.85	0.00	2000	0.6	2.45	0.23
55	0.063	83	0.25	G	0	0.8	0.9	0.00	2200	0.6	2.45	0.25
56	0.063	82	0.25	G	0	1.5	1.25	0.00	2200	0.6	2.45	0.25
57	0.063	82	0.25	G	0	1.5	1.25	0.00	2200	0.6	2.45	0.25
58	0.063	84	0.25	G	0	0.7	0.85	0.00	2200	0.6	2.45	0.25
59	0.063	82	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
60	0.063	81	0.49	U	1600	0.8	0.9	0.49				0.00
61	0.102	83	0.25	G	0	0.9	0.95	0.00	2500	0.9	2.8	0.25
62	0.13	79	0.88	U	3000	0.9	0.95	0.88				0.00
63	0.141	84	0.34	G	0	0.6	0.79	0.00	3000	0.6	2.45	0.34
64	0.25	82	0.33	G	0	0.7	0.85	0.00	3000	0.67	2.5	0.33
65	0.063	77	0.49	U	1600	0.8	0.9	0.49				0.00
66	0.063	83	0.46	U	1200	0.7	0.85	0.39	600	0.6	2.45	0.07
67	0.063	88	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
68	0.063	85	0.25	G	0	0.5	0.7	0.00	2200	0.6	2.45	0.25
69	0.063	81	0.62	U	1400	0.5	0.7	0.56	500	0.4	2.15	0.06
70	0.063	86	0.25	G	0	0.6	0.8	0.00	2200	0.6	2.45	0.25
71	0.125	85	0.49	G	0	0.4	0.7	0.00	3800	0.4	2.15	0.49
72	0.125	83	0.49	G	0	0.6	0.79	0.00	3800	0.4	2.15	0.49
73	0.197	80	0.79	U	1400	0.6	0.79	0.49	2500	0.55	2.3	0.30
74	0.063	90	0.24	G	0	0.6	0.79	0.00	2200	0.67	2.5	0.24
75	0.063	95	0.52	U	1600	0.7	0.85	0.52				0.00
76	0.063	86	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
77	0.063	77	0.38	U	1700	1.4	1.25	0.38				0.00
78	0.063	86	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
79	0.063	88	0.25	G	0	0.8	0.9	0.00	2200	0.6	2.45	0.25
80	0.063	83	0.45	U	1300	1	1	0.36	700	0.5	2.25	0.09
81	0.063	77	0.52	U	1600	0.7	0.85	0.52				0.00
82	0.063	84	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
83	0.063	81	0.52	U	1600	0.7	0.85	0.52				0.00
84	0.063	78	0.52	U	1600	0.7	0.85	0.52				0.00
85	0.063	80	0.52	U	1600	0.7	0.85	0.52				0.00
86	0.063	86	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
87	0.063	83	0.52	U	1600	0.7	0.85	0.52				0.00
88	0.094	87	0.75	U	2300	0.7	0.85	0.75				0.00
89	0.047	84	0.39	G	0	0.7	0.85	0.00	2500	0.33	1.8	0.39
90	0.109	85	0.63	U	1000	0.7	0.85	0.33	2600	0.55	2.4	0.30
91	0.125	86	0.47	G	0	0.7	0.85	0.00	3800	0.5	2.25	0.47
92	0.125	86	0.47	G	0	0.7	0.85	0.00	3800	0.5	2.25	0.47
93	0.195	84	0.45	G	0	0.7	0.85	0.00	4000	0.6	2.45	0.45
94	0.139	84	0.34	G	0	0.7	0.85	0.00	3000	0.6	2.45	0.34
95	0.125	86	0.98	U	3000	0.7	0.85	0.98				0.00
96	0.125	82	0.51	G	0	0.5	0.7	0.00	3500	0.3	1.9	0.51
97	0.188	87	0.53	G	0	0.7	0.85	0.00	4300	0.5	2.25	0.53
98	0.094	86	0.37	G	0	0.6	0.79	0.00	2800	0.4	2.1	0.37
99	0.094	86	0.49	G	0	0.7	0.85	0.00	3700	0.4	2.1	0.49
100	0.078	86	0.39	G	0	0.4	0.7	0.00	2700	0.3	1.9	0.39
101	0.047	89	0.52	U	1600	0.7	0.85	0.52				0.00
102	0.063	82	0.63	U	1600	0.5	0.7	0.63				0.00
103	0.081	84	0.26	G	0	0.4	0.7	0.00	2000	0.4	2.1	0.26

104	0.069	78	0.67	U	1900	0.6	0.79	0.67				0.00
105	0.063	78	0.63	U	1800	0.6	0.79	0.63				0.00
106	0.063	79	0.56	U	1700	0.7	0.85	0.56				0.00
107	0.059	82	0.42	U	1300	0.7	0.85	0.42				0.00
108	0.025	79	0.28	U	800	0.6	0.79	0.28				0.00
109	0.063	84	0.29	G	0	0.5	0.7	0.00	2200	0.4	2.1	0.29
110	0.073	78	0.56	U	1700	0.7	0.85	0.56				0.00
111	0.07	77	0.56	U	1700	0.7	0.85	0.56				0.00
112	0.061	77	0.46	U	1300	0.6	0.79	0.46				0.00
113	0.053	86	0.52	U	1300	0.5	0.7	0.52				0.00
114	0.128	77	1.19	U	3000	0.5	0.7	1.19				0.00
115	0.094	82	0.45	U	800	0.5	0.7	0.32	1200	0.7	2.55	0.13
116	0.094	79	0.77	U	2200	0.6	0.79	0.77				0.00
117	0.313	77	2.38	U	6000	0.5	0.7	2.38				0.00
118	0.231	81	1.59	U	4000	0.5	0.7	1.59				0.00
119	0.231	81	1.05	U	3000	0.6	0.79	1.05				0.00
120	0.231	87	0.30	G	0	9.4	3.2	0.00	3700	1.6	3.4	0.30
121	0.25	95	0.17	U	800	28.8	5.5	0.04	2300	4	5	0.13
122	0.355	85	0.29	U	2000	21	4.5	0.12	2400	2	3.9	0.17
123	0.213	95	0.25	U	1800	22.2	4.75	0.11	2400	3.3	4.5	0.15
124	0.219	84	0.25	G	0	0.7	0.85	0.00	3000	1.3	3.3	0.25
125	0.117	95	0.13	U	800	40	6.5	0.03	2000	7	6.1	0.09
126	0.158	95	0.28	U	4575	19.2	4.5	0.28				0.00
127	0.159	82	0.21	G	0	4.3	2.2	0.00	3800	4.3	5.1	0.21
128	0.036	80	0.13	U	1400	7.7	2.9	0.13				0.00
129	0.108	82	0.12	G	0	6.5	2.6	0.00	2500	6.5	6	0.12
130	0.031	91	0.07	G	0	2	1.4	0.00	1000	2	3.9	0.07
131	0.119	86	0.27	G	0	1.7	1.3	0.00	3500	1.7	3.6	0.27
132	0.145	88	0.27	U	2200	5.3	2.3	0.27				0.00
133	0.08	95	0.13	U	2300	21.4	4.8	0.13				0.00
134	0.197	85	0.31	G	0	1.8	1.4	0.00	4000	1.8	3.6	0.31
135	0.042	95	0.07	U	1300	24.9	5	0.07				0.00
136	0.066	95	0.15	U	1900	12.5	3.5	0.15				0.00
137	0.078	79	0.49	U	3700	4.1	2.1	0.49				0.00
138	0.203	84	0.24	G	0	3.2	1.8	0.00	4000	3.2	4.55	0.24
139	0.188	87	0.43	G	0	0.5	0.7	0.00	3500	0.5	2.25	0.43
140	0.125	86	0.44	G	0	0.5	0.7	0.00	3600	0.5	2.25	0.44
141	0.188	87	0.53	G	0	0.5	0.7	0.00	4300	0.5	2.25	0.53
142	0.25	83	1.39	U	3500	0.5	0.7	1.39				0.00
TOTAL	16.46											

UPPER EAST FORK - CAVE CREEK ADMS WATERSHED CHARACTERISTICS FUTURE CONDITIONS

DRAINAGE AREA NO.	AREA [SQ. MI.]	RUNOFF CURVE NO.	TIME OF CONCENT. [HRS.]	To, OVERLAND FLOW					Tg, GUTTER FLOW			
				METHOD USED	REACH LENGTH [FT.]	PERCENT SLOPE, Y	VELOCITY [FPS]	To [HRS.]	REACH LENGTH [FT.]	PERCENT SLOPE, Y	VELOCITY [FPS]	Tg [HRS.]
1	0.148	95	0.30	U	4107	13.9	3.8	0.30	0	0	0	0.00
2	0.097	95	0.19	U	3107	19.8	4.5	0.19	0	0	0	0.00
3	0.047	77	0.36	U	1600	1.4	1.25	0.36				0.00
4	0.195	95	0.22	U	2770	11.4	3.5	0.22				0.00
5	0.125	82	0.56	U	2500	1.5	1.25	0.56				0.00
6	0.109	83	0.82	U	2400	0.67	0.81	0.82				0.00
7	0.117	79	0.69	U	2000	0.67	0.81	0.69				0.00
8	0.131	78	0.75	U	2200	0.67	0.81	0.75				0.00
9	0.198	79	0.93	U	3300	0.95	0.99	0.93				0.00
10	0.095	77	0.56	U	2000	0.95	0.99	0.56				0.00
11	0.234	79	0.84	U	3000	0.95	0.99	0.84				0.00
12	0.07	82	0.42	U	1500	0.95	0.99	0.42				0.00
13	0.125	82	0.61	U	1300	0.95	0.99	0.36	2000	0.45	2.3	0.24
14	0.177	83	0.39	G	0	0.67	0.83	0.00	3500	0.63	2.5	0.39
15	0.073	82	0.89	U	2700	0.68	0.84	0.89				0.00
16	0.119	86	0.54	U	1000	1.4	1.3	0.21	2500	0.4	2.1	0.33
17	0.059	95	0.17	U	1800	27.5	5.4	0.09				0.00
18	0.184	84	0.72	U	3900	2.3	1.5	0.72				0.00
19	0.022	95	0.17	U	1800	11.5	3.45	0.14				0.00
20	0.064	95	0.17	U	1650	29.6	5.5	0.08				0.00
21	0.189	87	0.58	U	4000	3.4	1.9	0.58				0.00
22	0.153	87	0.47	U	3800	4.8	2.25	0.47				0.00
23	0.091	95	0.23	U	3000	12.9	3.6	0.23				0.00
24	0.198	86	0.46	U	4000	5.5	2.4	0.46				0.00
25	0.089	83	0.43	U	2000	1.5	1.3	0.43				0.00
26	0.067	85	0.31	U	900	1.3	1.2	0.21	1100	1.1	3	0.10
27	0.188	82	1.20	U	3400	0.6	0.79	1.20				0.00
28	0.156	82	0.93	U	3000	0.8	0.9	0.93				0.00
29	0.25	81	1.03	U	3700	1	1	1.03				0.00
30	0.25	79	0.97	U	3500	1	1	0.97				0.00
31	0.084	83	0.58	U	2100	1	1	0.58				0.00
32	0.18	80	0.93	U	3000	0.8	0.9	0.93				0.00
33	0.234	80	1.14	U	3700	0.8	0.9	1.14				0.00
34	0.125	84	0.73	U	1000	0.6	0.79	0.35	3000	0.43	2.2	0.38
35	0.125	83	0.49	G	0	0.6	0.79	0.00	4000	0.5	2.25	0.49
36	0.125	83	0.48	G	0	0.6	0.79	0.00	3900	0.5	2.25	0.48
37	0.125	83	0.25	G	0	0.5	0.7	0.00	2000	0.5	2.25	0.25
38	0.125	85	0.44	U	500	1.1	1.1	0.13	2500	0.42	2.2	0.32
39	0.125	85	0.53	U	1000	1	1	0.28	2000	0.42	2.2	0.25
40	0.094	82	0.51	U	1200	1	1	0.33	1500	0.56	2.4	0.17
41	0.172	84	0.38	U	1400	5	2.25	0.17	2200	1	2.95	0.21
42	0.078	87	0.22	U	2000	6.1	2.5	0.22				0.00
43	0.047	90	0.17	U	1000	9.7	3.3	0.08				0.00
44	0.125	87	0.30	U	3000	7.2	2.75	0.30				0.00
45	0.125	90	0.51	U	1200	2	1.4	0.24	2800	0.87	2.85	0.27
46	0.125	82	0.29	G	0	1.5	1.25	0.00	3400	1.3	3.25	0.29
47	0.125	82	0.31	G	0	1.8	1.4	0.00	3800	1.5	3.4	0.31

48	0.125	82	0.60	U	2800	1.6	1.3	0.60				0.00
49	0.086	95	0.19	U	2700	15.5	.4	0.19				0.00
50	0.134	77	0.57	U	3000	2	1.45	0.57				0.00
51	0.063	83	0.18	G	0	2	1.45	0.00	2150	1.3	3.25	0.18
52	0.063	81	0.56	U	1600	0.6	0.79	0.56				0.00
53	0.084	84	0.31	G	0	0.5	0.73	0.00	2500	0.5	2.25	0.31
54	0.061	83	0.23	G	0	0.7	0.85	0.00	2000	0.6	2.45	0.23
55	0.063	83	0.25	G	0	0.8	0.9	0.00	2200	0.6	2.45	0.25
56	0.063	82	0.25	G	0	1.5	1.25	0.00	2200	0.6	2.45	0.25
57	0.063	82	0.25	G	0	1.5	1.25	0.00	2200	0.6	2.45	0.25
58	0.063	84	0.25	G	0	0.7	0.85	0.00	2200	0.6	2.45	0.25
59	0.063	82	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
60	0.063	81	0.49	U	1600	0.8	0.9	0.49				0.00
61	0.102	83	0.25	G	0	0.9	0.95	0.00	2500	0.9	2.8	0.25
62	0.13	82	0.88	U	3000	0.9	0.95	0.88				0.00
63	0.141	84	0.34	G	0	0.6	0.79	0.00	3000	0.6	2.45	0.34
64	0.25	82	0.33	G	0	0.7	0.85	0.00	3000	0.67	2.5	0.33
65	0.063	82	0.49	U	1600	0.8	0.9	0.49				0.00
66	0.063	84	0.46	U	1200	0.7	0.85	0.39	600	0.6	2.45	0.07
67	0.063	88	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
68	0.063	85	0.25	G	0	0.5	0.7	0.00	2200	0.6	2.45	0.25
69	0.063	81	0.62	U	1400	0.5	0.7	0.56	500	0.4	2.15	0.06
70	0.063	86	0.25	G	0	0.6	0.8	0.00	2200	0.6	2.45	0.25
71	0.125	83	0.49	G	0	0.4	0.7	0.00	3800	0.4	2.15	0.49
72	0.125	83	0.49	G	0	0.6	0.79	0.00	3800	0.4	2.15	0.49
73	0.197	84	0.79	U	1400	0.6	0.79	0.49	2500	0.55	2.3	0.30
74	0.063	90	0.24	G	0	0.6	0.79	0.00	2200	0.67	2.5	0.24
75	0.063	95	0.52	U	1600	0.7	0.85	0.52				0.00
76	0.063	86	0.25	G	0	1	1	0.00	2200	0.6	2.45	0.25
77	0.063	86	0.38	U	1700	1.4	1.25	0.38				0.00
78	0.063	86	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
79	0.063	88	0.25	G	0	0.8	0.9	0.00	2200	0.6	2.45	0.25
80	0.063	82	0.45	U	1300	1	1	0.36	700	0.5	2.25	0.09
81	0.063	84	0.52	U	1600	0.7	0.85	0.52				0.00
82	0.063	84	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
83	0.063	85	0.52	U	1600	0.7	0.85	0.52				0.00
84	0.063	84	0.52	U	1600	0.7	0.85	0.52				0.00
85	0.063	84	0.52	U	1600	0.7	0.85	0.52				0.00
86	0.063	86	0.27	G	0	0.7	0.85	0.00	2200	0.5	2.25	0.27
87	0.063	87	0.52	U	1600	0.7	0.85	0.52				0.00
88	0.094	87	0.75	U	2300	0.7	0.85	0.75				0.00
89	0.047	84	0.39	G	0	0.7	0.85	0.00	2500	0.33	1.8	0.39
90	0.109	85	0.63	U	1000	0.7	0.85	0.33	2600	0.55	2.4	0.30
91	0.125	86	0.47	G	0	0.7	0.85	0.00	3800	0.5	2.25	0.47
92	0.125	86	0.47	G	0	0.7	0.85	0.00	3800	0.5	2.25	0.47
93	0.195	84	0.45	G	0	0.7	0.85	0.00	4000	0.6	2.45	0.45
94	0.139	84	0.34	G	0	0.7	0.85	0.00	3000	0.6	2.45	0.34
95	0.125	86	0.98	U	3000	0.7	0.85	0.98				0.00
96	0.125	82	0.51	G	0	0.5	0.7	0.00	3500	0.3	1.9	0.51
97	0.188	87	0.53	G	0	0.7	0.85	0.00	4300	0.5	2.25	0.53
98	0.094	86	0.37	G	0	0.6	0.79	0.00	2800	0.4	2.1	0.37
99	0.094	86	0.49	G	0	0.7	0.85	0.00	3700	0.4	2.1	0.49
100	0.078	86	0.39	G	0	0.4	0.7	0.00	2700	0.3	1.9	0.39
101	0.047	89	0.52	U	1600	0.7	0.85	0.52				0.00
102	0.063	82	0.63	U	1600	0.5	0.7	0.63				0.00
103	0.081	84	0.26	G	0	0.4	0.7	0.00	2000	0.4	2.1	0.26

