Appendix I

Sample Applications of HEC-2

Appendix I
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The following examples illustrate many of the input and output options available in HEC-2. These examples are contrived to show program features and may not represent realistic models of the actual streams.

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Note: There are additional bridge examples in Appendix III and culvert examples in Appendix IV.

Example No. 1

Input

```
T1      Example 1:  Single profile subcritical run
T2      Output options include: User design summary, flow distribution, suppress
T2        printer plot of profile, and cross-section printer plot.
T3      Bear Creek
T4      Input options include: Effective area option, encroachment method 1,
T5        add points, repeat cross section, and change discharge.
*   Starting with energy slope and estimated water surface elevation
J1                                0.0092                     7800 1756.02
*   Supress profile printer plot (J2.3 = -1)
J2                     -1
*   User designed output with variables and defined table (150)
J3    38       1       3      57      68     150

NC    .1      .1     .04      .1      .3

*   Use effective area option to only consider overbank when channel banks are
*   exceeded (X3.1 = 10).
*   Use left encroachment to block low overbank area beyond station 183 (X3.4&5)
X1   1.0      60     767     815       0       0       0
X3    10                     183    1757
GR1767.0       0  1765.4      23  1763.5      49  1762.0      69  1759.1      87
GR1758.1     103  1756.9     113  1756.9     122  1753.2     127  1753.1     131
GR1757.7     140  1757.7     152  1755.0     160  1755.6     168  1755.6     171
GR1755.6     174  1754.7     177  1755.9     183  1756.0     190  1754.9     208
GR1754.7     220  1753.7     247  1753.3     282  1752.7     321  1750.9     352
GR1748.6     373  1747.2     391  1748.3     404  1752.1     434  1753.6     452
GR1753.7     477  1752.6     499  1753.2     532  1753.4     572  1753.9     613
GR1753.3     644  1754.4     677  1754.7     698  1755.6     728  1756.2     750
GR1755.7     767  1749.9     772  1749.3     775  1748.0     775  1747.4     778
GR1749.3     785  1749.7     789  1752.9     797  1755.5     807  1756.9     815
GR1755.3     827  1756.3     847  1756.2     866  1756.9     871  1759.5     877
GR1760.7     893  1762.0     918  1763.2     936  1764.3     963  1766.2     990

*   Request Effective Area option (X3.1 = 10)
X1  2.00      45     768     816     500     480     510
X3    10
GR1764.5     220  1764.2     224  1763.8     232  1763.4     240  1762.5     245
GR1761.2     248  1762.8     255  1762.4     260  1761.4     263  1761.4     267
GR1759.3     271  1758.5     285  1758.7     298  1758.6     315  1757.7     326
GR1755.8     336  1755.7     347  1755.8     358  1757.3     374  1757.3     411
GR1756.5     433  1756.4     459  1755.2     482  1753.5     508  1755.1     539
GR1755.8     550  1758.0     578  1759.0     606  1759.1     632  1760.1     666
GR1759.6     693  1759.4     718  1760.2     748  1759.5     760  1759.8     768
GR1755.5     771  1754.6     773  1753.6     776  1754.6     788  1755.4     795
GR1762.6     816  1761.9     828  1761.9     851  1762.5     893  1763.9     919

*   Channel & left bank 'n' value changed for next and following cross sections
NC  .085            .035
*   Flow distribution requested for section 3 (X2.10 = 15)
X1  3.00      59    1017    1068     620     550     610
X2                                                                            15
X3    10
GR1772.3       0  1772.7      78  1772.7     103  1771.8     112  1771.2     124
GR1771.5     164  1771.5     182  1771.3     210  1771.8     225  1769.2     247
GR1769.2     253  1768.3     275  1766.5     310  1765.1     322  1764.1     341
GR1763.1     381  1763.5     486  1764.4     502  1764.1     513  1764.5     534
GR1764.6     557  1764.8     591  1764.2     619  1762.3     647  1760.3     666
GR1760.5     684  1762.4     707  1765.3     735  1765.8     766  1766.0     796
GR1765.8     825  1765.6     860  1765.6     906  1765.8     940  1765.8     980
GR1766.1     991  1765.8    1017  1763.1    1025  1762.4    1032  1761.3    1034
GR1759.4    1053  1761.3    1059  1763.5    1068  1765.1    1093  1765.6    1116
GR1765.5    1134  1766.9    1156  1770.0    1169  1770.5    1188  1770.9    1218
GR1771.5    1234  1771.2    1258  1771.1    1290  1770.6    1330  1770.1    1365
GR1770.9    1390  1773.5    1415  1777.0    1442  1778.6    1465
```

```
*   Cross-section plot to water surface requested for section 4 (X1.10 = 10)
X1  4.00      65    1248    1285     580     600     620                       10
X3    10
GR1775.9     254  1775.2     284  1775.0     314  1774.6     358  1774.5     373
GR1774.6     388  1773.8     407  1775.0     424  1775.0     441  1775.7     461
GR1775.7     465  1774.0     466  1774.0     474  1776.9     482  1775.0     488
GR1774.7     503  1773.5     506  1773.9     509  1773.9     512  1773.9     516
GR1772.2     518  1773.9     527  1772.5     543  1772.8     554  1772.9     565
GR1771.9     587  1771.3     619  1770.4     641  1770.6     658  1769.2     680
GR1765.9     697  1763.0     709  1763.7     713  1767.0     733  1768.5     747
GR1769.4     765  1769.4     798  1769.3     833  1768.9     865  1769.1     889
GR1769.0     907  1769.6     941  1769.2     974  1769.9    1006  1769.8    1032
GR1769.6    1060  1770.1    1088  1770.2    1126  1770.5    1159  1770.5    1187
GR1771.0    1198  1768.5    1207  1769.3    1221  1769.2    1248  1764.0    1257
GR1763.0    1263  1764.0    1267  1764.0    1275  1773.7    1285  1781.4    1302
GR1789.6    1320  1789.7    1332  1790.5    1352  1790.2    1373  1788.7    1396

*   Cross section 5 is a repeat of cross section 4 raised 5 ft.
X1     5                             600     650     670               5
X3    10

*   Manning's n values changed for next, and following sections
NC   .08     .09     .04
X1     6      45     595     694     650     550     630
GR1792.9       0  1791.0      75  1790.6     113  1789.4     164  1788.9     179
GR1787.1     184  1785.3     210  1784.7     263  1782.6     317  1781.0     323
GR1781.4     330  1780.3     339  1779.4     343  1778.4     346  1777.4     350
GR1779.8     353  1779.5     362  1780.0     369  1780.4     395  1779.9     398
GR1780.2     422  1779.1     452  1778.7     476  1778.2     499  1778.0     522
GR1778.0     550  1778.5     579  1779.0     595  1776.6     613  1774.1     626
GR1774.5     635  1775.3     643  1779.8     694  1780.3     705  1781.7     730
GR1784.9     785  1786.7     809  1787.7     817  1788.2     854  1788.5     878
GR1789.8     907  1792.0     937  1794.0     961  1795.3     987  1797.3    1015

*   Add a point to GR array with X4 input.
X1  7.00      55     912     983     590     600     620
X4     1  1785.1     800
GR1798.3       0  1794.5      22  1792.4      44  1790.8      69  1788.1     108
GR1787.4     133  1786.3     164  1785.2     206  1784.1     244  1784.2     281
GR1784.0     316  1783.5     353  1783.6     388  1783.7     418  1782.0     438
GR1782.7     464  1782.6     479  1781.0     488  1781.1     496  1781.2     508
GR1783.1     516  1783.1     540  1781.6     550  1782.7     554  1782.7     558
GR1787.7     561  1786.3     564  1788.8     570  1789.2     584  1788.9     606
GR1787.3     621  1786.4     652  1785.6     680  1784.9     709  1785.3     740
GR1785.1     777  1784.9     806  1784.3     830  1783.9     853  1784.8     886
GR1784.6     912  1783.8     932  1780.6     954  1779.7     963  1777.2     970
GR1779.7     976  1784.5     983  1787.5    1004  1788.8    1024  1790.6    1050
GR1792.1    1077  1794.3    1108  1795.4    1138  1796.7    1169  1798.6    1217

*   New discharge read on X2
X1  8.00      68    1089    1140     580     630     600
X2  7000
GR1803.0       0  1801.5      22  1799.8      36  1796.4      55  1794.1      70
GR1794.6      94  1793.7     123  1792.0     152  1791.1     182  1790.5     212
GR1790.0     249  1791.1     270  1792.2     283  1793.0     299  1792.6     324
GR1790.5     337  1789.3     343  1788.9     350  1789.4     375  1789.5     405
GR1789.0     436  1788.4     449  1788.2     461  1788.7     490  1789.2     518
GR1789.5     536  1789.7     548  1788.8     572  1788.4     590  1789.2     596
GR1787.4     599  1787.7     603  1787.6     606  1788.2     613  1788.5     635
GR1787.7     650  1787.5     673  1787.6     708  1787.0     738  1787.3     773
GR1787.1     809  1787.0     847  1787.3     886  1786.9     916  1786.8     946
GR1787.3     979  1787.9    1010  1788.2    1041  1788.4    1070  1788.0    1079
GR1789.5    1089  1788.7    1096  1784.6    1101  1784.3    1109  1784.7    1116
GR1784.6    1119  1785.3    1131  1790.3    1140  1790.8    1148  1791.5    1181
GR1792.3    1208  1792.3    1241  1792.9    1272  1793.6    1302  1794.6    1331
GR1795.8    1358  1798.9    1382  1802.7    1402
EJ
ER
```

Output

```
*******************************************                                                    ****************************************
*  HEC-2 WATER SURFACE PROFILES           *                                                    *  U.S. ARMY CORPS OF ENGINEERS       *
*                                         *                                                    *  HYDROLOGIC ENGINEERING CENTER      *
*  Version   4.6.0;  February 1991        *                                                    *  609 SECOND STREET, SUITE D         *
*                                         *                                                    *  DAVIS, CALIFORNIA 95616-4687       *
*  RUN DATE    06FEB91    TIME   13:53:59  *                                                    *          (916) 756-1104             *
*******************************************                                                    ****************************************


                                          X     X  XXXXXXX   XXXXX             XXXXX
                                          X     X  X        X     X            X     X
                                          X     X  X        X                        X
                                          XXXXXXX  XXXX     X          XXXXX    XXXXX
                                          X     X  X        X                  X
                                          X     X  X        X     X            X
                                          X     X  XXXXXXX   XXXXX             XXXXXXX
END OF BANNER


                                                   ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

   06FEB91      13:53:59                                                                                                    PAGE    1

                                                                                                THIS RUN EXECUTED 06FEB91    13:53:59
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  February 1991
*************************************

T1      Example 1:  Single profile subcritical run
T2      Output options include: User design summary, flow distribution, suppress
T2        printer plot of profile, and cross-section printer plot.
T3      Bear Creek
T4      Input options include: Effective area option, encroachment method 1,
T5        add points, repeat cross section, and change discharge.
    Starting with energy slope and estimated water surface elevation

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                                          0.0092                          7800   1756.02
    Supress profile printer plot (J2.3 = -1)

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

                         -1

    User designed output with variables and defined table (150)

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38          1          3         57         68        150

NC       .1         .1        .04         .1          .3

    Use effective area option to only consider overbank when channel banks are
    exceeded (X3.1 = 10).
    Use left encroachment to block low overbank area beyond station 183 (X3.4&5)
X1      1.0         60        767        815          0          0          0
X3       10                                183       1757
GR   1767.0          0     1765.4         23     1763.5         49     1762.0         69     1759.1         87
GR   1758.1        103     1756.9        113     1756.9        122     1753.2        127     1753.1        131
GR   1757.7        140     1757.7        152     1755.0        160     1755.6        168     1755.6        171
GR   1755.6        174     1754.7        177     1755.9        183     1756.0        190     1754.9        208
GR   1754.7        220     1753.7        247     1753.3        282     1752.7        321     1750.9        352
GR   1748.6        373     1747.2        391     1748.3        404     1752.1        434     1753.6        452
GR   1753.7        477     1752.6        499     1753.2        532     1753.4        572     1753.9        613
GR   1753.3        644     1754.4        677     1754.7        698     1755.6        728     1756.2        750
GR   1755.7        767     1749.9        772     1749.3        775     1748.0        775     1747.4        778
GR   1749.3        785     1749.7        789     1752.9        797     1755.5        807     1756.9        815
GR   1755.3        827     1756.3        847     1756.2        866     1756.9        871     1759.5        877
GR   1760.7        893     1762.0        918     1763.2        936     1764.3        963     1766.2        990

    Request Effective Area option (X3.1 = 10)

                                                   ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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X1     2.00         45        768        816        500        480        510
X3       10
GR   1764.5        220     1764.2        224     1763.8        232     1763.4        240     1762.5        245
GR   1761.2        248     1762.8        255     1762.4        260     1761.4        263     1761.4        267
GR   1759.3        271     1758.5        285     1758.7        298     1758.6        315     1757.7        326
GR   1755.8        336     1755.7        347     1755.8        358     1757.3        374     1757.3        411
GR   1756.5        433     1756.4        459     1755.2        482     1753.5        508     1755.1        539
GR   1755.8        550     1758.0        578     1759.0        606     1759.1        632     1760.1        666
GR   1759.6        693     1759.4        718     1760.2        748     1759.5        760     1759.8        768
GR   1755.5        771     1754.6        773     1753.6        776     1754.6        788     1755.4        795
GR   1762.6        816     1761.9        828     1761.9        851     1762.5        893     1763.9        919

    Channel & left bank 'n' value changed for next and following cross sections

NC     .085                  .035
    Flow distribution requested for section 3 (X2.10 = 15)
X1     3.00         59       1017       1068        620        550        610
X2                                                                                                                          15
X3       10
```

```
GR   1772.3          0     1772.7         78      1772.7        103      1771.8        112      1771.2        124
GR   1771.5        164     1771.5        182      1771.3        210      1771.8        225      1769.2        247
GR   1769.2        253     1768.3        275      1766.5        310      1765.1        322      1764.1        341
GR   1763.1        381     1763.5        486      1764.4        502      1764.1        513      1764.5        534
GR   1764.6        557     1764.8        591      1764.2        619      1762.3        647      1760.3        666
GR   1760.5        684     1762.4        707      1765.3        735      1765.8        766      1766.0        796
GR   1765.8        825     1765.6        860      1765.6        906      1765.8        940      1765.8        980
GR   1766.1        991     1765.8       1017      1763.1       1025      1762.4       1032      1761.3       1034
GR   1759.4       1053     1761.3       1059      1763.5       1068      1765.1       1093      1765.6       1116
GR   1765.5       1134     1766.9       1156      1770.0       1169      1770.5       1188      1770.9       1218
GR   1771.5       1234     1771.2       1258      1771.1       1290      1770.6       1330      1770.1       1365
GR   1770.9       1390     1773.5       1415      1777.0       1442      1778.6       1465
```

