00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN

SEGMENT 1

00BREAK00

THIS RUN EXECUTED 23 JUN 89 14:18:35

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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM CONF. WITH KALAMAZOO R. TO U/S OF FIRST R.R.
T3        100-YEAR FLOOD ENCROACHED RUN

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        3.         0.          0   0.000000       0.00       0.0         0.     755.300      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    15.000     0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 2

CCHV=   0.300 CEHV=   0.500
*SECNO 0.000
 2800 NAT Q1=     171.90  WSEL=     755.20  ENC Q1=     182.09  WSEL=     755.30  RATIO= -0.0592
 NAT Q1=     183.   RATIOS LOB, CH, ROB=  0 0030  0.9942  0.0028  WSEL=     755.30

3470 ENCROACHMENT STATIONS=      408.0      490.0  TYPE=      4  TARGET=        0.006
          PORTAGE CREEK, CONFLUENCE WITH KALAMAZOO RIVER
     0 00      3.30    755.30      0.00    755.20    755.41      0.11      0.00      0.00    753.30
     580.        0.      580.        0.        0.      221.        0.        0.        0.     753.60
     0.00      0.00      2.62      0.00     0.000     0.035     0.000     0.000    752.00    408.00
 0.001076        0.        0.        0.         0         0         0      0.00     82 00    490.00


*SECNO 229.000
 2800 NAT Q1=     110.38  WSEL=     755.48  ENC Q1=     115 88  WSEL=     755.58  RATIO= -0.0498
 NAT Q1=     116    RATIOS LOB, CH, ROB=  0.0000  1.0000  0.0000  WSEL=     755.58

3470 ENCROACHMENT STATIONS=      820.8      861.2  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       761.40 ELREA=       761.40

   229 00      4.36    755 56      0.00    755.48    755.87      0.31      0.36      0.10    755.40
     580.        0       580.        0.        0.      129.        0.        1.        0.     755.30
     0.01      0.00      4 50      0 00     0.000     0.035     0.000     0.000    751.20    820.85
 0 002576      375.      229.      150.         2         0         0      0.00     40.30    861.15


CCHV=   0.300 CEHV=   0 500
*SECNO 230.000
 2800 NAT Q1=     192.58  WSEL=     755.48  ENC Q1=     202.87  WSEL=     755 58  RATIO= -0.0535
 NAT Q1=     203.   RATIOS LOB, CH, ROB=  0.0000  1 0000  0.0000  WSEL=     755.58

3370 NORMAL BRIDGE, NRD=  0 MIN ELTRD=  765.60 MAX ELLC=  761.40


3470 ENCROACHMENT STATIONS=      820.8      861.2  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       761.40 ELREA=       761.40

          D/S FACE MICHIGAN AVE.  BRIDGE
   230.00      4.36    755.56      0.00    755.48    755.88      0.31      0.00      0 00    755.40
     580.        0.      580.        0.         0     129.        0.        1.        0.     755.30
     0.01      0.00      4.50      0.00     0.000     0.020     0.000     0.000    751.20    820.85
 0.000840        1.        1.        1.         0         0         0      0.00     40.30    861.15
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


*SECNO 322.000
 2800 NAT Q1=     203.60  WSEL=     755.59  ENC Q1=     214.22  WSEL=     755.69  RATIO= -0.0521
 NAT Q1=     214.   RATIOS LOB,CH,ROB=   0.0000   1.0000   0.0000  WSEL=     755.69

3370 NORMAL BRIDGE, NRD=  0 MIN ELTRD=  766.60 MAX ELLC=  762.40


3470 ENCROACHMENT STATIONS=      820.8      861.2  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       766.40 ELREA=       766.40

          U/S FACE MICHIGAN AVE.  BRIDGE
   322.00      4.46    755.66      0.00    755.59    755.95      0.30      0.07      0.01    755.40
     580.        0.      580.        0.        0.     133.        0.        1.        0.     755.30
     0.02      0.00      4.37      0.00     0.000     0.020     0.000     0.000    751.20    820.85
 0.000762       92.       92.       92.         2         0         0      0.00     40.30    861.15


CCHV=    0.300 CEHV=    0.500
*SECNO 323.000
 2800 NAT Q1=     116.38  WSEL=     755.59  ENC Q1=     122.50  WSEL=     755.69  RATIO= -0.0526
 NAT Q1=     122.   RATIOS LOB,CH,ROB=   0.0000   1.0000   0.0000  WSEL=     755.69

3470 ENCROACHMENT STATIONS=      820.8      861.2  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       766.40 ELREA=       766.40

   323.00      4.46    755.66      0.00    755.59    755.96      0.30      0.00      0.00    755.40
     580.        0.      580.        0.        0.     133.        0.        1.        0.     755.30
     0.02      0.00      4.37      0.00     0.000     0.035     0.000     0.000    751.20    820.85
 0.002331         1.        1.        1.         0         0         0      0.00     40.30    861.15


*SECNO 372.000
 2800 NAT Q1=      89.00  WSEL=     755.61  ENC Q1=      92.82  WSEL=     755.71  RATIO= -0.0429
 NAT Q1=      93.   RATIOS LOB,CH,ROB=   0.0000   0.9999   0.0001  WSEL=     755.71

3470 ENCROACHMENT STATIONS=      796.0      822.0  TYPE=      4  TARGET=        0.000
          50 FT.  U/S MICHIGAN AVE.  BRIDGE
   372.00      5.08    755.68      0.00    755.61    756.23      0.55      0.15      0.13    756.20
     580.        0.      580.        0.        0.      98.        0.        1.        0.     755.30
     0.02      0.00      5.94      0.00     0.000     0.035     0.000     0.000    750.60    796.14
 0.004078        49.       49.       49.         2         0         0      0.00     25.86    822.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 669.000
 2800 NAT Q1=     144.72  WSEL=     756.75  ENC Q1=     150.02  WSEL=     756.85  RATIO= -0.0366
 NAT Q1=     150.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     756.85

3470 ENCROACHMENT STATIONS=        0.1       56.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       762.50 ELREA=       762.50

   669 00      5.28    756.78     0 00    756.75    757.03      0.25      0.71      0.09    759.50
     580.        0.      580.       0.        0.       144        0.        2.        1.     762.50
     0.04     0.00      4.02     0 00     0.000     0.035     0 000     0.000    751.50      8.20
 0.001577     297.      297.      297.         2         0         0      0.00     35.05     43.25


*SECNO 670.000
 2800 NAT Q1=     144.89  WSEL=     756.76  ENC Q1=     150.13  WSEL=     756.86  RATIO= -0.0362
 NAT Q1=     150.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     756.86

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD=  762.00 MAX ELLC=  761 90


3470 ENCROACHMENT STATIONS=        0.1       56.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       762.50 ELREA=       762.50

          D/S FACE FOOTBRIDGE
   670.00      5.28    756.78     0 00    756.76    757.03      0 25      0.00      0.00    759 50
     580         0.      580.       0.        0.      144.        0.        2.        1.     762.50
     0.04     0.00      4.02      0.00     0.000     0.035     0.000     0.000    751.50      8 20
 0.001574        1.        .1.       1.         0         0         0      0..00    35.06     43.26


*SECNO 674 000
 2800 NAT Q1=     145.18  WSEL=     756.76  ENC Q1=     150.52  WSEL=     756.86  RATIO= -0.0368
 NAT Q1=     151.   RATIOS LOB,CH,ROB=  0:0000  1.0000  0 0000  WSEL=     756.86

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD=  762.00 MAX ELLC=  761.90


3470 ENCROACHMENT STATIONS=        0.1       56.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       762.50 ELREA=       762.50
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        U/S FACE FOOTBRIDGE
  674.00      5.29   756.79      0.00   756.76   757.04      0.25      0.01      0.00   759.50
    580.         0.     580.        0.       0.      145.        0.        2.        1.   762.50
    0.04      0.00     4.01      0.00    0.000    0.035     0.000     0.000    751.50     8.20
0.001567         4.       4.        4.        0        0         0      0.00     35.07    43.26

*SECNO 675.000
 2800 NAT Q1=     145.31  WSEL=    756.77  ENC Q1=     150.63  WSEL=     756.87  RATIO= -0.0366
 NAT Q1=    151.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     756.87

3470 ENCROACHMENT STATIONS=        0.1       56.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       762.50 ELREA=       762.50

  675.00      5.29   756.79      0.00   756.77   757.04      0.25      0.00      0.00   759.50
    580.         0.     580.        0.       0.      145.        0.        2.        1.   762.50
    0.04      0.00     4.01      0.00    0.000    0.035     0.000     0.000    751.50     8.19
0.001564         1.       1.        1.        0        0         0      0.00     35.07    43.27


*SECNO 890.000
 2800 NAT Q1=     138.03  WSEL=     757.10  ENC Q1=     143.21  WSEL=     757.20  RATIO= -0.0375
 NAT Q1=     143.  RATIOS LOB,CH,ROB=  0.0017  0.9982  0.0002  WSEL=     757.20

3470 ENCROACHMENT STATIONS=      892.5       925.5  TYPE=      4  TARGET=        0.002
          D/S FIRST RAILROAD BRIDGE
  890.00      5 15   757.15      0.00   757.10   757.45      0.30      0.38      0.02   753.80
    580          0.     580         0.       0.      132.        0.        3.        1.   756.10
    0.06      0.00     4 38      0.00    0.000    0.035     0.000     0.000    752.00   892.50
0.002027       215.     215.      215.        1        0         0      0.00     33.00   925.50


*SECNO 989.000
 2800 NAT Q1=     148.80  WSEL=     757.30  ENC Q1=     154.79  WSEL=     757.40  RATIO= -0.0403
 NAT Q1=     155.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     757.40

3470 ENCROACHMENT STATIONS=      892.5       925.5  TYPE=      4  TARGET=        0.000

3495 OVERBANK,AREA ASSUMED NON-EFFECTIVE,ELLEA=       761.20 ELREA=       761.20

  989 00      5.36   757.36      0.00   757.30   757.63      0.27      0.17      0.01   753.80
    580.         0.     580.        0.       0.      140.        0.        3.        1.   756.10
    0.06      0.00     4.15      0.00    0.000    0.035     0.000     0.000    752.00   892.50
0.001516        99.      99.       99.        2        0         0      0.00     33 00   925.50


*SECNO 990.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 2800 NAT Q1=     136.53  WSEL=     757.30  ENC Q1=     141.55  WSEL=     757.40  RATIO= -0.0368
 NAT Q1=     142.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     757.40

3370 NORMAL BRIDGE,NRD= 13 MIN ELTRD=  763.00 MAX ELLC=  761.20


3470 ENCROACHMENT STATIONS=      892.5      925.5  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       761.20 ELREA=       761.20

          D/S FACE FIRST RAILROAD BRIDGE
   990.00      5.36    757.36      0.00    757.30    757.63      0.27      0.00      0.00    753.80
     580.        0.      580.        0.        0.     140.        0.        3.        1.     756.10
     0.06      0.00      4.15      0.00     0.000     0.035     0.000     0.000   752.00    892.50
 0.001723        1.        1.        1.         0         0         0      0.00    33.00    925.50


*SECNO 1009.000
 2800 NAT Q1=      99.22  WSEL=     757.21  ENC Q1=     103.05  WSEL=     757.31  RATIO= -0.0386
 NAT Q1=     103.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     757.31

3370 NORMAL BRIDGE,NRD= 13 MIN ELTRD=  763.00 MAX ELLC=  761.20


3470 ENCROACHMENT STATIONS=      897.0      921.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       764.30 ELREA=       764.30

          U/S FACE FIRST RAILROAD BRIDGE
  1009.00      5.27    757.27      0.00    757.21    757.81      0.53      0.04      0.13    753 80
     580.        0.      580.        0.        0.      99.        0.        3.        1.     756.10
     0.06      0.00      5.86      0.00     0.000     0.035     0.000     0.000   752.00    897.00
 0.003248       19.       19.       19.         2         0         0      0.00    24.00    921.00


CCHV=   0.600 CEHV=   0.800
*SECNO 1010.000
 2800 NAT Q1=     102.21  WSEL=     757.21  ENC Q1=     106.52  WSEL=     757.31  RATIO= -0.0421
 NAT Q1=     107   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     757.31

3470 ENCROACHMENT STATIONS=      897.0      921.0  TYPE=      4  TARGET=        0.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764 30 ELREA= 764 30

U/S RAILROAD BRIDGE - CROSS SECTION A

1010.00	5.28	757.28	0.00	757.21	757.81	0.53	0.00	0.00	753.80
580.	0.	580.	0.	0.	99	0.	3.	1.	756.10
0.06	0.00	5.86	0.00	0 000	0.035	0.000	0.000	752.00	897.00
0.003242	1.	1.	1.	0	0	0	0.00	24.00	921.00



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN

SEGMENT 3



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


*SECND 8789.000
 2800 NAT Q1=      82.87  WSEL=    767.32  ENC Q1=      85.32  WSEL=     767.42  RATIO= -0.0295
 NAT Q1=     85.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     767.42

3470 ENCROACHMENT STATIONS=      250.0      269.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       770.40 ELREA=       770.50

          U/S REED AVE. - CROSS SECTION K
  8789.00      5.32    767.32      0.00    767.32    767.86      0.55      0.01      0.00    770.40
     540.        0.       540.       0.        0.       91.        0.       38.       15.     770.50
     0.46      0.00      5.94      0.00     0.000     0.035     0.000     0.000    762.00    250.00
 0.004250        1.        1.        1.         0         0         0      0.00     19.00    269.00


CCHV=    0.100 CEHV=    0.300
*SECND 8889.000
 2800 NAT Q1=      94.81  WSEL=     767.79  ENC Q1=      97.40  WSEL=     767.89  RATIO= -0.0273
 NAT Q1=     97.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     767.89

3470 ENCROACHMENT STATIONS=      250.0      269.0  TYPE=      4  TARGET=        0.000
          100 FT. D/S OF STRUCTURE U/S OF REED AVE.
  8889.00      5.79    767.79      0.00    767.79    768.24      0.45      0.37      0.01    770.40
     540.        0.       540.       0.        0.      100.        0.       39.       15.     770.50
     0.46      0.00      5.40      0.00     0.000     0 035     0.000     0.000    762.00    250.00
 0.003241      100.      100.      100.         2         0         0      0.00     19.00    269.00


*SECND 8989.000

3470 ENCROACHMENT STATIONS=       24.5       41.5  TYPE=      1  TARGET=       17.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       780.00 ELREA=       780 00

        D/S FACE OF STRUCTURE U/S OF REED AVE.-CROSS SEC.  L
  8989.00      5.62    768.02      0.00    767.97    768.59      0.58      0.32      0.04    762.60
     540.        0.       540.       0.        0.       89.        0.       39.       15.  100000.00
     0.47      0.00      6 09      0.00     0.000     0.035     0.000     0.000    762.40     24.50
 0.003072      100.      100.      100.         2         0         0      0.00     17.00     41.50
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2.21	3.00	0.00	17.60	0.00	88.00	0.00	762.80	762.40

*SECNO 9071.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
769.31	768.85	0.00	0.	540.	88.	81.	767.40	780.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 780.00 ELREA= 780.00

U/S FACE OF STRUCTURE U/S OF REED AVE. - CROSS SEC. M

9071.00	6.16	768.96	0.00	768.91	769.31	0.35	0.72	0.00	764.10
540.	0.	540	0.	0.	114.	0.	39.	15.	763.40
0.47	0.00	4.75	0.00	0.000	0.035	0.000	0.000	762.80	8.00
0.001239	82.	82.	82.	2	0	0	0.00	20.00	28.00

*SECNO 9120.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.60 ELREA= 781 60

9120.00	6.77	769.27	0.00	769 22	769.37	0.10	0.03	0.03	785.00
540.	0.	540.	0.	0.	215.	0.	39.	15	765.00
0.48	0.00	2.51	0.00	0 000	0.035	0.000	0.000	762.50	0.18
0.000422	49.	49.	49.	2	0	0	0.00	39.82	40.00

*SECNO 9121.000

3370 NORMAL BRIDGE, NRD= 4 MIN ELTRD= 781.50 MAX ELLC= 771.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.60 ELREA= 781.60

D/S FACE OF 1ST CROSSWALK

9121.00	6.77	769.27	0.00	769.22	769.37	0.10	0.00	0 00	785.00
540.	0.	540	0.	0.	215.	0.	39	15.	765.00
0.48	0.00	2.51	0 00	0.000	0.035	0.000	0.000	762.50	0 18
0.000422	1.	1.	1.	0	0	0	0.00	39.82	40.00

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

#SECNO 9129.000

3370 NORMAL BRIDGE, NRD= 4 MIN ELTRD= 781.50 MAX ELLC= 771.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.50 ELREA= 781 50

U/S FACE 1ST CROSSWALK

9129.00	6.78	769.28	0.00	769.23	769.37	0.10	0.00	0.00	785.00
540.	0.	540.	0.	0.	215.	0.	39.	15.	765.00
0.48	0.00	2.51	0.00	0.000	0.035	0.000	0.000	762.50	0.18
0.000421	8.	8.	8.	0	0	0	0.00	39.82	40.00

#SECNO 9130.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781 50 ELREA= 781.50

9130 00	6.78	769.28	0.00	769.23	769.37	0.10	0 00	0.00	785.00
540.	0.	540.	0.	0.	215.	0.	39.	15.	765.00
0.48	0.00	2.51	0.00	0.000	0.035	0.000	0.000	762.50	0.18
0.000421	1	1.	1.	0	0	0	0.00	39.82	40.00

#SECNO 9340.000

100 FT. D/S 2ND CROSSWALK

9340.00	5.34	769.34	0.00	769.29	769.56	0 22	0.15	0.04	793.10
540.	0.	540.	0.	0.	143.	0.	40.	15	793.10
0.49	0.00	3.78	0.00	0.000	0.035	0.000	0.000	764.00	17.78
0 001351	210.	210.	210.	2	0	0	0.00	28.62	46.40

#SECNO 9439.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793 10

9439.00	5.48	769.48	0.00	769.43	769.69	0 21	0.13	0.00	793.10
540.	0.	540.	0.	0.	147.	0.	40.	16.	793.10
0.50	0.00	3.68	0.00	0.000	0.035	0.000	0.000	764.00	17 77
0.001243	99.	99.	99.	2	0	0	0.00	28.63	46.40

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

*SECNO 9440.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 793.10 MAX ELLC= 780.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793.10

D/S FACE 2ND CROSSWALK

9440.00	5.48	769.48	0.00	769.44	769.69	0.21	0.00	0.00	793.10
540	0.	540	0.	0.	147.	0.	40.	16.	793.10
0.50	0.00	3.68	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001242	1.	1.	1.	0	0	0	0.00	28.63	46.40

*SECNO 9451.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 793.10 MAX ELLC= 780.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793.10

U/S FACE 2ND CROSSWALK

9451.00	5.49	769.49	0.00	769.45	769.70	0.21	0.01	0.00	793.10
540.	0.	540.	0.	0.	147.	0.	40.	16.	793.10
0.50	0.00	3.67	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001232	11.	11.	11.	0	0	0	0.00	28.63	46.40

*SECNO 9452.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793 10

9452.00	5.49	769.49	0.00	769.45	769.70	0.21	0.00	0.00	793.10
540.	0.	540.	0	0.	147	0.	40.	16.	793.10
0.50	0.00	3.67	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001230	1.	1.	1.	0	0	0	0.00	28.63	46.40

*SECNO 9501.000

75 FT. U/S 2ND CROSSWALK & 150 FT. D/S BRYANT ST.

9501.00	5.56	769.56	0.00	769.52	769 76	0 20	0.06	0.00	793.10
540.	0.	540	0.	0.	149.	0.	41.	16	793.10
0.51	0.00	3.62	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001188	49.	49.	49.	0	0	0	0.00	28.63	46.40

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

*SECNO 9650.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

9650.00	5.42	769.62	0.00	769.58	770.16	0.54	0.29	0.10	772.40
540.	0.	540.	0.	0.	91.	0.	41.	16.	772.40
0.51	0.00	5.92	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003930	149.	149.	149.	2	0	0	0.00	17.50	58.75

*SECNO 9651.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 772.40 MAX ELLC= 771.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

D/S FACE BRYANT ST.