104	0.069	78	0.67	U	1900	0.6	0.79	0.67				0.00
105	0.063	78	0.63	U	1800	0.6	0.79	0.63				0.00
106	0.063	79	0.56	U	1700	0.7	0.85	0.56				0.00
107	0.059	82	0.42	U	1300	0.7	0.85	0.42				0.00
108	0.025	83	0.28	U	800	0.6	0.79	0.28				0.00
109	0.063	84	0.29	G	0	0.5	0.7	0.00	2200	0.4	2.1	0.29
110	0.073	78	0.56	U	1700	0.7	0.85	0.56				0.00
111	0.07	77	0.56	U	1700	0.7	0.85	0.56				0.00
112	0.061	77	0.46	U	1300	0.6	0.79	0.46				0.00
113	0.053	91	0.52	U	1300	0.5	0.7	0.52				0.00
114	0.128	85	1.19	U	3000	0.5	0.7	1.19				0.00
115	0.094	82	0.45	U	800	0.5	0.7	0.32	1200	0.7	2.55	0.13
116	0.094	79	0.77	U	2200	0.6	0.79	0.77				0.00
117	0.313	80	2.38	U	6000	0.5	0.7	2.38				0.00
118	0.231	81	1.59	U	4000	0.5	0.7	1.59				0.00
119	0.231	84	1.05	U	3000	0.6	0.79	1.05				0.00
120	0.231	87	0.30	G	0	9.4	3.2	0.00	3700	1.6	3.4	0.30
121	0.25	95	0.17	U	800	28.8	5.5	0.04	2300	4	5	0.13
122	0.355	85	0.29	U	2000	21	4.5	0.12	2400	2	3.9	0.17
123	0.213	95	0.25	U	1800	22.2	4.75	0.11	2400	3.3	4.5	0.15
124	0.219	84	0.25	G	0	0.7	0.85	0.00	3000	1.3	3.3	0.25
125	0.117	83	0.17	U	800	40	6.5	0.03	2000	7	6.1	0.09
126	0.158	95	0.28	U	4575	19.2	4.5	0.28				0.00
127	0.159	82	0.21	G	0	4.3	2.2	0.00	3800	4.3	5.1	0.21
128	0.036	80	0.17	U	1400	7.7	2.9	0.13				0.00
129	0.108	82	0.17	G	0	6.5	2.6	0.00	2500	6.5	6	0.12
130	0.031	91	0.17	G	0	2	1.4	0.00	1000	2	3.9	0.07
131	0.119	86	0.27	G	0	1.7	1.3	0.00	3500	1.7	3.6	0.27
132	0.145	89	0.27	U	2200	5.3	2.3	0.27				0.00
133	0.08	95	0.17	U	2300	21.4	4.8	0.13				0.00
134	0.197	85	0.31	G	0	1.8	1.4	0.00	4000	1.8	3.6	0.31
135	0.042	95	0.17	U	1300	24.9	5	0.07				0.00
136	0.066	95	0.17	U	1900	12.5	3.5	0.15				0.00
137	0.078	80	0.49	U	3700	4.1	2.1	0.49				0.00
138	0.203	84	0.24	G	0	3.2	1.8	0.00	4000	3.2	4.55	0.24
139	0.188	87	0.43	G	0	0.5	0.7	0.00	3500	0.5	2.25	0.43
140	0.125	86	0.44	G	0	0.5	0.7	0.00	3600	0.5	2.25	0.44
141	0.188	87	0.53	G	0	0.5	0.7	0.00	4300	0.5	2.25	0.53
142	0.25	83	1.39	U	3500	0.5	0.7	1.39				0.00
TOTAL	16.46											

TR-20 ROUTING
X & M VALUES

CAVE CREEK ADMS - COMPUTATION OF M AND X FOR Q=XA^M

DRAINAGE AREA NO.	SLOPE [FT/FT]	ROUGHNESS n	BOTT. WID. B [FT.]	X	D [FT.]	B [FT.]	Z	M
3	0.014	0.1	250	0.04	0.6	250	10	1.66
4	0.02	0.1	250	0.05	0.6	250	10	1.66
5	0.015	0.1	250	0.05	0.6	250	10	1.66
6	0.0067	0.1	250	0.03	0.6	250	10	1.66
8	0.01	0.1	250	0.04	0.6	250	10	1.66
11	0.0065	0.018	60	0.44	1.5	60	33.3	1.54
14	0.005	0.035	6	0.91	3.5	6	0.75	1.49
15	0.01	0.018	60	0.54	1.5	60	33.3	1.54
25	0.015	0.1	250	0.05	0.6	250	10	1.66
27	0.003	0.018	60	0.30	0.5	60	0.1	1.66
28	0.008	0.1	250	0.03	0.6	250	10	1.66
29	0.01	0.1	250	0.04	0.6	250	10	1.66
29	0.0048	0.018	60	0.37	1.5	60	33.3	1.54
32	0.008	0.1	250	0.03	0.6	250	10	1.66
33	0.005	0.018	60	0.38	1.5	60	33.3	1.54
35	0.0034	0.018	60	0.31	1.5	60	33.3	1.54
36	0.0034	0.035	250	0.06	0.6	250	10	1.66
37	0.005	0.035	30	0.31	4	30	3.75	1.58
37	0.0057	0.018	60	0.41	1.5	60	33.3	1.54
40	0.0056	0.035	250	0.08	0.6	250	10	1.66
41	0.05	0.035	250	0.24	0.6	250	10	1.66
45	0.02	0.1	250	0.05	0.6	250	10	1.66
46	0.009	0.018	60	0.51	1.5	60	33.3	1.54
48	0.013	0.1	250	0.04	0.6	250	10	1.66
48	0.013	0.018	60	0.62	1.5	60	33.3	1.54
49	0.013	0.018	60	0.62	1.5	60	33.3	1.54
52	0.007	0.1	250	0.03	0.6	250	10	1.66
53	0.007	0.035	250	0.09	0.6	250	10	1.66
55	0.007	0.035	250	0.09	0.6	250	10	1.66
56	0.013	0.035	250	0.12	0.6	250	10	1.66
57	0.005	0.035	60	0.20	1.5	60	33.3	1.54
59	0.01	0.035	250	0.11	0.6	250	10	1.66
60	0.008	0.035	60	0.25	1.5	60	33.3	1.54
61	0.01	0.035	250	0.11	0.6	250	10	1.66
62				ERR		0		ERR
63				ERR		0		ERR
65	0.01	0.035	60	0.28	1.5	60	33.3	1.54
66	0.01	0.035	250	0.11	0.6	250	10	1.66
67	0.008	0.035	60	0.25	1.5	60	33.3	1.54
68	0.008	0.035	60	0.25	1.5	60	33.3	1.54
69	0.005	0.035	60	0.20	1.5	60	33.3	1.54
70	0.004	0.035	60	0.18	1.5	60	33.3	1.54
72	0.004	0.035	60	0.18	1.5	60	33.3	1.54
73				ERR		0		ERR
74	0.007	0.035	250	0.09	0.6	250	10	1.66
75	0.007	0.035	60	0.23	1.5	60	33.3	1.54
76	0.007	0.035	60	0.23	1.5	60	33.3	1.54
77	0.007	0.035	60	0.23	1.5	60	33.3	1.54
78	0.007	0.035	60	0.23	1.5	60	33.3	1.54
78	0.007	0.035	250	0.09	0.6	250	10	1.66
79	0.007	0.035	60	0.23	1.5	60	33.3	1.54

80	0.005	0.035	60	0.20	1.5	60	33.3	1.54
81	0.006	0.035	60	0.22	1.5	60	33.3	1.54
82	0.008	0.035	250	0.10	0.6	250	10	1.66
83				ERR		0		ERR
85				ERR		0		ERR
86				ERR		0		ERR
87				ERR		0		ERR
88	0.006	0.035	60	0.22	1.5	60	33.3	1.54
90	0.006	0.035	60	0.22	1.5	60	33.3	1.54
91	0.006	0.035	60	0.22	1.5	60	33.3	1.54
92	0.006	0.035	250	0.08	0.6	250	10	1.66
94	0.007	0.035	250	0.09	0.6	250	10	1.66
95	0.007	0.035	250	0.09	0.6	250	10	1.66
97	0.006	0.035	250	0.08	0.6	250	10	.1.66
98	0.006	0.035	250	0.08	0.6	250	10	1.66
99	0.006	0.035	250	0.08	0.6	250	10	1.66
101	0.006	0.035	60	0.22	1.5	60	33.3	1.54
102	0.003	0.1	250	0.02	0.6	250	10	1.66
105	0.003	0.035	250	0.06	0.6	250	10	1.66
107	0.006	0.035	250	0.08	0.6	250	10	1.66
109	0.005	0.035	250	0.08	0.6	250	10	1.66
113	0.005	0.035	250	0.08	0.6	250	10	1.66
114	0.0025	0.035	250	0.05	0.6	250	10	1.66
116				ERR		0		ERR
117				ERR		0		ERR
118	0.0025	0.035	250	0.05	0.6	250	10	1.66
124	0.007	0.035	250	0.09	0.6	250	10	1.66
126	0.01	0.035	250	0.11	0.6	250	10	1.66
127	0.006	0.035	250	0.08	0.6	250	10	1.66
131	0.025	0.035	250	0.17	0.6	250	10	1.66
134	0.015	0.035	250	0.13	0.6	250	10	1.66
138	0.024	0.035	250	0.17	0.6	250	10	1.66
139	0.002	0.035	250	0.05	0.6	250	10	1.66
140	0.005	0.035	250	0.08	0.6	250	10	1.66
141	0.005	0.035	250	0.08	0.6	250	10	1.66
143	0.007	0.035	250	0.09	0.6	250	10	1.66
	0.001	0.035	200	0.04	8	200	6	1.63
112	0.001	0.035	180	0.04	10	180	4	1.63
111	0.0055	0.014	20	1.07	11	20	2	1.53
107	0.0035	0.014	20	0.85	11	20	2	1.53
103,108	0.003	0.014	15	0.96	11	15	2	1.51
104,110								

*** M AND X FOR CIRCULAR PIPES ***

DRAINAGE AREA NO.	SLOPE [FT/FT]	ROUGHNESS n	DIAM. D [IN.]	X
13	0.0053	0.012	84	6.75
14	0.0053	0.012	90	6.82
29	0.0043	0.012	78	6.00
N-S 33	0.0066	0.012	84	7.53
E-W 33	0.0039	0.012	72	5.64
N-S 93	0.0037	0.012	72	5.49
E-W 93	0.003	0.012	66	4.88

91	0.005	0.012	90	6.63	M = 1.25 FOR ALL PIPES
N-S 90	0.005	0.012	90	6.63	
E-W 90	0.0061	0.012	72	7.05	
39	0.0096	0.012	54	8.44	
140	0.0012	0.012	90	3.25	
139	0.0012	0.012	84	3.21	
42	0.0054	0.012	90	6.89	
78	0.0025	0.012	90	4.69	
46	0.0105	0.012	78	9.38	
57	0.0048	0.012	90	6.49	
68	0.0057	0.012	66	6.72	
70	0.0061	0.012	72	7.05	
74	0.0042	0.012	84	6.01	
75	0.004	0.012	72	5.71	
76	0.008	0.012	66	7.96	
113	0.004	0.012	90	5.93	
62	0.002	0.012	90	4.19	
97	0.002	0.012	90	4.19	
36	0.0024	0.012	78	4.48	
37	0.0024	0.012	96	4.64	

DRAINAGE AREA NO.	SLOPE [FT/FT]	ROUGHNESS n	BOTT. WID. B [FT.]	X	D [FT.]	B [FT.]	Z	M
39	0.0004	0.03	150	0.04	4	150	6	1.64
85	0.0004	0.03	150	0.04	4	150	6	1.64
84	0.0004	0.03	150	0.04	4	150	6	1.64
105	0.00045	0.03	150	0.04	4	150	6	1.64
104	0.00045	0.03	150	0.04	4	150	6	1.64
98 & 99	0.0035	0.015	20	0.80	4	20	2	1.58
57	0.0032	0.015	20	0.76	4	20	2	1.58
59	0.003	0.015	20	0.74	4	20	2	1.58
77	0.0032	0.015	20	0.76	4	20	2	1.58
E-W 33	0.003	0.03	20	0.37	4	20	6	1.51
N-S 33	0.0015	0.03	28	0.21	4	28	6	1.54
E-W 62	0.0012	0.03	100	0.08	4	100	6	1.62
124	0.0015	0.015	30	0.40	8	30	1	1.60
14	0.00045	0.03	15	0.17	5	15	6	1.47
27	0.0004	0.03	120	0.04	4	120	6	1.63
		*** BOXES ***					*** BOXES ***	
88	0.0056	0.012	10	2.00				
87	0.006	0.012	12	1.83				
84	0.006	0.012	24	1.16				
92	0.005	0.012	16	1.38				
97	0.0025	0.012	22	0.79				
66	0.0123	0.012	8	3.44				M = 1.67 FOR ALL BOXES
67	0.0053	0.012	16	1.42				
69	0.001	0.012	33	0.38				
112	0.00045	0.012	18	0.38				
126	0.0067	0.012	12	1.94				
134	0.004	0.012	20	1.07				
124	0.0045	0.012	20	1.13				
75	0.005	0.012	16	1.38				
131	0.0108	0.012	4	5.12				
97	0.0026	0.012	12	1.21				