Cross-section plot to water surface requested for section 4 (X1.10 = 10)

```
X1     4.00         65       1248       1285         580        600        620                                10
X3       10
GR   1775.9        254     1775.2        284      1775.0        314      1774.6        358      1774.5        373
GR   1774.6        388     1773.8        407      1775.0        424      1775.0        441      1775.7        461
GR   1775.7        465     1774.0        466      1774.0        474      1776.9        482      1775.0        488
GR   1774.7        503     1773.5        506      1773.9        509      1773.9        512      1773.9        516
GR   1772.2        518     1773.9        527      1772.5        543      1772.8        554      1772.9        565
GR   1771.9        587     1771.3        619      1770.4        641      1770.6        658      1769.2        680
GR   1765.9        697     1763.0        709      1763.7        713      1767.0        733      1768.5        747
GR   1769.4        765     1769.4        798      1769.3        833      1768.9        865      1769.1        889
GR   1769.0        907     1769.6        941      1769.2        974      1769.9       1006      1769.8       1032
GR   1769.6       1060     1770.1       1088      1770.2       1126      1770.5       1159      1770.5       1187
GR   1771.0       1198     1768.5       1207      1769.3       1221      1769.2       1248      1764.0       1257
GR   1763.0       1263     1764.0       1267      1764.0       1275      1773.7       1285      1781.4       1302
GR   1789.6       1320     1789.7       1332      1790.5       1352      1790.2       1373      1788.7       1396
```

Cross section 5 is a repeat of cross section 4 raised 5 ft.

```
                                                  ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
   06FEB91      13:53:59                                                                                    PAGE    3

X1        5                                         600        650        670                        5
X3       10
```

Manning's n values changed for next, and following sections

```
NC      .08        .09        .04
X1        6         45        595        694        650        550        630
GR   1792.9          0     1791.0         75      1790.6        113      1789.4        164      1788.9        179
GR   1787.1        184     1785.3        210      1784.7        263      1782.6        317      1781.0        323
GR   1781.4        330     1780.3        339      1779.4        343      1778.4        346      1777.4        350
GR   1779.8        353     1779.5        362      1780.0        369      1780.4        395      1779.9        398
GR   1780.2        422     1779.1        452      1778.7        476      1778.2        499      1778.0        522
GR   1778.0        550     1778.5        579      1779.0        595      1776.6        613      1774.1        626
GR   1774.5        635     1775.3        643      1779.8        694      1780.3        705      1781.7        730
GR   1784.9        785     1786.7        809      1787.7        817      1788.2        854      1788.5        878
GR   1789.8        907     1792.0        937      1794.0        961      1795.3        987      1797.3       1015
```

Add a point to GR array with X4 input.

```
X1     7.00         55        912        983        590        600        620
X4        1     1785.1        800
GR   1798.3          0     1794.5         22      1792.4         44      1790.8         69      1788.1        108
GR   1787.4        133     1786.3        164      1785.2        206      1784.1        244      1784.2        281
GR   1784.0        316     1783.5        353      1783.6        388      1783.7        418      1782.0        438
GR   1782.7        464     1782.6        479      1781.0        488      1781.1        496      1781.2        508
GR   1783.1        516     1783.1        540      1781.6        550      1782.7        554      1782.7        558
GR   1787.7        561     1786.3        564      1788.8        570      1789.2        584      1788.9        606
GR   1787.3        621     1786.4        652      1785.6        680      1784.9        709      1785.3        740
GR   1785.1        777     1784.9        806      1784.3        830      1783.9        853      1784.8        886
GR   1784.6        912     1783.8        932      1780.6        954      1779.7        963      1777.2        970
GR   1779.7        976     1784.5        983      1787.5       1004      1788.8       1024      1790.6       1050
GR   1792.1       1077     1794.3       1108      1795.4       1138      1796.7       1169      1798.6       1217
```

New discharge read on X2

```
X1     8.00         68       1089       1140         580        630        600
X2     7000
GR   1803.0          0     1801.5         22      1799.8         36      1796.4         55      1794.1         70
GR   1794.6         94     1793.7        123      1792.0        152      1791.1        182      1790.5        212
GR   1790.0        249     1791.1        270      1792.2        283      1793.0        299      1792.6        324
GR   1790.5        337     1789.3        343      1788.9        350      1789.4        375      1789.5        405
GR   1789.0        436     1788.4        449      1788.2        461      1788.7        490      1789.2        518
GR   1789.5        536     1789.7        548      1788.8        572      1788.4        590      1789.2        596
GR   1787.4        599     1787.7        603      1787.6        606      1788.2        613      1788.5        635
GR   1787.7        650     1787.5        673      1787.6        708      1787.0        738      1787.3        773
GR   1787.1        809     1787.0        847      1787.3        886      1786.9        916      1786.8        946
GR   1787.3        979     1787.9       1010      1788.2       1041      1788.4       1070      1788.0       1079
GR   1789.5       1089     1788.7       1096      1784.6       1101      1784.3       1109      1784.7       1116
GR   1784.6       1119     1785.3       1131      1790.3       1140      1790.8       1148      1791.5       1181
GR   1792.3       1208     1792.3       1241      1792.9       1272      1793.6       1302      1794.6       1331
GR   1795.8       1358     1798.9       1382      1802.7       1402
                                                  ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
   06FEB91      13:53:59                                                                                    PAGE    4

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

*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      183.0     990.0  TYPE=      1  TARGET=     -183.000
 ELENCL=   1757.00  ELENCR= 100000.00
```

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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1755.70 ELREA=      1756.90

     1.000      8.82   1756.02       .00   1756.02   1756.48       .46       .00       .00   1755.70
    7800.0    5993.5    1806.5        .0    1668.2     196.8        .0        .0        .0   1756.90
       .00      3.59      9.18       .00      .100      .040      .000      .000   1747.20    183.00
   .009381        0.        0.        0.         0         0         0       .00    614.26    809.97

*SECNO 2.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1759.80 ELREA=      1762.60

     2.000      7.26   1760.76       .00       .00   1761.30       .54      4.80       .03   1759.80
    7800.0    5807.6    1992.4        .0    1562.5     202.8        .0      20.9       6.6   1762.60
       .03      3.72      9.82       .00      .100      .040      .000      .000   1753.50    268.22
   .009726      500.      510.      480.         2         0         0       .00    542.41    810.63

*SECNO 3.000
     3.000      7.05   1766.45       .00       .00   1767.25       .81      5.87       .08   1765.80
    7800.0    4893.2    2712.7     194.2    1431.9     239.8     102.0      45.9      16.4   1763.50
       .05      3.42     11.31      1.90      .085      .035      .100      .000   1759.40    310.46
   .009340      620.      610.      550.         2         0         0       .00    838.40   1148.87

FLOW DISTRIBUTION FOR SECNO=      3.00          CWSEL=   1766.45

STA=     310.     381.     486.     534.     591.     647.     666.     684.     707.     766.    1017.    1068.    1149.
  PER Q=      6.2      15.4       4.1       3.3       6.0       6.3       7.8       7.3       3.5       2.8      34.8       2.5
   AREA=    156.7    330.3     109.2     103.0     144.0      97.8     108.8     114.9     100.5     166.8     239.8     102.0
    VEL=      3.1      3.6       2.9       2.5       3.3       5.0       6.6       4.9       2.7       1.3      11.3       1.9
  DEPTH=      2.2      3.1       2.3       1.8       2.6       5.1       6.0       5.0       1.7        .7       4.7       1.3
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☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      13:53:59                                                                                                PAGE    5

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

*SECNO 4.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1769.20 ELREA=      1773.70

     4.000      8.70   1771.70       .00       .00   1772.66       .96      5.36       .04   1769.20
    7800.0    5062.0    2738.0        .0    1514.8     220.2        .0      69.5      26.6   1773.70
       .08      3.34     12.43       .00      .085      .035      .000      .000   1763.00    597.46
   .008724      580.      620.      600.         3         0         0       .00    685.49   1282.94

*SECNO 5.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1774.20 ELREA=      1778.70

     5.000      8.88   1776.88       .00       .00   1777.69       .81      5.02       .01   1774.20
    7800.0    5166.3    2633.7        .0    1628.3     226.3        .0      94.6      36.2   1778.70
       .11      3.17     11.64       .00      .085      .035      .000      .000   1768.00    588.21
   .007434      600.      670.      650.         3         0         0       .00    694.91   1283.12

*SECNO 6.000
     6.000      7.73   1781.83       .00       .00   1782.94      1.11      5.16       .09   1779.00
    7800.0    2657.9    5069.6      72.6     739.8     498.0      40.4     117.8      44.4   1779.80
       .13      3.59     10.18      1.80      .080      .040      .090      .000   1774.10    319.90
   .008786      650.      630.      550.         2         0         0       .00    412.29    732.19

*SECNO 7.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

     7.000      9.56   1786.76       .00       .00   1787.19       .42      4.18       .07   1784.60
    7800.0    5012.0    2764.2      23.8    1726.9     351.9      17.9     140.9      52.4   1784.50
       .17      2.90      7.86      1.33      .080      .040      .090      .000   1777.20    150.95
   .005562      590.      620.      600.         2         0         0       .00    770.94    998.84

*SECNO 8.000
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☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      13:53:59                                                                                                PAGE    6