9651.00	5.42	769.62	0.00	769.58	770.16	0.54	0.00	0.00	772.40
540.	0.	540.	0.	0.	91.	0.	41.	16.	772.40
0.51	0.00	5.91	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003925	1.	1.	1.	0	0	0	0.00	17.50	58.75

*SECNO 9673 000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 772.40 MAX ELLC= 771.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

U/S FACE BRYANT ST. - CROSS SECTION N

9673.00	5.53	769.73	0.00	769.69	770.25	0.52	0.08	0.00	772.40
540.	0.	540	0	0.	93.	0.	41.	16.	772.40
0.52	0.00	5.79	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003700	22.	22.	22.	2	0	0	0.00	17.50	58.75

*SECNO 9674.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

9674.00	5.53	769.73	0.00	769.70	770.25	0.52	0.00	0.00	772.40
540.	0.	540.	0.	0.	93.	0.	41.	16.	772.40
0.52	0.00	5.79	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003693	1.	1	1.	0	0	0	0.00	17.50	58.75

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

*SECNO 9685.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 780.00 ELREA= 780.00

D/S FACE OF STRUCTURE U/S OF BRYANT ST.

9685.00	5.58	769.78	0.00	769.75	770.29	0.51	0.04	0.00	772.40
540.	0.	540.	0.	0.	94.	0.	41.	16.	772.40
0.52	0.00	5.74	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003613	11.	11.	11.	0	0	0	0.00	17.50	58.75

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2.03	3.00	0.00	19.00	0.00	90.00	0.00	764.70	764.20

*SECNO 9837.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
770.92	770.70	0.00	0	540.	90.	97.	769.80	790.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

U/S FACE OF STRUCTURE U/S OF BRYANT ST.

9837.00	5 84	770.54	0.00	770.50	770.92	0.38	0.63	0.00	776.20
540.	0	540.	0.	0.	109.	0.	41.	16.	771.50
0.52	0.00	4.93	0.00	0.000	0.035	0.000	0.000	764.70	40.30
0.002435	152.	152.	152.	2	0	0	0.00	19.40	59.70

*SECNO 9937.000

9937.00	5.38	770.78	0.00	770.74	771.19	0 42	0.26	0.01	776.20
540.	0.	540.	0.	0.	104.	0.	42.	16.	771.50
0.53	0.00	5.18	0.00	0.000	0.035	0.000	0.000	765.40	40.30
0.002841	100	100.	100.	2	0	0	0.00	19.40	59.70

CCHV= 0.300 CEHV= 0.500

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

*SECNO 10034.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

10034.00	4.72	771.12	0.00	771.10	771.44	0.31	0.22	0.03	782.00
540.	0.	540.	0.	0.	120	0.	42.	16.	766.40
0.54	0.00	4.50	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.001779	97.	97.	97.	2	0	0	0.00	25.40	25.50

*SECNO 10035.000

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 782.00 MAX ELLC= 778.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

D/S FACE 2ND R.R. BRIDGE NORTH OF ALCOTT ST.

10035.00	4.70	771.10	0.00	771.07	771.47	0.38	0.00	0.03	782.00
540.	0.	540.	0.	0.	110.	0.	42.	16.	766.40
0.54	0.00	4.93	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.004350	1.	1.	1.	2	0	0	-9.75	25.40	25.50

*SECNO 10049.000

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 782.00 MAX ELLC= 778.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782 00 ELREA= 782 00

U/S FACE 2ND R.R. BRIDGE NORTH OF ALCOTT ST.

10049.00	4.77	771.17	0.00	771.14	771.54	0.37	0.06	0.00	782.00
540.	0.	540.	0.	0.	111.	0.	42.	16.	766.40
0.54	0.00	4.85	0.00	0.000	0.035	0 000	0.000	766.40	0.10
0.004172	14.	14.	14.	2	0	0	-9.91	25.40	25.50

*SECNO 10050.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

10050 00	4.86	771.26	0.00	771.24	771.56	0.30	0.00	0.02	782.00
540.	0.	540.	0.	0.	124.	0.	42.	16.	766.40
0.54	0.00	4.37	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.001626	1.	1.	1	2	0	0	0.00	25.40	25.50

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

*SECNO 10064.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10064.00	4.18	771.08	0.00	771.05	771.83	0.75	0.04	0.23	791.60
540.	0.	540.	0.	0.	78.	0.	42.	16.	791.50
0.54	0.00	6.96	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.006610	14.	14	14.	2	0	0	0.00	19.50	19 50

*SECNO 10065.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 781.50 MAX ELLC= 780.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

D/S FACE I-BEAM CROSSING

10065.00	4.18	771.08	0.00	771.05	771.83	0.75	0.01	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	42.	16.	791.50
0.54	0 00	6 96	0.00	0.000	0.029	0.000	0.000	766.90	0.00
0.004531	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10070.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 781.50 MAX ELLC= 780.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

U/S FACE I-BEAM CROSSING

10070.00	4.22	771.12	0 00	771.09	771.86	0.74	0.02	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	42.	16.	791.50
0.54	0.00	6 91	0.00	0.000	0.029	0.000	0.000	766.90	0.00
0.004431	5.	5.	5.	0	0	0	0.00	19.50	19.50

*SECNO 10071.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10071 00	4.23	771.13	0.00	771.10	771.87	0.74	0.01	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	42.	16.	791.50
0.54	0.00	6.88	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.006389	1.	1.	1.	0	0	0	0.00	19.50	19.50

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

*SECNO 10072.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791 50

10072.00	4.24	771.14	0.00	771.12	771.87	0.73	0.01	0.00	791.60
540.	0.	540.	0.	0.	79.	0.	42.	16.	791.50
0.54	0.00	6.86	0.00	0 000	0.035	0.000	0.000	766.90	0.00
0.006330	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10073.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 791.60 MAX ELLC= 790.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

D/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES

10073.00	4.26	771.16	0.00	771.13	771.88	0.73	0.01	0.00	791.60
540.	0.	540.	0.	0	79.	0.	42.	16.	791.50
0 54	0.00	6.84	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0 006269	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10090.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 791.60 MAX ELLC= 790.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

U/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES

10090.00	4.44	771.34	0.00	771.32	772.00	0.66	0.10	0.02	791.60
540.	0.	540.	0.	0.	83	0.	42.	16.	791.50
0.54	0.00	6.53	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.005487	17.	17	17.	2	0	0	0.00	19.50	19.50

*SECNO 10091.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791 50

10091.00	4.44	771.34	0.00	771.33	772.01	0.66	0.01	0.00	791.60
540.	0.	540.	0.	0.	83.	0.	42.	16.	791.50
0 54	0.00	6.53	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.005467	1.	1.	1.	0	0	0	0.00	19.50	19.50

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

*SECNO 10099.000

3265 DIVIDED FLOW

10099.00	4.01	771.21	0.00	771 18	772 27	1.06	0.06	0.20	768.70
540.	0.	540.	0.	0.	65.	0.	42.	16.	768.70
0.54	0.02	8.27	0.02	0.100	0.035	0.100	0.000	767.20	0.08
0.012487	8.	8.	8.	2	0	0	0.00	23.22	29.02

*SECNO 10100.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 785.00 MAX ELLC= 782.00

D/S FACE 1ST R.R. BRIDGE NORTH OF ALCOTT ST.

10100.00	3.90	771.10	771.06	771.07	772.41	1.31	0.02	0.13	768.70
540.	0.	540.	0.	0	59.	0.	42.	16	768.70
0.54	0.02	9.20	0.02	0.100	0.035	0.100	0.000	767.20	0.09
0.023698	1.	1.	1.	4	15	0	-4.04	23 20	29.01

*SECNO 10116.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 785.00 MAX ELLC= 782.00

U/S FACE 1ST R.R. BRIDGE NORTH OF ALCOTT ST.

10116.00	4.34	772.04	0.00	772.06	772.84	0.80	0.27	0.16	768.70
540.	0.	540.	0.	0.	75.	0.	42.	16.	768.70
0.54	0.02	7.16	0.02	0.100	0.035	0.100	0.000	767.70	0.08
0.012442	16.	16.	16.	5	0	0	-5 81	23.32	29.02

*SECNO 10117.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3265 DIVIDED FLOW									
10117.00	4.61	772.31	0.00	772.33	772.91	0.59	0.01	0.06	768.70
540.	0.	540.	0.	0	88.	0.	42.	16.	768.70
0.54	0.01	6.17	0.01	0.100	0.035	0.100	0.000	767.70	0.08
0 005137	1	1.	1.	3	0	0	0.00	23.36	29.02
*SECNO 10179.000									
D/S ALCOTT ST. - CROSS SECTION 0									
10179.00	4.60	772.90	0 00	772.91	773.14	0.24	0.13	0.11	768.30
540.	0.	540.	0.	0.	138.	0.	42.	16.	768.30
0.54	0 11	3.93	0.11	0.100	0.035	0.100	0.000	768.30	0.00
0.001117	62.	62.	62.	2	0	0	0.00	30.10	30.10
*SECNO 10180.000									
3370 NORMAL BRIDGE, NRD= 16 MIN ELTRD= 787 40 MAX ELLC= 779.30									
D/S FACE ALCOTT ST.									
10180.00	4.57	772.87	0.00	772.88	773.17	0.30	0.00	0.03	768.30
540.	0.	540.	0.	0.	123.	0.	42.	16.	768.30
0.54	0.10	4.39	0.10	0.100	0.035	0.100	0.000	768.30	0.00
0.002087	1.	1	1.	2	0	0	-14.08	30.10	30.10
*SECNO 10237.000									
3370 NORMAL BRIDGE, NRD= 16 MIN ELTRD= 787.40 MAX ELLC= 779.30									
U/S FACE ALCOTT ST.									
10237.00	4.71	773.01	0.00	773.01	773.29	0.28	0.11	0.01	768.30
540.	0.	540.	0.	0.	127.	0	42.	16.	768.30
0.55	0.09	4.26	0.09	0.100	0.035	0.100	0.000	768.30	0.00
0.001913	57.	57.	57	2	0	0	-14.52	30.10	30.10
*SECNO 10238.000									
10238.00	4.79	773.09	0.00	773.09	773.31	0.22	0.00	0.02	768.30
540.	0.	540.	0.	0.	143.	0.	42.	16	768.30
0.55	0.10	3.77	0.10	0.100	0.035	0.100	0.000	768.30	0.00
0.000977	1.	1.	1.	2	0	0	0.00	30.10	30.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
*SECNO 10246.000									
5' D/S DAM									
10246.00	4.47	773.07	0.00	773.07	773.35	0.28	0.01	0 03	768.60
540.	0.	540.	0.	0.	127.	0.	42.	16.	769.00
0.55	0.01	4.25	0.01	0.100	0.035	0.100	0.000	768.60	0.08
0.001444	8.	8.	8.	2	0	0	0.00	29.84	29.92
*SECNO 10251.000									
D/S FACE DAM (ELLIPTICAL OPENING) - CROSS SECTION P									
10251.00	4.46	773.06	0.00	773.07	773.36	0.30	0.00	0.01	790.00
540.	0.	540.	0.	0.	123.	0.	43.	16.	790.00
0.55	0.00	4.40	0.00	0 000	0.017	0.000	0.000	768.60	0.18
0.000538	5.	5.	5.	1	0	0	0.00	29.84	30.02