14	0.0048	0.012	12	1.64
13	0.0055	0.012	10	1.98
78	0.005	0.012	16	1.38
42	0.0052	0.012	14	1.54
90	0.0068	0.012	7	2.80
140	0.00045	0.012	24	0.32
139	0.0038	0.012	22	0.97
46	0.01	0.012	8	3.10
57	0.0076	0.012	14	1.86
61	0.0012	0.012	24	0.52

TR-20 DETENTION BASIN CALCS

BASIN 069

SIDESLOPE	0.17		
MAXIMUM DEPTH	12	FT	
NUMBER OF CULVERTS	5		
CULVERT DIAMETER	48	IN	4 FT
CULVERT AREA	12.57	FT2	
ENTRANCE LOSS COEFFIC	0.64		
LENGTH	1180	FT	
WIDTH	800	FT	
AREA	21.67	ACRES	
MANNING'S n	0.015		
SLOPE	0.003		
dT	0.16	HRS	576 SEC

MAX DISCHARGE	612	CFS
MAX DEPTH	5.6	FT
AREA AT MAX DEPTH	24.83	ACRES

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	21.67	0	0.00	0.00	0.00	0.0
0.2	21.78	189276	0.05	658.84	1.63	0.2
0.4	21.89	379504	0.10	1324.84	7.12	0.4
0.6	22.00	570688	0.15	1998.12	16.56	0.6
0.8	22.11	762829	0.20	2678.60	29.89	0.8
1.0	22.22	955929	0.25	3365.87	46.67	1.0
1.2	22.33	1149991	0.30	4059.79	66.76	1.2
1.4	22.44	1345018	0.35	4759.86	89.66	1.4
1.6	22.55	1541011	0.40	5465.64	114.90	1.6
1.8	22.66	1737973	0.45	6176.62	141.99	1.8
2.0	22.78	1935906	0.50	6892.67	170.77	2.0
2.2	22.89	2134812	0.55	7612.02	199.48	2.2
2.4	23.00	2334695	0.60	8335.50	228.92	2.4
2.6	23.11	2535555	0.65	9063.11	259.10	2.6
2.8	23.22	2737396	0.70	9790.45	285.60	2.8
3.0	23.34	2940219	0.75	10519.72	310.63	3.0
3.2	23.45	3144027	0.80	11250.21	333.45	3.2
3.4	23.56	3348823	0.85	11978.97	351.12	3.4
3.6	23.68	3554608	0.90	12706.02	363.63	3.6
3.8	23.79	3761385	0.95	13426.94	366.57	3.8
4.0	23.91	3969156	1.00	14122.60	340.81	4.0
4.2	24.02	4177923	1.05	14985.32	478.65	4.2
4.4	24.14	4387690	1.10	15734.96	499.93	4.4
4.6	24.25	4598457	1.15	16487.21	520.34	4.6
4.8	24.37	4810228	1.20	17242.17	539.98	4.8
5.0	24.48	5023005	1.25	17999.93	558.94	5.0
5.2	24.60	5236789	1.30	18760.56	577.27	5.2
5.4	24.71	5451584	1.35	19524.15	595.03	5.4
5.6	24.83	5667392	1.40	20290.73	612.29	5.6
5.8	24.95	5884214	1.45	21060.36	629.06	5.8
6.0	25.06	6102054	1.50	21833.09	645.41	6.0
6.2	25.18	6320913	1.55	22608.96	661.34	6.2
6.4	25.30	6540794	1.60	23388.00	676.91	6.4
6.6	25.42	6761699	1.65	24170.24	692.12	6.6

6.8	25.53	6983630	1.70	24955.72	707.01	6.8
7.0	25.65	7206591	1.75	25744.47	721.58	7.0
7.2	25.77	7430582	1.80	26536.51	735.88	7.2
7.4	25.89	7655607	1.85	27331.86	749.89	7.4
7.6	26.01	7881667	1.90	28130.55	763.65	7.6
7.8	26.13	8108765	1.95	28932.61	777.17	7.8
8.0	26.25	8336904	2.00	29738.04	790.46	8.0
8.2	26.37	8566085	2.05	30546.87	803.52	8.2
8.4	26.49	8796311	2.10	31359.13	816.38	8.4
8.6	26.61	9027584	2.15	32174.81	829.04	8.6
8.8	26.73	9259906	2.20	32993.96	841.51	8.8
9.0	26.85	9493281	2.25	33816.57	853.79	9.0
9.2	26.97	9727709	2.30	34642.67	865.90	9.2
9.4	27.09	9963194	2.35	35472.27	877.85	9.4
9.6	27.21	10199737	2.40	36305.38	889.63	9.6
9.8	27.33	10437342	2.45	37142.03	901.26	9.8
9.8	27.33	10437342	2.45	37142.03	901.26	9.8
10.0	27.46	10676010	2.50	37982.22	912.74	10.0
10.2	27.58	10915743	2.55	38825.96	924.08	10.2
10.4	27.70	11156544	2.60	39673.28	935.28	10.4
10.6	27.82	11398416	2.65	40524.18	946.35	10.6
10.8	27.95	11641360	2.70	41378.68	957.29	10.8
11.0	28.07	11885379	2.75	42236.78	968.11	11.0
11.2	28.20	12130474	2.80	43098.51	978.81	11.2
11.4	28.32	12376650	2.85	43963.87	989.39	11.4
11.6	28.44	12623907	2.90	44832.87	999.86	11.6
11.8	28.57	12872248	2.95	45705.52	1010.22	11.8
12.0	28.69	13121676	3.00	46581.85	1020.48	12.0
12.2	28.82	13372192	3.05	47461.85	1030.63	12.2
12.4	28.94	13623799	3.10	48345.54	1040.68	12.4
12.6	29.07	13876499	3.15	49232.93	1050.64	12.6
12.8	29.19	14130295	3.20	50124.03	1060.51	12.8
13.0	29.32	14385188	3.25	51018.85	1070.28	13.0
13.2	29.45	14641182	3.30	51917.41	1079.97	13.2
13.4	29.57	14898279	3.35	52819.70	1089.57	13.4
13.6	29.70	15156480	3.40	53725.75	1099.09	13.6
13.8	29.83	15415788	3.45	54635.56	1108.52	13.8
14.0	29.96	15676205	3.50	55549.14	1117.87	14.0
14.2	30.08	15937735	3.55	56466.51	1127.15	14.2
14.4	30.21	16200378	3.60	57387.66	1136.35	14.4
14.6	30.34	16464137	3.65	58312.62	1145.48	14.6
14.8	30.47	16729015	3.70	59241.39	1154.54	14.8
15.0	30.60	16995014	3.75	60173.99	1163.52	15.0
15.2	30.73	17262137	3.80	61110.41	1172.44	15.2
15.4	30.86	17530384	3.85	62050.68	1181.29	15.4
15.6	30.98	17799760	3.90	62994.79	1190.07	15.6
15.8	31.11	18070265	3.95	63942.76	1198.79	15.8
16.0	31.24	18341903	4.00	64894.61	1207.44	16.0
16.2	31.38	18614676	4.05	65850.33	1216.04	16.2
16.4	31.51	18888586	4.10	66809.94	1224.57	16.4
16.6	31.64	19163635	4.15	67773.44	1233.04	16.6
16.8	31.77	19439826	4.20	68740.86	1241.46	16.8
17.0	31.90	19717160	4.25	69712.18	1249.82	17.0
17.2	32.03	19995641	4.30	70687.44	1258.13	17.2
17.4	32.16	20275271	4.35	71666.62	1266.38	17.4
17.6	32.30	20556051	4.40	72649.75	1274.57	17.6

17.8	32.43	20837984	4.45	73636.83	1282.72	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)-O(n) / dT (cfs)	2S(n+1)+O(n+1) / dT (cfs)	O(n+1)
10.40	1	6.0	13.12	0		0
10.56	2	7.2	15.8	13	13	0
10.72	3	8.6	19.37	29	29	0
10.88	4	10.7	23.91	48	48	0
11.04	5	13.2	29.31	72	72	0
11.20	6	16.1	36.87	102	102	0
11.36	7	20.7	47.74	138	138	0
11.52	8	27.0	72.95	186	186	0
11.68	9	46.0	192.29	259	259	0
11.84	10	146.3	498.36	451	451	0
12.00	11	352.0	960.74	946	950	2
12.16	12	608.7	1500.78	1893	1907	7
12.32	13	892.1	2098.99	3300	3394	47
12.48	14	1206.9	2724.96	5220	5399	90
12.64	15	1518.0	3180.12	7546	7945	199
12.80	16	1662.1	3242.87	10105	10726	311
12.96	17	1580.8	3020.27	12621	13348	364
13.12	18	1439.5	2715.42	14684	15641	479
13.28	19	1275.9	2362.13	16319	17399	540
13.44	20	1086.2	2000.68	17563	18681	559
13.60	21	914.5	1700.53	18374	19564	595
13.76	22	786.1	1478.37	18884	20074	595
13.92	23	692.3	1616.12	19138	20363	612
14.08	24	923.8	1496.05	19530	20754	612
14.24	25	572.3	1102.47	19801	21026	612
14.40	26	530.2	1018.99	19679	20904	612
14.56	27	488.8	933.37	19473	20698	612
14.72	28	444.6	848.17	19182	20407	612
14.88	29	403.6	778.74	18840	20030	595
15.04	30	375.2	730.01	18429	19619	595
15.20	31	354.8	682.65	18004	19159	577
15.36	32	327.8	624.39	17569	18687	559
15.52	33	296.6	562.3	17076	18194	559
15.68	34	265.7	502.57	16558	17638	540
15.84	35	236.9	447.04	16020	17061	520
16.00	36	210.2	397.22	15467	16467	500
16.16	37	187.0	355.14	14865	15864	500
16.32	38	168.1	321.08	14262	15220	479
16.48	39	153.0	293.22	13902	14583	341
16.64	40	140.3	269.13	13513	14195	341
16.80	41	128.9	247.79	13049	13783	367
16.96	42	118.9	229.4	12570	13297	364
17.12	43	110.5	213.97	12072	12799	364
17.28	44	103.5	201.28	11584	12286	351
17.44	45	97.8	190.75	11118	11785	333
17.60	46	93.0	181.7	10642	11309	333
17.76	47	88.8	173.98	10203	10824	311
17.92	48	85.2	167.78	9805	10376	286
18.08	49	82.6	162.55	9402	9973	286

18.24	50	80.0	156.95	9046	9564	259
18.40	51	77.0	150.76	8685	9203	259
18.56	52	73.8	144.97	8378	8836	229
18.72	53	71.2	140.54	8065	8523	229
18.88	54	69.4	137.51	7807	8206	199
19.04	55	68.1	135.04	7545	7944	199
19.20	56	66.9	132.2	7281	7680	199
19.36	57	65.3	128.74	7072	7413	171
19.52	58	63.5	125.16	6859	7201	171
19.68	59	61.7	121.71	6643	6984	171
19.84	60	60.0	118.35	6480	6764	142
20.00	61	58.4	115.34	6315	6599	142
20.16	62	57.0	113.41	6146	6430	142
20.32	63	56.4	112.98	5976	6259	142
20.48	64	56.6	113.32	5859	6088	115
20.64	65	56.8	113.2	5742	5972	115
20.80	66	56.4	112.03	5626	5855	115
20.96	67	55.6	110.26	5508	5738	115
21.12	68	54.7	108.85	5388	5618	115
21.28	69	54.2	108.44	5267	5497	115
21.44	70	54.3	108.73	5196	5376	90
21.60	71	54.5	108.82	5126	5305	90
21.76	72	54.4	108.04	5055	5235	90
21.92	73	53.7	106.58	4984	5163	90
22.08	74	52.9	105.31	4911	5091	90
22.24	75	52.4	104.97	4837	5017	90
22.40	76	52.6	105.48	4763	4942	90
22.56	77	52.9	106.05	4689	4868	90
22.72	78	53.1	105.86	4616	4795	90
22.88	79	52.7	104.81	4588	4722	67
23.04	80	52.1	103.48	4560	4693	67
23.20	81	51.4	51.41	4529	4663	67

SIDESLOPE	0.17		BASIN 033
MAXIMUM DEPTH	12	FT	
NUMBER OF CULVERTS	1		
CULVERT DIAMETER	54	IN	4.5 FT
CULVERT AREA	15.90	FT2	
ENTRANCE LOSS COEFFIC	0.64		
LENGTH	1228	FT	
WIDTH	398	FT	
AREA	11.22	ACRES	
MANNING'S n	0.015		
SLOPE	0.003		
dT	0.16	HRS	576 SEC

MAX DISCHARGE	154	CFS
MAX DEPTH	5.8	FT
AREA AT MAX DEPTH	13.93	ACRES

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	11.22	0	0.00	0.00	0.00	0.0
0.2	11.31	98140	0.04	341.04	0.28	0.2
0.4	11.40	197062	0.09	685.46	1.22	0.4
0.6	11.49	296770	0.13	1033.82	3.37	0.6
0.8	11.58	397264	0.18	1385.26	5.86	0.8
1.0	11.67	498549	0.22	1740.99	9.92	1.0
1.2	11.76	600626	0.27	2099.33	13.83	1.2
1.4	11.85	703496	0.31	2462.17	19.47	1.4
1.6	11.95	807164	0.36	2827.20	24.55	1.6
1.8	12.04	911630	0.40	3196.84	31.46	1.8
2.0	12.13	1016898	0.44	3568.26	37.37	2.0
2.2	12.22	1122969	0.49	3942.73	43.53	2.2
2.4	12.31	1229846	0.53	4321.69	51.39	2.4
2.6	12.41	1337531	0.58	4702.05	57.84	2.6
2.8	12.50	1446027	0.62	5086.83	65.90	2.8
3.0	12.59	1555335	0.67	5472.62	72.15	3.0
3.2	12.69	1665458	0.71	5862.45	79.61	3.2
3.4	12.78	1776399	0.76	6253.10	85.05	3.4
3.6	12.88	1888159	0.80	6647.41	91.30	3.6
3.8	12.97	2000741	0.84	7042.35	95.33	3.8
4.0	13.06	2114148	0.89	7439.14	98.35	4.0
4.2	13.16	2228381	0.93	7837.80	100.37	4.2
4.4	13.25	2343443	0.98	8236.52	99.56	4.4
4.6	13.35	2459336	1.02	8664.58	125.22	4.6
4.8	13.45	2576062	1.07	9075.10	130.44	4.8
5.0	13.54	2693625	1.11	9488.32	135.46	5.0
5.2	13.64	2812025	1.16	9904.27	140.30	5.2
5.4	13.74	2931266	1.20	10322.98	144.97	5.4
5.6	13.83	3051350	1.24	10744.47	149.51	5.6
5.8	13.93	3172278	1.29	11168.76	153.90	5.8
6.0	14.03	3294054	1.33	11595.87	158.18	6.0
6.2	14.12	3416679	1.38	12025.81	162.34	6.2
6.4	14.22	3540156	1.42	12458.61	166.40	6.4
6.6	14.32	3664488	1.47	12894.28	170.37	6.6
6.8	14.42	3789676	1.51	13332.83	174.24	6.8
7.0	14.52	3915723	1.56	13774.29	178.03	7.0