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

3265 DIVIDED FLOW

     8.000      6.11   1790.41       .00       .00   1790.75       .34      3.55       .01   1789.50
    7000.0    5245.8    1754.2        .0    1801.9     223.3        .1     168.5      63.2   1790.30
       .21      2.91      7.85       .01      .080      .040      .090      .000   1784.30    218.62
   .006707      580.      600.      630.         3         0         0       .00    842.54   1141.77
```

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CROSS SECTION      4.00
STREAM  Bear Creek
DISCHARGE=     7800.
 PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 1763.0    1764.0    1765.0    1766.0    1767.0    1768.0    1769.0    1770.0    1771.0    1772.0    1773.0
    STA-FEET

27 585. .         .         .         .         .         .         .         .         .        X.      E  .         .
   590. .         .         .         .         .         .         .         .         .       X .      E  .         .
   595. .         .         .         .         .         .         .         .         .      X  .      E  .         .
   600. .         .         .         .         .         .         .         .         .     XW  .      E  .         .
   605. .         .         .         .         .         .         .         .         .    X W  .      E  .         .
   610. .         .         .         .         .         .         .         .         .   X  W  .      E  .         .
   615. .         .         .         .         .         .         .         .         .  X   W  .      E  .         .
28 620. .         .         .         .         .         .         .         .         .  X   W  .      E  .         .
   625. .         .         .         .         .         .         .         .         .X     W  .      E  .         .
   630. .         .         .         .         .         .         .         .        X.      W  .      E  .         .
   635. .         .         .         .         .         .         .         .      X  .      W  .      E  .         .
29 640. .         .         .         .         .         .         .         .   X     .      W  .      E  .         .
   645. .         .         .         .         .         .         .         .    X    .      W  .      E  .         .
   650. .         .         .         .         .         .         .         .    X    .      W  .      E  .         .
   655. .         .         .         .         .         .         .         .     X   .      W  .      E  .         .
30 660. .         .         .         .         .         .         .         .     X   .      W  .      E  .         .
   665. .         .         .         .         .         .         .         .  X      .      W  .      E  .         .
   670. .         .         .         .         .         .         .         X         .      W  .      E  .         .
   675. .         .         .         .         .         .         .     X   .         .      W  .      E  .         .
31 680. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
   685. .         .         .         .         .         . X       .         .         .      W  .      E  .         .
   690. .         .         .         .         .  X      .         .         .         .      W  .      E  .         .
32 695. .         .         .        X.         .         .         .         .         .      W  .      E  .         .
   700. .         .      X  .         .         .         .         .         .         .      W  .      E  .         .
   705. .    X    .         .         .         .         .         .         .         .      W  .      E  .         .
33 710. X         .         .         .         .         .         .         .         .      W  .      E  .         .
34 715. .      X  .         .         .         .         .         .         .         .      W  .      E  .         .
   720. .         .    X    .         .         .         .         .         .         .      W  .      E  .         .
   725. .         .         .  X      .         .         .         .         .         .      W  .      E  .         .
   730. .         .         .         . X       .         .         .         .         .      W  .      E  .         .
35 735. .         .         .         .         X         .         .         .         .      W  .      E  .         .
   740. .         .         .         .         .    X    .         .         .         .      W  .      E  .         .
36 745. .         .         .         .         .         .    X    .         .         .      W  .      E  .         .
   750. .         .         .         .         .         .       X .         .         .      W  .      E  .         .
   755. .         .         .         .         .         .         X         .         .      W  .      E  .         .
   760. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
37 765. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   770. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   775. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   780. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   785. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   790. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   795. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
38 800. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   805. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   810. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   815. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   820. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   825. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   830. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
39 835. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   840. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
   845. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
   850. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
   855. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
   860. .         .         .         .         .         .         X         .         .      W  .      E  .         .
40 865. .         .         .         .         .         .        X.         .         .      W  .      E  .         .
   870. .         .         .         .         .         .        X.         .         .      W  .      E  .         .
   875. .         .         .         .         .         .         X         .         .      W  .      E  .         .
   880. .         .         .         .         .         .         X         .         .      W  .      E  .         .
   885. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
41 890. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
   895. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
   900. .         .         .         .         .         .         X         .         .      W  .      E  .         .
42 905. .         .         .         .         .         .         X         .         .      W  .      E  .         .
   910. .         .         .         .         .         .         .X        .         .      W  .      E  .         .
   915. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
   920. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   925. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   930. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   935. .         .         .         .         .         .         .    X    .         .      W  .      E  .         .
43 940. .         .         .         .         .         .         .     X   .         .      W  .      E  .         .
   945. .         .         .         .         .         .         .    X    .         .      W  .      E  .         .
   950. .         .         .         .         .         .         .    X    .         .      W  .      E  .         .
   955. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   960. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   965. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   970. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
44 975. .         .         .         .         .         .         . X       .         .      W  .      E  .         .
   980. .         .         .         .         .         .         .  X      .         .      W  .      E  .         .
   985. .         .         .         .         .         .         .   X     .         .      W  .      E  .         .
   990. .         .         .         .         .         .         .    X    .         .      W  .      E  .         .
   995. .         .         .         .         .         .         .     X   .         .      W  .      E  .         .
  1000. .         .         .         .         .         .         .      X  .         .      W  .      E  .         .
451005. .         .         .         .         .         .         .        X.         .      W  .      E  .         .
  1010. .         .         .         .         .         .         .        X.         .      W  .      E  .         .
  1015. .         .         .         .         .         .         .        X.         .      W  .      E  .         .
  1020. .         .         .         .         .         .         .       X .         .      W  .      E  .         .
  1025. .         .         .         .         .         .         .       X .         .      W  .      E  .         .
461030. .         .         .         .         .         .         .       X .         .      W  .      E  .         .
  1035. .         .         .         .         .         .         .       X .         .      W  .      E  .         .
  1040. .         .         .         .         .         .         .      X  .         .      W  .      E  .         .
  1045. .         .         .         .         .         .         .      X  .         .      W  .      E  .         .
  1050. .         .         .         .         .         .         .      X  .         .      W  .      E  .         .
  1055. .         .         .         .         .         .         .     X   .         .      W  .      E  .         .
471060. .         .         .         .         .         .         .     X   .         .      W  .      E  .         .
  1065. .         .         .         .         .         .         .      X  .         .      W  .      E  .         .
  1070. .         .         .         .         .         .         .       X .         .      W  .      E  .         .
  1075. .         .         .         .         .         .         .        X.         .      W  .      E  .         .
```

```
  1080. .         .         .         .         .         .         .         X         .     W  .     E  .         .
  1085. .         .         .         .         .         .         .         X         .     W  .     E  .         .
481090. .         .         .         .         .         .         .         .X        .     W  .     E  .         .
  1095. .         .         .         .         .         .         .         .X        .     W  .     E  .         .
  1100. .         .         .         .         .         .         .         .X        .     W  .     E  .         .
  1105. .         .         .         .         .         .         .         .X        .     W  .     E  .         .
  1110. .         .         .         .         .         .         .         . X       .     W  .     E  .         .
  1115. .         .         .         .         .         .         .         . X       .     W  .     E  .         .
  1120. .         .         .         .         .         .         .         . X       .     W  .     E  .         .
491125. .         .         .         .         .         .         .         . X       .     W  .     E  .         .
  1130. .         .         .         .         .         .         .         . X       .     W  .     E  .         .
  1135. .         .         .         .         .         .         .         .  X      .     W  .     E  .         .
  1140. .         .         .         .         .         .         .         .  X      .     W  .     E  .         .
  1145. .         .         .         .         .         .         .         .   X     .     W  .     E  .         .
  1150. .         .         .         .         .         .         .         .   X     .     W  .     E  .         .
  1155. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
501160. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
  1165. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
  1170. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
  1175. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
  1180. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
511185. .         .         .         .         .         .         .         .    X    .     W  .     E  .         .
  1190. .         .         .         .         .         .         .         .      X  .     W  .     E  .         .
  1195. .         .         .         .         .         .         .         .         X     W  .     E  .         .
521200. .         .         .         .         .         .         .         .         X     W  .     E  .         .
531205. .         .         .         .         .         .    X    .         .         .     W  .     E  .         .
  1210. .         .         .         .         .         .       X .         .         .     W  .     E  .         .
  1215. .         .         .         .         .         .         .X        .         .     W  .     E  .         .
541220. .         .         .         .         .         .         .  X      .         .     W  .     E  .         .
  1225. .         .         .         .         .         .         .  X      .         .     W  .     E  .         .
  1230. .         .         .         .         .         .         .  X      .         .     W  .     E  .         .
  1235. .         .         .         .         .         .         . X       .         .     W  .     E  .         .
  1240. .         .         .         .         .         .         . X       .         .     W  .     E  .         .
  1245. .         .         .         .         .         .         . X       .         .     W  .     E  .         .
551250. .         .         .         .         .         .         . X       .         .     W  .     E  .     BANK.
561255. .         X         .         .         .         .         .         .         .     W  .     E  .         .
  1260. . X       .         .         .         .         .         .         .         .     W  .     E  .         .
581265. XXXXXXXXXX          .         .         .         .         .         .         .     W  .     E  .         .
  1270. .         X         .         .         .         .         .         .         .     W  .     E  .         .
591275. .         X         .         .         .         .         .         .         .     W  .     E  .         .
  1280. .         .         .         .         .         .       X .         .         .     W  .     E  .         .
601285. .         .         .         .         .         .         .         .         .         .         .     BANK.
```

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

1775.90	254.00	1775.20	284.00	1775.00	314.00	1774.60	358.00	1774.50	373.00
1774.60	388.00	1773.80	407.00	1775.00	424.00	1775.00	441.00	1775.70	461.00
1775.70	465.00	1774.00	466.00	1774.00	474.00	1776.90	482.00	1775.00	488.00
1774.70	503.00	1773.50	506.00	1773.90	509.00	1773.90	512.00	1773.90	516.00
1772.20	518.00	1773.90	527.00	1772.50	543.00	1772.80	554.00	1772.90	565.00
1771.90	587.00	1771.30	619.00	1770.40	641.00	1770.60	658.00	1769.20	680.00
1765.90	697.00	1763.00	709.00	1763.70	713.00	1767.00	733.00	1768.50	747.00
1769.40	765.00	1769.40	798.00	1769.30	833.00	1768.90	865.00	1769.10	889.00
1769.00	907.00	1769.60	941.00	1769.20	974.00	1769.90	1006.00	1769.80	1032.00
1769.60	1060.00	1770.10	1088.00	1770.20	1126.00	1770.50	1159.00	1770.50	1187.00
1771.00	1198.00	1768.50	1207.00	1769.30	1221.00	1769.20	1248.00	1764.00	1257.00
1763.00	1263.00	1764.00	1267.00	1764.00	1275.00	1773.70	1285.00	1781.40	1302.00
1789.60	1320.00	1789.70	1332.00	1790.50	1352.00	1790.20	1373.00	1788.70	1396.00

THIS RUN EXECUTED 06FEB91 13:53:59

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

 Version   4.6.0;  February 1991
************************************
```

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

Bear Creek

SUMMARY PRINTOUT

SECNO	CWSEL	EG	ALPHA	FRCH
1.000	1756.02	1756.48	1.68	.76
2.000	1760.76	1761.30	1.79	.79
3.000	1766.45	1767.25	2.68	.92
4.000	1771.70	1772.66	3.04	.87
5.000	1776.88	1777.69	2.96	.81
6.000	1781.83	1782.94	1.93	.80
7.000	1786.76	1787.19	1.97	.62
8.000	1790.41	1790.75	1.83	.66

Bear Creek

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
1.000	.00	.00	.00	1747.20	7800.00	1756.02	.00	1756.48	93.81	9.18	1865.06	805.34
2.000	510.00	.00	.00	1753.50	7800.00	1760.76	.00	1761.30	97.26	9.82	1765.29	790.93
3.000	610.00	.00	.00	1759.40	7800.00	1766.45	.00	1767.25	93.40	11.31	1773.78	807.10
4.000	620.00	.00	.00	1763.00	7800.00	1771.70	.00	1772.66	87.24	12.43	1734.96	835.08
5.000	670.00	.00	.00	1768.00	7800.00	1776.88	.00	1777.69	74.34	11.64	1854.59	904.64
6.000	630.00	.00	.00	1774.10	7800.00	1781.83	.00	1782.94	87.86	10.18	1278.22	832.15
7.000	620.00	.00	.00	1777.20	7800.00	1786.76	.00	1787.19	55.62	7.86	2096.67	1045.90
8.000	600.00	.00	.00	1784.30	7000.00	1790.41	.00	1790.75	67.07	7.85	2025.36	854.71

◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇

Bear Creek

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.000	7800.00	1756.02	.00	.00	.00	614.26	.00
2.000	7800.00	1760.76	.00	4.74	.00	542.41	510.00
3.000	7800.00	1766.45	.00	5.69	.00	838.40	610.00
4.000	7800.00	1771.70	.00	5.26	.00	685.49	620.00
5.000	7800.00	1776.88	.00	5.17	.00	694.91	670.00
6.000	7800.00	1781.83	.00	4.95	.00	412.29	630.00
7.000	7800.00	1786.76	.00	4.94	.00	770.94	620.00
8.000	7000.00	1790.41	.00	3.65	.00	842.54	600.00

◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇◇

SUMMARY OF ERRORS AND SPECIAL NOTES

Example No. 2

Input

```
C
C     16
C      1        X3 CARD UTILIZED TO SPECIFY SEDIMENT ELEVATION (X3.2)
C      2        X5 CARD UTILIZED TO SPECIFY WATER SURFACE ELEVATIONS
C      3        START TRIBUTARIES AT CROSS SECTION 3
C    3.1        X5 CARD UTILIZED TO SPECIFY DIFFERENCE IN CWSEL BETWEEN
C    3.1        SECTIONS 3 AND 3.1 FOR INQS 2,3 AND 4
C      4        EFFECTIVE AREA OPTION USED TO CONFINE FLOW TO BRIDGE OPENING
C      4        UNTIL WEIR FLOW CAN BE EXPECTED (X3.8,X3.9=58)
C      5        BT CARDS DEFINE WEIR PROFILE ONLY ,SINCE PIER IS SPECIFIED THIS
C      5        SPECIAL BRIDGE CAN NOT REVERT TO THE NORMAL BRIDGE ROUTINE
C      6        HIGH WATER ELEVATION OF 59.06 (X2.2)
C     15        WEIR LENGETH DEFINED BY SB.4, BT CARDS ARE NOT REQUIRED
C     15        NO PIER DEFINED ON SB CARD,NORMAL BR. TO BE USED FOR LOW FLOW
C     16        HIGH WATER ELEVATION OF 59.06 (X2.2)
C   24.1        X4 CARD PROVIDES ADDITIONAL GR DATA TO MODEL BRIDGE PIERS
C   24.2        X1 CARD REPEATS GR AND X4 DATA,X2 CARD REPEATS BT DATA
C     26        HIGH WATER ELEVATION OF 59.06 (X2.2)
T1      Example 2, Special and Normal Bridge plus tributary stream profile
T2      Comments used to annotate input data
T3      WOODY CREEK
T4      (See test data file HEC205.DAT for example input)
J1            2                 0.0016                              45
J2                   -1
J3    38       1       9       5      33      55      26      56      42       4
J3    58      62     100     105
*   Detailed output omitted by J5 record input.
J5   -10     -10
QT     9    6000   10000   14000   14000   16000   18000   20000   24000   28000
NC  0.06    0.06   0.035     0.1     0.3
X1     1      15     550     670
X3    10      36
GR    55       0      50     100      45     250      44     500      43     550
GR    35     570      33     575      38     600      39     640      45     670
GR    46     750    43.5     800      44    1050      49    1100      55    1200
X1     2      14     450     540    1700    2050    1900
X3    10    37.5
X5     9    48.5   49.59      51      51    51.2    51.5    51.7    52.4      53
GR    60       0      50     100      47     200      46     400      45     450
GR  36.8     460      37     480      38     510      47     540      49     700
GR    48     750      46     800      49    1000      60    1200
X1     3      14     650     745    1900    1900    2000
GR    65       0      55      50      52     100      53     300      55     400
GR    52     600      50     650      45     660    40.8     700      41     740
GR    53     745      51     890      52    1000      65    1200
X1   3.1                             400     400     400    0.95     0.5
X5    -3     0.6       1    1.05
NC  0.06    0.06   0.035     0.3     0.5
X1     4      21     600     700    1600    1600    1600
X3    10                                                   58      58
GR    70       0      63     100    57.5     250      55     400      54     500
GR  53.5     600      45     610      44     625    44.5     640      46     650
GR  47.5     660      47     670      47     695      55     700    55.5     750
GR  54.5     775      53     825      55     900    57.5     950      63    1000
GR    70    1100
```

```
SB  1.25     1.5     3.0            82.5       6    1014    0.67      45      45
X1     5                             50      50      50
X2                   1      57      60
X3    10                                                   61      61
BT     7       0      65            500      61             600      60
BT   700      60             800      61            1000      63            1100
BT    70
X1     6      12     350     440     250     250     250             -.3
X2         59.56
X3    10
GR    75       0      60      50      56     300    54.5     350      45     370
GR    46     400      48     420      56     440      58     600      55     650
GR    56     700      75     850
```

```
*  Negative section number indicates tributary starting with Section 3 WSEL.
*  The water surface elevation will be used with the following input data.
NC  0.06    0.06   0.035     0.1     0.3
X1    -3      14     650     745
X3    10
GR    65       0      55      50      52     100      53     300      55     400
GR    52     600      50     650      45     660    40.8     700      41     740
GR    53     745      51     890      52    1000      65    1200
X1  13.1                             400     400     400    0.95     0.5
X5    -3     0.6       1    1.05
NC  0.06    0.06   0.035     0.3     0.5
X1    14      21     600     700    1600    1600    1600
X3    10                                                     58      58
GR    70       0      63     100    57.5     250      55     400      54     500
GR  53.5     600      45     610      44     625    44.5     640      46     650
GR  47.5     660      47     670      47     695      55     700    55.5     750
GR  54.5     775      53     825      55     900    57.5     950      63    1000
GR    70    1100
SB           1.5     3.0     300    76.5            1014    0.67      45      45
X1    15                             50      50      50
X2                     1      57      60
X3    10                                                     61      61
X4    10      44   622.9      57     623      57   624.9      46   647.9      57
X4   648      57   649.9      47     674      57   674.1      57     676      47
X4 676.1
X1    16      12     350     440     250     250     250             -.3
X2         59.56
X3    10
GR    75       0      60      50      56     300    54.5     350      45     370
GR    46     400      48     420      56     440      58     600      55     650
GR    56     700      75     850
NC  0.06    0.06   0.035     0.1     0.3
X1    -3      14     650     745
X3    10
GR    65       0      55      50      52     100      53     300      55     400
GR    52     600      50     650      45     660    40.8     700      41     740
GR    53     745      51     890      52    1000      65    1200
X1  23.1                             400     400     400    0.95     0.5
X5    -3     0.6       1    1.05
NC  0.06    0.06   0.035     0.3     0.5
X1    24      21     600     700    1600    1600    1600
X3    10                                                     58      58
GR    70       0      63     100    57.5     250      55     400      54     500
GR  53.5     600      45     610      44     625    44.5     640      46     650
GR  47.5     660      47     670      47     695      55     700    55.5     750
GR  54.5     775      53     825      55     900    57.5     950      63    1000
GR    70    1100
X1  24.1                               1       1       1
X3    10                                                     60      60
X4    10      44   622.9      57     623      57   624.9      46   647.9      57
X4   648      57   649.9      47     674      57   674.1      57     676      47
X4 676.1
BT    16       0      70      70     100      63      63     250      62    57.5
BT   400    61.5      55     500      61      54     600      60    53.5     600
BT    60      57     700      60      57     700      60      55     750    60.5
BT  55.5     775    60.5    54.5     825      61      53     900      62      55
BT   950    62.5    57.5    1000      63      63    1100      70      70
X1  24.2                               50      50      50
X2                                                      1
X3    10                                                     60      60
X1    25      21     600     700       1       1       1
X3    10                                                     61      61
GR    70       0      63     100    57.5     250      55     400      54     500
GR  53.5     600      45     610      44     625    44.5     640      46     650
GR  47.5     660      47     670      47     695      55     700    55.5     750
GR  54.5     775      53     825      55     900    57.5     950      63    1000
```