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN

SEGMENT 5

00BREAK00

THIS RUN EXECUTED 30 JUN 89 11:13:09

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

T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM DAM TO 1ST R.R. N. OF KILGORE RD.
T3        100-YEAR FLOOD ENCROACHMENT RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.       3.        0.        0.  0.000000      0.00      0.0       0.    788.900     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15.000     0.000    -1.000     0.000     0 000     0 000     0.000     0.000     0.000     0.000
```

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

*PROF 2

CCHV= 0.100 CEHV= 0.300
*SECNO 10317.000

3470 ENCROACHMENT STATIONS= 30 0 192.0 TYPE= 1 TARGET= 162.000
50' U/S DAM - CROSS SECTION Q

10317.00	12.80	788.90	0.00	788.80	788.90	0.00	0.00	0.00	786.40
540.	0.	538.	1.	13.	1266.	36.	0	0.	786.40
0.00	0.04	0 43	0.04	0.120	0.045	0.120	0.000	776.10	30.00
0.000007	66.	66.	66.	0	0	0	0 00	162.00	192.00

*SECNO 11674.000

3470 ENCROACHMENT STATIONS= 1246.3 1291 3 TYPE= 1 TARGET= 45.020
VALLEY SECTION - CROSS SECTION R

11674.00	10.90	788.90	0.00	788.80	788.94	0.04	0.03	0.01100000.00	
540.	0	540.	0	0.	349	0.	26	3.	100000.00
0.24	0.00	1.55	0 00	0.000	0.045	0.000	0.000	778.00	1246.30
0.000177	1357	1357.	1357.	0	0	0	0.00	45.02	1291.32

*SECNO 13254.000

3470 ENCROACHMENT STATIONS= 492.2 605.7 TYPE= 1 TARGET= 113.560
VALLEY SECTION - CROSS SECTION S

13254.00	7.09	789.19	0 00	789 10	789.22	0.03	0.27	0.00	787.90
540.	0	504.	36.	3.	369.	114.	41.	6.	785.40
0 58	0 12	1.36	0 31	0.120	0.045	0.120	0.000	782.10	492.18
0.000173	1800.	1580.	1200.	2	0	0	0.00	113 56	605.74

*SECNO 13724.000

3470 ENCROACHMENT STATIONS= 507.0 586.0 TYPE= 1 TARGET= 79 000

13724.00	5.20	789.30	0.00	789.22	789.38	0.08	0.15	0.02100000.00	
540.	0.	528.	12.	0.	230.	32.	45.	7.	787.40
0 64	0.00	2.29	0.39	0.000	0.045	0 120	0.000	784.10	507.00
0.000769	470.	470.	470.	2	0	0	0.00	79.00	586.00

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

*SECNO 14194 000

3470 ENCROACHMENT STATIONS= 505.0 565.0 TYPE= 1 TARGET= 60.000

14194.00	3 85	789.85	0.00	789.77	790.02	0 17	0.61	0.03100000 00	
540.	0.	539.	1.	0.	161.	2.	47.	8.	789.30
0.68	0.00	3.35	0.35	0.000	0.045	0.120	0.000	786.00	505.00
0.002659	470	470.	470.	2	0	0	0.00	60.00	565.00

*SECNO 14600.000

3470 ENCROACHMENT STATIONS= 2087.0 2160.0 TYPE= 1 TARGET= 73.000

CROSS SECTION T

14600.00	4.87	791.27	0.00	791.22	791.59	0.32	1.52	0.04100000.00	
540.	0.	428.	112.	0.	85.	83.	48.	8.	789.00
0.70	0 00	5.03	1.34	0.000	0.045	0.120	0.000	786.40	2087.00
0.005678	406	406.	406.	2	0	0	0.00	73.00	2160.00

*SECNO 15300.000

15300.00	5.96	794.16	0.00	794.08	794.47	0.31	2.88	0.00	790.70
540.	9.	521.	11.	10.	114	13.	51.	9.	792.40
0 75	0.89	4.56	0.79	0.120	0.045	0.120	0.000	788.20	2080.44
0.003121	700.	700.	700.	1	0	0	0.00	44.83	2125.26

*SECNO 16004.000

100 FT. D/S CORK'ST BRIDGE

16004.00	6.19	796.19	0.00	796.18	796.46	0.28	1.99	0.00	792.50
540.	9.	518.	13.	11.	121.	16.	53.	10.	794.20
0.79	0.85	4.29	0.79	0.120	0.045	0.120	0.000	790.00	2080.05
0.002571	704.	704.	704.	3	0	0	0.00	46.18	2126.23

CCHV= 0.500 CEHV= 1.000

*SECNO 16037.000

16037.00	6.17	796.27	0.00	796.26	796.55	0.28	0.09	0.00	792.60
540.	9	518.	13.	11.	120.	16.	53.	10.	794.30
0.80	0.85	4.30	0.79	0.120	0.045	0.120	0.000	790.10	2080.06
0.002585	33	33.	33.	0	0	0	0.00	46.14	2126.20

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

*SECNO 16070.000

3470 ENCROACHMENT STATIONS= 2086.0 2113.0 TYPE= 1 TARGET= 27.000

16070.00	6.17	796.37	0.00	796.37	796.69	0.31	0.10	0.04	792 70
540.	0.	540.	0.	0.	120.	0.	53.	10.	100000.00
0.80	0.00	4.50	0.00	0.000	0.045	0.000	0 000	790.20	2086.00
0.003595	33.	33.	33.	1	0	0	0.00	27.00	2113.00

*SECNO 16104.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 798.40 ELREA= 798.40

D/S FACE	CORK ST.	BRIDGE						
16104.00	6.25	796.55	0.00	796.55	798.75	2.20	0.18	1.88	794.10
540.	0.	540.	0.	0.	45.	0.	53	10.	794.10
0.80	0.00	11.89	0.00	0.000	0.027	0.000	0.000	790.30	2093.90
0.008826	34.	34.	34.	2	0	0	0.00	8.40	2102.30

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0 00	2.44	3 00	0.00	6.00	0.00	50.30	0.00	790.00	790.00

*SECNO 16194.000

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
800.92	798.72	0.00	0.	540.	50.	50.	798.40	801.90

3470 ENCROACHMENT STATIONS= 2093.9 2102.3 TYPE= 1 TARGET= 8.400

U/S FACE	CORK ST.	BRIDGE						
16194.00	9.83	800.13	0.00	800.12	800.92	0.79	2.17	0.00	794.10
540.	0.	540.	0.	0.	75.	0.	54.	10.	100000.00
0.80	0.00	7.15	0.00	0.000	0.027	0.000	0.000	790 30	2093.90
0.003890	90.	90.	90.	2	0	0	0.00	8.40	2102.30

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

CCHV= 0.300 CEHV= 0.500
*SECNO 16244.000
2800 NAT Q1= 435.88 WSEL= 801.13 ENC Q1= 435.88 WSEL= 801.23 RATIO= 0.0000
NAT Q1= 534 RATIOS LOB,CH,ROB= 0.0341 0.6488 0.3170 WSEL= 801.23

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 2086.0 2189.8 TYPE= 4 TARGET= 0.183

16244.00	9.84	801.14	0.00	801.13	801.18	0.03	0.03	0.23	792.50
540.	0.	414.	126.	0.	245.	285.	54.	10.	794.20
0.81	0.00	1.69	0.44	0.000	0.045	0.120	0.000	791.30	2086.00
0.000211	50.	50.	50.	2	0	0	0.00	103.84	2189.84

*SECNO 16514.000
2800 NAT Q1= 347.26 WSEL= 801.17 ENC Q1= 347.26 WSEL= 801.27 RATIO= 0.0000
NAT Q1= 360. RATIOS LOB,CH,ROB= 0.0524 0.8813 0.0663 WSEL= 801.27

3470 ENCROACHMENT STATIONS= 1305.7 1363.8 TYPE= 4 TARGET= 0.036
100 FT. D/S 1ST R.R. BRIDGE S OF CORK ST.

16514.00	8.69	801.19	0.00	801.17	801.25	0.05	0.06	0.01	793.70
540.	20.	492.	28.	44.	257.	59.	57.	11.	796.00
0.85	0.45	1.92	0.47	0.120	0.045	0.120	0.000	792.50	1305.67
0.000248	300.	270	250.	0	0	0	0.00	58.16	1363.84

*SECNO 16614.000
2800 NAT Q1= 374.61 WSEL= 801 23 ENC Q1= 388.61 WSEL= 801.33 RATIO= -0.0374
NAT Q1= 389. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 801.33

3470 ENCROACHMENT STATIONS= 1295.3 1389.2 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 803.30 ELREA= 803.30

D/S FACE 1ST R.R. BRIDGE S. OF CORK ST.

16614.00	7.55	801.25	0.00	801.23	801.28	0.03	0.02	0.01	801.00
540.	0.	540.	0.	0.	424.	0.	58.	11.	800.30
0.88	0.00	1.27	0.00	0.000	0.045	0.000	0.000	793.70	1295.30
0.000207	100.	100.	100.	2	0	0	0.00	93.90	1389.20

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

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.95	1.50	3.00	0.00	46.50	17.50	284.00	2.00	794.30	793.70

*SECND 16629.000
CLASS A LOW FLOW

3420 BRIDGE W.S.= 801.53 BRIDGE VELOCITY=, 1.63 CALCULATED CHANNEL AREA=, 314.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
801.34	801.41	0.01	0.	540.	284.	284.	801.00	803.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 803.30 ELREA= 803.30

U/S FACE 1ST R.R. BRIDGE S. OF CORK ST. - CROSS SECTION U

16629.00	7.08	801.38	0.00	801.28	801.41	0.02	0.13	0.00	801.00
540.	0.	540.	0.	0.	429.	0.	58.	11.	800.30
0 88	0.00	1.26	0.00	0.000	0.045	0.000	0.000	794.30	1295.30
0.000196	15.	15.	15.	0	0	0	0.00	93.90	1389.20

*SECND 16679.000
2800 NAT Q1= 252.20 WSEL= 801.27 ENC Q1= 252.20 WSEL= 801.37 RATIO= 0.0000
NAT Q1= 266. RATIOS LOB, CH, ROB= 0.0677 0.8953 0.0369 WSEL= 801.37

3470 ENCROACHMENT STATIONS= 1304.0 1352.3 TYPE= 4 TARGET= 0.052

50 FT. U/S 1ST R.R. S. OF CORK ST.

16679.00	6.87	801.37	0.00	801.27	801.45	0.08	0.01	0.03	794.80
540.	25	510.	5.	42.	216.	13.	58.	11.	797.00
0.89	0.59	2.37	0.40	0.120	0.045	0.120	0.000	794.50	1303.96
0.000459	50	50.	50	2	0	0	0.00	48.35	1352.31

*SECND 17000 000
2800 NAT Q1= 111.54 WSEL= 801.43 ENC Q1= 111.54 WSEL= 801 53 RATIO= 0.0000
NAT Q1= 115. RATIOS LOB, CH, ROB= 0.0464 0.9199 0.0337 WSEL= 801.53
3280 CROSS SECTION 17000.00 EXTENDED 2.52 FEET

3470 ENCROACHMENT STATIONS= 1248.0 1275.8 TYPE= 4 TARGET= 0.033

```
          100 FT. D/S 2ND R.R. BRIDGE S. OF CORK ST.
 17000 00      6.32    801 52      0.00    801.43    801.86      0.34      0.28      0.13    797.60
     540.        19.       512.       10.        16.       106.       11.        60.        11.     796.80
     0.91       1.16      4.80      0.87      0.120     0.045     0.120     0.000    795.20   1247.96
 0.002339       321.      321.      321.          2         0         0      0.00     27.80   1275.76

*SECNO 17099.000
 2800 NAT Q1=     163.16  WSEL=     801.82  ENC Q1=     166.37  WSEL=     801 92  RATIO= -0.0197
 NAT Q1=     166   RATIOS LOB,CH,ROB=  0.0000  1 0000  0.0000  WSEL=     801.92

3470 ENCROACHMENT STATIONS=     1250.6     1275.4  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       807.60 ELREA=       807.60

          D/S 2ND R.R. BRIDGE S. OF CORK ST. -CROSS SECTION V
 17099.00      7.54    801.94      0 00    801.82    802.07      0.14      0.15      0.06    809.00
     540.         0.       540.        0.         0.       181.        0.        60         11.     809.00
     0 91       0.00      2.98      0.00      0.000     0.045     0.000     0.000    794.40   1250.60
 0.001048        99.       99        99.          2         0         0      0.00     24.80   1275.40


*SECNO 17100.000
 2800 NAT Q1=     163.20  WSEL=     801.82  ENC Q1=     166.41  WSEL=     801.92  RATIO= -0.0196
 NAT Q1=     166.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.92

3370 NORMAL BRIDGE,NRD=  0 MIN ELTRD=  810.80 MAX ELLC=  807.60


3470 ENCROACHMENT STATIONS=     1250.6     1275.4  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       807.60 ELREA=       807.60

           D/S FACE 2ND R.R. BRIDGE S. OF CORK ST.
 17100 00      7.54    801.94      0.00    801.82    802.08      0.14      0.00      0.00    809 00
     540.         0.       540.        0.         0.       181.        0.        60         11.     809.00
     0.91       0 00      2.98      0 00      0 000     0.045     0.000     0 000    794.40   1250.60
 0.001048         1.        1.        1.          0         0         0      0.00     24.80   1275 40

*SECNO 17117.000
 2800 NAT Q1=     163.79  WSEL=     801.84  ENC Q1=     167.04  WSEL=     801.94  RATIO= -0 0199
 NAT Q1=     167.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.94

3370 NORMAL BRIDGE,NRD=  0 MIN ELTRD=  810.80 MAX ELLC=  807.66


3470 ENCROACHMENT STATIONS=     1250.6     1275.4  TYPE=      4  TARGET=        0.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 810.80 ELREA= 810.80

U/S FACE 2ND R.R. BRIDGE S. OF CORK ST.

17117.00	7.56	801.96	0.00	801.84	802.09	0.14	0.02	0.00	809.00
540.	0.	540.	0.	0.	182.	0.	60.	11.	809.00
0.92	0.00	2 97	0.00	0.000	0.045	0.000	0.000	794.40	1250 60
0.001041	17.	17.	17.	0	0	0	0.00	24.80	1275.40

*SECNO 17118.000
2800 NAT Q1= 163.85 WSEL= 801 85 ENC Q1= 167.08 WSEL= 801.95 RATIO= -0.0197
NAT Q1= 167. RATIOS LOB, CH, ROB= 0 0000 1.0000 0.0000 WSEL= 801.95

3470 ENCROACHMENT STATIONS= 1250.6 1275 4 TYPE= 4 TARGET= 0 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 810.80 ELREA= 810.80

17118 00	7.56	801.96	0.00	801.85	802.09	0.14	0.00	0.00	809.00
540	0.	540.	0.	0.	182.	0.	60.	11.	809.00
0.92	0.00	2.97	0.00	0.000	0.045	0.000	0.000	794.40	1250.60
0.001040	1.	1.	1.	0	0	0	0.00	24.80	1275.40

CCHV= 0.500 CEHV= 1.000
*SECNO 17132.000
2800 NAT Q1= 29.39 WSEL= 802.20 ENC Q1= 31.40 WSEL= 802.30 RATIO= -0.0685
NAT Q1= 31. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 802.30

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1250 6 1275.4 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 813.00 ELREA= 813.00

D/S FACE MONARK POND DAM

17132.00	2 30	802.20	802.20	802.20	803.37	1.16	0.04	1 03	809.00
495.	0.	495.	0.	0.	57.	0.	60.	11.	809.00
0.92	0.00	8.66	0.00	0.000	0.045	0 000	0.000	799.90	1250.60
0.028369	14.	14.	14.	2	17	0	0.00	24.80	1275.40

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

*SECNO 17135.000
WATER EL=X5 CARD= 812.300
2800 NAT Q1= 276.02 WSEL= 812.25 ENC Q1= 279.61 WSEL= 812 35 RATIO= -0.0130
NAT Q1= 280. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 812.35

3470 ENCROACHMENT STATIONS= 1.0 25.8 TYPE= 4 TARGET= 0.000
D/S FACE CROSSWALK 3 FT. U/S MONARCH DAM

17135.00	11.40	812.30	0.00	812.25	812.36	0.06	0.00	0.55	816.00
495.	0.	495.	0.	0.	258.	0.	60.	11.	816.00
0.92	0.00	1.92	0.00	0.000	0.045	0.000	0.000	800.90	1.03
0.000317	3	3.	3.	0	0	0	0.00	24.74	25.77

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.50	3.00	0.00	24.80	0.00	240.00	0.00	800.90	800.90

*SECNO 17145 000

6070, LOW FLOW BY NORMAL BRIDGE

EGPRS= 812.399 EGLWC= 812.448 ELLC= 811 500 PCWSE= 812.300 ELTRD= 813.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 813.00 MAX ELLC= 811.50

U/S FACE CROSSWALK U/S OF DAM

17145.00	11.40	812.30	0.00	812 29	812.37	0.07	0.00	0.01	816.00
495.	0.	495.	0.	0.	239.	0.	60.	11	816.00
0 92	0.00	2.07	0.00	0 000	0.045	0.000	0.000	800.90	1.03
0.000727	10.	10.	10.	3	0	0	-19.85	24.74	25.77

*SECNO 17345.000

3470 ENCROACHMENT STATIONS= 160.0 330.0 TYPE= 1 TARGET= 170 000

17345 00	10.41	812.41	0.00	812.38	812.41	0.00	0.00	0.03	100000.00
495	0.	495.	0.	0.	1770.	0.	65.	12.	100000.00
1.12	0.00	0.28	0.00	0.000	0.045	0.000	0.000	802.00	160.00
0.000004	200.	200.	200.	0	0	0	0.00	170.00	330.00

*SECNO 18939.000

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


3470 ENCROACHMENT STATIONS=      730.0      950.0  TYPE=      1  TARGET=      220.000
 18939.00      5.12    812.42      0.00    812.38    812.42      0.00      0.01      0.00100000.00
     495.        0.      495.        0.        0.      899.        0.      114.       19.  100000.00
     1.92      0.00      0.55      0.00     0.000     0.045     0.000     0.000    807.30    730.00
 0.000045    1594.     1594.     1594.         2         0         0      0.00    220.00    950.00


*SECNO 19845.000
 2800 NAT Q1=     104.80  WSEL=     812.44  ENC Q1=     111.31  WSEL=     812.54  RATIO= -0.0621
 NAT Q1=     117   RATIOS LOB,CH,ROB=   0.0481   0.9509   0.0010  WSEL=     812.54

3470 ENCROACHMENT STATIONS=      500.0      561.6  TYPE=      4  TARGET=        0.049
          50 FT. D/S 2ND R.R. BRIDGE N. OF KIGORE RD
 19845.00      3.34    812.54      0.00    812.44    812.67      0.13      0.12      0.12    812.30
     495         0.      495.        0.        0.      172.        0.      125.       22.     812.30
     2.01      0.00      2.87      0.00     0.000     0.045     0.000     0.000    809.20    500.00
 0.001985     800.      906.     1000.         2         0         0      0.00     61.60    561.60


*SECNO 19895.000
 2800 NAT Q1=     112.69  WSEL=     812.56  ENC Q1=     119.44  WSEL=     812.66  RATIO= -0.0598
 NAT Q1=     119.   RATIOS LOB,CH,ROB=   0.0000   1.0000   0.0000  WSEL=     812.66

3470 ENCROACHMENT STATIONS=      500.0      561.6  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      816.00 ELREA=      816.00

          D/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD.
 19895.00      3.45    812.65      0.00    812.56    812.77      0.12      0.09      0.00    812.30
     495         0.      495         0.         0       179.        0.      125.       22.     812.30
     2.01      0.00      2.77      0.00     0.000     0.045     0.000     0.000    809.20    500.00
 0.001762      50.       50.       50.         1         0         0      0.00     61.60    561.60


SPECIAL BRIDGE

SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.05       1.63       3.00       0.00      61.80       4.40     201.00       0.00     809.70     809.70

*SECNO 19905.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CLASS A LOW FLOW

3420 BRIDGE W.S. = 812.63 BRIDGE VELOCITY=, 2.94 CALCULATED CHANNEL AREA=, 168.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	812.79	0.02	0.	495.	201.	201.	813.20	816.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 816.00 ELREA= 816.00

U/S FACE	2ND R.R.	BRIDGE N.	OF KIGORE RD. - CROSS SECTION W					
19905.00	3 47	812.67	0.00	812.57	812.79	0.12	0.02	0.00	812 30
495.	0.	495.	0.	0	181.	0.	125.	22.	812.30
2.01	0.00	2 74	0.00	0.000	0.045	0.000	0.000	809.20	500.00
0.001685	10.	10	10.	0	0	0	0.00	61.60	561.60

*SECNO 19955.000
2800 NAT Q1= 122.29 WSEL= 812 68 ENC Q1= 128.06 WSEL= 812.78 RATIO= -0.0471
NAT Q1= 147. RATIOS LOB, CH, ROB= 0.1247 0.8701 0.0052 WSEL= 812.78

3470 ENCROACHMENT STATIONS= 500.0 561 6 TYPE= 4 TARGET= 0.130

19955.00	3.57	812.77	0.00	812.68	812.88	0.11	0 08	0.00	812.30
495.	0.	495.	0	0.	186.	0	125.	22.	812.30
2.02	0.00	2.66	0.00	0.000	0.045	0.000	0.000	809.20	500.00
0.001551	50.	50.	50.	2	0	0	0.00	61.60	561.60