7.2	14.62	4042631	1.60	14218.65	181.74	7.2
7.4	14.72	4170402	1.64	14665.93	185.37	7.4
7.6	14.82	4299039	1.69	15116.15	188.94	7.6
7.8	14.92	4428544	1.73	15569.32	192.43	7.8
8.0	15.02	4558920	1.78	16025.45	195.87	8.0
8.2	15.12	4690168	1.82	16484.55	199.25	8.2
8.4	15.22	4822291	1.87	16946.64	202.57	8.4
8.6	15.32	4955291	1.91	17411.71	205.84	8.6
8.8	15.42	5089171	1.96	17879.79	209.05	8.8
9.0	15.52	5223933	2.00	18350.88	212.22	9.0
9.2	15.62	5359578	2.04	18824.99	215.34	9.2
9.4	15.72	5496111	2.09	19302.14	218.42	9.4
9.6	15.82	5633532	2.13	19782.33	221.45	9.6
9.8	15.93	5771844	2.18	20265.57	224.45	9.8
9.8	15.93	5771844	2.18	20265.57	224.45	9.8
10.0	16.03	5911050	2.22	20751.88	227.40	10.0
10.2	16.13	6051151	2.27	21241.25	230.31	10.2
10.4	16.24	6192150	2.31	21733.71	233.19	10.4
10.6	16.34	6334050	2.36	22229.26	236.04	10.6
10.8	16.44	6476852	2.40	22727.92	238.85	10.8
11.0	16.55	6620559	2.44	23229.68	241.62	11.0
11.2	16.65	6765173	2.49	23734.55	244.37	11.2
11.4	16.76	6910696	2.53	24242.56	247.09	11.4
11.6	16.86	7057132	2.58	24753.70	249.77	11.6
11.8	16.97	7204482	2.62	25267.99	252.43	11.8
12.0	17.07	7352748	2.67	25785.43	255.06	12.0
12.2	17.18	7501932	2.71	26306.04	257.66	12.2
12.4	17.28	7652038	2.76	26829.81	260.24	12.4
12.6	17.39	7803067	2.80	27356.77	262.79	12.6
12.8	17.50	7955022	2.84	27886.92	265.32	12.8
13.0	17.60	8107904	2.89	28420.27	267.82	13.0
13.2	17.71	8261717	2.93	28956.82	270.30	13.2
13.4	17.82	8416463	2.98	29496.59	272.76	13.4
13.6	17.92	8572143	3.02	30039.58	275.19	13.6
13.8	18.03	8728761	3.07	30585.80	277.61	13.8
14.0	18.14	8886317	3.11	31135.27	280.00	14.0
14.2	18.25	9044816	3.16	31687.98	282.37	14.2
14.4	18.36	9204259	3.20	32243.96	284.72	14.4
14.6	18.46	9364648	3.24	32803.20	287.06	14.6
14.8	18.57	9525986	3.29	33365.71	289.37	14.8
15.0	18.68	9688274	3.33	33931.51	291.67	15.0
15.2	18.79	9851516	3.38	34500.60	293.95	15.2
15.4	18.90	10015714	3.42	35073.00	296.21	15.4
15.6	19.01	10180870	3.47	35648.70	298.45	15.6
15.8	19.12	10346985	3.51	36227.71	300.68	15.8
16.0	19.23	10514063	3.56	36810.06	302.89	16.0
16.2	19.34	10682106	3.60	37395.73	305.09	16.2
16.4	19.46	10851116	3.64	37984.75	307.27	16.4
16.6	19.57	11021096	3.69	38577.12	309.43	16.6
16.8	19.68	11192047	3.73	39172.85	311.58	16.8
17.0	19.79	11363972	3.78	39771.95	313.71	17.0
17.2	19.90	11536874	3.82	40374.42	315.83	17.2
17.4	20.01	11710754	3.87	40980.28	317.94	17.4
17.6	20.13	11885615	3.91	41589.53	320.03	17.6
17.8	20.24	12061459	3.96	42202.18	322.11	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)-O(n) dT (cfs)	2S(n+1)+O(n+1) dT (cfs)	O(n+1)
10.40	1	0.0	0	0		0
10.56	2	0.0	0.03	0	0	0
10.72	3	0.0	0.17	0	0	0
10.88	4	0.1	0.54	0	0	0
11.04	5	0.4	1.34	1	1	0
11.20	6	0.9	2.84	2	2	0
11.36	7	1.9	5.56	5	5	0
11.52	8	3.7	14.21	10	10	0
11.68	9	10.6	43.91	25	25	0
11.84	10	33.4	120.1	69	69	0
12.00	11	86.7	264.09	189	189	0
12.16	12	177.4	478.64	452	453	0
12.32	13	301.3	750.15	928	931	1
12.48	14	448.9	1046.33	1667	1679	6
12.64	15	597.5	1309.85	2674	2713	19
12.80	16	712.4	1474.34	3897	3984	44
12.96	17	762.0	1504.73	5240	5371	66
13.12	18	742.8	1418.16	6562	6744	91
13.28	19	675.4	1255.09	7779	7980	100
13.44	20	579.7	1058.55	8784	9034	125
13.60	21	478.9	869.32	9571	9842	135
13.76	22	390.5	707.18	10151	10441	145
13.92	23	316.7	573.37	10559	10858	150
14.08	24	256.7	465.89	10833	11132	150
14.24	25	209.2	381.8	10991	11299	154
14.40	26	172.6	317.29	11065	11373	154
14.56	27	144.7	268.62	11075	11383	154
14.72	28	123.9	232.25	11036	11343	154
14.88	29	108.4	204.89	10960	11268	154
15.04	30	96.5	183.53	10866	11165	150
15.20	31	87.0	165.28	10750	11050	150
15.36	32	78.3	147.76	10617	10916	150
15.52	33	69.5	130.18	10466	10765	150
15.68	34	60.7	113.12	10306	10596	145
15.84	35	52.4	97.39	10129	10419	145
16.00	36	45.0	83.83	9946	10226	140
16.16	37	38.9	73.03	9749	10030	140
16.32	38	34.2	64.97	9551	9822	135
16.48	39	30.8	59.2	9345	9616	135
16.64	40	28.4	55.1	9143	9404	130
16.80	41	26.7	52.01	8938	9199	130
16.96	42	25.3	49.48	8739	8990	125
17.12	43	24.2	47.36	8538	8789	125
17.28	44	23.2	45.73	8387	8586	100
17.44	45	22.5	44.7	8233	8432	100
17.60	46	22.2	44.25	8079	8278	100
17.76	47	22.1	44.24	7922	8123	100
17.92	48	22.2	44.46	7766	7966	100
18.08	49	22.3	44.65	7613	7810	98
18.24	50	22.4	44.57	7461	7658	98
18.40	51	22.2	44.11	7309	7506	98

18.56	52	21.9	43.39	7163	7353	95
18.72	53	21.5	42.68	7015	7206	95
18.88	54	21.2	42.24	6867	7058	95
19.04	55	21.1	42.15	6727	6910	91
19.20	56	21.1	42.21	6587	6769	91
19.36	57	21.1	42.14	6459	6629	85
19.52	58	21.0	41.78	6331	6501	85
19.68	59	20.8	41.16	6202	6373	85
19.84	60	20.4	40.4	6084	6244	80
20.00	61	20.0	39.69	5966	6125	80
20.16	62	19.7	39.25	5846	6005	80
20.32	63	19.6	39.25	5726	5885	80
20.48	64	19.7	39.67	5621	5765	72
20.64	65	20.0	40.27	5516	5661	72
20.80	66	20.3	40.76	5412	5557	72
20.96	67	20.5	40.93	5321	5453	66
21.12	68	20.5	40.84	5230	5362	66
21.28	69	20.4	40.77	5139	5271	66
21.44	70	20.4	40.94	5048	5180	66
21.60	71	20.6	41.3	4958	5089	66
21.76	72	20.8	41.6	4883	4999	58
21.92	73	20.9	41.64	4809	4925	58
22.08	74	20.8	41.44	4735	4851	58
22.24	75	20.7	41.22	4661	4776	58
22.40	76	20.6	41.22	4599	4702	51
22.56	77	20.7	41.48	4538	4640	51
22.72	78	20.8	41.78	4476	4579	51
22.88	79	21.0	41.86	4415	4518	51
23.04	80	20.9	41.6	4354	4457	51
23.20	81	20.7	20.69	4293	4396	51

BASIN 143B

SIDESLOPE	0.17	
MAXIMUM DEPTH	12	FT
NUMBER OF CULVERTS	2	
BOX DEPTH	6	FT
BOX WIDTH	10	FT
CULVERT AREA	60	FT2
ENTRANCE LOSS COEFFIC	0.591	
LENGTH	588	FT
WIDTH	1128	FT
AREA	15.23	ACRES
MANNING'S n	0.015	
SLOPE	0.003	
dT	0.16	HRS 576 SEC
MAX DISCHARGE	1271	CFS
MAX DEPTH	6	FT
AREA AT MAX DEPTH	18.18	ACRES

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	15.23	0	0.00	0.00	0.00	0.0
0.2	15.32	133065	0.03	469.26	7.23	0.2
0.4	15.42	266956	0.07	949.32	22.39	0.4
0.6	15.51	401676	0.10	1437.66	42.95	0.6
0.8	15.61	537226	0.13	1933.14	67.77	0.8
1.0	15.70	673609	0.17	2435.02	96.10	1.0
1.2	15.80	810827	0.20	2942.78	127.41	1.2
1.4	15.89	948883	0.23	3456.02	161.28	1.4
1.6	15.99	1087778	0.27	3974.40	197.39	1.6
1.8	16.09	1227516	0.30	4497.68	235.48	1.8
2.0	16.19	1368098	0.33	5025.65	275.31	2.0
2.2	16.28	1509527	0.37	5558.11	316.70	2.2
2.4	16.38	1651804	0.40	6094.93	359.50	2.4
2.6	16.48	1794934	0.43	6635.97	403.56	2.6
2.8	16.58	1938916	0.47	7181.13	448.78	2.8
3.0	16.67	2083755	0.50	7730.30	495.04	3.0
3.2	16.77	2229452	0.53	8283.41	542.26	3.2
3.4	16.87	2376009	0.57	8840.38	590.35	3.4
3.6	16.97	2523430	0.60	9401.16	639.25	3.6
3.8	17.07	2671715	0.63	9965.68	688.89	3.8
4.0	17.17	2820868	0.67	10533.89	739.21	4.0
4.2	17.27	2970890	0.70	11105.76	790.17	4.2
4.4	17.37	3121785	0.73	11681.25	841.72	4.4
4.6	17.47	3273554	0.77	12260.32	893.81	4.6
4.8	17.57	3426200	0.80	12842.95	946.42	4.8
5.0	17.67	3579725	0.83	13429.10	999.50	5.0
5.2	17.77	3734131	0.87	14018.75	1053.02	5.2
5.4	17.88	3889420	0.90	14611.89	1106.96	5.4
5.6	17.98	4045596	0.93	15208.50	1161.29	5.6
5.8	18.08	4202660	0.97	15808.56	1215.99	5.8
6.0	18.18	4360614	1.00	16412.05	1271.03	6.0
6.2	18.28	4519461	1.03	16710.66	1018.09	6.2
6.4	18.39	4679203	1.07	17296.66	1049.42	6.4
6.6	18.49	4839842	1.10	17884.86	1079.85	6.6
6.8	18.59	5001382	1.13	18475.35	1109.44	6.8
7.0	18.70	5163823	1.17	19068.20	1138.26	7.0

7.2	18.80	5327168	1.20	19663.48	1166.37	7.2
7.4	18.91	5491420	1.23	20261.25	1193.82	7.4
7.6	19.01	5656582	1.27	20861.56	1220.65	7.6
7.8	19.11	5822654	1.30	21464.45	1246.90	7.8
8.0	19.22	5989640	1.33	22069.97	1272.61	8.0
8.2	19.33	6157541	1.37	22678.17	1297.82	8.2
8.4	19.43	6326361	1.40	23289.07	1322.54	8.4
8.6	19.54	6496102	1.43	23902.72	1346.81	8.6
8.8	19.64	6666765	1.47	24519.14	1370.65	8.8
9.0	19.75	6838353	1.50	25138.36	1394.08	9.0
9.2	19.86	7010868	1.53	25760.41	1417.12	9.2
9.4	19.96	7184313	1.57	26385.33	1439.80	9.4
9.6	20.07	7358690	1.60	27013.13	1462.12	9.6
9.8	20.18	7534002	1.63	27643.84	1484.11	9.8
9.8	20.18	7534002	1.63	27643.84	1484.11	9.8
10.0	20.28	7710250	1.67	28277.48	1505.78	10.0
10.2	20.39	7887436	1.70	28914.07	1527.14	10.2
10.4	20.50	8065564	1.73	29553.63	1548.20	10.4
10.6	20.61	8244636	1.77	30196.19	1568.98	10.6
10.8	20.72	8424653	1.80	30841.76	1589.49	10.8
11.0	20.83	8605619	1.83	31490.36	1609.74	11.0
11.2	20.94	8787534	1.87	32142.01	1629.74	11.2
11.4	21.05	8970403	1.90	32796.73	1649.50	11.4
11.6	21.15	9154226	1.93	33454.53	1669.02	11.6
11.8	21.26	9339007	1.97	34115.42	1688.31	11.8
12.0	21.38	9524748	2.00	34779.43	1707.39	12.0
12.2	21.49	9711450	2.03	35446.57	1726.26	12.2
12.4	21.60	9899116	2.07	36116.85	1744.92	12.4
12.6	21.71	10087750	2.10	36790.29	1763.39	12.6
12.8	21.82	10277351	2.13	37466.91	1781.66	12.8
13.0	21.93	10467924	2.17	38146.71	1799.75	13.0
13.2	22.04	10659471	2.20	38829.71	1817.66	13.2
13.4	22.15	10851993	2.23	39515.92	1835.39	13.4
13.6	22.27	11045494	2.27	40205.36	1852.95	13.6
13.8	22.38	11239974	2.30	40898.04	1870.35	13.8
14.0	22.49	11435437	2.33	41593.97	1887.59	14.0
14.2	22.61	11631886	2.37	42293.17	1904.67	14.2
14.4	22.72	11829321	2.40	42995.64	1921.60	14.4
14.6	22.83	12027746	2.43	43701.40	1938.39	14.6
14.8	22.95	12227163	2.47	44410.45	1955.03	14.8
15.0	23.06	12427574	2.50	45122.82	1971.52	15.0
15.2	23.18	12628982	2.53	45838.52	1987.89	15.2
15.4	23.29	12831388	2.57	46557.55	2004.11	15.4
15.6	23.41	13034796	2.60	47279.92	2020.21	15.6
15.8	23.52	13239207	2.63	48005.65	2036.18	15.8
16.0	23.64	13444623	2.67	48734.75	2052.03	16.0
16.2	23.75	13651048	2.70	49467.22	2067.75	16.2
16.4	23.87	13858483	2.73	50203.09	2083.36	16.4
16.6	23.98	14066930	2.77	50942.36	2098.85	16.6
16.8	24.10	14276393	2.80	51685.03	2114.22	16.8
17.0	24.22	14486872	2.83	52431.13	2129.49	17.0
17.2	24.34	14698371	2.87	53180.66	2144.65	17.2
17.4	24.45	14910892	2.90	53933.63	2159.70	17.4
17.6	24.57	15124438	2.93	54690.05	2174.64	17.6
17.8	24.69	15339009	2.97	55449.94	2189.49	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)/dT-O(n) (cfs)	2S(n+1)/dT+O(n+1) (cfs)	O(n+1)
10.40	1	2.3	5.11	0		0
10.56	2	2.9	6.61	5	5	0
10.72	3	3.8	9.02	12	12	0
10.88	4	5.3	12.24	21	21	0
11.04	5	7.0	16.15	33	33	0
11.20	6	9.2	21.71	49	49	0
11.36	7	12.5	29.88	71	71	0
11.52	8	17.3	67.44	101	101	0
11.68	9	50.1	292.57	168	168	0
11.84	10	242.5	808.61	461	461	0
12.00	11	566.1	1460.93	1225	1269	22
12.16	12	894.8	2139.93	2493	2685	96
12.32	13	1245.1	2850.52	4162	4633	235
12.48	14	1605.4	3465.21	6206	7013	404
12.64	15	1859.8	3732.39	8392	9671	639
12.80	16	1872.6	3659.01	10441	12125	842
12.96	17	1786.5	3457.43	11994	14100	1053
13.12	18	1671.0	3192.14	13129	15452	1161
13.28	19	1521.2	2878.26	13889	16321	1216
13.44	20	1357.1	2557.62	14731	16768	1018
13.60	21	1200.5	2259.64	15253	17289	1018
13.76	22	1059.1	1999.31	15414	17512	1049
13.92	23	940.2	1785.16	15314	17413	1049
14.08	24	845.0	1614.23	15063	17099	1018
14.24	25	769.3	1477.33	14135	16677	1271
14.40	26	708.1	1366.01	13290	15613	1161
14.56	27	657.9	1273.97	12442	14656	1107
14.72	28	616.0	1191.61	11717	13716	999
14.88	29	575.6	1113.18	11016	12909	946
15.04	30	537.6	1034.97	10446	12129	842
15.20	31	497.4	953.6	9900	11481	790
15.36	32	456.2	876.45	9375	10854	739
15.52	33	420.2	809.69	8874	10252	689
15.68	34	389.5	750.99	8405	9684	639
15.84	35	361.5	697.69	7976	9156	590
16.00	36	336.2	649.79	7589	8673	542
16.16	37	313.6	606.12	7248	8238	495
16.32	38	292.5	565.73	6864	7855	495
16.48	39	273.2	528.53	6533	7430	449
16.64	40	255.3	493.43	6254	7061	404
16.80	41	238.1	460.25	5940	6747	404
16.96	42	222.1	429.78	5682	6401	359
17.12	43	207.7	402.86	5392	6111	359
17.28	44	195.2	379.44	5162	5795	317
17.44	45	184.2	358.65	4991	5541	275
17.60	46	174.4	340.06	4799	5349	275
17.76	47	165.7	323.48	4588	5139	275
17.92	48	157.8	308.58	4441	4912	235
18.08	49	150.8	294.52	4278	4749	235
18.24	50	143.8	280.79	4102	4573	235
18.40	51	137.0	267.89	3988	4383	197