```
GR    70    1100
X1    26      12     350     440     250     250     250             -.3
X2         59.56
X3    10
GR    75       0      60      50      56     300    54.5     350      45     370
GR    46     400      48     420      56     440      58     600      55     650
GR    56     700      75     850
EJ
T1   Title input is optional; however,
J1            3                  0.0016                                48
J2     2              -1
T1   One or more Title records are required for each profile.
J1            6                  0.0016                                50
J2     3              -1
ER
```

Output

```
*****************************************                                    ***************************************
*  HEC-2 WATER SURFACE PROFILES           *                                    *  U.S. ARMY CORPS OF ENGINEERS       *
*                                         *                                    *  HYDROLOGIC ENGINEERING CENTER      *
*  Version   4.6.0;  February 1991        *                                    *  609 SECOND STREET, SUITE D         *
*                                         *                                    *  DAVIS, CALIFORNIA 95616-4687       *
*  RUN DATE    06FEB91    TIME   12:58:27  *                                    *          (916) 756-1104             *
*****************************************                                    ***************************************


                                          X     X  XXXXXXX   XXXXX              XXXXX
                                          X     X  X        X     X            X     X
                                          X     X  X        X                        X
                                          XXXXXXX  XXXX     X          XXXXX    XXXXX
                                          X     X  X        X                  X
                                          X     X  X        X     X            X
                                          X     X  XXXXXXX   XXXXX             XXXXXXX
END OF BANNER


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


   06FEB91      12:58:27                                                                                          PAGE    1

                                                                                   THIS RUN EXECUTED 06FEB91    12:58:27
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  February 1991
*************************************

T1      Example 2, Special and Normal Bridge plus tributary stream profile
T2      Comments used to annotate input data
T3      WOODY CREEK
T4      (See test data file HEC205.DAT for example input)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0016                                      45

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

                         -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38         1         9         5        33        55        26        56        42         4
     58        62       100       105
    Detailed output omitted by J5 record input.

J5  LPRNT    NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10       -10

QT        9      6000     10000     14000     14000     16000     18000     20000     24000     28000
NC     0.06      0.06     0.035       0.1       0.3
                X3 CARD UTILIZED TO SPECIFY SEDIMENT ELEVATION (X3.2)
X1        1        15       550       670
X3       10        36
GR       55         0        50       100        45       250        44       500        43       550
GR       35       570        33       575        38       600        39       640        45       670
GR       46       750      43.5       800        44      1050        49      1100        55      1200

                X5 CARD UTILIZED TO SPECIFY WATER SURFACE ELEVATIONS
X1        2        14       450       540      1700      2050      1900
X3       10      37.5
X5        9      48.5     49.59        51        51      51.2      51.5      51.7      52.4        53
GR       60         0        50       100        47       200        46       400        45       450
GR     36.8       460        37       480        38       510        47       540        49       700
GR       48       750        46       800        49      1000        60      1200


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

```
                 START TRIBUTARIES AT CROSS SECTION 3
X1        3        14       650       745      1900      1900      2000
GR       65         0        55        50        52       100        53       300        55       400
GR       52       600        50       650        45       660      40.8       700        41       740
GR       53       745        51       890        52      1000        65      1200

                 X5 CARD UTILIZED TO SPECIFY DIFFERENCE IN CWSEL BETWEEN
                 SECTIONS 3 AND 3.1 FOR INQS 2,3 AND 4
X1      3.1                                        400       400       400      0.95       0.5
X5       -3       0.6         1      1.05

NC     0.06      0.06     0.035       0.3       0.5
                 EFFECTIVE AREA OPTION USED TO CONFINE FLOW TO BRIDGE OPENING
                 UNTIL WEIR FLOW CAN BE EXPECTED (X3.8,X3.9=58)
X1        4        21       600       700      1600      1600      1600
X3       10                                                                 58        58
GR       70         0        63       100      57.5       250        55       400        54       500
GR     53.5       600        45       610        44       625      44.5       640        46       650
GR     47.5       660        47       670        47       695        55       700      55.5       750
GR     54.5       775        53       825        55       900      57.5       950        63      1000
GR       70      1100

SB     1.25       1.5       3.0                 82.5         6      1014      0.67        45        45
```

```
                BT CARDS DEFINE WEIR PROFILE ONLY ,SINCE PIER IS SPECIFIED THIS
                SPECIAL BRIDGE CAN NOT REVERT TO THE NORMAL BRIDGE ROUTINE
X1        5                                       50         50         50
X2                            1         57         60
X3       10                                                                61         61
BT        7         0         65                  500         61                    600         60
BT      700        60                  800         61                   1000         63                   1100
BT       70

                HIGH WATER ELEVATION OF 59.06 (X2.2)
X1        6        12        350        440        250        250        250                   -.3
X2            59.56
X3       10
GR       75         0         60         50         56        300       54.5        350         45        370
GR       46       400         48        420         56        440         58        600         55        650
GR       56       700         75        850

   Negative section number indicates tributary starting with Section 3 WSEL.
   The water surface elevation will be used with the following input data.

NC     0.06      0.06      0.035       0.1        0.3
X1       -3        14        650        745
X3       10
GR       65         0         55         50         52        100         53        300         55        400
GR       52       600         50        650         45        660       40.8        700         41        740
GR       53       745         51        890         52       1000         65       1200
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

```
   06FEB91      12:58:27                                                                                    PAGE    3

X1     13.1                                       400        400        400       0.95        0.5
X5       -3       0.6          1       1.05

NC     0.06      0.06      0.035       0.3        0.5
X1       14        21        600        700       1600       1600       1600
X3       10                                                                58         58
GR       70         0         63        100       57.5        250         55        400         54        500
GR     53.5       600         45        610         44        625       44.5        640         46        650
GR     47.5       660         47        670         47        695         55        700       55.5        750
GR     54.5       775         53        825         55        900       57.5        950         63       1000
GR       70      1100

SB                1.5        3.0        300       76.5                   1014       0.67         45         45
                WEIR LENGETH DEFINED BY SB.4, BT CARDS ARE NOT REQUIRED
                NO PIER DEFINED ON SB CARD,NORMAL BR. TO BE USED FOR LOW FLOW
X1       15                                        50         50         50
X2                            1         57         60
X3       10                                                                61         61
X4       10        44      622.9         57        623         57      624.9         46      647.9         57
X4      648        57      649.9         47        674         57      674.1         57        676         47
X4    676.1

                HIGH WATER ELEVATION OF 59.06 (X2.2)
X1       16        12        350        440        250        250        250                   -.3
X2            59.56
X3       10
GR       75         0         60         50         56        300       54.5        350         45        370
GR       46       400         48        420         56        440         58        600         55        650
GR       56       700         75        850

NC     0.06      0.06      0.035       0.1        0.3
X1       -3        14        650        745
X3       10
GR       65         0         55         50         52        100         53        300         55        400
GR       52       600         50        650         45        660       40.8        700         41        740
GR       53       745         51        890         52       1000         65       1200

X1     23.1                                       400        400        400       0.95        0.5
X5       -3       0.6          1       1.05

NC     0.06      0.06      0.035       0.3        0.5
X1       24        21        600        700       1600       1600       1600
X3       10                                                                58         58
GR       70         0         63        100       57.5        250         55        400         54        500
GR     53.5       600         45        610         44        625       44.5        640         46        650
GR     47.5       660         47        670         47        695         55        700       55.5        750
GR     54.5       775         53        825         55        900       57.5        950         63       1000
GR       70      1100
```

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```
                X4 CARD PROVIDES ADDITIONAL GR DATA TO MODEL BRIDGE PIERS
X1     24.1                                          1          1          1
X3       10                                                                          60         60
X4       10        44      622.9        57        623         57      624.9         46      647.9         57
X4      648        57      649.9        47        674         57      674.1         57        676         47
X4    676.1
BT       16         0         70        70        100         63         63        250         62       57.5
BT      400      61.5         55       500         61         54        600         60       53.5        600
BT       60        57        700        60         57        700         60         55        750       60.5
BT     55.5       775       60.5      54.5        825         61         53        900         62         55
BT      950      62.5       57.5      1000         63         63       1100         70         70

                X1 CARD REPEATS GR AND X4 DATA,X2 CARD REPEATS BT DATA
X1     24.2                                         50         50         50
X2                                                                         1
X3       10                                                                          60         60

X1       25        21       600       700          1          1          1
X3       10                                                                          61         61
GR       70         0        63       100       57.5        250         55        400         54        500
GR     53.5       600        45       610         44        625       44.5        640         46        650
GR     47.5       660        47       670         47        695         55        700       55.5        750
GR     54.5       775        53       825         55        900       57.5        950         63       1000
GR       70      1100
```

```
                HIGH WATER ELEVATION OF 59.06 (X2.2)
X1       26         12        350        440         250         250         250                    -.3
X2               59.56
X3       10
GR       75          0         60         50          56         300        54.5         350          45         370
GR       46        400         48        420          56         440          58         600          55         650
GR       56        700         75        850
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

```
   06FEB91      12:58:27                                                                                    PAGE    5

T1   Title input is optional; however,

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                         0.0016                                      48

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                 -1
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      12:58:27                                                                                    PAGE    6

T1   One or more Title records are required for each profile.

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                         0.0016                                      50

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      3                 -1
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      12:58:27                                                                                    PAGE    7

                                                                                THIS RUN EXECUTED 06FEB91    12:58:57
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  Febraury 1991
*************************************