*SECNO 20490.000
2800 NAT Q1= 353.22 WSEL= 813 08 ENC Q1= 353.22 WSEL= 813.18 RATIO= 0.0000
NAT Q1= 380. RATIOS LOB, CH, ROB= 0.0090 0.5781 0.4128 WSEL= 813.18

3470 ENCROACHMENT STATIONS= 931.0 1173.2 TYPE= 4 TARGET= 0.071

20490.00	3 86	813.16	0.00	813.08	813.18	0.01	0.25	0.05	810.00
495.	0.	305.	190.	0.	277.	509.	132.	24.	809.30
2.21	0.00	1.10	0.37	0.000	0.045	0.120	0.000	809.30	931.00
0.000206	350.	535.	700.	2	0	0	0.00	242.25	1173.25

CCHV=. 0.100 CEHV= 0.300

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

*SECNO 20900.000
2800 NAT Q1= 118.33 WSEL= 813.18 ENC Q1= 120.61 WSEL= 813.28 RATIO= -0.0193
NAT Q1= 138. RATIOS LOB,CH,ROB= 0.1232 0 8768 0.0000 WSEL= 813.28

3470 ENCROACHMENT STATIONS= 500.0 557.9 TYPE= 4 TARGET= 0.123

20900.00	3.96	813.26	0.00	813.18	813.39	0.13	0.18	0.03	812.00
495.	0.	495.	0.	0.	174.	0.	136	25.	813.40
2.25	0.00	2.84	0.00	0.000	0.045	0.000	0.000	809.30	500.00
0.001756	650.	410.	300.	2	0	0	0.00	57.32	557.32

CCHV= 0.500 CEHV= 1.000
*SECNO 21000 000
2800 NAT Q1= 181 22 WSEL= 813.28 ENC Q1= 190.99 WSEL= 813.38 RATIO= -0.0539
NAT Q1= 191. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 813.38

3470 ENCROACHMENT STATIONS= 500.0 557 9 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 818.00 ELREA= 818.00

D/S FACE 1ST R.R. BRIDGE N. OF KILGORE RD. - CROSS SECTION X

21000.00	4.08	813.38	0.00	813.28	813.49	0.12	0.10	0.00	812.00
495.	0.	495.	0.	0.	181.	0.	136.	25.	813.40
2.26	0.00	2.73	0.00	0.000	0.030	0.000	0.000	809.30	500.00
0.000672	100.	100.	100.	0	0	0	0.00	57.74	557.74

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1 61	3.00	0.00	57.90	4.40	257.00	0.00	810.00	810.00

*SECNO 21010.000
CLASS A LOW FLOW

3420 BRIDGE W.S = 813.36 BRIDGE VELOCITY=, 2.75 CALCULATED CHANNEL AREA=, 180.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	813.52	0.01	0.	495.	257.	257.	814.80	818.10

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 818.00 ELREA= 818.00

	U/S FACE	1ST R.R.	BRIDGE N.	OF KILGORE RD.				
21010.00	4.10	813.40	0.00	813.30	813.52	0.11	0.02	0.00	812.00
495.	0.	495.	0	0.	182.	0.	136.	25.	813.40
2.26	0.00	2.72	0.00	0.000	0.030	0.000	0.000	809.30	500.00
0.000662	10.	10.	10.	0	0	0	0.00	57.90	557.90

*SECNO 21060.000
2800 NAT Q1= 198.03 WSEL= 813.36 ENC Q1= 198.84 WSEL= 813.46 RATIO= -0.0041
NAT Q1= 223. RATIOS LOB, CH, ROB= 0 1098 0.8902 0.0000 WSEL= 813.46

3470 ENCROACHMENT STATIONS= 500.0 557.9 TYPE= 4 TARGET= 0.110

	50 FT. U/S	1ST R R.	BRIDGE N.	OF KILGORE RD.				
21060.00	4.14	813.44	0.00	813.36	813.55	0.11	0.03	0.00	812.00
495	0.	495.	0.	0.	184.	0.	137.	26.	813.40
2.27	0.00	2.69	0.00	0.000	0.030	0.000	0.000	809.30	500.00
0.000664	50	50.	50.	0	0	0	0.00	57.90	557.90

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN SEGMENT 2

00BREAK00

THIS RUN EXECUTED 26 JUN 89 10:43:15

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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T1 CITY OF KALAMAZOO FIS
T2 PORTAGE CREEK FROM DIVERSION AT FIRST R.R. BRIDGE TO D/S GIBSON ST.
T3 100-YEAR FLOOD ENCROACHED RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3.	0	0.	0.000000	0 00	0.0	0.	757.270	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000

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

*PROF 2

CCHV= 0.300 CEHV= 0.500
*SECNO 1009.000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 761.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764.30

U/S FACE FIRST RAILROAD BRIDGE

1009.00	5.27	757.27	0.00	757.27	757.80	0.53	0.00	0.00	753.80
580.	0	580.	0.	0.	99	0.	0	0.	756.10
0.00	0.00	5.87	0.00	0.000	0.020	0.000	0.000	752.00	897.00
0.001064	19.	19.	19.	0	0	0	-0.27	24.00	921.00

CCHV= 0.600 CEHV= 0.800
*SECNO 1010.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764.30

U/S RAILROAD BRIDGE

1010.00	5.27	757.27	0.00	0.00	757.81	0.53	0.00	0.00	753.80
580	0	580	0	0.	99.	0.	0.	0	756.10
0.00	0.00	5.87	0.00	0.000	0.035	0.000	0.000	752.00	897.00
0.003062	1.	1.	1.	0	0	0	0.00	24.00	921.00

*SECNO 1059.000

3470 ENCROACHMENT STATIONS= 890.4 952.9 TYPE= 1 TARGET= 62.530

50 FT. U/S RAILROAD BRIDGE

1059.00	5.78	757.98	0.00	757.95	758.11	0.12	0.05	0.25	756.30
580.	1.	564.	14.	5.	199.	30.	0.	0.	755.50
0.00	0.30	2.84	0.49	0.100	0.035	0.100	0.000	752.20	890.42
0.000532	49.	49.	49.	2	0	0	0.00	62.53	952.95

CCHV= 0.300 CEHV= 0.500
*SECNO 1480.000
2800 NAT Q1= 127.30 WSEL= 758.21 ENC Q1= 127.30 WSEL= 758.31 RATIO= 0.0000
NAT Q1= 132. RATIOS LOB, CH, ROB= 0.0393 0.9469 0.0138 WSEL= 758.31

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

3470 ENCROACHMENT STATIONS= 814.2 840.0 TYPE= 4 TARGET= 0.036

D/S OF SECOND RAILROAD BRIDGE

1480.00	5.45	758.25	0.00	758.21	758.69	0.44	0.42	0.16	753.80
580.	11.	569.	0	11	106.	0.	2	0.	755.20
0.03	1.07	5 38	0.00	0 100	0.035	.0.000	0.000	752.80	814.17
0.002542	421.	421.	421.	2	0	0	0.00	25.83	840.00

*SECNO 1580.000

2800 NAT Q1= 129.07 WSEL= 758.40 ENC Q1= 133.63 WSEL= 758.50 RATIO= -0.0353

NAT Q1= 134. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 758.50

3470 ENCROACHMENT STATIONS= 817 0 840.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 761 40 ELREA= 761.40

D/S FACE RAILROAD BRIDGE

1580.00	5.71	758.51	0.00	758.40	758.93	0.42	0.24	0.01	753.80
580	0.	580.	0.	0.	112.	0.	2.	1.	755.20
0.03	0.00	5.18	0.00	0.000	0 035	0.000	0.000	752.80	817.00
0.002219	100.	100.	100.	2	0	0	0.00	23.00	840.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	EL CHD
	1.05	1.87	3.00	0.00	23.20	1.20	147.00	0.00	753.40	753.30

*SECNO 1608 000

CLASS A LOW FLOW

3420 BRIDGE W.S.= 758.52 BRIDGE VELOCITY=, 5.10 CALCULATED CHANNEL AREA=, 113.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	758.99	0 06	0.	580.	147.	147.	760.10	762.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 762.80 ELREA= 762.80

U/S FACE RAILROAD BRIDGE - CROSS SECTION B

1608.00	5.66	758 56	0.00	758.46	758.99	0.43	0.05	0.00	753.90
580.	0.	580.	0.	0.	111	0.	2.	1.	755.30
0.03	0.00	5.24	0.00	0.000	0.035	0.000	0.000	752.90	817.00
0.001933	28.	28.	28.	0	0	0	0.00	23.00	840.00

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

*SECNO 1658.000
2800 NAT Q1= 146 17 WSEL= 758.69 ENC Q1= 146.17 WSEL= 758.79 RATIO= 0.0000
NAT Q1= 151. RATIOS LOB,CH,ROB= 0.0428 0 9409 0.0163 WSEL= 758.79

3470 ENCROACHMENT STATIONS= 812.8 840.0 TYPE= 4 TARGET= 0.034
50 FT. U/S RAILROAD BRIDGE

1658.00	5 84	758.74	0.00	758.69	759.10	0.36	0.10	0.02	753.90
580.	17.	563.	0.	16.	115.	0.	2.	1	755.30
0 04	1.08	4.91	0.00	0.100	0.035	0.000	0.000	752.90	812 85
0 001936	50.	50.	50.	2	0	0	0.00	27.15	840.00

*SECNO 1850 000

3470 ENCROACHMENT STATIONS= 812.9 866.5 TYPE= 1 TARGET= 53.600
100 FT. D/S THIRD RAILROAD BRIDGE

1850.00	6.38	759 18	0.00	759.06	759.41	0.23	0 27	0.04	757.00
580.	9.	566	6.	16.	144.	11.	3.	1.	757.00
0.05	0.55	3.92	0.52	0.100	0.035	0.100	0.000	752.80	812.90
0.001054	192.	192	192.	2	0	0	0.00	53.60	866.50

*SECNO 1950 000

3470 ENCROACHMENT STATIONS= 770 0 920 0 TYPE= 1 TARGET= 150.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.00 ELREA= 762.00

D/S FACE RAILROAD BRIDGE - CROSS SECTION C

1950.00	5.84	759.24	0.00	759.14	759.60	0.36	0.13	0.07	753.50
580.	0.	580.	0.	0	120.	0.	3.	1	757.20
0.06	0.00	4 84	0.00	0.000	0.035	0.000	0.000	753.40	832.00
0.001581	100.	100.	100.	2	0	0	0.00	24.00	856.00

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.00	1.50	3 00	0.00	24.00	0 00	115.00	0.00	754.20	754.20

*SECNO 1967.000

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

6070, LOW FLOW BY NORMAL BRIDGE

EGPRS= 759.831 EGLWC= 760 329 ELLC= 759.700 PCWSE= 759.238 ELTRD= 763.000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 759.70

3470 ENCROACHMENT STATIONS= 770.0 920.0 TYPE= 1 TARGET= 150.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.00 ELREA= 763 00

U/S FACE RAILROAD BRIDGE

1967.00	5.66	759.26	0.00	759.16	759.65	0.39	0.03	0.01	753.70
580.	0.	580.	0.	0	115.	0.	3.	1.	757.40
0.06	0.00	5 03	0.00	0.000	0.035	0.000	0.000	753.60	832 00
0 002543	17.	17.	17.	3	0	0	-1.43	24.00	856.00

*SECNO 2000.000

2800 NAT Q1= 268.93 WSEL= 759.58 ENC Q1= 268.93 WSEL= 759.68 RATIO= 0.0000

NAT Q1= 279. RATIOS LOB, CH, ROB= 0.0510 0.9164 0.0326 WSEL= 759.68

3470 ENCROACHMENT STATIONS= 866.8 924.4 TYPE= 4 TARGET= 0.037

2000.00	6.05	759 65	0.00	759.58	759.77	0.11	0.03	0.08	756.30
580.	20.	552.	8.	34.	201.	17.	4.	1.	756.80
0.06	0.57	2 74	0.49	0.100	0.035	0.100	0.000	753.60	866.85
0.000473	33	33.	33.	2	0	0	0.00	57.53	924.38

*SECNO 2040.000

2800 NAT Q1= 283 38 WSEL= 759.64 ENC Q1= 294.80 WSEL= 759.74 RATIO= -0.0403

NAT Q1= 295. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 759.74

3470 ENCROACHMENT STATIONS= 609.0 676.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.00 ELREA= 763 00

D/S FACE FOURTH RAILROAD BRIDGE

2040.00	6.13	759.73	0.00	759.64	759.80	0.07	0.02	0.01	758 00
580.	0.	580	0.	0	276.	0.	4.	1.	759.40
0.07	0.00	2.10	0.00	0.000	0.035	0.000	0.000	753.60	609.00
0.000395	40.	40.	40.	2	0	0	0.00	67.00	676.00

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

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.95	2 11	3.00	0.00	59.00	45 00	110.00	0.39	753.60	753.60

*SECND 2057 000
CLASS A LOW FLOW

3420 BRIDGE W.S.= 758.56 BRIDGE VELOCITY=, 7.34 CALCULATED CHANNEL AREA=, 79.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	760.12	0.30	0.	580.	110.	131.	761.30	763.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763 60 ELREA= 763.60

U/S FACE R.R. BRIDGE

2057.00	6.47	760.07	0.00	759.97	760.12	0.06	0.33	0.00	758 00
580	0.	580.	0.	0.	299.	0.	4.	1	759.40
0.07	0.00	1.94	0.00	0.000	0.035	0.000	0.000	753.60	609.00
0.000302	17.	17.	17.	0	0	0	0 00	67.00	676.00

*SECNO 2157.000
2800 NAT Q1= 294.14 WSEL= 759 98 ENC Q1= 294.14 WSEL= 760.08 RATIO= 0.0000
NAT Q1= 304. RATIOS LOB,CH,ROB= 0.0349 0.9500 0 0150 WSEL= 760.08

3470 ENCROACHMENT STATIONS= 873.2 917.0 TYPE= 4 TARGET= 0.032
100 FT U/S RAILROAD BRIDGE

2157.00	6.48	760.08	0.00	759.98	760.18	0.10	0.04	0.02	756.30
580.	10.	570	0.	19.	218.	0.	5.	1.	756.80
0 08	0.53	2.62	0.00	0.100	0.035	0.000	0.000	753.60	873.15
0.000434	150.	100.	70.	2	0	0	0.00	43.85	917.00

*SECNO 2339.000
2800 NAT Q1= 176 44 WSEL= 760.03 ENC Q1= 182.11 WSEL= 760 13 RATIO= -0.0321
NAT Q1= 182. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 760.13

3470 ENCROACHMENT STATIONS= 451.0 483.0 TYPE= 4 TARGET= 0.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

2339.00	6.04	760.14	0.00	760.03	760.36	0.22	0.12	0 06	758.00
580.	0.	580.	0.	0.	155.	0.	5.	1.	757.90
0.09	0.00	3 74	0.00	0.000	0.035	0.000	0.000	754.10	451.00
0.001096	182.	182.	182.	2	0	0	0.00	32.00	483.00

*SECNO 2340.000

2800 NAT Q1= 80.21 WSEL= 759.75 ENC Q1= 82.61 WSEL= 759.85 RATIO= -0.0299
NAT Q1= 83. RATIOS LOB, CH, ROB= 0 0000 1 0000 0.0000 WSEL= 759.85

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE, NRD= 18 MIN ELTRD= 758.00 MAX ELLC= 760.40

3470 ENCROACHMENT STATIONS= 451.0 483.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

D/S FACE RAILROAD BRIDGE

2340.00	5.79	759 89	0.00	759.75	760.62	0.73	0.00	0.26	758.00
580.	0.	580.	0.	0.	84.	0.	5.	1.	757.90
0.09	0 00	6.87	0 00	0 000	0.020	0.000	0.000	754.10	451.00
0.005046	1.	1.	1.	2	0	0	-62.75	32.00	483.00

*SECNO 2364.000

3370 NORMAL BRIDGE, NRD= 18 MIN ELTRD= 758.00 MAX ELLC= 760.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.00 ELREA= 762 00

U/S FACE 5TH RAILROAD BRIDGE

2364.00	5 97	760.07	0.00	759.97	760.76	0.68	0.12	0.01	758.00
580.	0.	580.	0.	0.	87.	0.	5.	1.	757.90
0.09	0.00	6.64	0.00	0 000	0.020	0.000	0.000	754.10	451.00
0.005242	24	24	24.	0	0	0	-65 51	32.00	483 00

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

*SECNO 2365.000
2800 NAT Q1= 379.77 WSEL= 760.66 ENC Q1= 390.61 WSEL= 760.76 RATIO= -0.0285
NAT Q1= 391. RATIOS LOB,CH,ROB= 0.0000 1.0000 0 0000 WSEL= 760.76

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 451.0 483.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 762 00 ELREA= 762.00

2365.00	6.64	760 74	0.00	760.66	760.91	0.17	0.00	0.15	758.00
580.	0.	580.	0.	0.	174.	0.	5.	1.	757.90
0 09	0.00	3.32	0.00	0.000	0 020	0.000	0.000	754.10	451.00
0.000247	1.	1	1.	2	0	0	0.00	32.00	483.00

*SECNO 2376.000
2800 NAT Q1= 418 94 WSEL= 760.67 ENC Q1= 429.31 WSEL= 760.77 RATIO= -0.0248
NAT Q1= 429 RATIOS LOB,CH,ROB= 0.0000 1.0000 0 0000 WSEL= 760.77