18.56	52	130.9	256.72	3861	4256	197
18.72	53	125.9	248.57	3723	4118	197
18.88	54	122.7	242.03	3649	3971	161
19.04	55	119.3	234.77	3568	3891	161
19.20	56	115.5	226.82	3481	3803	161
19.36	57	111.4	218.86	3385	3707	161
19.52	58	107.5	211.44	3281	3604	161
19.68	59	103.9	204.56	3170	3493	161
19.84	60	100.6	198.22	3120	3375	127
20.00	61	97.6	192.85	3063	3318	127
20.16	62	95.3	189.16	3001	3256	127
20.32	63	93.9	186.92	2935	3190	127
20.48	64	93.0	185.01	2868	3122	127
20.64	65	92.0	182.45	2798	3053	127
20.80	66	90.5	179.22	2725	2980	127
20.96	67	88.8	176.14	2712	2905	96
21.12	68	87.4	174.05	2696	2889	96
21.28	69	86.7	172.95	2678	2870	96
21.44	70	86.3	171.96	2659	2851	96
21.60	71	85.7	170.22	2639	2831	96
21.76	72	84.5	167.65	2617	2809	96
21.92	73	83.1	165.01	2592	2784	96
22.08	74	81.9	163.22	2565	2757	96
22.24	75	81.3	162.52	2536	2728	96
22.40	76	81.2	162.17	2506	2698	96
22.56	77	81.0	161.23	2476	2668	96
22.72	78	80.3	159.37	2445	2637	96
22.88	79	79.1	157.13	2412	2605	96
23.04	80	78.0	154.94	2377	2570	96
23.20	81	76.9	76.93	2340	2532	96

SIDESLOPE	0.17	BASIN 139
MAXIMUM DEPTH	12 FT	
NUMBER OF CULVERTS	3	
BOX DEPTH	6 FT	
BOX WIDTH	10 FT	
CULVERT AREA	60 FT2	
ENTRANCE LOSS COEFFIC	0.591	
LENGTH	660 FT	
WIDTH	1320 FT	
AREA	20.00 ACRES	
MANNING'S n	0.015	
SLOPE	0.003	
dT	0.16 HRS	576 SEC
MAX DISCHARGE	1580 CFS	
MAX DEPTH	5.2 FT	
AREA AT MAX DEPTH	22.93 ACRES	

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	20.00	0	0.00	0.00	0.00	0.0
0.2	20.11	174716	0.03	617.50	10.85	0.2
0.4	20.22	350384	0.07	1250.19	33.58	0.4
0.6	20.33	527008	0.10	1894.31	64.42	0.6
0.8	20.44	704589	0.13	2548.14	101.65	0.8
1.0	20.55	883129	0.17	3210.57	144.15	1.0
1.2	20.66	1062631	0.20	3880.81	191.12	1.2
1.4	20.77	1243098	0.23	4558.24	241.93	1.4
1.6	20.88	1424531	0.27	5242.38	296.09	1.6
1.8	20.99	1606933	0.30	5932.84	353.21	1.8
2.0	21.10	1790306	0.33	6629.30	412.96	2.0
2.2	21.22	1974652	0.37	7331.48	475.05	2.2
2.4	21.33	2159975	0.40	8039.16	539.25	2.4
2.6	21.44	2346275	0.43	8752.13	605.34	2.6
2.8	21.55	2533556	0.47	9470.24	673.17	2.8
3.0	21.67	2721819	0.50	10193.32	742.56	3.0
3.2	21.78	2911067	0.53	10921.26	813.39	3.2
3.4	21.89	3101303	0.57	11653.94	885.53	3.4
3.6	22.01	3292528	0.60	12391.26	958.87	3.6
3.8	22.12	3484745	0.63	13133.14	1033.33	3.8
4.0	22.23	3677956	0.67	13879.50	1108.82	4.0
4.2	22.35	3872163	0.70	14630.27	1185.26	4.2
4.4	22.46	4067370	0.73	15385.39	1262.58	4.4
4.6	22.58	4263577	0.77	16144.81	1340.72	4.6
4.8	22.69	4460788	0.80	16908.47	1419.63	4.8
5.0	22.81	4659005	0.83	17676.35	1499.25	5.0
5.2	22.93	4858229	0.87	18448.38	1579.53	5.2
5.4	23.04	5058464	0.90	19224.55	1660.44	5.4
5.6	23.16	5259712	0.93	20004.82	1741.94	5.6
5.8	23.27	5461974	0.97	20789.17	1823.98	5.8
6.0	23.39	5665254	1.00	21577.56	1906.54	6.0
6.2	23.51	5869553	1.03	21907.53	1527.14	6.2
6.4	23.63	6074874	1.07	22667.45	1574.14	6.4
6.6	23.74	6281219	1.10	23429.56	1619.77	6.6
6.8	23.86	6488590	1.13	24193.99	1664.16	6.8
7.0	23.98	6696991	1.17	24960.83	1707.39	7.0

7.2	24.10	6906422	1.20	25730.19	1749.55	7.2
7.4	24.22	7116887	1.23	26502.14	1790.73	7.4
7.6	24.34	7328387	1.27	27276.76	1830.97	7.6
7.8	24.46	7540925	1.30	28054.12	1870.35	7.8
8.0	24.58	7754504	1.33	28834.28	1908.92	8.0
8.2	24.70	7969125	1.37	29617.30	1946.72	8.2
8.4	24.82	8184791	1.40	30403.22	1983.81	8.4
8.6	24.94	8401504	1.43	31192.10	2020.21	8.6
8.8	25.06	8619266	1.47	31983.98	2055.97	8.8
9.0	25.18	8838081	1.50	32778.90	2091.12	9.0
9.2	25.30	9057949	1.53	33576.90	2125.68	9.2
9.4	25.42	9278874	1.57	34378.01	2159.70	9.4
9.6	25.54	9500857	1.60	35182.27	2193.18	9.6
9.8	25.66	9723902	1.63	35989.71	2226.17	9.8
9.8	25.66	9723902	1.63	35989.71	2226.17	9.8
10.0	25.79	9948010	1.67	36800.37	2258.67	10.0
10.2	25.91	10173183	1.70	37614.26	2290.71	10.2
10.4	26.03	10399424	1.73	38431.41	2322.30	10.4
10.6	26.15	10626736	1.77	39251.86	2353.48	10.6
10.8	26.28	10855120	1.80	40075.63	2384.24	10.8
11.0	26.40	11084579	1.83	40902.74	2414.62	11.0
11.2	26.52	11315114	1.87	41733.20	2444.61	11.2
11.4	26.65	11546730	1.90	42567.06	2474.24	11.4
11.6	26.77	11779427	1.93	43404.31	2503.53	11.6
11.8	26.90	12013208	1.97	44245.00	2532.47	11.8
12.0	27.02	12248076	2.00	45089.13	2561.09	12.0
12.2	27.15	12484032	2.03	45936.72	2589.39	12.2
12.4	27.27	12721079	2.07	46787.79	2617.38	12.4
12.6	27.40	12959219	2.10	47642.37	2645.08	12.6
12.8	27.52	13198455	2.13	48500.46	2672.49	12.8
13.0	27.65	13438788	2.17	49362.08	2699.62	13.0
13.2	27.78	13680222	2.20	50227.26	2726.48	13.2
13.4	27.90	13922759	2.23	51096.00	2753.08	13.4
13.6	28.03	14166400	2.27	51968.32	2779.43	13.6
13.8	28.16	14411148	2.30	52844.24	2805.53	13.8
14.0	28.28	14657005	2.33	53723.77	2831.39	14.0
14.2	28.41	14903975	2.37	54606.92	2857.01	14.2
14.4	28.54	15152058	2.40	55493.72	2882.41	14.4
14.6	28.67	15401257	2.43	56384.17	2907.58	14.6
14.8	28.80	15651575	2.47	57278.29	2932.54	14.8
15.0	28.93	15903014	2.50	58176.09	2957.29	15.0
15.2	29.05	16155577	2.53	59077.58	2981.83	15.2
15.4	29.18	16409264	2.57	59982.78	3006.17	15.4
15.6	29.31	16664080	2.60	60891.71	3030.32	15.6
15.8	29.44	16920025	2.63	61804.36	3054.27	15.8
16.0	29.57	17177103	2.67	62720.76	3078.04	16.0
16.2	29.70	17435316	2.70	63640.92	3101.63	16.2
16.4	29.83	17694666	2.73	64564.85	3125.04	16.4
16.6	29.97	17955155	2.77	65492.56	3148.27	16.6
16.8	30.10	18216786	2.80	66424.07	3171.34	16.8
17.0	30.23	18479560	2.83	67359.38	3194.24	17.0
17.2	30.36	18743481	2.87	68298.50	3216.97	17.2
17.4	30.49	19008551	2.90	69241.46	3239.55	17.4
17.6	30.62	19274771	2.93	70188.25	3261.97	17.6
17.8	30.76	19542144	2.97	71138.90	3284.23	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)/dT-O(n) (cfs)	2S(n+1)/dT+O(n+1) (cfs)	O(n+1)
10.40	1	12.3	26.67	0		0
10.56	2	14.3	31.3	27	27	0
10.72	3	17.0	37.72	58	58	0
10.88	4	20.8	46.35	96	96	0
11.04	5	25.6	57.76	142	142	0
11.20	6	32.2	73.28	200	200	0
11.36	7	41.1	94.08	273	273	0
11.52	8	53.0	163.68	367	367	0
11.68	9	110.7	413.01	531	531	0
11.84	10	302.3	919.92	922	944	11
12.00	11	617.6	1634.73	1775	1842	34
12.16	12	1017.1	2466.25	3121	3410	144
12.32	13	1449.2	3314.02	4995	5588	296
12.48	14	1864.9	4056.86	7231	8309	539
12.64	15	2192.0	4450.85	9661	11288	813
12.80	16	2258.9	4405.96	11894	14112	1109
12.96	17	2147.1	4085.73	13619	16300	1341
13.12	18	1938.6	3629.85	14706	17704	1499
13.28	19	1691.2	3164.6	15337	18336	1499
13.44	20	1473.4	2776.16	15343	18502	1580
13.60	21	1302.8	2463.85	15121	18119	1499
13.76	22	1161.1	2194.19	14745	17584	1420
13.92	23	1033.1	1945.68	14100	16939	1420
14.08	24	912.6	1712.17	13521	16046	1263
14.24	25	799.6	1497.41	12862	15233	1185
14.40	26	697.8	1307.01	12142	14360	1109
14.56	27	609.2	1142.7	11382	13449	1033
14.72	28	533.5	1002.81	10607	12525	959
14.88	29	469.3	884.74	9983	11610	813
15.04	30	415.4	782.52	9383	10868	743
15.20	31	367.1	687.5	8819	10166	673
15.36	32	320.4	598.16	8160	9507	673
15.52	33	277.8	517.34	7548	8758	605
15.68	34	239.6	446.46	6987	8065	539
15.84	35	206.9	387.08	6483	7433	475
16.00	36	180.2	339.11	6044	6870	413
16.16	37	158.9	301.19	5677	6383	353
16.32	38	142.3	271.31	5272	5978	353
16.48	39	129.0	247.17	4951	5543	296
16.64	40	118.1	226.63	4714	5198	242
16.80	41	108.5	208.41	4457	4941	242
16.96	42	99.9	192.49	4181	4665	242
17.12	43	92.6	179.63	3992	4374	191
17.28	44	87.1	170.32	3789	4171	191
17.44	45	83.3	164.02	3577	3959	191
17.60	46	80.8	159.9	3453	3741	144
17.76	47	79.1	157.11	3324	3613	144
17.92	48	78.0	154.92	3193	3482	144
18.08	49	77.0	152.48	3060	3348	144
18.24	50	75.5	149.18	2924	3212	144
18.40	51	73.7	145.36	2870	3073	102

18.56	52	71.7	142.06	2812	3015	102
18.72	53	70.4	140.26	2751	2954	102
18.88	54	69.9	139.97	2688	2891	102
19.04	55	70.1	140.18	2624	2828	102
19.20	56	70.1	139.64	2561	2765	102
19.36	57	69.5	137.98	2498	2701	102
19.52	58	68.5	135.59	2432	2636	102
19.68	59	67.1	132.97	2365	2568	102
19.84	60	65.8	130.63	2369	2497	64
20.00	61	64.8	129.05	2370	2499	64
20.16	62	64.3	128.92	2371	2499	64
20.32	63	64.7	130.21	2371	2500	64
20.48	64	65.6	132.02	2372	2501	64
20.64	65	66.5	133.11	2375	2504	64
20.80	66	66.6	132.84	2379	2508	64
20.96	67	66.2	131.73	2383	2512	64
21.12	68	65.5	131.02	2386	2515	64
21.28	69	65.5	131.57	2389	2517	64
21.44	70	66.1	133.07	2391	2520	64
21.60	71	67.0	134.37	2395	2524	64
21.76	72	67.4	134.67	2401	2530	64
21.92	73	67.3	134.03	2407	2536	64
22.08	74	66.7	132.87	2412	2541	64
22.24	75	66.1	132.63	2416	2545	64
22.40	76	66.5	133.82	2345	2549	102
22.56	77	67.3	135.15	2350	2479	64
22.72	78	67.8	135.43	2357	2485	64
22.88	79	67.6	134.47	2363	2492	64
23.04	80	66.9	132.72	2369	2498	64
23.20	81	65.9	65.85	2373	2502	64