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

WOODY CREEK

SUMMARY PRINTOUT
```

	SECNO	CWSEL	WSELK	10*KS	K*CHSL	VLOB	VCH	VROB	ELMIN	TOPWID	KRATIO	IHLEQ
	1.000	45.60	45.00	16.08	.00	1.21	5.96	1.41	36.00	794.33	.00	.00
	1.000	46.92	48.00	15.87	.00	1.82	6.68	1.95	36.00	886.99	.00	.00
	1.000	48.37	50.00	15.99	.00	2.38	7.50	2.54	36.00	944.80	.00	.00
*	2.000	48.50	.00	11.53	.79	1.40	6.02	.92	37.50	751.67	1.18	.00
*	2.000	49.59	.00	15.50	.79	2.05	7.54	1.51	37.50	897.06	1.01	.00
*	2.000	51.20	.00	14.90	.79	2.59	8.16	2.18	37.50	952.00	1.04	.00
	3.000	51.18	.00	20.01	1.65	.78	7.48	.22	40.80	155.62	.76	.00
	3.000	52.99	.00	25.54	1.65	1.28	9.50	1.44	40.80	696.48	.78	.00
	3.000	54.53	.00	28.10	1.65	2.06	10.94	2.52	40.80	926.84	.73	.00
*	3.100	51.78	.00	21.46	1.25	.85	7.77	.31	41.30	168.48	.97	.00
*	3.100	53.99	.00	21.82	1.25	1.38	9.02	1.64	41.30	733.19	1.08	.00
	3.100	56.00	.00	18.51	1.25	2.05	9.31	2.47	41.30	955.84	1.23	.00
	4.000	55.06	.00	16.99	1.69	.00	6.98	.00	44.00	100.00	1.12	.00
	4.000	57.35	.00	21.44	1.69	.00	9.18	.00	44.00	100.00	1.01	.00
	4.000	58.89	.00	14.25	1.69	2.37	8.18	2.47	44.00	750.59	1.14	.00
	5.000	55.24	.00	15.86	.00	.00	6.84	.00	44.00	100.00	1.04	.00

	5.000	58.56	.00	15.11	.00	.00	8.27	.00	44.00	100.00	1.19	.00
*	5.000	62.25	.00	3.67	.00	1.69	4.87	1.78	44.00	872.70	1.97	.00
	6.000	55.54	59.56	29.45	2.80	1.03	8.71	.00	44.70	134.29	.73	.00
	6.000	59.51	59.56	11.05	2.80	1.60	7.03	1.78	44.70	668.13	1.17	.00
*	6.000	62.25	59.56	8.12	2.80	2.10	6.94	2.25	44.70	710.27	.67	.00
	-3.000	51.18	.00	19.98	.00	.78	7.48	.00	40.80	123.74	.73	.00
	-3.000	52.99	.00	28.06	.00	1.34	9.96	.00	40.80	425.85	1.17	.00
	-3.000	54.53	.00	28.18	.00	2.06	10.95	2.52	40.80	926.01	.67	.00

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	SECNO	CWSEL	WSELK	10*KS	K*CHSL	VLOB	VCH	VROB	ELMIN	TOPWID	KRATIO	IHLEQ
*	13.100	51.78	.00	21.46	1.25	.85	7.77	.31	41.30	168.48	.96	.00
*	13.100	53.99	.00	21.82	1.25	1.38	9.02	1.64	41.30	733.19	1.13	.00
	13.100	56.01	.00	18.34	1.25	2.05	9.28	2.46	41.30	956.17	1.24	.00
	14.000	55.06	.00	16.99	1.69	.00	6.98	.00	44.00	100.00	1.12	.00
	14.000	57.35	.00	21.45	1.69	.00	9.19	.00	44.00	100.00	1.01	.00
	14.000	58.88	.00	14.31	1.69	2.37	8.19	2.47	44.00	750.27	1.13	.00
*	15.000	55.12	.00	34.75	.00	.00	7.42	.00	44.00	94.20	.70	.00
	15.000	58.39	.00	36.83	.00	.00	8.90	.00	44.00	100.00	.76	.00
*	15.000	62.31	.00	5.06	.00	1.99	4.02	2.10	44.00	874.90	1.68	.00
	16.000	55.77	59.56	26.40	2.80	1.11	8.38	.86	44.70	218.53	1.15	.00
*	16.000	59.75	59.56	9.83	2.80	1.56	6.72	1.76	44.70	682.08	1.94	.00
	16.000	62.31	59.56	7.93	2.80	2.09	6.88	2.24	44.70	710.92	.80	.00
	-3.000	51.18	.00	19.98	.00	.78	7.48	.00	40.80	123.74	1.15	.00
	-3.000	52.99	.00	28.06	.00	1.34	9.96	.00	40.80	425.85	1.94	.00
	-3.000	54.53	.00	28.18	.00	2.06	10.95	2.52	40.80	926.01	.80	.00
*	23.100	51.78	.00	21.46	1.25	.85	7.77	.31	41.30	168.48	.96	.00
*	23.100	53.99	.00	21.82	1.25	1.38	9.02	1.64	41.30	733.19	1.13	.00
	23.100	56.01	.00	18.34	1.25	2.05	9.28	2.46	41.30	956.17	1.24	.00
	24.000	55.06	.00	16.99	1.69	.00	6.98	.00	44.00	100.00	1.12	.00
	24.000	57.35	.00	21.45	1.69	.00	9.19	.00	44.00	100.00	1.01	.00
	24.000	58.88	.00	14.31	1.69	2.37	8.19	2.47	44.00	750.27	1.13	.00
*	24.100	55.00	.00	36.76	.00	.00	7.53	.00	44.00	94.19	.68	.00
*	24.100	57.21	.00	101.41	.00	.00	10.15	.00	44.00	100.00	.46	.00
*	24.100	57.18	.00	259.61	.00	.00	16.24	.00	44.00	100.00	.23	.00
	24.200	55.23	.00	34.03	.00	.00	7.33	.00	44.00	94.21	1.04	.00
	24.200	57.72	.00	101.41	.00	.00	10.15	.00	44.00	100.00	1.00	.00
	24.200	58.48	.00	259.61	.00	.00	16.24	.00	44.00	100.00	1.00	.00
*	25.000	55.41	.00	14.82	.00	.00	6.70	.00	44.00	100.00	1.52	.00
*	25.000	58.38	.00	15.81	.00	.00	8.38	.00	44.00	100.00	2.53	.00
*	25.000	63.63	.00	2.32	.00	1.49	4.09	1.57	44.00	917.97	10.59	.00
	26.000	55.70	59.56	27.27	2.80	1.07	8.47	.82	44.70	207.31	.74	.00
	26.000	59.34	59.56	11.98	2.80	1.63	7.25	1.79	44.70	656.67	1.15	.00
*	26.000	63.64	59.56	4.83	2.80	1.89	5.70	1.98	44.70	725.88	.69	.00

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WOODY CREEK

SUMMARY PRINTOUT TABLE 100

	SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG
	5.000	55.96	57.00	.00	60.00	6000.00	.00	1.00	.18	11.24	55.24	6.84	55.96
	5.000	58.95	57.00	59.62	60.00	10000.00	.00	10.00	.37	14.56	58.56	8.27	59.62
*	5.000	61.54	57.00	64.69	60.00	12540.73	3388.55	30.00	.13	18.25	62.25	4.87	62.45

*	15.000	56.75	57.00	.00	60.00	6000.00	.00	59.00	.00	11.12	55.12	7.42	55.98
	15.000	59.59	57.00	59.62	60.00	10000.00	.00	10.00	.00	14.39	58.39	8.90	59.62
*	15.000	62.33	57.00	64.68	60.00	12548.82	3442.20	30.00	.00	18.31	62.31	4.02	62.45

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WOODY CREEK

SUMMARY PRINTOUT TABLE 105

	SECNO	CWSEL	HL	OLOSS	TOPWID	QLOB	QCH	QROB
*	3.100	51.78	.83	.02	168.48	16.56	5981.34	2.10
*	3.100	53.99	.94	.02	733.19	554.42	8738.88	706.71
	3.100	56.00	.90	.05	955.84	2868.51	10697.73	2433.76
	4.000	55.06	3.04	.05	100.00	.00	6000.00	.00
	4.000	57.35	3.46	.10	100.00	.00	10000.00	.00
	4.000	58.89	2.59	.07	750.59	3260.18	10165.85	2573.97
	5.000	55.24	.15	.00	100.00	.00	6000.00	.00
	5.000	58.56	.96	.00	100.00	.00	10000.00	.00
*	5.000	62.25	2.87	.00	872.70	4789.71	7686.46	3523.82
	6.000	55.54	.53	.22	134.29	30.82	5969.18	.00
	6.000	59.51	.32	.15	668.13	1089.15	7330.64	1580.20
*	6.000	62.25	.13	.13	710.27	3187.18	8958.11	3854.71
*	13.100	51.78	.83	.02	168.48	16.56	5981.34	2.10
*	13.100	53.99	.99	.04	733.19	554.42	8738.88	706.71
	13.100	56.01	.90	.05	956.17	2885.87	10672.47	2441.66
	14.000	55.06	3.04	.05	100.00	.00	6000.00	.00
	14.000	57.35	3.46	.10	100.00	.00	10000.00	.00
	14.000	58.88	2.58	.07	750.27	3254.97	10174.60	2570.44
*	15.000	55.12	.12	.05	94.20	.00	6000.00	.00
	15.000	58.39	.96	.00	100.00	.00	10000.00	.00
*	15.000	62.31	2.87	.00	874.90	5705.60	6101.16	4193.24
	16.000	55.77	.75	.11	218.53	45.81	5921.15	33.04
*	16.000	59.75	.43	.21	682.08	1168.88	7152.66	1678.46
	16.000	62.31	.16	.15	710.92	3210.47	8915.18	3874.35

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   06FEB91      12:58:27                                                                                                    PAGE   11

 SUMMARY OF ERRORS AND SPECIAL NOTES

NOTE    SECNO=      2.000  PROFILE=  1  WSEL BASED ON X5 CARD
NOTE    SECNO=      2.000  PROFILE=  2  WSEL BASED ON X5 CARD
NOTE    SECNO=      2.000  PROFILE=  3  WSEL BASED ON X5 CARD

NOTE    SECNO=      3.100  PROFILE=  1  WSEL BASED ON X5 CARD
NOTE    SECNO=      3.100  PROFILE=  2  WSEL BASED ON X5 CARD

WARNING SECNO=      5.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      6.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

NOTE    SECNO=     13.100  PROFILE=  1  WSEL BASED ON X5 CARD
NOTE    SECNO=     13.100  PROFILE=  2  WSEL BASED ON X5 CARD

WARNING SECNO=     15.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     15.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     16.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

NOTE    SECNO=     23.100  PROFILE=  1  WSEL BASED ON X5 CARD
NOTE    SECNO=     23.100  PROFILE=  2  WSEL BASED ON X5 CARD

WARNING SECNO=     24.100  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     24.100  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     24.100  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     25.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     25.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     25.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     26.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

Example No. 3

Input

```
T1      Example 3:  Channel Improvement (CHIMP)
T2      1ST PROFILE IS NATURAL (IBW=8 on J2.8), (BW=.01 on CI.8)
T3      RABBIT CREEK
T4      (Example 3 based on test data file HEC212.DAT)
T5      Field 12 (Second field of second QT) read for discharge.
J1            12                                                  168.1
J2     1              -1                                      8
J3   120
*   Supress detailed output, except for the last two cross sections.
J5   -10       0     2.2
NC  .120    .120    .037     0.1     0.3
QT    11     450     600     900    1200    1500    2300    5000    6700    9400
QT 15000   25000

*   No CI input for first section; therefore, this section is always natural.
X1  1.05      38   18150   18448                                1    -.85
GR 200.0   12000   180.0   12200   170.0   13000   170.0   13200   170.0   13500
GR 170.0   14000   170.0   14400   165.0   14500   170.0   14600   170.0   15950
GR 165.0   18149   165.0   18150   165.0   18151   165.0   18168   160.0   18179
GR 149.0   18188   155.0   18201   158.0   18209   159.8   18229   159.9   18234
GR 159.9   18237   160.0   18255   157.5   18259   157.0   18260   145.0   18282
GR 144.8   18308   144.8   18309   145.0   18310   145.0   18324   150.0   18341
GR 155.0   18353   162.0   18364   163.0   18429   164.0   18447   167.0   18448
GR 172.8   18449   180.0   19250   200.0   20600

*   CI input provides center station, elevation, channel 'n' value, and
*   side slopes of 3 on 1.
X1  1.55                            1200    1300    3684            3.14
CI 18300  147.09   0.025       3       3      10     100             300     400

*   CI input of -1 provides center station and elevation based on existing cross
*   section.  Blank fields indicate no change from previous CI input.
X1  1.82                            1400    1250    1450             1.7
CI    -1      -1   0.025

*   No CI incicates no change from previous input.
X1   2.1                            1400    1250    1450            1.76

*   CI input changes center station, elevation, 'n' value and side slopes.
X1   2.2                             528     528     528             0.5
CI 18400     150   0.015       4       2     100     100             300     400

*   The Channel improvement is stopped at this cross section.  (BW = 0.01)
X1   2.3                             600     600     600               1
CI                                          0.01    0.01            0.01    0.01
EJ
T1      CHANNEL IMPROVEMENT: IBW=6, BW=10 UNTIL SEC 2.2, BW=100 AT SEC 2.2
J1            12                                                  168.1
J2     2              -1                                      6      30
T1      CHANNEL IMPROVEMENT: IBW=7, BW=100 and CHNIM=30 (J2.9)
J1            12                                                  168.1
J2     3              -1                                      7      30
T1      CHANNEL IMPROVEMENT:  IBW=9, BW=300 and CHNIM=20 (J2.9)
J1            12                                                  168.1
J2     4              -1                                      9      20
```

ER

Output

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*****************************************                                          ***************************************
*  HEC-2 WATER SURFACE PROFILES           *                                          *  U.S. ARMY CORPS OF ENGINEERS       *
*                                         *                                          *  HYDROLOGIC ENGINEERING CENTER      *
*  Version   4.6.0;  February 1991        *                                          *  609 SECOND STREET, SUITE D         *
*                                         *                                          *  DAVIS, CALIFORNIA 95616-4687       *
*  RUN DATE    06FEB91    TIME   08:38:43  *                                          *          (916) 756-1104             *
*****************************************                                          ***************************************

                                          X     X  XXXXXXX   XXXXX              XXXXX
                                          X     X  X        X     X            X     X
                                          X     X  X        X                        X
                                          XXXXXXX  XXXX     X          XXXXX    XXXXX
                                          X     X  X        X                  X
                                          X     X  X        X     X            X
                                          X     X  XXXXXXX   XXXXX             XXXXXXX
END OF BANNER


                                                        ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

   06FEB91      08:38:43                                                                                                  PAGE    1

                                                                                                   THIS RUN EXECUTED 06FEB91    08:38:43
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  February 1991
*************************************

T1      Example 3:  Channel Improvement (CHIMP)
T2      1ST PROFILE IS NATURAL (IBW=8 on J2.8), (BW=.01 on CI.8)
T3      RABBIT CREEK
T4      (Example 3 based on test data file HEC212.DAT)
T5      Field 12 (Second field of second QT) read for discharge.

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                12                                                                  168.1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                  -1                                                  8

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    120
    Supress detailed output, except for the last two cross sections.

J5  LPRNT    NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10         0       2.2

NC     .120       .120       .037        0.1         0.3
QT       11        450        600        900        1200        1500        2300        5000        6700        9400
QT    15000      25000

    No CI input for first section; therefore, this section is always natural.
X1     1.05         38      18150      18448                                                   1        -.85
GR    200.0      12000      180.0      12200       170.0       13000       170.0       13200       170.0       13500
GR    170.0      14000      170.0      14400       165.0       14500       170.0       14600       170.0       15950
GR    165.0      18149      165.0      18150       165.0       18151       165.0       18168       160.0       18179
GR    149.0      18188      155.0      18201       158.0       18209       159.8       18229       159.9       18234
GR    159.9      18237      160.0      18255       157.5       18259       157.0       18260       145.0       18282
GR    144.8      18308      144.8      18309       145.0       18310       145.0       18324       150.0       18341
GR    155.0      18353      162.0      18364       163.0       18429       164.0       18447       167.0       18448
GR    172.8      18449      180.0      19250       200.0       20600

    CI input provides center station, elevation, channel 'n' value, and
    side slopes of 3 on 1.


                                                        ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
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X1     1.55                                        1200        1300        3684                    3.14
CI    18300     147.09      0.025          3           3          10         100                     300         400

    CI input of -1 provides center station and elevation based on existing cross
    section.  Blank fields indicate no change from previous CI input.

X1     1.82                                        1400        1250        1450                     1.7
CI       -1         -1      0.025

    No CI incicates no change from previous input.

X1      2.1                                        1400        1250        1450                    1.76

    CI input changes center station, elevation, 'n' value and side slopes.

X1      2.2                                         528         528         528                     0.5
CI    18400        150      0.015          4           2         100         100                     300         400

    The Channel improvement is stopped at this cross section.  (BW = 0.01)

X1      2.3                                         600         600         600                       1
CI                                                             0.01        0.01                    0.01        0.01
```

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

   06FEB91      08:38:43                                                                                                    PAGE    3

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

*SECNO 2.200

3265 DIVIDED FLOW

     2.200     23.65    174.70       .00       .00    175.34       .63       .58       .00    171.25
   25000.0    1679.5   23320.5        .0    2865.4    3533.9        .2     931.7     232.3    173.25
       .32       .59      6.60       .10      .120      .037      .120      .000    151.05  14430.92
   .001080      528.      528.      528.         2         0         0       .00   1956.44  18448.25