3470 ENCROACHMENT STATIONS= 445.0 473.2 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 761.00 ELREA= 761.00

2376.00	8 35	760.75	0.00	760.67	760.91	0.17	0 00	0.00	757.60
580.	0.	580.	0.	0	177.	0.	5.	1.	756.90
0.09	0.00	3.28	0.00	0.000	0.020	0.000	0.000	752.40	445 00
0.000217	11.	11.	11.	0	0	0	0.00	28.20	473.20

*SECNO 2377.000
2800 NAT Q1= 209.08 WSEL= 760.66 ENC Q1= 212.82 WSEL= 760.76 RATIO= -0.0179
NAT Q1= 213. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 760.76

3370 NORMAL BRIDGE,NRD= 19 MIN ELTRD= 762.00 MAX ELLC= 761.00

3470 ENCROACHMENT STATIONS= 445.0 473.2 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 761.00 ELREA= 761.00

D/S FACE 6TH RAILROAD BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
2377.00	8.34	760.74	0.00	760.66	760.93	0.19	0.00	0 01	757.60
580.	0.	580.	0.	0.	166.	0.	5.	1.	756.90
0.10	0 00	3.50	0.00	0.000	0.020	0.000	0.000	752.40	445.00
0.000746	1.	1:	1.	1	0	0	-11.43	28.20	473 20

*SECNO 2417 000
2800 NAT Q1= 209.84 WSEL= 760.69 ENC Q1= 214.10 WSEL= 760 79 RATIO= -0.0203
NAT Q1= 214. RATIOS LOB,CH,ROB= 0 0000 1 0000 0.0000 WSEL= 760.79

3370 NORMAL BRIDGE, NRD= 19 MIN ELTRD= 762.00 MAX ELLC= 761.00

3470 ENCROACHMENT STATIONS= 445.0 473.2 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

U/S FACE RAILROAD BRIDGE

2417.00	8.37	760.77	0.00	760.69	760.96	0.19	0.03	0.00	757.60
580.	0	580.	0.	0.	166.	0.	6	1.	756.90
0.10	0 00	3.49	0.00	0 000	0.020	0.000	0.000	752.40	445.00
0.000740	40	40.	40.	0	0	0	-11.48	28.20	473.20

*SECNO 2418.000
2800 NAT Q1= 242.41 WSEL= 760.72 ENC Q1= 248.90 WSEL= 760 82 RATIO= -0.0268
NAT Q1= 249 RATIOS LOB,CH,ROB= 0 0000 1.0000 0.0000 WSEL= 760.82

3470 ENCROACHMENT STATIONS= 445.0 473.2 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

2418.00	8.40	760.80	0.00	760 72	760 97	0.16	0.00	0.01	757.60
580.	0.	580.	0.	0.	179.	0.	6	1	756.90
0.10	0.00	3 25	0.00	0.000	0.035	0.000	0.000	752.40	445.00
0.000645	1.	1.	1.	2	0	0	0.00	28.20	473.20

*SECNO 2468.000
2800 NAT Q1= 212.90 WSEL= 760.76 ENC Q1= 251.17 WSEL= 760.86 RATIO= -0.1798
NAT Q1= 297. RATIOS LOB,CH,ROB= 0.0249 0 8455 0.1297 WSEL= 760.86