BASIN 059

SIDESLOPE	0.17		
MAXIMUM DEPTH	12	FT	
NUMBER OF CULVERTS	4		
CULVERT DIAMETER	48	IN	4 FT
CULVERT AREA	12.57	FT2	
ENTRANCE LOSS COEFFIC	0.64		
LENGTH	660	FT	
WIDTH	660	FT	
AREA	10.00	ACRES	
MANNING'S n	0.015		
SLOPE	0.003		
dT	0.16	HRS	576 SEC
MAX DISCHARGE	490	CFS	
MAX DEPTH	5.6	FT	
AREA AT MAX DEPTH	12.14	ACRES	

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	10.00	0	0.00	0.00	0.00	0.0
0.2	10.07	87437	0.05	304.91	1.31	0.2
0.4	10.15	175511	0.10	615.11	5.69	0.4
0.6	10.22	264222	0.15	930.69	13.25	0.6
0.8	10.29	353574	0.20	1251.60	23.91	0.8
1.0	10.37	443569	0.25	1577.50	37.33	1.0
1.2	10.44	534209	0.30	1908.30	53.41	1.2
1.4	10.52	625496	0.35	2243.59	71.72	1.4
1.6	10.59	717433	0.40	2583.01	91.92	1.6
1.8	10.67	810022	0.45	2926.17	113.59	1.8
2.0	10.74	903266	0.50	3272.96	136.62	2.0
2.2	10.82	997166	0.55	3621.97	159.58	2.2
2.4	10.89	1091725	0.60	3973.85	183.14	2.4
2.6	10.97	1186945	0.65	4328.62	207.28	2.6
2.8	11.04	1282829	0.70	4682.75	228.48	2.8
3.0	11.12	1379379	0.75	5038.01	248.50	3.0
3.2	11.20	1476597	0.80	5393.83	266.76	3.2
3.4	11.27	1574485	0.85	5747.86	280.89	3.4
3.6	11.35	1673046	0.90	6100.09	290.90	3.6
3.8	11.43	1772282	0.95	6447.02	293.26	3.8
4.0	11.51	1872196	1.00	6773.33	272.65	4.0
4.2	11.59	1972789	1.05	7232.88	382.92	4.2
4.4	11.66	2074064	1.10	7601.55	399.94	4.4
4.6	11.74	2176024	1.15	7971.91	416.27	4.6
4.8	11.82	2278670	1.20	8344.04	431.99	4.8
5.0	11.90	2382005	1.25	8718.00	447.15	5.0
5.2	11.98	2486031	1.30	9093.87	461.81	5.2
5.4	12.06	2590751	1.35	9471.69	476.03	5.4
5.6	12.14	2696166	1.40	9851.52	489.83	5.6
5.8	12.22	2802280	1.45	10233.39	503.25	5.8
6.0	12.30	2909094	1.50	10617.34	516.32	6.0
6.2	12.38	3016610	1.55	11003.42	529.07	6.2
6.4	12.46	3124832	1.60	11391.64	541.53	6.4
6.6	12.54	3233761	1.65	11782.03	553.70	6.6
6.8	12.63	3343400	1.70	12174.63	565.60	6.8
7.0	12.71	3453751	1.75	12569.46	577.27	7.0

7.2	12.79	3564816	1.80	12966.53	588.70	7.2
7.4	12.87	3676597	1.85	13365.88	599.91	7.4
7.6	12.95	3789097	1.90	13767.51	610.92	7.6
7.8	13.04	3902319	1.95	14171.45	621.74	7.8
8.0	13.12	4016264	2.00	14577.73	632.37	8.0
8.2	13.20	4130934	2.05	14986.34	642.82	8.2
8.4	13.29	4246333	2.10	15397.32	653.10	8.4
8.6	13.37	4362462	2.15	15810.67	663.23	8.6
8.8	13.46	4479324	2.20	16226.41	673.20	8.8
9.0	13.54	4596921	2.25	16644.56	683.03	9.0
9.2	13.63	4715255	2.30	17065.13	692.72	9.2
9.4	13.71	4834328	2.35	17488.14	702.28	9.4
9.6	13.80	4954144	2.40	17913.59	711.70	9.6
9.8	13.88	5074703	2.45	18341.51	721.01	9.8
9.8	13.88	5074703	2.45	18341.51	721.01	9.8
10.0	13.97	5196010	2.50	18771.89	730.19	10.0
10.2	14.05	5318065	2.55	19204.77	739.26	10.2
10.4	14.14	5440871	2.60	19640.14	748.22	10.4
10.6	14.23	5564430	2.65	20078.02	757.08	10.6
10.8	14.31	5688745	2.70	20518.42	765.83	10.8
11.0	14.40	5813819	2.75	20961.36	774.49	11.0
11.2	14.49	5939652	2.80	21406.84	783.04	11.2
11.4	14.58	6066248	2.85	21854.87	791.51	11.4
11.6	14.66	6193609	2.90	22305.47	799.89	11.6
11.8	14.75	6321738	2.95	22758.65	808.18	11.8
12.0	14.84	6450636	3.00	23214.42	816.38	12.0
12.2	14.93	6580305	3.05	23672.79	824.50	12.2
12.4	15.02	6710749	3.10	24133.76	832.55	12.4
12.6	15.11	6841969	3.15	24597.35	840.51	12.6
12.8	15.20	6973968	3.20	25063.58	848.41	12.8
13.0	15.29	7106748	3.25	25532.44	856.23	13.0
13.2	15.38	7240312	3.30	26003.95	863.98	13.2
13.4	15.47	7374661	3.35	26478.12	871.66	13.4
13.6	15.56	7509798	3.40	26954.96	879.27	13.6
13.8	15.65	7645726	3.45	27434.47	886.82	13.8
14.0	15.74	7782445	3.50	27916.68	894.30	14.0
14.2	15.83	7919960	3.55	28401.58	901.72	14.2
14.4	15.92	8058272	3.60	28889.19	909.08	14.4
14.6	16.01	8197384	3.65	29379.52	916.38	14.6
14.8	16.11	8337297	3.70	29872.58	923.63	14.8
15.0	16.20	8478014	3.75	30368.37	930.82	15.0
15.2	16.29	8619538	3.80	30866.90	937.95	15.2
15.4	16.38	8761871	3.85	31368.19	945.03	15.4
15.6	16.48	8905014	3.90	31872.24	952.05	15.6
15.8	16.57	9048971	3.95	32379.07	959.03	15.8
16.0	16.66	9193743	4.00	32888.67	965.95	16.0
16.2	16.76	9339334	4.05	33401.07	972.83	16.2
16.4	16.85	9485744	4.10	33916.27	979.66	16.4
16.6	16.95	9632977	4.15	34434.27	986.44	16.6
16.8	17.04	9781035	4.20	34955.10	993.17	16.8
17.0	17.14	9929920	4.25	35478.75	999.86	17.0
17.2	17.23	10079635	4.30	36005.23	1006.50	17.2
17.4	17.33	10230181	4.35	36534.56	1013.10	17.4
17.6	17.42	10381561	4.40	37066.75	1019.66	17.6
17.8	17.52	10533778	4.45	37601.79	1026.17	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)-O(n) dT (cfs)	2S(n+1)+O(n+1) dT (cfs)	O(n+1)
4.00	1	0.0	0.06	0		0
4.16	2	0.1	0.14	0	0	0
4.32	3	0.1	0.23	0	0	0
4.48	4	0.1	0.32	0	0	0
4.64	5	0.2	0.42	1	1	0
4.80	6	0.2	0.55	1	1	0
4.96	7	0.3	0.69	2	2	0
5.12	8	0.4	0.83	2	2	0
5.28	9	0.5	0.95	3	3	0
5.44	10	0.5	1.05	4	4	0
5.60	11	0.6	1.13	5	5	0
5.76	12	0.6	1.2	6	6	0
5.92	13	0.6	1.28	8	8	0
6.08	14	0.7	1.36	9	9	0
6.24	15	0.7	1.47	10	10	0
6.40	16	0.8	1.62	12	12	0
6.56	17	0.9	1.78	13	13	0
6.72	18	0.9	1.91	15	15	0
6.88	19	1.0	1.98	17	17	0
7.04	20	1.0	2.02	19	19	0
7.20	21	1.0	2.09	21	21	0
7.36	22	1.1	2.21	23	23	0
7.52	23	1.1	2.35	25	25	0
7.68	24	1.2	2.47	28	28	0
7.84	25	1.3	2.54	30	30	0
8.00	26	1.3	2.56	33	33	0
8.16	27	1.3	2.59	35	35	0
8.32	28	1.3	2.68	38	38	0
8.48	29	1.4	2.81	40	40	0
8.64	30	1.4	2.94	43	43	0
8.80	31	1.5	3.01	46	46	0
8.96	32	1.5	3.01	49	49	0
9.12	33	1.5	3.02	52	52	0
9.28	34	1.5	3.13	55	55	0
9.44	35	1.6	3.42	58	58	0
9.60	36	1.8	4.03	62	62	0
9.76	37	2.2	5.17	66	66	0
9.92	38	3.0	6.83	71	71	0
10.08	39	3.9	8.72	78	78	0
10.24	40	4.8	10.66	87	87	0
10.40	41	5.8	12.69	97	97	0
10.56	42	6.9	15.02	110	110	0
10.72	43	8.2	17.99	125	125	0
10.88	44	9.8	21.68	143	143	0
11.04	45	11.8	26.22	165	165	0
11.20	46	14.4	32.59	191	191	0
11.36	47	18.2	41.93	223	223	0
11.52	48	23.7	77.75	265	265	0
11.68	49	54.0	210.15	340	343	1
11.84	50	156.1	490.52	548	551	1
12.00	51	334.4	865.48	1012	1039	13

12.16	52	531.1	1258.86	1803	1878	37
12.32	53	727.8	1646.75	2835	3062	114
12.48	54	919.0	1969.69	4067	4481	207
12.64	55	1050.7	2083.4	5475	6036	281
12.80	56	1032.7	1908.43	6792	7558	383
12.96	57	875.8	1598.81	7837	8701	432
13.12	58	723.1	1315.72	8512	9435	462
13.28	59	592.7	1058.96	8875	9828	476
13.44	60	466.3	820.9	8955	9934	490
13.60	61	354.6	620.55	8824	9776	476
13.76	62	266.0	465.6	8521	9444	462
13.92	63	199.7	353.35	8092	8986	447
14.08	64	153.7	277.44	7581	8445	432
14.24	65	123.7	228.1	7059	7859	400
14.40	66	104.4	195.92	6521	7287	383
14.56	67	91.6	174.35	6130	6717	293
14.72	68	82.8	159.41	5723	6305	291
14.88	69	76.6	148.84	5321	5882	281
15.04	70	72.2	139	4936	5469	267
15.20	71	66.8	124.95	4578	5075	249
15.36	72	58.2	106.9	4246	4703	228
15.52	73	48.7	90.26	3938	4353	207
15.68	74	41.5	77.29	3662	4028	183
15.84	75	35.8	66.71	3420	3740	160
16.00	76	31.0	58.34	3214	3487	137
16.16	77	27.4	52.73	3045	3272	114
16.32	78	25.3	49.79	2871	3098	114
16.48	79	24.5	48.34	2736	2920	92
16.64	80	23.9	47.06	2601	2785	92
16.80	81	23.2	23.17	2464	2648	92

SIDESLOPE	0.17			
MAXIMUM DEPTH	12	FT	BASIN 008	
NUMBER OF CULVERTS	4			
CULVERT DIAMETER	48	IN		4 FT
CULVERT AREA	12.57	FT2		
ENTRANCE LOSS COEFFIC	0.64			
LENGTH	660	FT		
WIDTH	990	FT		
AREA	15.00	ACRES		
MANNING'S n	0.015			
SLOPE	0.003			
dT	0.16	HRS		576 SEC

MAX DISCHARGE	462	CFS
MAX DEPTH	5.2	FT
AREA AT MAX DEPTH	17.45	ACRES

DEPTH (FT)	AREA (AC)	VOLUME (FT3)	DEPTH/DIA	2S/dT+O (CFS)	DISCHARGE (CFS)	DEPTH (FT)
0.0	15.00	0	0.00	0.00	0.00	0.0
0.2	15.09	131077	0.05	456.43	1.31	0.2
0.4	15.18	262947	0.10	918.71	5.69	0.4
0.6	15.27	395615	0.15	1386.91	13.25	0.6
0.8	15.37	529081	0.20	1861.00	23.91	0.8
1.0	15.46	663349	0.25	2340.63	37.33	1.0
1.2	15.55	798420	0.30	2825.70	53.41	1.2
1.4	15.64	934297	0.35	3315.81	71.72	1.4
1.6	15.74	1070982	0.40	3810.61	91.92	1.6
1.8	15.83	1208478	0.45	4309.70	113.59	1.8
2.0	15.92	1346786	0.50	4812.96	136.62	2.0
2.2	16.02	1485909	0.55	5318.99	159.58	2.2
2.4	16.11	1625850	0.60	5828.45	183.14	2.4
2.6	16.20	1766610	0.65	6341.35	207.28	2.6
2.8	16.30	1908192	0.70	6854.15	228.48	2.8
3.0	16.39	2050599	0.75	7368.64	248.50	3.0
3.2	16.49	2193832	0.80	7884.23	266.76	3.2
3.4	16.58	2337894	0.85	8398.58	280.89	3.4
3.6	16.68	2482787	0.90	8911.69	290.90	3.6
3.8	16.78	2628514	0.95	9420.04	293.26	3.8
4.0	16.87	2775076	1.00	9908.33	272.65	4.0
4.2	16.97	2922476	1.05	10530.40	382.92	4.2
4.4	17.06	3070717	1.10	11062.15	399.94	4.4
4.6	17.16	3219801	1.15	11596.14	416.27	4.6
4.8	17.26	3369729	1.20	12132.44	431.99	4.8
5.0	17.36	3520505	1.25	12671.12	447.15	5.0
5.2	17.45	3672130	1.30	13212.27	461.81	5.2
5.4	17.55	3824607	1.35	13755.91	476.03	5.4
5.6	17.65	3977939	1.40	14302.12	489.83	5.6
5.8	17.75	4132127	1.45	14850.91	503.25	5.8
6.0	17.85	4287174	1.50	15402.34	516.32	6.0
6.2	17.95	4443082	1.55	15956.44	529.07	6.2
6.4	18.04	4599853	1.60	16513.24	541.53	6.4
6.6	18.14	4757490	1.65	17072.76	553.70	6.6
6.8	18.24	4915995	1.70	17635.03	565.60	6.8
7.0	18.34	5075371	1.75	18200.08	577.27	7.0