*SECNO 2.300

3265 DIVIDED FLOW

     2.300     23.30    175.35       .00       .00    176.05       .70       .69       .02    172.25
   25000.0    1348.4   23651.6        .0    2316.6    3430.0        .1    1015.3     258.1    174.25
       .35       .58      6.90       .09      .120      .037      .120      .000    152.05  14437.89
   .001227      600.      600.      600.         1         0         0       .00   1789.17  18448.19


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


   06FEB91      08:38:43                                                                                                    PAGE    4

T1      CHANNEL IMPROVEMENT: IBW=6, BW=10 UNTIL SEC 2.2, BW=100 AT SEC 2.2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               12                                                                   168.1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                  -1                                                  6        30

*SECNO 2.200
CHIMP CLSTA=   18400.00 CELCH=     150.00 BW=     100.00 STCHL=   18150.00 STCHR=   18509.18
EXCAVATION DATA
AEX=    2783.0SQ-FT     VEXR=      27.4K*CU-YD     VEXT=       29.1K*CU-YD

2136  NH VALUES        .120   18120.000        .015   18539.180        .120   20600.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.18

     2.200     23.23    173.23       .00       .00    173.54       .31       .07       .07    171.25
   25000.0     152.1   24847.9        .0     986.0    5547.7        .0     753.8     181.5    179.59
       .28       .15      4.48       .00      .073      .015      .000      .000    150.00  14460.45
   .000054      528.      528.      528.         2         0         0       .00   1313.75  18496.46

*SECNO 2.300

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .31

     2.300     20.45    172.50       .00       .00    173.96      1.46       .08       .34    172.25
   25000.0       8.3   24991.7        .0      15.0    2579.0        .0     816.6     193.5    174.25
       .30       .56      9.69       .00      .016      .015      .000      .000    152.05  14495.04
   .000578      600.      600.      600.         2         0         0       .00    417.45  18447.42


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


   06FEB91      08:38:43                                                                                                    PAGE    5

T1      CHANNEL IMPROVEMENT: IBW=7, BW=100 and CHNIM=30 (J2.9)
```

```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                12                                                                  168.1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      3                  -1                                                   7        30

*SECNO 2.200
CHIMP CLSTA=   18400.00 CELCH=     150.00 BW=     100.00 STCHL=   18150.00 STCHR=   18509.18
EXCAVATION DATA
AEX=    2783.0SQ-FT     VEXR=      38.0K*CU-YD     VEXT=      156.7K*CU-YD

2136  NH VALUES        .120   18120.000        .015   18539.180        .120   20600.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.47

     2.200     21.12    171.12       .00       .00    171.54       .42       .09       .03    171.25
   25000.0        .0   25000.0        .0        .0    4824.0        .0     762.7     129.7    179.59
       .33       .00      5.18       .00      .000      .015      .000      .000    150.00  18168.29
   .000080      528.      528.      528.         2         0         0       .00    323.95  18492.24

*SECNO 2.300

3301 HV CHANGED MORE THAN HVINS
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .26

     2.300     17.27    169.32       .00       .00    172.48      3.16       .12       .82    172.25
   25000.0        .0   25000.0        .0        .0    1752.7        .0     808.0     133.3    174.25
       .34       .00     14.26       .00      .000      .015      .000      .000    152.05  18174.43
   .001224      600.      600.      600.         3         0         0       .00    194.72  18369.15
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      08:38:43                                                                                    PAGE    6

T1      CHANNEL IMPROVEMENT:  IBW=9, BW=300 and CHNIM=20 (J2.9)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               12                                                                  168.1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      4                  -1                                                   9        20

*SECNO 2.200
CHIMP CLSTA=   18400.00 CELCH=     150.00 BW=     300.00 STCHL=   18150.00 STCHR=   18611.01
EXCAVATION DATA
AEX=    6658.3SQ-FT     VEXR=     117.8K*CU-YD     VEXT=      696.4K*CU-YD

2136  NH VALUES        .120   18130.000        .015   18631.010        .120   20600.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.80

     2.200     19.27    169.27       .00       .00    169.46       .20       .03       .00    171.25
   25000.0        .0   25000.0        .0        .0    7022.6        .0    1137.8     113.7    180.51
       .59       .00      3.56       .00      .000      .015      .000      .000    150.00  18172.38
   .000031      528.      528.      528.         0         0         0       .00    416.14  18588.52

*SECNO 2.300

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.300     16.04    168.09    168.09       .00    172.29      4.20       .06      1.20    172.25
   25000.0        .0   25000.0        .0        .0    1520.3        .0    1196.6     117.8    174.25
       .60       .00     16.44       .00      .000      .015      .000      .000    152.05  18177.15
   .001840      600.      600.      600.        20        10         0       .00    185.03  18362.18
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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   06FEB91      08:38:43                                                                                    PAGE    7

                                                                                THIS RUN EXECUTED 06FEB91    08:39:01
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  February 1991
*************************************

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

RABBIT CREEK

SUMMARY PRINTOUT TABLE  120

      SECNO     CWSEL      EG        VCH      10*KS     DEPTH    TOPWID     CLSTA      BW       STCHL     XLBEL     STCHR     RBEL

       2.200    174.70    175.34      6.60     10.80     23.65   1956.44       .00       .01  18150.00    171.25  18448.00   173.25
*      2.200    173.23    173.54      4.48       .54     23.23   1313.75  18400.00    100.00  18150.00    171.25  18509.18   179.59
*      2.200    171.12    171.54      5.18       .80     21.12    323.95  18400.00    100.00  18150.00    171.25  18509.18   179.59
*      2.200    169.27    169.46      3.56       .31     19.27    416.14  18400.00    300.00  18150.00    171.25  18611.01   180.51

       2.300    175.35    176.05      6.90     12.27     23.30   1789.17       .00       .01  18150.00    172.25  18448.00   174.25
*      2.300    172.50    173.96      9.69      5.78     20.45    417.45       .00       .01  18150.00    172.25  18448.00   174.25
*      2.300    169.32    172.48     14.26     12.24     17.27    194.72       .00       .01  18150.00    172.25  18448.00   174.25
*      2.300    168.09    172.29     16.44     18.40     16.04    185.03       .00       .01  18150.00    172.25  18448.00   174.25
```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      1.550  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.550  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.300  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.300  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=      2.300  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.300  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.300  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

Example No. 4

Input

```
T1      Example 4:  Floodway Analysis, METHODS 1, 2, 3, 4 and 5.
T2      Existing conditions profile, no encroachment.
T3      NORTH BUFFALO CREEK
T4      (Data based on HEC214.DAT)
J1            2                                                   698.3
*  Flow distribution requested for first profile (J2.10 = 15)
J2     1              -1                                                    15
*  Floodway Summary Tables requested.
J3   110     115     200
*  Detailed output suppressed.  Flow distribution will be displayed.
J5   -10     -10
*  Channel will be subdivided when 'n' values change within channel (J6.3 = -1)
J6                   -1
NC   .12     .12    .055      .1      .3
*  Discharge Table (QT) has 1% chance flow in all fields.
QT     7    8000    8000    8000    8000    8000    8000    8000

*  First profile is natural, ET.2 is blank.  (J1.2 = 2 reads QT & ET field 2)
*  Method 1 encroachment stations are in fields 9 & 10 (ET.3 = 9.1)
*  Method 2 is 250 foot wide floodway centered on channel (ET.4 = 250.2)
*  Method 3 is a 12% conveyance reduction (ET.5 = 12.3)
*  Method 4 is a one-foot rise to compute encroachments (ET.6 = 10.4)
*  Method 5 is the same one-foot rise, but with multiple cycles (ET.7 = 10.5)
ET                   9.1   250.2    12.3    10.4    10.5             360     610
X1 29900      23     460     508       0       0       0       1       0       0
GR 712.0       0   708.0      10   703.2      28   701.2      35   699.2      42
GR 697.2      57   695.2      71   693.2     110   691.2     150   691.0     400
GR 689.2     460   681.2     470   681.2     495   689.2     508   691.2     512
GR 693.2     530   695.2     563   697.2     570   699.2     580   701.2     595
GR 703.2     601   709.0     612   712.0     630

*  Method 1 must be defined for each cross sections.  The other methods continue
ET                   9.1                                             145     385
NH     5    0.12      75    0.10     245   0.055     285    0.10     457    0.12
NH   590
X1 33700      22     245     285    3000    3000    3800       1       0       0
GR 713.0       0   709.2      20   705.2      35   703.2      50   701.2      63
GR 699.2      75   697.2      90   695.2     130   695.2     240   693.2     245
GR 685.0     250   685.0     280   693.2     285   695.2     292   695.2     410
GR 697.2     457   699.2     500   701.2     510   703.2     535   705.2     560
GR 708.7     573   713.0     590

ET                   9.1                                             100     330
NH     6    0.12      48    0.10     115    0.04     140    0.06     160    0.10
NH   360    0.12     410
X1 35100      19     115     150    1000    1500    1400       1       0       0
GR 714.0       0   710.1      23   706.7      36   705.2      48   703.2      64
GR 701.2      76   699.2      92   689.2     115   686.0     116   686.0     136
GR 689.2     140   691.2     145   693.2     150   695.2     160   695.2     360
GR 697.2     370   699.2     375   709.2     395   714.2     410

ET                   9.1                                             100     340
NC  0.12    0.12   0.055     0.1     0.3
X1 36950      22     193     233    1600    1600    1850       1       0       0
X3    10                                                   705.5   705.5
```

```
GR 715.0       0   709.2      25   707.2      31   705.2      40   703.2      50
GR 701.2      61   699.2      87   697.2     180   693.2     193   688.0     198
GR 688.0     228   693.2     233   695.2     245   697.2     250   697.2     290
GR 699.2     310   701.2     370   703.2     410   705.2     445   707.2     465
GR 709.2     500   715.2     512

SB   0.9     1.5     2.9              28     1.5    1050     2.4     688     688

*  A value of 0.01 added to input will transfer encroachment stations to the
*  BT record for weir flow calculations.
ET                  9.11  250.21   12.31   10.41   10.51             100     340
X1 37000                              50      50      50
X2                     1     704     706
X3    10                                                     706     706
BT    16       0     715     715      25     712   709.2      31     710   707.2
BT    40     709   705.2      50     709   703.2      61   708.5   701.2      87
BT 706.5   699.2     180     706   697.2     290     706   697.2     310     706
BT 699.2     370     708   701.2     410   708.5   703.2     445     709   705.2
BT   465     710   707.2     500     712   709.2     512   715.2   715.2

ET                   9.1                                             100     340
X1 37110                             110     110     110             0.2

ET                   9.1                                              10     240
X1 40150      22      95     145    2800    2800    3040
GR 720.2       0   719.2      22   717.2      30   715.2      40   713.2      50
GR 711.2      58   709.2      70   699.2      95     693     105     693     135
GR 699.2     145   701.2     150   701.2     220   703.2     240   705.2     255
GR 707.2     270   709.2     290   711.2     310   713.2     325   715.2     350
GR 717.2     370   719.2     390
EJ
T1      Method 1 floodway profile
J1             3                                                   699.3
J2     2              -1
T1      Method 2 floodway profile
J1             4                                                   699.3
J2     3              -1
T1      Method 3 floodway profile
J1             5                                                   699.3
J2     4              -1
T1      Method 4 floodway profile
J1             6                                                   699.3
J2     5              -1
T1      Method 5 floodway profile
J1             7                                                   699.3
J2     6              -1
ER
```

Output

```
*****************************************                                          ***************************************
*  HEC-2 WATER SURFACE PROFILES           *                                          *  U.S. ARMY CORPS OF ENGINEERS       *
*                                         *                                          *  HYDROLOGIC ENGINEERING CENTER      *
*  Version   4.6.0;  February 1991        *                                          *  609 SECOND STREET, SUITE D         *
*                                         *                                          *  DAVIS, CALIFORNIA 95616-4687       *
*  RUN DATE    06FEB91    TIME   09:21:40  *                                          *          (916) 756-1104             *
*****************************************                                          ***************************************

                                          X     X  XXXXXXX   XXXXX              XXXXX
                                          X     X  X        X     X            X     X
                                          X     X  X        X                        X
                                          XXXXXXX  XXXX     X          XXXXX    XXXXX
                                          X     X  X        X                  X
                                          X     X  X        X     X            X
                                          X     X  XXXXXXX   XXXXX             XXXXXXX
END OF BANNER


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


   06FEB91      09:21:40                                                                                                  PAGE    1

                                                                                                THIS RUN EXECUTED 06FEB91    09:21:40
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.0;  September 1991
************************************

T1      Example 4:  Floodway Analysis, METHODS 1, 2, 3, 4 and 5.
T2      Existing conditions profile, no encroachment.
T3      NORTH BUFFALO CREEK
T4      (Data based on HEC214.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                                                                  698.3
   Flow distribution requested for first profile (J2.10 = 15)

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                  -1                                                                        15

   Floodway Summary Tables requested.

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    110        115        200
   Detailed output suppressed.  Flow distribution will be displayed.