3470 ENCROACHMENT STATIONS= 445 0 473.2 TYPE= 4 TARGET= 0.155

```
          50 FT. U/S RAILROAD BRIDGE
 2468 00      8.44    760.84      0.00    760.76    761.00      0.16      0.03      0.00    757.60
    580.        0.      580.        0.        0.      180.        0.        6.         1.     756.90
    0.10      0.00      3.23      0.00     0.000     0.035     0.000     0 000    752.40    445.00
0.000717       50.       50.       50.         1         0         0      0.00     28.20    473.20


*SECNO 2693.000
 2800 NAT Q1=     522.24  WSEL=     760.97  ENC Q1=     534 51  WSEL=     761.07  RATIO= -0.0235
 NAT Q1=     535   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     761.07

3470 ENCROACHMENT STATIONS=     1305 0     1360.0  TYPE=      4  TARGET=         0.000
 2693.00     10.84    761.04      0.00    760.97    761.09      0.05      0.05      0 03    762.20
    580.        0       580.        0.        0.      339.        0.        7.         2.     761.40
    0 14      0.00      1.71      0.00     0 000     0.030     0.000     0.000    750.20   1306.68
0.000119       225.      225.      225.         2         0         0      0.00     53.32   1360.00


*SECNO 2792 000
 2800 NAT Q1=     634 09  WSEL=     760.99  ENC Q1=     645.08  WSEL=     761.09  RATIO= -0.0173
 NAT Q1=     645.  RATIOS LOB,CH,ROB=  0 0000  1.0000  0 0000  WSEL=     761.09

3470 ENCROACHMENT STATIONS=     1318.0     1361.0  TYPE=      4  TARGET=         0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       763.20 ELREA=       763.20

 2792.00     10 86    761.06      0.00    760.99    761.10      0.04      0.01      0.00    763.20
    580.        0.      580.        0.        0.      366.        0         8.         2.     763.20
    0.16      0 00      1.58      0.00     0.000     0.030     0.000     0.000    750.20   1318.00
0.000082       99.       99.       99.         0         0         0      0.00     43.00   1361.00


*SECNO 2793.000

3370 NORMAL BRIDGE,NRD= 15 MIN ELTRD=  761.30 MAX ELLC=  760.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       763.20 ELREA=       763.20

          D/S FACE PITCHER ST.  BRIDGE
 2793.00     10 86    761.06      0.00    760.99    761.10      0.04      0.00      0.00    763.20
    580.        0.      580.        0.        0.      351.        0.        8.         2.     763.20
    0.16      0.00      1.65      0.00     0.000     0.030     0 000     0.000    750.20   1318.00
0.000228         1.        1.        1.         1         0         0    -15.26     43.00   1361.00


*SECNO 2845.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3370 NORMAL BRIDGE, NRD= 15 MIN ELTRD= 761.30 MAX ELLC= 760.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.20 ELREA= 763 20

	U/S FACE	PITCHER ST	BRIDGE						
2845.00	10.87	761.07	0.00	761 00	761.11	0.04	0.01	0.00	763.20
580.	0.	580.	0.	0.	351.	0	8.	2.	763.20
0.17	0.00	1.65	0.00	0 000	0 030	0.000	0.000	750.20	1318.00
0.000228	52.	52.	52.	2	0	0	-16.00	43 00	1361 00

*SECNO 2846.000
2800 NAT Q1= 635.28 WSEL= 761.00 ENC Q1= 646.68 WSEL= 761 10 RATIO= -0.0180
NAT Q1= 647. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 761.10

3470 ENCROACHMENT STATIONS= 1318.0 1361 0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763 20 ELREA= 763.20

2846 00	10.88	761 08	0.00	761.00	761.12	0.04	0.00	0.00	763.20
580.	0.	580.	0.	0.	367	0.	8.	2.	763.20
0.17	0.00	1.58	0.00	0.000	0.030	0.000	0.000	750.20	1318.00
0.000081	1.	1.	1.	0	0	0	0.00	43.00	1361.00

1490 NH CARD USED
*SECNO 3218.000
2800 NAT Q1= 149.13 WSEL= 760.97 ENC Q1= 155.89 WSEL= 761 07 RATIO= -0.0454
NAT Q1= 156. RATIOS LOB, CH, ROB= 0.0009 0.9991 0.0000 WSEL= 761 07

3470 ENCROACHMENT STATIONS= 968.0 999.0 TYPE= 4 TARGET= 0.001
100 FT D/S GIBSON ST. BRIDGE

3218.00	6.65	761.05	0.00	760.97	761.31	0.26	0.08	0.11	760.40
580.	0.	580.	0.	0	142.	0.	11.	2.	761.30
0.19	0.00	4.09	0.00	0.000	0.035	0.000	0.000	754.40	968.00
0.001441	372.	372.	372.	2	0	0	0 00	30.72	998 72

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR INPUT DATA SEGMENT 1

00BREAK00

THIS RUN EXECUTED 23 JUN 89 14:18:32

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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C
T1 CITY OF KALAMAZOO FIS
T2 PORTAGE CREEK FROM CONFLUENCE WITH KALAMAZOO RIVER TO U/S OF FIRST R.R
T3 100-YEAR FLOOD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.000000	0.00	0.0	0.	755.200	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
J3	VARIABLE CODES FOR SUMMARY PRINTOUT									
	110.000	150.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	2.000	580.000	580.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.100	0.100	0 035	0.300	0.500	0 000	0.000	0.000	0.000	0.000
ET	0.000	0.000	1.400	0.000	0.000	0 000	0.000	0.000	0 000	0.000
	PORTAGE CREEK, CONFLUENCE WITH KALAMAZOO RIVER									
X1	0 000	19.000	408.000	490.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	768.400	232.000	767.000	244.000	764.700	256.000	762.200	268.000	761.600	294.000
GR	760.400	362.000	759.200	394.000	757.300	400.000	753.300	408.000	752.300	438.000
GR	752.400	449 000	752.000	468.000	753.600	490.000	759.700	507.000	763.700	518.000
GR	764.800	566.000	765 600	592.000	766.000	640.000	766.700	690 000	0.000	0.000
X1	229.000	14.000	820.850	861.150	375.000	150.000	229.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0 000	0.000	0.000	761.400	761.400	0.000
GR	766.700	0.000	766.700	0.000	767.200	142.000	766.200	222.000	766.400	384.000
GR	765.500	798.000	755.400	820.850	752.500	831.000	751.200	841.000	751.800	858.000
GR	755.300	861.150	765.200	884.000	766.000	946.000	766.800	1108.000	0.000	0.000
NC	0.100	0.100	0 020	0.300	0 500	0.000	0.000	0.000	0.000	0.000
	D/S FACE MICHIGAN AVE. BRIDGE									
X1	230.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	761.400	765.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0 000	0.000	0.000	0.000	761.400	761.400	0.000
	U/S FACE MICHIGAN AVE. BRIDGE									
X1	322.000	0.000	0 000	0.000	92.000	92 000	92.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	762.400	766.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000

NC	0.080	0.080	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	323.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0 000	0.000	766.400	766.400	0.000
	50 FT. U/S MICHIGAN AVE. BRIDGE									
X1	372.000	19.000	796.000	822.000	49.000	49.000	49.000	0.000	0.000	0.000
GR	767.200	0.000	767.200	0.000	767.000	216.000	766.600	300.000	765.800	400.000
GR	765.200	502.000	766.000	544.000	766.200	606.000	764.800	752.000	764.800	773.000
GR	756.200	796.000	752.500	797.000	750.600	808.000	752.500	819.000	755.300	822.000
GR	761.500	832.000	764.000	846.000	766.200	982.000	767.000	1100.000	0.000	0.000
X1	669.000	13.000	0.100	56.000	297.000	297.000	297.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0.000
X4	4.000	757.000	7.600	757 000	8.100	757.000	43.600	757.000	44.100	0.000
GR	780.000	0.000	759.500	0.100	757.000	7.500	757.000	8.000	752.800	10.000
GR	751.500	23.000	753.000	39.000	757.000	43.500	757.000	44.000	762.500	56.000
GR	763.200	62.000	767.800	262.000	767.900	400.000	0.000	0.000	0.000	0.000
	D/S FACE FOOTBRIDGE									
X1	670.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0.000
BT	14.000	0.000	780.000	0.000	0.100	762.000	761.900	7.500	762.500	761.900
BT	7.600	762 500	0.000	8.000	762.500	0 000	8.100	762.500	761.900	43.500
BT	762.500	761.900	43.600	762.500	0.000	44.000	762.500	0.000	44.100	762.500
BT	761.900	56.000	762.500	0.000	62.000	763.200	0.000	262.000	767.800	0.000
BT	400.000	767.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S FACE FOOTBRIDGE									
X1	674.000	0.000	0.000	0.000	4.000	4.000	4.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0 000	1.000	0.000	0.000	0 000
X3	10.000	0.000	0.000	0.000	0 000	0.000	0.000	762.500	762.500	0.000
X1	675.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0 000
	D/S FIRST RAILROAD BRIDGE									
X1	890.000	15.000	892.500	925.500	215.000	215.000	215.000	0.000	0.000	0.000
GR	763.000	560.000	763.600	628.000	763.000	774.000	764.400	844.000	764.000	870.000
GR	761.200	890.000	753.800	892.500	752.000	909.000	753.100	919.000	756.100	925.500
GR	761.100	928.000	762.300	978.000	761.700	1064.000	761.200	1226.000	762.000	1302.000
X1	989.000	0.000	0.000	0.000	99.000	99.000	99.000	0.000	0.000	0 000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.200	761.200	0.000
	D/S FACE FIRST RAILROAD BRIDGE									
X1	990.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.200	761.200	0.000
BT	13.000	560.000	763.000	0.000	628.000	763.600	0.000	774.000	763.800	0.000
BT	844.000	764.400	0.000	870.000	764.000	0.000	892.500	764.300	0.000	892.500
BT	764.300	761.200	925.500	764.300	761.200	925.500	764.300	0.000	978.000	763.800
BT	0.000	1064.000	764.000	0.000	1226.000	764.200	0.000	1302.000	764.000	0.000

U/S FACE FIRST RAILROAD BRIDGE

X1	1009.000	15.000	897.000	921.000	19.000	19.000	19.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	764 300	764.300	0.000
BT	13.000	560.000	763.000	0.000	628.000	763.600	0.000	774.000	763.800	0.000
BT	844.000	764.400	0.000	870.000	764.000	0.000	895.000	764.300	0.000	895.000
BT	764.300	761.200	921.000	764.300	761.200	921.000	764.300	0.000	978.000	763.800
BT	0.000	1064.000	764.000	0.000	1226.000	764.200	0.000	1302.000	764.000	0.000
GR	763.000	560 000	763.600	628.000	763.000	774.000	764.400	844.000	764.000	870.000
GR	761.200	895.000	753.800	897.000	752.000	909.000	753.100	916 000	756.100	921.000
GR	761.100	923 000	762.300	978.000	761.700	1064.000	761.200	1226.000	762.000	1302.000
NC	0.100	0.100	0.035	0.600	0.800	0.000	0.000	0 000	0.000	0.000

U/S RAILROAD BRIDGE - CROSS SECTION A

X1	1010.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	764.300	764.300	0.000
EJ	0.000	0.000	0.000	0 000	0.000	0 000	0.000	0.000	0.000	0.000



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100 YR
INPUT DATA
SEGMENT 2



THIS RUN EXECUTED 26 JUN 89 10:43:09

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM DIVERSION AT FIRST R.R. BRIDGE TO D/S GIBSON ST.
T3        100-YEAR FLOOD

J1  ICHECK.    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        2.        0.        0.  0.000000      0.00      0.0       0.    757.210     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
   110.000   150.000   200.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

QT     2.000   580.000   580.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC     0.100     0.100     0.020     0.300     0.500     0.000     0.000     0.000     0.000     0.000
          U/S FACE FIRST RAILROAD BRIDGE
X1  1009.000    15.000   897.000   921.000    19.000    19.000    19.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000   764.300   764.300     0.000
BT    13.000   560.000   763.000     0.000   628.000   763.600     0.000   774.000   763.800     0.000
BT   844.000   764.400     0.000   870.000   764.000     0.000   895.000   764.300     0.000   895.000
BT   764.300   761.200   921.000   764.300   761.200   921.000   764.300     0.000   978.000   763.800
BT     0.000  1064.000   764.000     0.000  1226.000   764.200     0.000  1302.000   764.000     0.000
GR   763.000   560.000   763.600   628.000   763.000   774.000   764.400   844.000   764.000   870.000
GR   761.200   895.000   753.800   897.000   752.000   909.000   753.100   916.000   756.100   921.000
GR   761.100   923.000   762.300   978.000   761.700  1064.000   761.200  1226.000   762.000  1302.000

NC     0.100     0.100     0.035     0.600     0.800     0.000     0.000     0.000     0.000     0.000
          U/S RAILROAD BRIDGE
X1  1010.000     0.000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000   764.300   764.300     0.000

ET     0.000     0.000     6.100     0.000     0.000   890.420   952.950     0.000     0.000     0.000
          50 FT. U/S RAILROAD BRIDGE
X1  1059.000    15.000   896.000   933.000    49.000    49.000    49.000     0.000     0.000     0.000
GR   763.000   560.000   763.600   628.000   763.000   774.000   764.400   844.000   764.000   870.000
GR   756.300   896.000   753.000   898.000   752.200   909.000   752.300   930.000   755.500   933.000
GR   756.400   944.000   762.300   978.000   761.700  1064.000   761.200  1226.000   762.000  1302.000
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NC	0.100	0.100	0.035	0 300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0 000	4.100	1.400	802 000	852.000	0.000	0.000	0.000	0.000	0.000
	D/S OF SECOND RAILROAD BRIDGE									
X1	1480.000	21.000	817.000	840.000	421.000	421.000	421.000	0.000	0.000	0.000
GR	766.200	0.000	766.000	58.000	760.000	188.000	760.400	290.000	763 000	320.000
GR	762.600	430.000	763.500	520.000	763.000	642.000	763.000	778.000	762.400	798.000
GR	758.200	809.000	756 400	812.000	753.800	817.000	752.800	823.000	753.900	828.400
GR	753.900	829.600	753.300	834.000	755.200	840.000	761.100	852.000	762.400	868.000
GR	800 000	1094.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0 000
	D/S FACE RAILROAD BRIDGE									
X1	1580.000	0.000	0.000	0.000	100 000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.400	761.400	0.000
SB	1.050	1.870	3 000	0.000	23.200	1.200	147.000	0.000	753.400	753.300
	U/S FACE RAILROAD BRIDGE - CROSS SECTION B									
X1	1608.000	0.000	0.000	0.000	28.000	28.000	28.000	0.000	0.100	0.000
X2	0 000	0.000	1 000	760.100	762.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.800	762.800	0.000
BT	21.000	0.000	766.300	0.000	58.000	766.100	0.000	188.000	763 500	0.000
BT	290.000	763.400	0.000	320.000	763.200	0.000	430.000	763 200	0.000	520.000
BT	763.600	0.000	642.000	763.100	0.000	778.000	763.100	0.000	798.000	762.500
BT	0.000	817.000	762.600	0.000	817.000	762.600	760.100	828.400	762.600	760.100
BT	828.400	762.600	0.000	829.600	762.600	0.000	829.600	762.600	760.100	840.000
BT	762.600	762.100	840.000	762.600	0.000	852.000	762.800	0 000	868.000	762.800
BT	0.000	1094.000	800.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	802.000	852.000	0.000	0.000	0.000	0.000	0.000
	50 FT. U/S RAILROAD BRIDGE									
X1	1658.000	0 000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
ET	0.000	4.100	6.100	804.000	882 000	812.900	866.500	0.000	0.000	0.000
	100 FT. D/S THIRD RAILROAD BRIDGE									
X1	1850.000	18.000	829.000	857.000	192.000	192.000	192.000	0.000	0.000	0.000
GR	767.200	0.000	765.200	160.000	767.000	248.000	765.800	352.000	761.800	592.000
GR	760.000	734.000	760.100	802.000	758.200	822.000	757 000	829.000	753.300	834.000
GR	752 800	844.000	754.900	854.000	757.000	857.000	762 000	880.000	760.000	1004.000
GR	759.800	1178.000	760.700	1342.000	800.000	1343.000	0.000	0.000	0.000	0.000
	D/S FACE RAILROAD BRIDGE - CROSS SECTION C									
X1	1950.000	19.000	832.000	856.000	100.000	100.000	100 000	0.000	0.000	0.000
X3	10.000	0.000	0 000	770.000	0.000	920.000	0.000	762.000	762.000	0.000
GR	767.200	0.000	765.200	160.000	767.000	248.000	765.800	352.000	761.800	592 000
GR	760.000	734.000	760.100	802.000	762.500	829.000	760.800	829.000	753.500	832.000
GR	753.400	844.000	754 800	850.000	757.200	856.000	760.800	859.000	762.500	859.000
GR	762.000	880.000	760.000	1004.000	759.800	1178.000	800.000	1342.000	0.000	0.000
SB	0.000	1.500	3.000	0.000	24.000	0.000	115.000	0.000	754.200	754.200

	U/S FACE RAILROAD BRIDGE									
X1	1967 000	0.000	0.000	0.000	17.000	17 000	17.000	0.000	0.200	0.000
X2	0.000	0.000	1.000	759.700	763 000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	770.000	0.000	920.000	0.000	763.000	763 000	0.000
BT	13.000	0.000	800.000	0.000	160.000	800 000	0.000	248.000	800.000	0.000
BT	352.000	800.000	0.000	592.000	800.000	0.000	769.000	763.000	0.000	802.000
BT	763.200	0.000	832.000	764.000	0.000	832.000	764.000	759.700	856.000	764 000
BT	759.700	856.000	764.000	0 000	880.000	763.500	0.000	921.000	763.000	0.000
ET	0.000	4.100	1.400	853.000	943.000	0.000	0.000	0.000	0.000	0.000
X1	2000.000	19.000	879.000	917.000	33.000	33.000	33.000	0.000	0.000	0.000
GR	771.100	0.000	770.000	224 000	767 800	286.000	765.800	470 000	764 500	576.000
GR	763.600	734.000	763.200	820.000	760.400	844.000	757.600	864 000	756.300	879.000
GR	754.900	881.000	753.600	898.000	754.700	915.000	756.800	917.000	757.900	925.000
GR	759.200	944.000	760.600	1104.000	761 200	1184.000	800.000	1370.000	0.000	0.000
	D/S FACE FOURTH RAILROAD BRIDGE									
X1	2040.000	25.000	609.000	676.000	40.000	40.000	40.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	763.000	763.000	0.000
GR	763.600	539 000	763.200	574.000	760.000	601.000	758.000	609.000	757.500	612.000
GR	755.500	615.000	755.500	620.000	754.000	623.000	754 000	629.000	753.600	631.000
GR	753.600	637.000	755.200	640.000	755.200	645.000	755.200	648.000	755.200	654.000
GR	756.000	657.000	756.000	662.000	756.900	665.000	756.900	671.000	759.400	673.000
GR	759.400	676.000	760.000	680.000	762.000	685.000	760 000	720.000	762.000	745.000
SB	0.950	2 110	3.000	0.000	59.000	45.000	110.000	0.390	753.600	753.600
	U/S FACE R.R. BRIDGE									
X1	2057.000	0.000	0 000	0.000	17 000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0 000	1 000	761.300	763.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.600	763.600	0.000
BT	4.000	539.000	764.200	0.000	609.000	763.900	0.000	676.000	763.500	0.000
BT	745 000	762 800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	100 FT. U/S RAILROAD BRIDGE									
X1	2157 000	14.000	879 000	917.000	150.000	70.000	100.000	0.000	0.000	0.000
GR	800.000	819.000	761.800	820.000	760.000	855.000	756.300	879.000	754.900	881.000
GR	753.600	898.000	754.700	915.000	756.800	917.000	760.000	930.000	762.500	950.000
GR	760.000	975 000	760.000	1000.000	761.000	1025.000	800.000	1026.000	0.000	0.000
X1	2339.000	29.000	451.000	483.000	182.000	182.000	182.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
GR	800.000	409.000	763.000	410.000	762.800	442.000	758.000	451.000	758.000	451.100
GR	755 400	456.000	755.400	456.100	754.400	460.000	754.400	460.100	754.100	464.000
GR	754.100	464.100	754 700	468.000	754.700	468.100	754.700	472.000	754.700	472.100
GR	754.700	476.000	754 700	476.100	757.900	483.000	757.900	483.100	758.000	493.000
GR	760.000	503.000	758.000	513.000	758.000	560.000	760.000	568.000	762.200	580.000
GR	760.000	595.000	760.000	625.000	761.000	655.000	800.000	656.000	0.000	0.000
NC	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE RAILROAD BRIDGE

X1	2340.000	0.000	0.000	0.000	1.000	1.000	1 000	0.000	0 000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
BT	18.000	442.000	762.800	0.000	451.000	763.100	758.000	451.100	763.100	760.300
BT	456.000	763.100	760.300	456.100	763.100	755.400	460.000	763.100	754 400	460.100
BT	763.100	760.000	464.000	763.100	760.000	464.100	763.100	754.100	468.000	763.100
BT	754.700	468.100	763.100	760.000	472.000	763.100	760.000	472.100	763.100	754.700
BT	476 000	763.100	754.700	476.100	763 100	760.400	483.000	763.100	760.400	483.100
BT	763.100	757.900	493.000	758.000	0.000	0.000	0.000	0.000	0.000	0.000

U/S FACE 5TH RAILROAD BRIDGE

X1	2364.000	0.000	0.000	0.000	24.000	24.000	24.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1 000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.000	762.000	0.000
X1	2365.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.000	762.000	0.000
X1	2376.000	34.000	445.000	473.200	11.000	11.000	11.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
GR	800.000	414.000	762.000	415.000	757 600	445.000	757 600	445.100	754.600	449.000
GR	754.400	451.500	754.400	451.600	754.400	452.100	754 400	452.200	752.400	457.800
GR	752.400	457.900	752 400	458.400	752.400	458 500	753.900	463.800	753.900	463.900
GR	753.900	464.400	753 900	464.500	755.300	468 300	755.300	468.400	755.300	468.900
GR	755.300	469.000	756.900	473.100	756.900	473 200	762.400	505 000	762.000	515.000
GR	760.000	550 000	758.000	560.000	758.000	580.000	760.000	585.000	761.800	600.000
GR	760.000	620.000	760 000	650.000	761.600	660.000	800 000	661.000	0.000	0.000

D/S FACE 6TH RAILROAD BRIDGE

X1	2377.000	0.000	0.000	0.000	1.000	1 000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
BT	19.000	415 000	762 000	0.000	445.000	763 500	757.600	445.100	763.500	761.000