7.2	18.44	5235619	1.80	18767.93	588.70	7.2
7.4	18.54	5396742	1.85	19338.60	599.91	7.4
7.6	18.65	5558742	1.90	19912.11	610.92	7.6
7.8	18.75	5721622	1.95	20488.48	621.74	7.8
8.0	18.85	5885384	2.00	21067.73	632.37	8.0
8.2	18.95	6050030	2.05	21649.87	642.82	8.2
8.4	19.05	6215562	2.10	22234.92	653.10	8.4
8.6	19.15	6381983	2.15	22822.89	663.23	8.6
8.8	19.26	6549295	2.20	23413.81	673.20	8.8
9.0	19.36	6717501	2.25	24007.69	683.03	9.0
9.2	19.46	6886602	2.30	24604.53	692.72	9.2
9.4	19.56	7056601	2.35	25204.36	702.28	9.4
9.6	19.67	7227501	2.40	25807.19	711.70	9.6
9.8	19.77	7399303	2.45	26413.03	721.01	9.8
9.8	19.77	7399303	2.45	26413.03	721.01	9.8
10.0	19.88	7572010	2.50	27021.89	730.19	10.0
10.2	19.98	7745624	2.55	27633.79	739.26	10.2
10.4	20.08	7920147	2.60	28248.74	748.22	10.4
10.6	20.19	8095583	2.65	28866.74	757.08	10.6
10.8	20.29	8271933	2.70	29487.82	765.83	10.8
11.0	20.40	8449199	2.75	30111.98	774.49	11.0
11.2	20.51	8627383	2.80	30739.24	783.04	11.2
11.4	20.61	8806489	2.85	31369.60	791.51	11.4
11.6	20.72	8986518	2.90	32003.07	799.89	11.6
11.8	20.82	9167473	2.95	32639.68	808.18	11.8
12.0	20.93	9349356	3.00	33279.42	816.38	12.0
12.2	21.04	9532168	3.05	33922.31	824.50	12.2
12.4	21.14	9715914	3.10	34568.36	832.55	12.4
12.6	21.25	9900594	3.15	35217.58	840.51	12.6
12.8	21.36	10086212	3.20	35869.98	848.41	12.8
13.0	21.47	10272768	3.25	36525.56	856.23	13.0
13.2	21.58	10460267	3.30	37184.35	863.98	13.2
13.4	21.68	10648710	3.35	37846.34	871.66	13.4
13.6	21.79	10838099	3.40	38511.56	879.27	13.6
13.8	21.90	11028437	3.45	39180.00	886.82	13.8
14.0	22.01	11219725	3.50	39851.68	894.30	14.0
14.2	22.12	11411967	3.55	40526.61	901.72	14.2
14.4	22.23	11605165	3.60	41204.79	909.08	14.4
14.6	22.34	11799321	3.65	41886.25	916.38	14.6
14.8	22.45	11994436	3.70	42570.98	923.63	14.8
15.0	22.56	12190514	3.75	43258.99	930.82	15.0
15.2	22.67	12387557	3.80	43950.30	937.95	15.2
15.4	22.78	12585567	3.85	44644.92	945.03	15.4
15.6	22.90	12784547	3.90	45342.84	952.05	15.6
15.8	23.01	12984498	3.95	46044.09	959.03	15.8
16.0	23.12	13185423	4.00	46748.67	965.95	16.0
16.2	23.23	13387325	4.05	47456.60	972.83	16.2
16.4	23.34	13590205	4.10	48167.87	979.66	16.4
16.6	23.46	13794066	4.15	48882.50	986.44	16.6
16.8	23.57	13998910	4.20	49600.50	993.17	16.8
17.0	23.68	14204740	4.25	50321.87	999.86	17.0
17.2	23.80	14411558	4.30	51046.63	1006.50	17.2
17.4	23.91	14619366	4.35	51774.79	1013.10	17.4
17.6	24.02	14828166	4.40	52506.35	1019.66	17.6
17.8	24.14	15037961	4.45	53241.32	1026.17	17.8

TIME (hr)	n	I (cfs)	I(n)+I(n+1) (cfs)	2S(n)-O(n) dT (cfs)	2S(n+1)+O(n+1) dT (cfs)	O(n+1)
3.20	1	0.0	0	0		0
3.36	2	0.0	0	0	0	0
3.52	3	0.0	0.07	0	0	0
3.68	4	0.1	0.27	0	0	0
3.84	5	0.2	0.58	0	0	0
4.00	6	0.4	0.92	1	1	0
4.16	7	0.5	1.24	2	2	0
4.32	8	0.7	1.57	3	3	0
4.48	9	0.9	1.98	5	5	0
4.64	10	1.1	2.48	7	7	0
4.80	11	1.4	2.98	9	9	0
4.96	12	1.6	3.36	12	12	0
5.12	13	1.8	3.59	15	15	0
5.28	14	1.8	3.77	19	19	0
5.44	15	1.9	3.96	23	23	0
5.60	16	2.0	4.17	27	27	0
5.76	17	2.1	4.42	31	31	0
5.92	18	2.3	4.8	35	35	0
6.08	19	2.5	5.35	40	40	0
6.24	20	2.8	5.94	46	46	0
6.40	21	3.1	6.35	51	51	0
6.56	22	3.2	6.48	58	58	0
6.72	23	3.2	6.48	64	64	0
6.88	24	3.2	6.62	71	71	0
7.04	25	3.4	7.04	77	77	0
7.20	26	3.7	7.62	84	84	0
7.36	27	4.0	8.06	92	92	0
7.52	28	4.1	8.16	100	100	0
7.68	29	4.1	8.05	108	108	0
7.84	30	4.0	8.05	116	116	0
8.00	31	4.1	8.39	124	124	0
8.16	32	4.3	8.97	133	133	0
8.32	33	4.6	9.47	142	142	0
8.48	34	4.8	9.61	151	151	0
8.64	35	4.8	9.44	161	161	0
8.80	36	4.7	9.31	170	170	0
8.96	37	4.7	9.53	180	180	0
9.12	38	4.9	10.09	189	189	0
9.28	39	5.2	11.1	199	199	0
9.44	40	5.9	14.03	210	210	0
9.60	41	8.1	19.18	224	224	0
9.76	42	11.0	24.55	243	243	0
9.92	43	13.5	29.03	268	268	0
10.08	44	15.5	32.67	297	297	0
10.24	45	17.2	35.53	330	330	0
10.40	46	18.4	37.49	365	365	0
10.56	47	19.1	38.6	403	403	0
10.72	48	19.5	39.41	441	441	0
10.88	49	19.9	41.86	478	481	1
11.04	50	21.9	47.41	517	520	1
11.20	51	25.5	54.52	562	565	1

11.36	52	29.1	63.4	614	617	1
11.52	53	34.4	79.33	675	677	1
11.68	54	45.0	118.34	752	754	1
11.84	55	73.4	269.62	867	870	1
12.00	56	196.3	652.08	1126	1137	6
12.16	57	455.8	1205.27	1751	1778	13
12.32	58	749.5	1754.7	2850	2956	53
12.48	59	1005.3	2205.16	4377	4604	114
12.64	60	1199.9	2507.16	6168	6582	207
12.80	61	1307.3	2562.91	8113	8675	281
12.96	62	1255.7	2265.14	9910	10576	383
13.12	63	1009.5	1732.49	11311	12175	432
13.28	64	723.0	1224.02	12149	13044	447
13.44	65	501.0	851.13	12450	13374	462
13.60	66	350.1	603.02	12377	13301	462
13.76	67	252.9	443.79	12086	12980	447
13.92	68	190.9	339.36	11666	12530	432
14.08	69	148.5	267.52	11173	12005	416
14.24	70	119.1	219.08	10640	11440	400
14.40	71	100.0	188.81	10094	10859	383
14.56	72	88.8	171.14	9737	10282	273
14.72	73	82.4	160.81	9322	9908	293
14.88	74	78.5	153.9	8896	9483	293
15.04	75	75.5	147.91	8468	9050	291
15.20	76	72.5	140.67	8054	8616	281
15.36	77	68.2	127.98	7661	8195	267
15.52	78	59.8	108.15	7292	7789	249
15.68	79	48.4	86.92	6904	7401	249
15.84	80	38.5	70.31	6533	6990	228
16.00	81	31.8	31.77	6189	6604	207

RATING TABLES FOR NATURAL X-SECTIONS

CROSS SECTION NAME: CAVE CREEK ADMS XSECT. 006

MANNINGS N = .035
SLOPE = 8.000001E-03

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1509	0
2	1508	130
3	1506	390
4	1506	480
5	1506	560
6	1504	632
7	1502	638
8	1502	642
9	1504	648
10	1506	685
11	1508	835
12	1510	1015

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1502.40	2.1	6.5	1.77	3.7
1502.80	5.1	9.1	2.60	13.3
1503.20	9.1	11.6	3.24	29.5
1503.60	14.1	14.1	3.79	53.4
1504.00	20.0	16.7	4.29	85.8
1504.40	30.8	38.5	3.27	100.7
1504.80	50.3	60.3	3.36	169.0
1505.20	78.5	82.1	3.68	289.0
1505.60	115.4	103.9	4.07	469.8
1506.00	161.1	295.8	2.53	407.9
1506.40	295.5	377.8	3.22	952.6
1506.80	462.7	459.8	3.81	1764.7
1507.20	662.8	541.8	4.34	2878.8
1507.60	895.6	623.8	4.83	4328.4
1508.00	1161.3	705.8	5.29	6145.9
1508.40	1460.9	793.8	5.70	8331.5
1508.80	1795.8	881.9	6.10	10956.2
1509.20	2163.2	943.8	6.60	14280.8
1509.60	2547.7	979.8	7.18	18294.3
1510.00	2946.5	1015.8	7.72	22759.3

CROSS SECTION NAME: CAVE CREEK ADMS XSECT. 008

MANNINGS N = .035
SLOPE = .005

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1500	0
2	1498	100
3	1496	390
4	1494	400
5	1494	418
6	1496	421
7	1498	700
8	1500	885

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1494.30	5.7	20.1	1.30	7.4
1494.60	12.0	22.1	1.99	23.9
1494.90	18.8	24.2	2.54	47.8
1495.20	26.3	26.3	3.00	78.9
1495.50	34.3	28.4	3.41	117.0
1495.80	42.9	30.4	3.78	162.2
1496.10	53.5	60.4	2.77	148.4
1496.40	84.2	145.7	2.08	175.4
1496.70	140.5	231.1	2.15	302.7
1497.00	222.4	316.4	2.37	527.8
1497.30	329.9	401.8	2.63	868.5
1497.60	463.0	487.2	2.90	1343.8
1497.90	621.8	572.5	3.17	1972.3
1498.20	803.3	629.4	3.53	2837.4
1498.50	998.3	672.2	3.91	3901.4
1498.80	1206.2	714.9	4.25	5131.8
1499.10	1426.8	757.7	4.58	6532.4
1499.40	1660.4	800.5	4.88	8107.5
1499.70	1906.7	843.2	5.17	9861.7
1500.00	2165.9	885.8	5.45	11801.2

CROSS SECTION NAME: CAVE CREEK ADMS XSECT. 014

MANNINGS N = .035
SLOPE = .005

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1490	0
2	1488	289
3	1486	295
4	1484	300
5	1484	311
6	1486	315
7	1488	320
8	1490	740

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1484.30	3.5	12.5	1.29	4.5
1484.60	7.4	14.0	1.97	14.6
1484.90	11.7	15.4	2.50	29.3
1485.20	16.4	16.9	2.95	48.4
1485.50	21.6	18.4	3.34	72.0
1485.80	27.1	19.9	3.69	100.0
1486.10	33.0	21.4	4.00	132.3
1486.40	39.4	23.2	4.28	168.7
1486.70	46.4	25.0	4.54	210.3
1487.00	53.8	26.7	4.79	257.3
1487.30	61.7	28.5	5.03	309.9
1487.60	70.1	30.2	5.26	368.3
1487.90	78.9	32.0	5.48	432.9
1488.20	95.4	103.7	2.84	270.7
1488.50	142.0	210.1	2.31	328.2
1488.80	220.5	316.4	2.36	520.2
1489.10	330.9	422.8	2.55	843.7
1489.40	473.3	529.2	2.79	1318.9
1489.70	647.5	635.6	3.04	1968.4
1490.00	853.7	741.6	3.30	2815.3

CROSS SECTION NAME: CAVE CREEK ADMS XSECT 027

MANNINGS N = .035
SLOPE = .004

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1472.1	0
2	1471.9	308
3	1470	316
4	1468	320
5	1468	330
6	1470	341
7	1472	349
8	1474	510

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1468.30	3.3	12.3	1.12	3.7
1468.60	7.4	14.7	1.69	12.4
1468.90	12.0	17.0	2.13	25.6
1469.20	17.4	19.4	2.50	43.5
1469.50	23.4	21.7	2.82	66.2
1469.80	30.2	24.1	3.12	94.1
1470.10	37.5	26.5	3.39	127.2
1470.40	45.7	29.0	3.63	165.8
1470.70	54.5	31.6	3.87	210.8
1471.00	64.1	34.1	4.09	262.3
1471.30	74.5	36.6	4.31	320.8
1471.60	85.5	39.2	4.52	386.5
1471.90	97.3	42.7	4.65	453.1
1472.20	173.1	366.3	1.63	281.9
1472.50	286.2	390.4	2.18	625.0
1472.80	406.7	414.6	2.65	1078.1
1473.10	534.4	438.7	3.06	1636.5
1473.40	669.3	462.9	3.43	2298.0
1473.70	811.5	487.1	3.77	3062.4
1474.00	960.9	511.1	4.09	3930.3

CROSS SECTION NAME: CAVE CREEK ADMS XSECT. 80

MANNINGS N = .035
SLOPE = .007

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1418.9	0
2	1418	190
3	1416.5	340
4	1418	490
5	1419.1	710

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1416.70	4.0	40.0	0.77	3.1
1416.90	16.0	80.0	1.21	19.4
1417.10	36.0	120.0	1.59	57.3
1417.30	64.0	160.0	1.93	123.3
1417.50	100.0	200.0	2.24	223.6
1417.70	143.9	240.0	2.53	363.6
1417.90	195.9	279.9	2.80	548.5
1418.10	256.9	341.0	2.94	755.7
1418.30	333.3	423.2	3.03	1009.8
1418.50	426.1	505.4	3.17	1351.1
1418.70	535.4	587.6	3.34	1787.6
1418.90	661.1	669.8	3.52	2328.1
1419.10	799.0	709.9	3.84	3071.3
1419.30	941.0	710.0	4.29	4033.2

CROSS SECTION NAME: CAVE CREEK ADMS XSECTS. 83 & 85

MANNINGS N = .035
SLOPE = .007

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1430	0
2	1428.7	120
3	1429.2	740
4	1430	910

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1428.90	26.6	266.4	0.77	20.4
1429.10	106.5	532.8	1.21	129.4
1429.30	234.6	696.6	1.72	403.3
1429.50	380.0	757.5	2.24	852.0
1429.70	537.5	818.5	2.68	1442.6
1429.90	707.3	879.4	3.07	2172.7
1430.10	887.7	910.0	3.49	3101.4

¿KAVE CREEK ADMS XSECTS. 86 & 87

MANNINGS N = .035
SLOPE = .0069

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1432	0
2	1430	160
3	1429.8	370
4	1429.8	760
5	1430	930
6	1432	1140

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1429.90	48.5	580.0	0.67	32.7
1430.00	116.0	770.0	1.00	115.8
1430.10	193.9	788.5	1.38	268.3
1430.20	273.6	807.0	1.71	469.2
1430.30	355.2	825.5	2.01	714.1
1430.40	438.7	844.0	2.28	1000.2
1430.50	524.0	862.5	2.53	1325.6
1430.60	611.1	881.0	2.76	1689.0
1430.70	700.1	899.5	2.98	2089.4
1430.80	791.0	918.0	3.19	2526.0
1430.90	883.7	936.5	3.39	2998.3
1431.00	978.2	955.0	3.58	3505.8
1431.10	1074.6	973.5	3.77	4048.2
1431.20	1172.9	992.0	3.94	4625.3
1431.30	1273.0	1010.5	4.11	5236.8
1431.40	1374.9	1029.0	4.28	5882.7
1431.50	1478.7	1047.4	4.44	6562.9
1431.60	1584.4	1065.9	4.59	7277.4
1431.70	1691.8	1084.4	4.74	8026.2
1431.80	1801.2	1102.9	4.89	8809.4
1431.90	1912.4	1121.4	5.03	9627.0
1432.00	2025.4	1139.9	5.17	10479.0
1432.10	2139.4	1140.0	5.37	11479.5