J5  LPRNT    NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10       -10
   Channel will be subdivided when 'n' values change within channel (J6.3 = -1)

J6  IHLEQ     ICOPY     SUBDIV    STRTDS     RMILE

                         -1

NC      .12        .12       .055         .1          .3
   Discharge Table (QT) has 1% chance flow in all fields.
QT        7       8000       8000       8000        8000        8000        8000        8000

   First profile is natural, ET.2 is blank.  (J1.2 = 2 reads QT & ET field 2)
   Method 1 encroachment stations are in fields 9 & 10 (ET.3 = 9.1)
   Method 2 is 250 foot wide floodway centered on channel (ET.4 = 250.2)
   Method 3 is a 12% conveyance reduction (ET.5 = 12.3)
   Method 4 is a one-foot rise to compute encroachments (ET.6 = 10.4)
   Method 5 is the same one-foot rise, but with multiple cycles (ET.7 = 10.5)
ET                            9.1      250.2        12.3        10.4        10.5                    360         610
X1    29900         23        460        508           0           0           0           1           0           0
GR    712.0          0      708.0         10       703.2          28       701.2          35       699.2          42
GR    697.2         57      695.2         71       693.2         110       691.2         150       691.0         400
```

```
GR    689.2        460      681.2        470       681.2         495       689.2         508       691.2         512
GR    693.2        530      695.2        563       697.2         570       699.2         580       701.2         595
GR    703.2        601      709.0        612       712.0         630
```

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Method 1 must be defined for each cross sections. The other methods continue

```
ET                           9.1                                                                  145         385
NH        5       0.12        75       0.10         245       0.055         285        0.10         457        0.12
NH      590
X1    33700         22       245        285        3000        3000        3800           1           0           0
GR    713.0          0      709.2         20       705.2          35       703.2          50       701.2          63
GR    699.2         75      697.2         90       695.2         130       695.2         240       693.2         245
GR    685.0        250      685.0        280       693.2         285       695.2         292       695.2         410
GR    697.2        457      699.2        500       701.2         510       703.2         535       705.2         560
GR    708.7        573      713.0        590
```

```
ET                          9.1                                                                 100         330
NH        6       0.12        48       0.10        115        0.04        140        0.06        160        0.10
NH      360       0.12       410
X1    35100         19       115        150       1000        1500       1400           1          0           0
GR    714.0          0     710.1         23      706.7          36      705.2          48      703.2          64
GR    701.2         76     699.2         92      689.2         115      686.0         116      686.0         136
GR    689.2        140     691.2        145      693.2         150      695.2         160      695.2         360
GR    697.2        370     699.2        375      709.2         395      714.2         410

ET                          9.1                                                                 100         340
NC     0.12       0.12     0.055        0.1        0.3
X1    36950         22       193        233       1600        1600       1850           1          0           0
X3       10                                                                              705.5      705.5
GR    715.0          0     709.2         25      707.2          31      705.2          40      703.2          50
GR    701.2         61     699.2         87      697.2         180      693.2         193      688.0         198
GR    688.0        228     693.2        233      695.2         245      697.2         250      697.2         290
GR    699.2        310     701.2        370      703.2         410      705.2         445      707.2         465
GR    709.2        500     715.2        512

SB      0.9        1.5       2.9                   28         1.5       1050         2.4        688         688

   A value of 0.01 added to input will transfer encroachment stations to the
   BT record for weir flow calculations.
ET                          9.11     250.21      12.31      10.41      10.51                   100         340
X1    37000                                        50         50         50
X2                           1        704        706
X3       10                                                                              706        706
BT       16          0       715        715         25        712      709.2          31        710       707.2
BT       40        709     705.2         50        709      703.2         61       708.5      701.2          87
BT    706.5      699.2       180        706      697.2        290        706       697.2        310         706
BT    699.2        370       708      701.2        410      708.5      703.2         445        709       705.2
BT      465        710     707.2        500        712      709.2        512       715.2      715.2
```

✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿✿

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   06FEB91      09:21:40                                                                                PAGE    3

ET                          9.1                                                                 100         340
X1    37110                                       110        110        110                     0.2

ET                          9.1                                                                  10         240
X1    40150         22        95        145       2800       2800       3040
GR    720.2          0     719.2         22      717.2         30      715.2          40      713.2          50
GR    711.2         58     709.2         70      699.2         95        693         105        693         135
GR    699.2        145     701.2        150      701.2        220      703.2         240      705.2         255
GR    707.2        270     709.2        290      711.2        310      713.2         325      715.2         350
GR    717.2        370     719.2        390
```

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   06FEB91      09:21:40                                                                                PAGE    4

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

FLOW DISTRIBUTION FOR SECNO=  29900.00          CWSEL=    698.30

STA=      49.      57.      71.     110.     150.     400.     460.     508.     512.     530.     563.     570.     575.
  PER Q=       .0       .2      2.1      4.1     33.6     10.0     45.7       .6      1.8      1.7       .1       .0
   AREA=      4.5     29.4    159.9    244.0   1800.0    492.0    728.8     32.4    109.8    135.3     14.7      3.0
    VEL=       .3       .7      1.0      1.3      1.5      1.6      5.0      1.5      1.3      1.0       .6       .3
  DEPTH=       .5      2.1      4.1      6.1      7.2      8.2     15.2      8.1      6.1      4.1      2.1       .5

FLOW DISTRIBUTION FOR SECNO=  33700.00          CWSEL=    702.17

STA=      57.     130.     240.     245.     285.     410.     457.     522.
  PER Q=      6.5     18.7      1.0     43.6     21.5      6.2      2.6
   AREA=    325.1    766.8     39.9    645.8    878.4    280.6    196.4
    VEL=      1.6      1.9      2.0      5.4      2.0      1.8      1.0
  DEPTH=      4.4      7.0      8.0     16.1      7.0      6.0      3.0

FLOW DISTRIBUTION FOR SECNO=  35100.00          CWSEL=    703.67

STA=      60.     115.     140.     150.     160.     360.     384.
  PER Q=      6.3     39.5      6.3      4.1     41.7      1.9
   AREA=    291.6    433.6    124.7     94.7   1693.2    121.9
    VEL=      1.7      7.3      4.0      3.5      2.0      1.3
  DEPTH=      5.3     17.3     12.5      9.5      8.5      5.1
```

```
FLOW DISTRIBUTION FOR SECNO=  36950.00          CWSEL=    705.70

STA=      38.      87.     180.     193.     233.     245.     290.     310.     370.     450.
  PER Q=      3.2     15.4      3.7     52.9      4.0      9.3      3.3      5.9      2.3
   AREA=    197.2    697.8    136.5    682.1    138.0    387.7    150.1    330.2    194.0
    VEL=      1.3      1.8      2.1      6.2      2.3      1.9      1.8      1.4       .9
  DEPTH=      4.0      7.5     10.5     17.1     11.5      8.6      7.5      5.5      2.4

FLOW DISTRIBUTION FOR SECNO=  37000.00          CWSEL=    706.66

STA=      33.      87.     180.     193.     233.     245.     290.     310.     370.     445.     460.
  PER Q=      3.8     16.1      3.6     49.7      3.9      9.5      3.5      6.6      3.2       .0
   AREA=    246.4    786.7    149.0    720.4    149.5    430.7    169.2    387.6    264.5     10.7
    VEL=      1.2      1.6      1.9      5.5      2.1      1.8      1.6      1.4      1.0       .3
  DEPTH=      4.6      8.5     11.5     18.0     12.5      9.6      8.5      6.5      3.5       .7


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


   06FEB91      09:21:40                                                                                    PAGE    5

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

```
FLOW DISTRIBUTION FOR SECNO=  37110.00          CWSEL=    706.77

STA=      34.      87.     180.     193.     233.     245.     290.     310.     370.     445.     459.
  PER Q=      3.7     16.1      3.6     50.0      3.9      9.5      3.4      6.6      3.1       .0
   AREA=    241.5    778.2    147.8    716.7    148.4    426.6    167.4    382.1    257.6      9.4
    VEL=      1.2      1.7      2.0      5.6      2.1      1.8      1.6      1.4      1.0       .3
  DEPTH=      4.5      8.4     11.4     17.9     12.4      9.5      8.4      6.4      3.4       .7

FLOW DISTRIBUTION FOR SECNO=  40150.00          CWSEL=    710.46

STA=      62.      70.      95.     145.     150.     220.     240.     255.     270.     290.     303.
  PER Q=       .0      3.2     69.1      1.5     18.2      4.3      2.0      1.1       .5       .0
   AREA=      4.7    156.4    810.8     51.3    647.9    165.1     93.8     63.8     45.1      7.9
    VEL=       .4      1.7      6.8      2.3      2.3      2.1      1.7      1.3       .9       .4
  DEPTH=       .6      6.3     16.2     10.3      9.3      8.3      6.3      4.3      2.3       .6
```

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   06FEB91      09:21:40                                                                                    PAGE    6

T1      Method 1 floodway profile

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   699.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                 -1
```

****

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   06FEB91      09:21:40                                                                                    PAGE    7

T1      Method 2 floodway profile

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                                                                   699.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      3                 -1
```

****

```
   06FEB91      09:21:40                                                                                    PAGE    8

T1      Method 3 floodway profile

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                                                                   699.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      4                 -1
```

****

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   06FEB91      09:21:40                                                                                    PAGE    9

T1      Method 4 floodway profile

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                                                                   699.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      5                 -1
```

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**********

  06FEB91      09:21:40                                                                                                PAGE   10

T1      Method 5 floodway profile

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                7                                                                   699.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      6                 -1
```

THIS RUN EXECUTED 06FEB91 09:22:14

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

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

NORTH BUFFALO CREEK

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
29900.000	698.30	.00	698.50	526.75	4001.78	3654.36	343.85	.00	.00	460.00	508.00	.00
29900.000	699.30	1.00	699.84	220.75	1939.17	5432.97	627.85	250.00	360.00	460.00	508.00	610.00
29900.000	699.30	1.00	699.83	221.75	1952.64	5420.90	626.46	250.00	359.00	460.00	508.00	609.00
29900.000	699.30	1.00	699.49	352.80	4284.74	3715.26	.00	.12	155.20	460.00	508.00	508.00
29900.000	699.30	1.00	699.50	335.10	4170.57	3829.43	.00	.16	172.90	460.00	508.00	508.00
29900.000	699.30	1.00	699.48	364.84	4373.39	3626.61	.00	.10	143.16	460.00	508.00	508.00
33700.000	702.17	.00	702.40	465.45	2091.73	3490.15	2418.12	.00	.00	245.00	285.00	.00
33700.000	704.54	2.37	704.82	240.00	1954.04	4082.66	1963.30	240.00	145.00	245.00	285.00	385.00
33700.000	704.46	2.29	704.72	250.00	1998.17	3994.61	2007.22	250.00	140.00	245.00	285.00	390.00
33700.000	703.16	.99	703.41	304.61	1928.63	3735.99	2335.38	.12	126.51	245.00	285.00	431.12
33700.000	703.33	1.16	703.60	289.24	1872.39	3832.96	2294.65	.17	131.68	245.00	285.00	420.92
33700.000	703.17	1.00	703.45	287.74	1863.63	3876.30	2260.06	.15	131.64	245.00	285.00	419.38
35100.000	703.67	.00	704.01	323.66	507.39	3666.99	3825.61	.00	.00	115.00	150.00	.00
35100.000	705.78	2.11	706.09	230.00	315.53	3872.88	3811.59	230.00	100.00	115.00	150.00	330.00
35100.000	705.75	2.08	706.23	213.89	809.26	4513.06	2677.68	250.00	7.50	115.00	150.00	257.50
35100.000	704.60	.94	705.00	232.61	10.41	4018.62	3970.97	.12	113.71	115.00	150.00	346.32
35100.000	705.01	1.34	705.28	228.61	.00	3501.73	4498.27	.14	115.00	115.00	150.00	343.61
35100.000	704.66	1.00	705.04	237.98	53.17	3958.12	3988.72	.11	111.28	115.00	150.00	349.27
36950.000	705.70	.00	706.04	412.30	1779.05	4234.96	1986.00	.00	.00	193.00	233.00	.00
36950.000	707.35	1.65	707.68	240.00	1617.12	4462.44	1920.43	240.00	100.00	193.00	233.00	340.00
36950.000	707.72	2.02	708.02	250.00	1783.99	4326.31	1889.70	250.00	88.00	193.00	233.00	338.00
36950.000	706.65	.95	707.05	229.07	1563.86	4645.78	1790.36	.12	101.86	193.00	233.00	330.93
36950.000	707.04	1.34	707.42	227.30	1551.59	4602.02	1846.39	.15	105.09	193.00	233.00	332.39
36950.000	706.70	1.00	707.17	194.52	1407.98	4905.23	1686.79	.17	117.78	193.00	233.00	312.30
37000.000	706.66	.00	706.91	426.17	1881.13	3978.04	2140.83	.00	.00	193.00	233.00	.00
37000.000	707.83	1.18	708.14	240.00	1647.94	4394.24	1957.82	240.00	100.00	193.00	233.00	340.00
37000.000	708.11	1.45	708.38	250.00	1810.97	4272.79	1916.24	250.00	88.00	193.00	233.00	338.00
37000.000	707.26	.60	707.61	229.07	1609.10	4551.35	1839.55	.12	101.86	193.00	233.00	330.93
37000.000	707.57	.91	707.91	227.30	1586.74	4525.46	1887.79	.14	105.09	193.00	233.00	332.39
37000.000	707.26	.60	707.68	194.52	1444.69	4825.89	1729.42	.05	117.78	193.00	233.00	312.30

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
37110.000	706.77	.00	707.03	424.84	1872.14	4001.12	2126.73	.00	.00	193.00	233.00	.00
37110.000	707.94	1.17	708.25	240.00	1642.70	4405.85	1951.45	240.00	100.00	193.00	233.00	340.00
37110.000	708.20	1.44	708.48	250.00	1804.34	4285.95	1909.71	250.00	88.00	193.00	233.00	338.00
37110.000	707.41	.65	707.74	247.14	1635.34	4435.28	1929.38	.12	96.79	193.00	233.00	343.93
37110.000	707.72	.95	708.03	249.14	1632.20	4379.98	1987.82	.14	98.22	193.00	233.00	347.36
37110.000	707.61	.84	707.82	404.35	1944.35	3809.06	2246.59	.00	41.25	193.00	233.00	445.60
40150.000	710.46	.00	710.98	240.09	259.86	5530.99	2209.15	.00	.00	95.00	145.00	.00
40150.000	711.41	.95	711.90	182.82	311.72	5658.96	2029.32	230.00	10.00	95.00	145.00	240.00
40150.000	711.42	.96	711.89	187.86	307.58	5575.27	2117.15	250.00	.01	95.00	145.00	245.00
40150.000	711.65	1.19	712.20	127.22	.00	5886.32	2113.68	.12	95.00	95.00	145.00	222.22
40150.000	711.72	1.27	712.27	126.45	.00	5885.04	2114.96	.13	95.00	95.00	145.00	221.45
* 40150.000	711.37	.91	712.72	51.53	.00	7982.71	17.29	.31	95.00	95.00	145.00	146.53

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 40150.000 PROFILE= 6 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

Floodway width summary: NORTH BUFFALO CREEK
Profile No. 2

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
29900.000	1.00	250.00	360.00	124.00	484.00	126.00	610.00
33700.000	2.37	240.00	145.00	120.00	265.00	120.00	385.00
35100.000	2.11	230.00	100.00	32.50	132.50	197.50	330.00
36950.000	1.65	240.00	100.00	113.00	213.00	127.00	340.00
37000.000	1.18	240.00	100.00	113.00	213.00	127.00	340.00
37110.000	1.17	240.00	100.00	113.00	213.00	127.00	340.00
40150.000	.95	230.00	10.00	110.00	120.00	120.00	240.00