BT	451 500	763.500	761.000	451 600	763.500	754.400	452.100	763 500	754.400	452.200
BT	763.500	761.000	457.800	763.500	761 000	463.800	763.500	761.000	463.900	763.500
BT	753.900	464.400	763.500	753.900	464.500	763.500	761.000	468 300	763.500	761.000
BT	468.400	763.500	755.300	468.900	763.500	755.300	469.000	763.500	761.000	473.100
BT	763 500	761.000	473 200	763.500	756.900	505.000	762.400	0.000	0.000	0.000

U/S FACE RAILROAD BRIDGE

X1	2417.000	0.000	0.000	0.000	40.000	40.000	40.000	0.000	0.000	0.000
X2	0.000	0 000	0.000	0.000	0 000	0.000	1.000	0 000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
NC	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	2418.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
ET	0.000	4.100	0.000	445.000	473.200	0.000	0.000	0.000	0.000	0.000

50 FT. U/S RAILROAD BRIDGE

X1	2468.000	0.000	0 000	0.000	50.000	50.000	50.000	0.000	0.000	0 000

NC	0 080	0.080	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	1305.000	1360.000	0.000	0.000	0.000	0.000	0 000
X1	2693.000	20.000	1305.000	1360.000	225.000	225.000	225.000	0 000	0.000	0.000
GR	800 000	1289.000	761.800	1290.000	762.300	1300.000	762.200	1305 000	750.500	1322.000
GR	750.200	1325.000	750.600	1330.000	751 300	1332.000	751.500	1334.000	754.400	1340 000
GR	756.000	1345.000	757.000	1350 000	757 800	1356.000	758.700	1360.000	761.400	1360.000
GR	761.500	1370.000	761.900	1380.000	762 000	1400.000	762.000	1500.000	800.000	1505.000
NC	0.080	0.080	0 030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	2792.000	20.000	1318.000	1361.000	99.000	99.000	99.000	0.000	0.000	0 000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0 000
GR	800.000	1149.000	761.300	1150.000	761.500	1200.000	762.300	1250.000	763.000	1300.000
GR	763.200	1318.000	755.900	1318.000	751.000	1330.000	750.200	1340.000	752.700	1350.000
GR	755.900	1361.000	763.200	1361.000	763.300	1376.000	762.800	1400.000	762.400	1450.000
GR	762.000	1500.000	761.700	1550.000	761.600	1600.000	761.300	1650.000	800.000	1651.000
	D/S FACE PITCHER ST. BRIDGE									
X1	2793.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
BT	15.000	1150.000	761.300	0 000	1200.000	761.500	0.000	1250.000	762.300	0.000
BT	1300.000	763.000	0.000	1318.000	763.200	0.000	1318.000	763.200	760.700	1361.000
BT	763.200	760.700	1361.000	763.200	0.000	1376.000	763.300	0.000	1400.000	762.800
BT	0.000	1450.000	762.400	0.000	1500.000	762.000	0.000	1550.000	761.700	0.000
BT	1600.000	761.600	0.000	1650.000	761.300	0.000	0.000	0.000	0.000	0.000
	U/S FACE PITCHER ST. BRIDGE									
X1	2845.000	0.000	0.000	0.000	52.000	52.000	52.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
X1	2846.000	0.000	0.000	0.000	1.000	1.000	1 000	0 000	0.000	0.000
X3	10 000	0 000	0 000	0.000	0 000	0.000	0.000	763.200	763 200	0.000
NH	5.000	0.070	968.000	0.035	999.000	0.060	1050.000	1.000	1400.000	0 050
NH	1500.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000	0.000
ET	0.000	4.100	0.000	968.000	999.000	0.000	0.000	0.000	0.000	0 000
	100 FT. D/S GIBSON ST BRIDGE									
X1	3218.000	14.000	968 000	999.000	372.000	372.000	372.000	0.000	0.000	0.000
GR	800.000	950.000	762.000	950.000	762.000	958.000	760.400	968.000	755.100	978.000
GR	754.400	985.000	755.000	992.000	761.300	999 000	761.600	1008.000	762.400	1026.000
GR	762.200	1050.000	762.000	1400.000	762.000	1500.000	800 000	1500.000	0.000	0 000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR INPUT DATA

SEGMENT 3



ET	0.000	4.100	4.100	250.000	270.850	0.000	0.000	0.000	0.000	0.000
	50 FT. U/S STOCKBRIDGE AVE. BRIDGE									
X1	7519.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	0.000	757.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0 080	0.080	0.035	0 300	0.500	0.000	0.000	0.000	0.000	0 000
ET	0.000	4.100	1.400	830.000	864.000	0.000	0.000	0.000	0.000	0.000
	D/S FACE RAILROAD BRIDGE									
X1	7720.000	12.000	830.000	864.000	175.000	280.000	201.000	0.000	0.000	0.000
X4	6.000	761.500	830.100	759.900	840.100	759.900	841.100	759.500	853.100	759.500
X4	854.100	761.100	863.900	0 000	0.000	0.000	0.000	0.000	0.000	0.000
GR	800.000	580.000	761.500	580.000	761.500	830.000	759.900	840.000	759.900	841.000
GR	759.600	847.000	759.500	853.000	759.500	854.000	761.100	864.000	762.000	900.000
GR	762.400	1100.000	800.000	1100.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0 030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	6.100	830.000	864.000	830.000	864.000	0.000	0.000	0.000
X1	7721.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
BT	15 000	580.000	768.000	0.000	830.000	766.200	761.500	830.100	767.500	764.500
BT	840.000	767.500	764.500	840.100	767.500	759.900	841.000	767.500	759.900	841.100
BT	767.500	764.500	853.000	767.500	764.500	853.100	767.500	759.500	854.000	767.500
BT	759.500	854.100	767.500	764 500	863 900	767.500	764.500	864 000	766.200	761.100
BT	900.000	766.100	0.000	1100.000	766 000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	6.100	830.000	864.000	830.000	864.000	0.000	0 000	0.000
	U/S FACE R.R BRIDGE									
X1	7734.000	0.000	0.000	0.000	13.000	13.000	13.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
NC	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	6.100	830.000	864.000	830.000	864.000	0.000	0.000	0.000
X1	7735.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
ET	0.000	4.100	4.100	780.000	915.000	0.000	0.000	0.000	0.000	0.000
	50 FT. U/S R R. BRIDGE									
X1	7784.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.200	0.000
ET	0.000	4.100	4.100	1662.000	1773.000	0.000	0.000	0.000	0.000	0.000
	VALLEY SECTION - CROSS SECTION J									
X1	8298.000	10.000	1744.000	1776.000	514.000	514.000	514 000	0.000	0.000	0.000
GR	763.000	1530.000	763.000	1670.000	764.200	1739.000	762.600	1741.000	762.200	1744.000
GR	761.800	1754.000	761 400	1765.000	761.700	1775.000	765.700	1776.000	766.000	1810.000
NC	0.080	0 060	0.035	0.500	1.000	0 000	0.000	0.000	0.000	0.000
ET	0.000	0.000	4.100	1348.470	1380.980	0.000	0 000	0.000	0.000	0.000
	100 FT. D/S REED AVE.									
X1	8620.000	13.000	1354.000	1374.000	161.000	161.000	161.000	0.000	0.000	0.000
GR	769.200	1175.000	768.000	1222.000	769.600	1314.000	769 100	1348.000	765.000	1348.500
GR	762.200	1354.000	762.200	1364.000	762.300	1374.000	765.000	1379.000	766.100	1383.000
GR	768.200	1388.000	768.500	1405.000	800.000	1405.000	0.000	0.000	0.000	0.000

NC	0.090	0 060	0.035	0.300	0.500	0 000	0.000	0 000	0.000	0.000
ET	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	8719.000	28.000	250.000	269.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770 400	770.500	0.000
GR	771.400	0.000	770.500	25.000	770.100	50 000	769.800	75.000	769.500	100.000
GR	769.300	125.000	769.300	150.000	769.400	175.000	769.600	200.000	770.000	225.000
GR	770.400	250.000	762.000	250.000	762.300	255 000	762.800	260.000	762.700	265.000
GR	762.700	269.000	770.500	269.000	770.500	273.000	770.300	300.000	770.200	325.000
GR	770.000	350.000	770.400	375.000	770.600	400.000	770.800	425.000	771.600	450.000
GR	772.500	475.000	773.500	500.000	774 200	525.000	0.000	0.000	0.000	0.000
	D/S FACE REED AVE.									
X1	8720.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
BT	25.000	0.000	771.400	0.000	25.000	770.500	0.000	50.000	770.100	0.000
BT	75.000	769.800	0.000	100.000	769.500	0.000	125.000	769.300	0.000	150.000
BT	769.300	0.000	175.000	769.400	0.000	200.000	769.600	0.000	225.000	770.000
BT	0.000	250.000	770.400	762 000	250.000	770.400	768.800	269.000	770.500	768.900
BT	269 000	770.500	762.700	273.000	770.500	0 000	300.000	770.300	0.000	325.000
BT	770.200	0.000	350.000	770.000	0.000	375.000	770.400	0.000	400.000	770.600
BT	0 000	425.000	770.800	0.000	450.000	771.600	0.000	475.000	772.500	0.000
BT	500.000	773 500	0.000	525.000	774.200	0.000	0.000	0.000	0.000	0.000
	U/S FACE REED AVE.									
X1	8788.000	0.000	0.000	0 000	68.000	68.000	68.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
	U/S REED AVE. - CROSS SECTION K									
X1	8789.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	100 FT D/S OF STRUCTURE U/S OF REED AVE.									
X1	8889.000	0 000	0.000	0 000	100.000	100.000	100.000	0.000	0.000	0.000
ET	0.000	0.000	4.100	24.500	41.500	0.000	0.000	0.000	0.000	0.000
	D/S FACE OF STRUCTURE U/S OF REED AVE. -CROSS SEC. L									
X1	8989.000	9.000	24.500	41.500	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0 000	0.000	780.000	780.000	0.000
GR	780.000	0.000	769.100	1.000	769.100	22.000	762.600	24.500	762.400	33.000
GR	763 800	41.500	769.100	44.000	769.100	65 000	780.000	66.000	0.000	0.000
SB	0.000	2.210	3.000	0.000	17.600	0.000	88 000	0.000	762.800	762.400
	U/S FACE OF STRUCTURE U/S OF REED AVE. - CROSS SEC. M									
X1	9071.000	9.000	8.000	28.000	82.000	82.000	82.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	767.400	780.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	780.000	780.000	0.000
GR	780.000	0.000	769.100	1.000	769.100	6.000	764.100	8.000	762.800	18.000
GR	763.400	28.000	769 100	30.000	769 100	35.000	780.000	36.000	0.000	0.000

X1	9120.000	5.000	0.100	40.000	49 000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	781.600	781.600	0.000
GR	785.000	0.100	765 500	0.200	762.500	20.000	765.000	40.000	785.000	40.100
	D/S FACE OF 1ST CROSSWALK									
X1	9121.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	781.600	781.600	0.000
BT	4.000	0.100	781.500	765.500	0.100	781.500	771.100	40.000	785.000	771.100
BT	40.100	785.000	765.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S FACE 1ST CROSSWALK									
X1	9129.000	0.000	0.000	0.000	8.000	8.000	8.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	781.500	781.500	0.000
X1	9130.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	781.500	781.500	0.000
	100 FT. D/S 2ND CROSSWALK									
X1	9340.000	7.000	0.000	46.400	210 000	210.000	210.000	0.000	0.000	0.000
GR	793.100	0.000	773.500	0.000	773.500	17.600	764.100	18.000	764.000	32.000
GR	765.200	46 400	793.100	46.400	0.000	0.000	0.000	0.000	0.000	0.000
X1	9439.000	0.000	0.000	0.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10 000	0 000	0 000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
	D/S FACE 2ND CROSSWALK									
X1	9440.000	0.000	0.000	0.000	1.000	1.000	1.000	0 000	0.000	0.000
X2	0.000	0.000	0.000	780.700	793.100	0.000	0.000	0.000	0 000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
	U/S FACE 2ND CROSSWALK									
X1	9451.000	0.000	0.000	0.000	11.000	11.000	11.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	780.700	793.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
X1	9452 000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
	75 FT. U/S 2ND CROSSWALK & 150 FT. D/S BRYANT ST.									
X1	9501.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X1	9650.000	9.000	41 250	58.750	149.000	149.000	149.000	0.000	0.000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0 000	775.000	775.000	0.000
GR	780.000	0 000	772.600	0.000	772.400	41.250	764.700	41.250	764.200	50.000
GR	764.500	58.750	772.400	58.750	772.600	100.000	780.000	100.000	0.000	0.000
	D/S FACE BRYANT ST.									
X1	9651.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0 000	0.000
X2	0.000	0.000	0.000	771.500	772.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	775.000	775.000	0.000

	U/S FACE BRYANT ST. - CROSS SECTION N									
X1	9673.000	0.000	0.000	0.000	22.000	22.000	22.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	771.500	772.400	0.000	0.000	0.000	0.000	0 000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0 000	775 000	775.000	0.000
X1	9674.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	775.000	775.000	0.000
	D/S FACE OF STRUCTURE U/S OF BRYANT ST.									
X1	9685.000	0 000	0.000	0.000	11.000	11.000	11.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	780.000	780.000	0 000
SB	0.000	2.034	3.000	0.000	19.000	0.000	90.000	0.000	764.700	764.200
	U/S FACE OF STRUCTURE U/S OF BRYANT ST.									
X1	9837.000	8.000	40.300	59.700	152.000	152.000	152.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	769.800	790.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	790.000	790.000	0.000
GR	790.000	0.000	776.200	0.000	776.200	40.300	765.400	40.300	764.700	50.000
GR	764.800	59.700	771.500	59.700	777.700	100 000	0.000	0.000	0.000	0.000
X1	9937.000	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	0.000	765.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.100	0.100	0.035	0.300	0.500	0.000	0.000	0.000	0 000	0.000
NC	0.100	0.100	0.035	0.300	0.500	0.000	0.000	0.000	0 000	0.000
X1	10034.000	9.000	0.100	25.500	97.000	97.000	97.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782.000	0.000
X4	4.000	766.400	5.400	766.400	6.500	766.400	19.500	766.400	20.600	0.000
GR	782.000	0.000	782.000	0.100	766.400	0.100	766.400	5.300	766.400	6.400
GR	766 400	19.400	766.400	20.500	766.400	25.500	782.000	25.600	0.000	0.000
	D/S FACE 2ND R.R BRIDGE NORTH OF ALCOTT ST.									
X1	10035 000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0 000	0 000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782 000	0.000
BT	12.000	0.000	782.000	766 400	0.100	782.000	778.800	5.300	782.000	778.800
BT	5.400	782.000	766.400	6.400	782.000	766.400	6.500	782.000	778.800	19.400
BT	782.000	778.800	19.500	782.000	766.400	20.500	782.000	766.400	20.600	782.000
BT	778.800	25.500	782.000	778.800	25 600	782.000	766.400	0.000	0.000	0.000
	U/S FACE 2ND R.R. BRIDGE NORTH OF ALCOTT ST.									
X1	10049.000	0.000	0.000	0.000	14.000	14.000	14.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782.000	0.000
X1	10050.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782.000	0 000
X1	10064.000	5.000	0.000	19.500	14.000	14.000	14.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
GR	791.600	0.000	767.300	0.000	766.900	9.750	767.300	19.500	791.500	19.500

NC	0.000	0.000	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	D/S FACE I-BEAM CROSSING									
X1	10065.000	0.000	0.000	0 000	1.000	1.000	1 000	0.000	0.000	0.000
X2	0.000	0.000	0.000	780.500	781.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
	U/S FACE I-BEAM CROSSING									
X1	10070.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	780.500	781.500	0.000	0.000	0.000	0 000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
NC	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	10071.000	0.000	0 000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0 000	791.500	791.500	0.000
X1	10072.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0 000	791.500	791.500	0.000
	D/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES									
X1	10073.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	790.100	791 600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
	U/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES									
X1	10090.000	0.000	0.000	0.000	17 000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	790.100	791.600	0.000	0.000	0.000	0.000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10091.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10099.000	13.000	0.100	29.000	8.000	8.000	8.000	0.000	0.000	0.000
X4	4.000	768.700	9.600	768.700	10.600	769.100	24.100	769.100	25.100	0.000
GR	785.000	0 000	768.700	0 100	768.700	2.500	777.500	3.000	777.500	8.000
GR	768.700	8.500	768.700	9.500	768.700	10.500	767.200	17.000	769.100	24.000
GR	769 100	25.000	768.700	29.000	785.000	29.100	0.000	0.000	0.000	0 000
	D/S FACE 1ST R.R. BRIDGE NORTH OF ALCOTT ST.									
X1	10100.000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
BT	12.000	0 000	785.000	768 700	0.100	785.000	782.000	9.500	785.000	782.000
BT	9.600	785.000	768.700	10.500	785.000	768.700	10.600	785.000	782.000	24.000
BT	785.000	782.000	24.100	785.000	769.100	25.000	785.000	769.100	25.100	785.000
BT	782.000	29 000	785.000	782.000	29.100	785.000	768.700	0 000	0.000	0.000
	U/S FACE 1ST R.R. BRIDGE NORTH OF ALCOTT ST									
X1	10116.000	0.000	0.000	0.000	16.000	16.000	16.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1 000	0.000	0.000	0.000
X3	0.000	767.700	0.000	0.000	0 000	0.000	0.000	0 000	0.000	0.000

X1	10117.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	0.000	767.700	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	D/S ALCOTT ST. - CROSS SECTION O									
X1	10179.000	14.000	0.100	30.000	62.000	62.000	62.000	0.000	0.000	0.000
X3	0.000	768 300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	4.000	768.300	13.600	768.300	16.600	768.300	1.000	768.300	12.500	0 000
GR	787.400	0.000	768.300	0.000	768.300	0.100	768.300	7.000	768.300	13.500
GR	768.300	16.500	768.300	18.000	768.300	20.000	768.300	23.000	768.300	26.000
GR	768.300	28.000	768 300	30.000	768.300	30.100	787 400	30.100	0.000	0.000
	D/S FACE ALCOTT ST.									
X1	10180.000	0 000	0.000	0 000	1.000	1.000	1 000	0.000	0.000	0.000
X3	0.000	768.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	16.000	0.000	787.400	768.300	0.100	787.400	773.400	1.000	787.400	776.000
BT	7.000	787.400	779.300	12 500	787 400	776.000	13.500	787.400	773.400	13.600
BT	787.400	768.300	16.500	787.400	768 300	16.600	787 400	773.400	18.000	787.400
BT	776.600	20.000	787.400	778.200	23.000	787.400	779.300	26.000	787.400	778.600
BT	28.000	787.400	777.200	30.000	787.400	773.400	30.100	787 400	768.300	0.000
	U/S FACE ALCOTT ST.									
X1	10237.000	0.000	0.000	0.000	57.000	57.000	57.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X1	10238.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
	5' D/S DAM									
X1	10246.000	4.000	0.100	29.900	8.000	8.000	8.000	0.000	0.000	0.000
GR	790.000	0.000	768.600	0.100	769.000	29.900	790.200	30.000	0.000	0.000
NC	0.000	0 000	0.017	0.000	0.000	0.000	0.000	0.000	0 000	0.000
	D/S FACE DAM (ELLIPTICAL OPENING) - CROSS SECTION P									
X1	10251.000	6.000	0.100	30.100	5.000	5.000	5.000	0.000	0.000	0.000
GR	790.000	0.000	790.000	0.100	769.000	0.200	769.100	16.000	768.600	30.000
GR	790 000	30.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR INPUT DATA

SEGMENT 5



THIS RUN EXECUTED 30 JUN 89 11:13:02

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

C
T1         CITY OF KALAMAZOO FIS
T2         PORTAGE CREEK FROM DAM TO 1ST R.R. N OF KILGORE RD.
T3        100-YEAR FLOOD

J1  ICHECK     INQ        NINV      IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        2.         0.        0.   0 000000      0 00       0.0         0.    788.800      0.000
J2  NPROF      IPLOT      PRFVS     XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0 000     -1.000     0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    110.000    150.000    200.000    0.000      0.000      0.000      0.000      0.000      0.000      0.000

QT      2.000    540.000    540.000      0.000      0.000      0.000      0 000      0.000      0.000      0.000
NC      0.120      0 120      0.045      0.100      0.300      0.000      0 000      0.000      0.000      0.000
ET      0.000      4.100      4.100     30.000    192.000      0.000      0.000      0.000      0 000      0.000
          50' U/S DAM - CROSS SECTION Q
X1  10317.000     10.000     45.000    160.000     66.000     66.000     66.000      0.000      0.000      0.000
GR    793.000      0.000    790.000     15.000    788.000     40.000    786.400     45.000    776.100     65.000
GR    776.100    140.000    786.400    160.000    788.000    170.000    790.000    550.000    794.000    610.000

ET      0 000      0 000      4.100   1246.300   1291.320      0.000      0.000      0 000      0.000      0.000
          VALLEY SECTION - CROSS SECTION R
X1  11674.000     15.000   1246.000   1292 000   1357.000   1357.000   1357.000      0.000      0.000      0.000
GR    810.800    346.000    805.400    424 000    800.800    566.000    793.000    880.000    791.800   1112.000
GR    791.800   1230.000    789.200   1246.000    781.100   1252.000    778.000   1267.000    780.400   1282.000
GR    789.400   1292.000    789.100   1424.000    793.000   1564.000    800.000   1742.000    810 500   2036.000

ET      0.000      0.000      4.100    492.180    605.740      0.000      0.000      0.000      0.000      0.000
          VALLEY SECTION - CROSS SECTION S
X1  13254.000     15 000    496.000    561.000   1800.000   1200.000   1580.000      0.000      0.000      0.000