CROSS SECTION NAME: CAVE CREEK ADMS XSECTS. 105 & 107

MANNINGS N = .035
SLOPE = .0058

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1419.4	0
2	1418	110
3	1417.1	420
4	1418	740
5	1420	1060

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1417.30	14.0	140.0	0.70	9.7
1417.50	56.0	279.9	1.11	61.9
1417.70	125.9	419.9	1.45	182.4
1417.90	223.9	559.9	1.76	392.9
1418.10	347.5	653.8	2.12	737.3
1418.30	483.0	701.5	2.52	1217.8
1418.50	628.1	749.2	2.87	1805.5
1418.70	782.6	796.9	3.19	2500.2
1418.90	946.7	844.6	3.49	3303.3
1419.10	1120.4	892.3	3.76	4216.3
1419.30	1303.6	940.0	4.02	5241.7
1419.50	1495.9	979.9	4.29	6412.9
1419.70	1695.0	1011.9	4.56	7730.5
1419.90	1900.6	1043.9	4.82	9163.0
1420.10	2111.7	1060.0	5.12	10810.7

CROSS SECTION NAME: CAVE CREEK ADMS XSECT 109

MANNINGS N = .035
SLOPE = .007

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1419.1	0
2	1418	295
3	1418	310
4	1418.9	390

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1418.10	3.3	50.7	0.57	1.9
1418.20	10.1	86.4	0.85	8.6
1418.30	20.6	122.1	1.08	22.3
1418.40	34.6	157.8	1.29	44.6
1418.50	52.1	193.5	1.48	77.2
1418.60	73.2	229.2	1.66	121.6
1418.70	97.9	264.9	1.83	179.2
1418.80	126.2	300.6	1.99	251.4
1418.90	158.0	336.3	2.15	339.3
1419.00	193.0	363.1	2.33	449.8
1419.10	230.6	389.9	2.50	577.3
1419.20	269.6	390.0	2.78	748.9

CROSS SECTION NAME: CAVE CREEK ADMS XSECT. PEPPERIDGE CHANNEL

MANNINGS N = .035
SLOPE = .0075

POINT NO.	ELEVATION [FT]	STATION [FT]
1	1456	5
2	1452	13
3	1452	45
4	1454	49
5	1454	79
6	1455.5	82
7	1455.5	90
8	1456	90.1

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
1452.20	6.5	32.9	1.24	8.1
1452.40	13.1	33.8	1.96	25.7
1452.60	19.9	34.7	2.54	50.6
1452.80	26.9	35.6	3.05	82.0
1453.00	34.0	36.5	3.51	119.3
1453.20	41.3	37.4	3.93	162.1
1453.40	48.7	38.3	4.32	210.4
1453.60	56.3	39.2	4.68	263.8
1453.80	64.1	40.0	5.03	322.2
1454.00	72.0	40.9	5.36	385.5
1454.20	86.0	71.8	4.15	356.8
1454.40	100.3	72.7	4.55	456.8
1454.60	114.7	73.6	4.94	566.6
1454.80	129.2	74.5	5.31	685.9
1455.00	143.9	75.4	5.66	814.4
1455.20	158.8	76.3	5.99	952.0
1455.40	173.9	77.2	6.32	1098.3
1455.60	189.8	86.0	6.23	1183.6
1455.80	206.7	86.6	6.57	1357.4
1456.00	223.7	87.3	6.89	1540.4
1456.20	240.7	87.3	7.23	1740.6

DIFF. MODEL
INPUT HYDROGRAPHS

CAVE CREEK ADHS HYDROGRAPHS FOR INPUT INTO
THE DIFFUSION MODEL

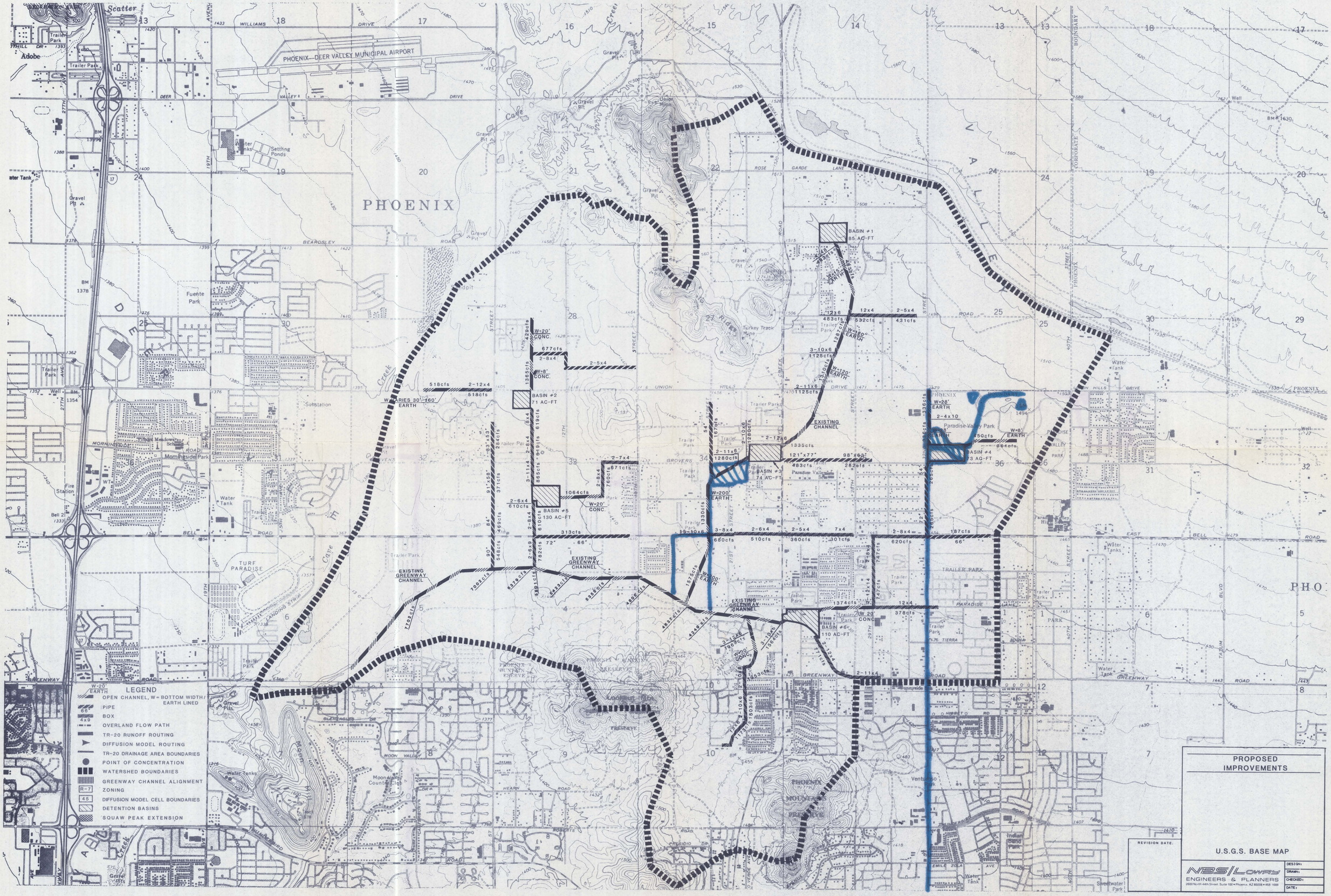
TIME [HRS.]	143	33	34	35	36	95	93	96	142	39	40	41	42	44	45	46	47	48	50
3.00																			
4.00											0.17							0.23	
5.00	0.00										0.38							0.60	
6.00	0.01										0.65							0.99	
7.00	0.01										0.82							1.29	
8.00	0.03										0.98							1.54	
9.00	0.04										1.11							1.75	
9.50	0.05		0.00			0.03				0.01	2.94				0.17			4.10	
10.00	0.06		0.06	0.01	0.01	0.37	0.25			0.35	3.82	0.25	0.04	0.04	0.83			5.74	
10.50	0.08		0.39	0.29	0.30	1.24	0.89	0.09	0.09	0.79	4.01	0.88	0.29	0.42	1.53	0.18	0.17	6.32	
11.00	17.70	0.00	1.08	1.09	1.12	2.73	2.42	0.72	0.54	1.81	6.68	2.67	0.95	1.40	3.45	1.03	1.00	9.22	
11.50	35.72	0.38	2.74	3.11	3.24	6.25	6.11	2.49	1.91	5.04	11.85	7.19	2.72	4.00	8.11	3.40	3.35	15.44	0.22
12.00	292.04	43.73	48.51	80.96	83.38	94.84	146.70	72.55	21.43	137.82	175.10	157.18	79.40	115.10	131.10	110.71	107.46	201.04	45.00
12.50	1147.92	329.00	131.99	152.74	153.78	297.58	250.99	146.21	112.96	290.00	260.63	325.60	105.84	166.44	327.07	162.48	161.60	344.69	124.76
13.00	1948.69	574.24	94.09	50.73	48.09	310.18	68.84	52.76	195.92	112.15	73.43	185.74	10.96	22.66	271.95	21.43	23.24	161.65	60.07
13.50	1991.88	358.23	29.07	14.92	14.47	201.73	21.54	15.33	148.14	30.78	21.76	73.42	6.85	11.18	128.20	10.94	11.00	58.24	17.23
14.00	1223.66	168.60	12.72	8.17	8.08	130.67	12.54	8.22	76.45	16.56	12.72	32.55	4.50	7.33	55.84	7.18	7.23	27.86	8.69
14.50	598.85	92.49	8.46	7.69	7.69	84.82	12.21	7.56	41.64	15.06	12.16	21.96	4.83	7.73	31.34	7.60	7.59	20.23	7.35

DIFF. MODEL RAINFALL DISTRIBUTION INPUT

CITY OF PHOENIX 24 HR. RAINFALL DISTRIBUTION
100 YR. RAINFALL INTENSITY VS. TIME FOR DIFFUSION MODEL

TIME [HRS.]	UNIT HYD. ACC.RAINFALL	ADJ. HYD. 100 YR.	INTENSITY [IN/HR]
0.000	0.000	0.000	
			0.016
1.000	0.008	0.016	
			0.020
2.000	0.018	0.036	
			0.016
3.000	0.026	0.052	
			0.018
4.000	0.035	0.070	
			0.018
5.000	0.044	0.088	
			0.018
6.000	0.053	0.106	
			0.018
7.000	0.062	0.124	
			0.018
8.000	0.071	0.142	
			0.018
9.000	0.080	0.160	
			0.054
10.000	0.107	0.214	
			0.066
11.000	0.140	0.280	
			0.720
12.000	0.500	1.000	
			0.720
13.000	0.860	1.720	
			0.066
14.000	0.893	1.786	
			0.054
15.000	0.920	1.840	
			0.016
16.000	0.928	1.856	
			0.018
17.000	0.937	1.874	
			0.020
18.000	0.947	1.894	
			0.018
19.000	0.956	1.912	
			0.016
20.000	0.964	1.928	
			0.018
21.000	0.973	1.946	
			0.018
22.000	0.982	1.964	
			0.018
23.000	0.991	1.982	
			0.018
24.000	1.000	2.000	

UPPER EAST FORK CAVE CREEK
DETENTION AREA SIZING STUDY


PHOENIX—DEER VALLEY MUNICIPAL AIRPORT
PHOENIX
BASIN #1
85 AC-FT
BASIN #2
71 AC-FT
BASIN #3
74 AC-FT
BASIN #4
73 AC-FT
BASIN #5
130 AC-FT
BASIN #6
110 AC-FT
EXISTING CHANNEL
EXISTING GREENWAY CHANNEL
EXISTING GREENWAY CHANNEL
EXISTING GREENWAY CHANNEL
LEGEND
OPEN CHANNEL, W = BOTTOM WIDTH/ EARTH LINED
PIPE
BOX
OVERLAND FLOW PATH
TR-20 RUNOFF ROUTING
DIFFUSION MODEL ROUTING
TR-20 DRAINAGE AREA BOUNDARIES
POINT OF CONCENTRATION
WATERSHED BOUNDARIES
GREENWAY CHANNEL ALIGNMENT
ZONING
DIFFUSION MODEL CELL BOUNDARIES
DETENTION BASINS
SQUAW PEAK EXTENSION
PROPOSED IMPROVEMENTS
U.S.G.S. BASE MAP
REVISION DATE:
NBS/LOWRY
ENGINEERS & PLANNERS
2600 North 44th Street, Suite 100 • Phoenix, AZ 85008 • 468-1688
DESIGN:
DRAWN:
CHECKED:
DATE:

APPENDIX F

LETTER FROM CITY OF PHOENIX PARKS DEPARTMENT

City of Phoenix
Engineering Department

FLOOD CONTROL DISTRICT
RECEIVED
SEP 23 '87

	CH ENG		P & PM
	DEP		HYDRO
	ADMIN		LAND
	FINANCE		FILE
	C & O	1	TAD
	ENGR		

REMARKS

September 25, 1987

Ms. Teresa Dominguez
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
3335 West Durango Street
Phcenix, AZ 85015

Dear Ms. Dominguez:

CITY OF PHOENIX COMMENTS ON UPPER EAST FORK OF CAVE CREEK WASH STUDY
SPECIFICALLY, DESIGN CRITERIA FROM THE
PARKS, RECREATION AND LIBRARY DEPARTMENT
INDEX NO. ST-860320

As you know, we have been anticipating a statement from the City Parks, Recreation and Library Department regarding their design criteria for joint use trails and detention basins. Their statement has been received and is hereby being transmitted to you.

If there are any questions, please contact me at 256-3441.

Very truly yours,

J. E. ATTEBERY, P.E., City Engineer

Dwayne A. Williams
DWAYNE A. WILLIAMS, P.E.
Civil Engineer III

DAW/nf/DAW25

Attachments

c. Mr. Attebery
Mr. Blakley

125 East Washington Street

CITY OF PHOENIX

TO ROSS BLAKELEY, Supervisor
Engineering Department

DATE September 21, 1987

FROM BILL ROWE
Landscape Architect II

SUBJECT TRAIL STANDARDS AND DESIGN CRITERIA

HORSE

1. 10 foot clear area
2. Under passes 10 feet by 10 feet with Positive Drainage, lighted over 200 feet long, base rough broom finish.
3. 2 inches DG to mark paths
4. 10 foot tall clear needed
5. No turf trails.

BIKE

1. 8 foot concrete path
2. Grades 6%--preferred to 10% maximum
3. 8 foot tall clear
4. No stepp drops within 3 feet of path

Aesthetics are very important.

Paths should be:

1. Landscaped in excess R.O.W.
2. Meandering
3. Treated with surflan or other premergent to prevent weed growth.

BR/rt

CITY OF PHOENIX

TO ROSS BLAKELEY, Supervisor
Engineering Department

DATE September 21, 1987

FROM BILL ROWE
Landscape Architect II

SUBJECT RETENTION BASIN JOINT USE

The following are criteria that works well for Parks, Recreation and Library Department.

A. Make inflow areas from streets so that nuisance water will be allowed to go directly into storm sewer, i.e. Sereno Park.

B. Any residential nuisance water will be placed in pipes or put into a low flow channel or storm sewer, i.e. Venturoso Park, 61st and Paradise Lane.

C. Stabilize the slopes where high velocity is expected, i.e. Sereno Park.

D. Area should be engineered to drain within 24 hours from a full basin.

E. No standing water.

F. Terrace the areas so that open space is lowest, green playfields next level, and parking and court games should be above flood line.

G. Maximum slope should be 5:1.

H. Maintenance and access roads to all levels.

I. Granite may be used in some areas, discuss with Parks.

J. No dry wells.

BR/rt