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Floodway width summary: NORTH BUFFALO CREEK
Profile No. 3

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
29900.000	1.00	250.00	359.00	125.00	484.00	125.00	609.00
33700.000	2.29	250.00	140.00	125.00	265.00	125.00	390.00
35100.000	2.08	250.00	7.50	125.00	132.50	125.00	257.50
36950.000	2.02	250.00	88.00	125.00	213.00	125.00	338.00
37000.000	1.45	250.00	88.00	125.00	213.00	125.00	338.00
37110.000	1.44	250.00	88.00	125.00	213.00	125.00	338.00
40150.000	.96	244.99	.01	119.99	120.00	125.00	245.00

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Floodway width summary: NORTH BUFFALO CREEK
Profile No. 4

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
29900.000	1.00	352.80	155.20	328.80	484.00	24.00	508.00
33700.000	.99	304.61	126.51	138.49	265.00	166.12	431.12
35100.000	.94	232.61	113.71	18.79	132.50	213.82	346.32
36950.000	.95	229.07	101.86	111.14	213.00	117.93	330.93
37000.000	.60	229.07	101.86	111.14	213.00	117.93	330.93
37110.000	.65	247.14	96.79	116.21	213.00	130.93	343.93
40150.000	1.19	127.22	95.00	25.00	120.00	102.22	222.22

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Floodway width summary: NORTH BUFFALO CREEK
Profile No. 5

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
29900.000	1.00	335.11	172.90	311.10	484.00	24.00	508.00
33700.000	1.16	289.24	131.68	133.32	265.00	155.92	420.92
35100.000	1.34	228.61	115.00	17.50	132.50	211.11	343.61
36950.000	1.34	227.30	105.09	107.91	213.00	119.39	332.39
37000.000	.91	227.30	105.09	107.91	213.00	119.39	332.39
37110.000	.95	249.14	98.22	114.78	213.00	134.36	347.36
40150.000	1.27	126.45	95.00	25.00	120.00	101.45	221.45

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Floodway width summary: NORTH BUFFALO CREEK
Profile No. 6

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
29900.000	1.00	364.84	143.16	340.84	484.00	24.00	508.00
33700.000	1.00	287.74	131.64	133.36	265.00	154.38	419.38

35100.000	1.00	237.99	111.28	21.22	132.50	216.77	349.27
36950.000	1.00	194.52	117.78	95.22	213.00	99.30	312.30
37000.000	.60	194.52	117.78	95.22	213.00	99.30	312.30
37110.000	.84	404.35	41.25	171.75	213.00	232.60	445.60
40150.000	.91	51.53	95.00	25.00	120.00	26.53	146.53

****

FLOODWAY DATA, NORTH BUFFALO CREEK
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
29900.000	221.	2025.	3.9	699.3	698.3	1.0
33700.000	240.	2619.	3.1	704.6	702.2	2.4
35100.000	230.	2746.	2.9	705.8	703.7	2.1
36950.000	240.	2684.	3.0	707.3	705.7	1.6
37000.000	240.	2798.	2.9	707.9	706.7	1.2
37110.000	240.	2778.	2.9	708.0	706.8	1.2
40150.000	183.	2008.	4.0	711.4	710.5	.9

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FLOODWAY DATA, NORTH BUFFALO CREEK
PROFILE NO. 3

STATION	WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
29900.000	222.	2034.	3.9	699.3	698.3	1.0
33700.000	250.	2692.	3.0	704.5	702.2	2.3
35100.000	214.	2198.	3.6	705.7	703.7	2.0
36950.000	250.	2860.	2.8	707.7	705.7	2.0
37000.000	250.	2955.	2.7	708.1	706.7	1.4
37110.000	250.	2931.	2.7	708.2	706.8	1.4
40150.000	188.	2049.	3.9	711.4	710.5	.9

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FLOODWAY DATA, NORTH BUFFALO CREEK
PROFILE NO. 4

STATION	WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
29900.000	353.	3337.	2.4	699.3	698.3	1.0
33700.000	305.	2794.	2.9	703.2	702.2	1.0
35100.000	233.	2467.	3.2	704.6	703.7	.9
36950.000	229.	2439.	3.3	706.7	705.7	1.0
37000.000	229.	2579.	3.1	707.3	706.7	.6
37110.000	247.	2703.	3.0	707.4	706.8	.6
40150.000	127.	1682.	4.8	711.7	710.5	1.2

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FLOODWAY DATA, NORTH BUFFALO CREEK
PROFILE NO. 5

STATION	WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
29900.000	335.	3193.	2.5	699.3	698.3	1.0
33700.000	289.	2728.	2.9	703.3	702.2	1.1
35100.000	229.	2513.	3.2	705.0	703.7	1.3
36950.000	227.	2513.	3.2	707.0	705.7	1.3
37000.000	227.	2632.	3.0	707.6	706.7	.9
37110.000	249.	2790.	2.9	707.7	706.8	.9
40150.000	126.	1684.	4.8	711.7	710.5	1.2

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FLOODWAY DATA, NORTH BUFFALO CREEK
PROFILE NO. 6

STATION	WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
29900.000	365.	3433.	2.3	699.3	698.3	1.0
33700.000	288.	2671.	3.0	703.2	702.2	1.0
35100.000	238.	2545.	3.1	704.7	703.7	1.0
36950.000	195.	2191.	3.7	706.7	705.7	1.0
37000.000	195.	2300.	3.5	707.3	706.7	.6
37110.000	404.	3601.	2.2	707.6	706.8	.8

40150.000	52.	875.	9.1	711.4	710.5	.9

Example No. 5

Input

```
SF      Example 5:  SPLIT FLOW data are entered first
TW      Right bank levee between Sections 3 and 4
WS     2       3       4      -1     3.4
WC            26     460      28
TW      Right bank floodway over-flow weir between Sections 2 and 3
WS     2       2       3      -1     2.7
WC            19     370      21
TW      Right bank levee between Sections 1 and 2
WS     2       1       2      -1     3.4
WC            19     520      24
EE
T1    Example 5:  SPLIT FLOW  reach data follow Split Flow EE record
T2    One profile with 40,000 cfs
T3       RED FOX RIVER
J1     0                           .005                   40000      20       0
*  NC only used to define contraction and expansion coefficients
NC     0       0       0      .1      .3
*  NH record used to define Manning's 'n' values for Section 1
NH     5      .1     415    .050     650    .030     710    .050    1020      .1
NH  1635
X1     1      11     650     710       0       0       0
X3                           622             752
GR    25      20      18     110      17     415      14     650       1     675
GR     0     690       1     710      13     710      14    1020      14    1590
GR    25    1635
NH     4    .100     415    .050     575    .030     640    .100    1250
X1     2      10     575     640     600     600     600
X3                           525             735
GR    25      30      20     110      20     200      17     415      10     575
GR     4     580       4     615      18     640      18    1195      25    1250
NC  .100    .050    .030
X1     3      10     390     600     500     500     500
X3                           390             600
X4     1    17.2     390
GR    25      40      22     260    18.7     370      15     420     7.1     500
GR   7.5     530    17.3     560      20     600      22     850      25     875
NH     5    .100     130    .050     330    .036     460    .050     610    .100
NH   700
X1     4       8     330     460     700     700     700
X3                           300             600
GR    26      30      24     130      23     330     9.5     370      10     400
GR    22     460      22     610      26     700
EJ
ER
```

Output

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*****************************************                                          ***************************************
*  HEC-2 WATER SURFACE PROFILES           *                                          *  U.S. ARMY CORPS OF ENGINEERS       *
*                                         *                                          *  HYDROLOGIC ENGINEERING CENTER      *
*  Version   4.6.0;  February 1991        *                                          *  609 SECOND STREET, SUITE D         *
*                                         *                                          *  DAVIS, CALIFORNIA 95616-4687       *
*  RUN DATE    06FEB91    TIME   11:02:02  *                                          *          (916) 756-1104             *
*****************************************                                          ***************************************

                                          X     X  XXXXXXX   XXXXX              XXXXX
                                          X     X  X        X     X            X     X
                                          X     X  X        X                        X
                                          XXXXXXX  XXXX     X          XXXXX    XXXXX
                                          X     X  X        X                  X
                                          X     X  X        X     X            X
                                          X     X  XXXXXXX   XXXXX             XXXXXXX
END OF BANNER


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

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                                                                                                THIS RUN EXECUTED 06FEB91    11:02:02
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 HEC-2 WATER SURFACE PROFILES

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SPLIT FLOW BEING PERFORMED

SF      Example 5:  SPLIT FLOW data are entered first

TW      Right bank levee between Sections 3 and 4
WS     2       3       4      -1     3.4
WC            26     460      28

TW      Right bank floodway over-flow weir between Sections 2 and 3
WS     2       2       3      -1     2.7
WC            19     370      21

TW      Right bank levee between Sections 1 and 2
WS     2       1       2      -1     3.4
WC            19     520      24


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


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T1    Example 5:  SPLIT FLOW  reach data follow Split Flow EE record
T2    One profile with 40,000 cfs
T3       RED FOX RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0                                    .005                        40000        20         0
   NC only used to define contraction and expansion coefficients

NC        0          0          0         .1          .3
   NH record used to define Manning's 'n' values for Section 1
NH        5         .1        415       .050         650        .030         710        .050        1020          .1
NH     1635
X1        1         11        650        710           0           0           0
X3                                       622                     752
GR       25         20         18        110          17         415          14         650           1         675
GR        0        690          1        710          13         710          14        1020          14        1590
GR       25       1635

NH        4       .100        415       .050         575        .030         640        .100        1250
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X1        2        10       575       640       600       600       600
X3                                    525                 735
GR       25        30        20       110        20       200        17       415        10       575
GR        4       580         4       615        18       640        18      1195        25      1250

NC     .100      .050      .030
X1        3        10       390       600       500       500       500
X3                                    390                 600
X4        1      17.2       390
GR       25        40        22       260      18.7       370        15       420       7.1       500
GR      7.5       530      17.3       560        20       600        22       850        25       875

NH        5      .100       130      .050       330      .036       460      .050       610      .100
NH      700
X1        4         8       330       460       700       700       700
X3                                    300                 600
GR       26        30        24       130        23       330       9.5       370        10       400
GR       22       460        22       610        26       700
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 1

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 1.000

3470 ENCROACHMENT STATIONS=      622.0     752.0  TYPE=      1  TARGET=      130.000
     1.000     20.42     20.42       .00     20.00     25.84      5.42       .00       .00     14.00
   23659.0    1094.2   20355.7    2209.1     174.7    1020.1     308.7        .0        .0     13.00
       .00      6.26     19.95      7.16      .050      .030      .050      .000       .00    622.00
   .005018        0.        0.        0.         0         0         3       .00    130.00    752.00

1490 NH CARD USED
*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.53

3470 ENCROACHMENT STATIONS=      525.0     735.0  TYPE=      1  TARGET=      210.000
     2.000     20.95     24.95       .00       .00     28.13      3.18      2.06       .22     10.00
   25930.6    5180.5   19016.8    1733.3     693.4    1172.5     661.4      27.8       2.3     18.00
       .01      7.47     16.22      2.62      .050      .030      .100      .000      4.00    525.00
   .002571      600.      600.      600.         2         0         0       .00    210.00    735.00

*SECNO 3.000
3280 CROSS SECTION      3.00 EXTENDED      1.49 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.49

3470 ENCROACHMENT STATIONS=      390.0     600.0  TYPE=      1  TARGET=      210.000
     3.000     19.39     26.49       .00       .00     29.47      2.98      1.32       .02     17.20
   39615.7        .0   39615.7        .0        .0    2858.5        .0      58.7       4.8 100000.00
       .02       .00     13.86       .00      .000      .030      .000      .000      7.10    390.00
   .002686      500.      500.      500.         3         0         0       .00    210.00    600.00


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

1490 NH CARD USED
*SECNO 4.000
3280 CROSS SECTION      4.00 EXTENDED      2.30 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .67

3470 ENCROACHMENT STATIONS=      300.0     600.0  TYPE=      1  TARGET=      300.000
     4.000     18.80     28.30       .00       .00     32.59      4.29      2.73       .39     23.00
   40000.0     987.1   32222.0    6790.9     156.7    1776.5     882.0     104.3       8.8     22.00
       .03      6.30     18.14      7.70      .050      .036      .050      .000      9.50    300.00
   .006117      700.      700.      700.         3         0         0       .00    300.00    600.00


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 TW      Right bank levee between Sections 3 and 4

    ASQ       QCOMP     ERRAC     TASQ       TCQ       TABER     NITER     DSWS      USWS      DSSNO     USSNO
    384.29    387.88       .93    384.29    387.88       .93        17    26.487    28.299     3.000     4.000

 TW      Right bank floodway over-flow weir between Sections 2 and 3
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ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
13685.15	13670.57	.11	14069.44	14058.45	.08	17	24.954	26.487	2.000	3.000

TW Right bank levee between Sections 1 and 2

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
2271.58	2296.01	1.07	16341.03	16354.46	.08	17	20.419	24.954	1.000	2.000

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

 RED FOX RIVER

SUMMARY PRINTOUT TABLE  150

      SECNO     XLCH      ELTRD     ELLC      ELMIN       Q       CWSEL     CRIWS      EG       10*KS      VCH      AREA      .01K

       1.000      .00       .00       .00       .00  23658.97     20.42       .00     25.84     50.18     19.95   1503.61  3339.84

*      2.000    600.00      .00       .00      4.00  25930.56     24.95       .00     28.13     25.71     16.22   2527.26  5113.90

*      3.000    500.00      .00       .00      7.10  39615.71     26.49       .00     29.47     26.86     13.86   2858.55  7644.48

*      4.000    700.00      .00       .00      9.50  40000.00     28.30       .00     32.59     61.17     18.14   2815.18  5114.48

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 RED FOX RIVER

SUMMARY PRINTOUT TABLE  150

      SECNO       Q       CWSEL    DIFWSP    DIFWSX    DIFKWS    TOPWID     XLCH

       1.000  23658.97     20.42       .00       .00       .42    130.00       .00

*      2.000  25930.56     24.95       .00      4.54       .00    210.00    600.00

*      3.000  39615.71     26.49       .00      1.53       .00    210.00    500.00

*      4.000  40000.00     28.30       .00      1.81       .00    300.00    700.00

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

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 SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO=      2.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      4.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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