GR    810.000    180.000    807.000    316.000    804 100    396.000    798.000    460.000    794.200    476.000
GR    787.900    496.000    783.700    507.000    782.400    514.000    782.100    528.000    782.100    542.000
GR    783.900    546.000    785 400    561.000    787.400    600.000    804.000    656.000    821.400    706.000

ET      0.000      0.000      4.100    507.000    586.000      0.000      0.000      0.000      0.000      0.000
X1  13724.000      0.000      0.000      0.000    470.000    470.000    470.000      0.000      2.000      0.000
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ET       0.000       0.000       4.100     505.000     565 000       0.000       0.000       0.000       0.000       0.000
X1   14194.000       0.000       0.000       0.000     470.000     470.000     470.000       0.000       1.900       0.000

ET       0.000       0.000       4.100    2087 000    2160.000       0.000       0.000       0.000       0.000       0.000
             CROSS SECTION T
X1   14600.000       8.000    2086.000    2113.000     406.000     406.000     406.000       0.000       0.000       0.000
GR     800.000    2065.000     798.200    2071 000     788.900    2086.000     788.500    2098.000     786.400    2110.000
GR     789.000    2113.000     790.000    2160.000     800.000    2200.000       0.000       0.000       0.000       0 000

X1   15300.000       7.000    2086.000    2113 000     700.000     700.000     700.000       0.000       0.000       0.000
GR     800.000    2071.000     790.700    2086.000     790.300    2098.000     788.200    2110.000     792.400    2113.000
GR     793.100    2121.000     796.300    2134.000       0.000       0.000       0.000       0.000       0.000       0.000

          100 FT. D/S CORK ST  BRIDGE
X1   16004.000      19.000    2086.000    2113.000     704.000     704.000     704.000       0.000       0.000       0.000
GR     830.200     804.000     825.800     892.000     821.000     936.000     813.000    1022.000     808.400    1140.000
GR     804.000    1490.000     802.400    1894.000     799.400    1950.000     801.800    2071.000     792.500    2086.000
GR     792.100    2098.000     790.000    2110.000     794.200    2113.000     794.900    2121.000     798.100    2134.000
GR     798.000    2230.000     814.000    3008 000     820.000    3190.000     831.400    3284.000       0.000       0.000

NC       0 000       0.000       0.000       0.500       1.000       0.000       0.000       0.000       0.000       0.000
X1   16037.000       0.000       0.000       0.000      33.000      33.000      33.000       0.000       0.100       0.000

ET       0.000       4.100       4.100    2086.000    2113.000       0.000       0.000       0.000       0.000       0.000
X1   16070.000       0.000       0.000       0.000      33.000      33.000      33.000       0.000       0.100       0.000

NC       0.000       0.000       0.027       0.000       0.000       0.000       0.000       0.000       0.000       0 000
          D/S FACE CORK ST  BRIDGE
X1   16104.000      24.000    2093.900    2102 300      34.000      34.000      34.000       0.000       0.000       0.000
X3      10.000     790.300       0.000       0.000       0.000       0.000       0.000     798.400     798.400       0.000
X4       2.000     794.100    2094.000     794.100    2102.200       0.000       0 000       0.000       0.000       0.000
GR     830.200     804.000     825.800     892.000     821.000     936.000     813 000    1022.000     808.400    1140.000
GR     804.000    1490 000     802.400    1894.000     799.400    1950.000     801.800    2071.000     794.100    2093.900
GR     793.800    2094.100     791.000    2095.000     790.000    2097.000     790.000    2099.000     791.000    2101.000
GR     793.600    2102 000     794.100    2102.300     794.200    2113.000     794.900    2121.000     798.100    2134.000
GR     798 000    2230.000     814.000    3008.000     820.000    3190.000     831.400    3284.000       0.000       0.000

SB       0.000       2 440       3 000       0.000       6.000       0.000      50 300       0.000     790.000     790.000
ET       0.000       4.100       6.100    2093.900    2102.300    2093.900    2102.300       0.000       0.000       0.000
          U/S FACE CORK ST.  BRIDGE
X1   16194.000       0.000       0.000       0.000      90.000      90.000      90.000       0.000       0.000       0.000
X2       0.000       0.000       1.000     798.400     801.900       0.000       0.000       0.000       0.000       0.000
BT      26.000     804.000     830.200       0.000     892.000     825.800       0.000     936.000     821.000       0.000
BT    1022.000     813.000       0.000    1140.000     808.400       0.000    1490.000     804.000       0.000    1894.000
BT     803.500       0.000    1950.000     804.200       0.000    2071.000     802.600       0.000    2093.900     801.900
BT       0.000    2094.000     801.900     794.100    2094.100     801.900     795.200    2095.000     801.900     797.000
BT    2097.000     801.900     798.400    2099.000     801.900     798.400    2101.000     801.900     797.000    2102.000
BT     801.900     795.600    2102.200     801.900     794.100    2102.300     801.900       0.000    2113.000     801.900
BT       0.000    2121.000     801.900       0.000    2134.000     801.900       0.000    2230.000     801.900       0.000
BT    3008 000     814.000       0.000    3190 000     820.000       0.000    3284.000     831.400       0.000       0.000
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NC	0.000	0.000	0.045	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	1.400	2045.000	2180.000	0.000	0.000	0.000	0.000	0.000
X1	16244.000	19.000	2086.000	2113 000	50.000	50.000	50.000	0.000	0.000	0.000
GR	830 200	804 000	825.800	892.000	821.000	936.000	813.000	1022.000	808.400	1140.000
GR	804 000	1490.000	802.400	1894.000	801.800	1950.000	801.800	2071.000	792.500	2086.000
GR	792.100	2098.000	791.300	2110.000	794.200	2113.000	794.900	2121.000	798.100	2134.000
GR	798.000	2230.000	814.000	3008.000	820.000	3190.000	831.400	3284.000	0.000	0.000
ET	0.000	4.100	0.000	1238.000	1442.000	0.000	0.000	0.000	0.000	0.000
	100 FT D/S 1ST R.R. BRIDGE S. OF CORK ST.									
X1	16514 000	17.000	1314.000	1349 000	300.000	250.000	270.000	0.000	0.000	0.000
GR	815.000	0.000	810.400	286.000	810.000	450.000	804.000	708.000	800.600	762.000
GR	801.600	1200.000	804.000	1242.000	801.800	1299.000	793.700	1314.000	793.400	1326.000
GR	792.500	1338.000	795.400	1341.000	796.000	1349.000	798.100	1362.000	803.200	1400.000
GR	804.000	1500.000	820.000	1500.000	0.000	0.000	0.000	0 000	0.000	0.000
	D/S FACE 1ST R.R. BRIDGE S. OF CORK ST.									
X1	16614.000	25.000	1295.300	1389.200	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	803.300	803.300	0.000
X4	16.000	801 000	1295.400	799.300	1300.900	799.300	1303.900	799.100	1313.400	799.100
X4	1316 400	796.700	1326.100	796 700	1329.100	794.800	1338.900	794.800	1341.900	793.700
X4	1351.900	793.700	1354.900	795.500	1364.600	795.500	1367.600	796.200	1376.600	796.200
X4	1379.600	800.300	1389.100	0 000	0.000	0.000	0.000	0.000	0.000	0.000
GR	815.000	0.000	810.400	286.000	810 000	450.000	804.000	708.000	800.600	762.000
GR	801.600	1200.000	804.000	1242.000	801.000	1295.300	799.300	1300.800	799.300	1303.800
GR	799.100	1313.300	799.100	1316.300	796.700	1326.000	796.700	1329.000	794.800	1338.800
GR	794.800	1341.800	793.700	1351 800	793.700	1354.800	795.500	1364.500	795.500	1367.500
GR	796.200	1376.500	796.200	1379.500	800.300	1389.200	803.200	1399 900	820.000	1400.000
SB	0.950	1.500	3.000	0.000	46.500	17.500	284.000	2.000	794.300	793.700
	U/S FACE 1ST R.R. BRIDGE S. OF CORK ST. - CROSS SECTION U									
X1	16629.000	0.000	0.000	0.000	15.000	15.000	15.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	801.000	803.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	794.300	0.000	0.000	0.000	0.000	0.000	803.300	803.300	0.000
BT	41.000	0.000	815.000	0.000	286.000	810 400	0.000	450.000	810.000	0.000
BT	708.000	804.000	0.000	962.000	804.000	0.000	1200.000	804.000	0.000	1242.000
BT	804.000	0 000	1295.300	803.700	0 000	1295.400	803.700	801.200	1300.800	803.700
BT	801.200	1300 900	803.700	0.000	1303.800	803.700	0.000	1303.900	803.700	801.200
BT	1313.300	803.600	801 100	1313 400	803 600	0.000	1316.300	803.600	0.000	1316.400
BT	803.600	801.100	1326.000	803.400	800 900	1326.100	803.400	0.000	1329.000	803.400
BT	0.000	1329.100	803.400	800.900	1338.800	803.300	800.800	1338.900	803.300	0.000
BT	1341.800	803.300	0.000	1341.900	803.300	800.800	1351.800	803.200	800.700	1351.900
BT	803.200	0.000	1354.800	803.200	0.000	1354.900	803.200	800.700	1364.500	803.100
BT	800.600	1364.600	803.100	0.000	1367.500	803.100	0.000	1367.600	803.100	800.600
BT	1376.500	802.900	800.400	1376.600	802.900	0.000	1379 500	802.900	0.000	1379.600
BT	802.900	800.400	1389.100	802.800	800.300	1389.200	802.800	0.000	1399.900	803.200
BT	0.000	1400.000	820.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000

ET	0.000	4.100	0.000	1178.000	1492.000	0.000	0.000	0 000	0.000	0.000
		50 FT U/S 1ST R R S. OF CORK ST.								
X1	16679.000	17.000	1314.000	1349.000	50.000	50.000	50.000	0.000	0 000	0.000
GR	815.000	0.000	810.400	286.000	810.000	450.000	804.000	708.000	800.600	762.000
GR	801.600	1200.000	804.000	1242.000	801.800	1299.000	794.800	1314.000	794 500	1326.000
GR	795.000	1338 000	796.200	1341.000	797.000	1349.000	800.100	1362.000	803.200	1400.000
GR	803.200	1450.000	820.000	1450.000	0.000	0.000	0.000	0.000	0.000	0.000
		100 FT. D/S 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17000.000	15.000	1253.000	1273.000	321.000	321.000	321.000	0.000	0.000	0.000
GR	819.400	0.000	815.000	162.000	813.000	364.000	809.200	600.000	806.000	750.000
GR	805.800	894.000	807.100	1100.000	810.200	1220.000	809.200	1228.000	799.700	1246.000
GR	798 800	1249.000	797.600	1253.000	795.200	1263.000	796.800	1273.000	799.000	1278.000
		D/S 2ND R.R. BRIDGE S. OF CORK ST. -CROSS SECTION V								
X1	17099.000	17.000	1250.600	1275.400	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	794.400	0.000	0.000	0.000	0.000	0.000	807.600	807 600	0.000
GR	819.400	0.000	815.000	162.000	813.000	364.000	809.200	600.000	806.000	750.000
GR	805.800	894.000	807.100	1100.000	810.200	1220.000	809.200	1228.000	809.000	1250.600
GR	794.300	1250.600	793.600	1263.000	795.300	1275.400	809.000	1275.400	810.000	1332.000
GR	815.800	1390.000	818.800	1554.000	0.000	0.000	0 000	0.000	0.000	0.000
		D/S FACE 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17100 000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	807.600	810.800	0.000	0 000	0.000	0.000	0.000
X3	10.000	794.400	0 000	0.000	0.000	0.000	0.000	807.600	807.600	0.000
		U/S FACE 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17117.000	0.000	0.000	0.000	17.000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	807.660	810.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	810.800	810.800	0.000
X1	17118.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	810.800	810.800	0.000
QT	2.000	495.000	495.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	1.000	0.000	0.000	0.000	0.000	0.000
		D/S FACE MONARK POND DAM								
X1	17132.000	0.000	0.000	0.000	14.000	14.000	14.000	0.000	0.000	0.000
X3	10.000	799.900	0.000	0.000	0.000	0.000	0.000	813 000	813.000	0.000
		D/S FACE CROSSWALK 3 FT. U/S MONARCH DAM								
X1	17135.000	5.000	1.000	25.800	3.000	3.000	3.000	0.000	0.000	0.000
X5	4.000	812.250	812.300	812.330	812.350	0.000	0.000	0.000	0.000	0.000
GR	816.000	1.000	802.700	1.100	800.900	13.400	802.800	25.700	816.000	25.800
SB	0.000	1.500	3.000	0.000	24.800	0.000	240.000	0.000	800.900	800 900
		U/S FACE CROSSWALK U/S OF DAM								
X1	17145.000	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	811.500	813.000	0.000	0.000	0.000	0.000	0.000

ET	0.000	0.000	4.100	160.000	330.000	0.000	0.000	0.000	0.000	0.000
X1	17345.000	7.000	110.000	390.000	200.000	200.000	200.000	0.000	0.000	0.000
GR	812.600	0.000	810.000	110.000	802.000	160.000	802.000	225.000	802.000	350.000
GR	810 000	390.000	830.000	500 000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	4.100	730.000	950.000	0.000	0.000	0.000	0.000	0.000
X1	18939.000	13.000	677.000	1002.000	1594.000	1594.000	1594.000	0.000	0 000	0.000
GR	815.800	454.000	811.600	550.000	811.100	577.000	809.700	677 000	809.300	682.000
GR	808.200	732.000	809.100	782.000	808.600	832.000	807.300	872.000	808.600	932.000
GR	806.200	982.000	809.100	1002.000	815.100	1022.000	0.000	0.000	0.000	0.000
ET	0.000	4 100	1.400	494.000	580.000	0.000	0.000	0.000	0.000	0.000
	50 FT. D/S 2ND R.R. BRIDGE N. OF KIGORE RD.									
X1	19845.000	15.000	500.000	561.600	800.000	1000 000	906.000	0.000	0.000	0.000
X4	10.000	812.300	500.100	809.800	510.000	809.900	511.100	809.400	523.400	809.400
X4	524.500	809.200	536.800	809.200	537.900	809.300	549 700	809.300	550.800	812.300
X4	561.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000
GR	815.300	0.000	812.300	0.000	812.300	500.000	809.900	505.000	809.800	509.900
GR	809.800	511.000	809.400	523.300	809.400	524.400	809.200	536.700	809.200	537.800
GR	809.300	549.600	809.300	550.700	809.800	556.000	812.300	561.600	814.600	875.000
	D/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD.									
X1	19895.000	0.000	0 000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	816.000	816.000	0.000
SB	1 050	1.630	3.000	0.000	61.800	4.400	201.000	0.000	809.700	809.700
	U/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD - CROSS SECTION W									
X1	19905.000	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	813 200	816.500	0.000	0.000	0.000	0 000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	816.000	816.000	0.000
BT	22.000	0.000	815.300	0.000	500.000	816.500	0.000	500.100	816.500	813.200
BT	509.900	816.500	813.200	510.000	816.500	0.000	511.000	816.500	0.000	511.100
BT	816.500	813 200	523.300	816.500	813.200	523.400	816.500	0.000	524.400	816.500
BT	0 000	524.500	816.500	813.200	536.700	816.500	813.200	536.800	816.500	0.000
BT	537 800	816.500	0.000	537.900	816.500	813.200	549.600	816.500	813.200	549.700
BT	816.500	0.000	550.700	816.500	0.000	550.800	816.500	813.200	561.500	816.500
BT	813.200	561.600	816.500	0.000	875.000	816.800	0.000	0.000	0.000	0 000
ET	0 000	4 100	0.000	450.000	611.000	0.000	0.000	0.000	0.000	0.000
X1	19955 000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	920.000	1207.000	0.000	0.000	0.000	0.000	0.000
X1	20490.000	13.000	931.000	1006.000	350.000	700.000	535.000	0.000	0.000	0.000
GR	823.200	844.000	819.100	907.000	814.900	915.000	811.900	924.000	810.000	931.000
GR	809.300	968.000	809.300	1006.000	810.300	1018.000	809.500	1061.000	810.400	1124.000
GR	811.000	1199.000	813.900	1292.000	816.700	1312.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0 300	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	475.000	583.000	0.000	0.000	0.000	0.000	0.000

X1	20900.000	12.000	500.000	557.900	650.000	300.000	410.000	0.000	0.000	0.000
X4	10.000	812.000	500.100	809 600	511.000	809.600	512.100	809.500	522.400	809.500
X4	523.500	809.300	534.400	809.300	535.600	810.300	545.800	810 300	546.900	813.400
X4	557.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	814 200	0.000	812.000	500.000	809.600	510 900	809.600	512 000	809.500	522.300
GR	809.500	523.400	809.300	534.300	809.300	535.400	810.300	545.700	810.300	546.800
GR	813.400	557.900	815.000	800.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.030	0.500	1.000	0.000	0.000	0.000	0.000	0.000
	D/S FACE 1ST R.R. BRIDGE N. OF KILGORE RD - CROSS SECTION X									
X1	21000 000	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	818.000	818.000	0.000
SB	1.050	1.610	3.000	0.000	57.900	4.400	257.000	0.000	810.000	810.000
	U/S FACE 1ST R.R. BRIDGE N. OF KILGORE RD									
X1	21010.000	0.000	0.000	0.000	10.000	10.000	10.000	0 000	0.000	0.000
X2	0.000	0.000	1.000	814.800	818.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	818.000	818.000	0.000
BT	22.000	0.000	816.800	0.000	500.000	818.100	0.000	500.100	818 100	814.800
BT	510.900	818.100	814.800	511.000	818.100	0.000	512.000	818.100	0.000	512.100
BT	818.100	814.800	522.300	818.100	814.800	522.400	818.100	0.000	523.400	818 100
BT	0.000	523.500	818.100	814.800	534.300	818.100	814.800	534.400	818.100	0 000
BT	535.400	818.100	0.000	535.600	818.100	814.800	545.700	818.100	814.800	545.800
BT	818.100	0.000	546.800	818.100	0.000	546.900	818.100	814.800	557.800	818.100
BT	814.800	557.900	818.100	0.000	800.000	819.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	450.000	608.000	0 000	0.000	0.000	0.000	0.000
	50 FT. U/S 1ST R.R. BRIDGE N. OF KILGORE RD.									
X1	21060.000	0.000	0.000	0.000	50 000	50.000	50.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100 YR NATURAL RUN SEGMENT 1

00BREAK00

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

*PROF 1

CCHV= 0.300 CEHV= 0.500
*SECNO 0.000
PORTAGE CREEK, CONFLUENCE WITH KALAMAZOO RIVER

0.00	3 20	755.20	0.00	755.20	755 31	0.11	0.00	0.00	753.30
580.	2.	577.	1.	4.	213.	4.	0.	0.	753.60
0.00	0.45	2.71	0.41	0.100	0.035	0.100	0.000	752.00	404.20
0.001138	0.	0.	0.	0	0	0	0.00	90.26	494.46

*SECNO 229.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.40 ELREA= 761.40

229.00	4.28	755.48	0.00	0.00	755.81	0.33	0.39	0.11	755.40
580.	0.	580.	0	0.	126.	0.	1.	0.	755.30
0.01	0.00	4 61	0 00	0.000	0.035	0.000	0.000	751.20	820.85
0.002761	375.	229.	150.	0	0	0	0.00	40.30	861.15

CCHV= 0 300 CEHV= 0.500
*SECNO 230.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 765.60 MAX ELLC= 761.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.40 ELREA= 761 40

D/S FACE MICHIGAN AVE. BRIDGE

230 00	4.28	755.48	0.00	0.00	755.81	0.33	0.00	0.00	755.40
580.	0.	580.	0.	0.	126.	0.	1.	0.	755.30
0.01	0.00	4.62	0.00	0.000	0.020	0.000	0.000	751.20	820.85
0.000907	1.	1.	1.	0	0	0	0.00	40.30	861.15

*SECNO 322.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 766.60 MAX ELLC= 762.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 766.40 ELREA= 766.40

U/S FACE MICHIGAN AVE. BRIDGE

322.00	4.39	755.59	0.00	0.00	755.90	0.31	0.08	0.01	755.40
580.	0.	580	0.	0.	130.	0.	1.	0.	755.30
0.02	0.00	4.47	0.00	0.000	0.020	0.000	0.000	751.20	820.85
0.000812	92.	92.	92.	2	0	0	0.00	40.30	861.15

CCHV= 0.300 CEHV= 0 500
*SECNO 323.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 766 40 ELREA= 766.40

323.00	4.39	755.59	0.00	0.00	755.90	0.31	0.00	0.00	755.40
580	0.	580.	0.	0.	130.	0.	1.	0.	755.30
0.02	0.00	4.47	0.00	0.000	0.035	0.000	0.000	751.20	820.85
0.002484	1.	1.	1.	0	0	0	0.00	40.30	861.15

*SECNO 372.000
50 FT. U/S MICHIGAN AVE. BRIDGE

372.00	5.01	755.61	0.00	0.00	756.18	0.57	0.16	0.13	756.20
580.	0	580	0.	0.	96	0.	1.	0.	755.30
0.02	0.00	6.05	0.01	0.000	0.035	0.080	0 000	750 60	796.16
0.004247	49.	49	49.	2	0	0	0.00	26.35	822..51

*SECNO 669.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.50 ELREA= 762.50

669 00	5 25	756.75	0.00	0 00	757 01	0.25	0.73	0 09	759 50
580.	0.	580.	0	0.	143.	0.	2.	1.	762.50
0.04	0.00	4.04	0.00	0.000	0.035	0.000	0.000	751.50	8.21
0.001606	297.	297.	297.	2	0	0	0.00	35.01	43.22

*SECNO 670.000

3370 NORMAL BRIDGE, NRD= 14 MIN ELTRD= 762.00 MAX ELLC= 761.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.50 ELREA= 762.50

D/S FACE FOOTBRIDGE

670.00	5.26	756 76	0.00	0.00	757.01	0.25	0.00	0.00	759.50
580.	0.	580.	0.	0.	144.	0	2.	1.	762.50
0.04	0.00	4.04	0.00	0.000	0.035	0.000	0.000	751.50	8.21
0.001602	1.	1.	1.	0	0	0	0.00	35.02	43.23

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

*SECNO 674.000

3370 NORMAL BRIDGE, NRD= 14 MIN ELTRD= 762.00 MAX ELLC= 761.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.50 ELREA= 762.50

U/S FACE FOOTBRIDGE

674.00	5.26	756.76	0.00	0.00	757.02	0.25	0.01	0.00	759.50
580.	0.	580.	0.	0.	144.	0.	2.	1.	762.50
0.04	0.00	4.04	0 00	0.000	0 035	0.000	0.000	751.50	8.21
0.001596	4.	4.	4.	0	0	0	0.00	35.03	43.23

*SECNO 675.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.50 ELREA= 762.50

675.00	5.27	756 77	0.00	0 00	757.02	0.25	0.00	0.00	759.50
580.	0.	580.	0.	0.	144.	0.	2.	1.	762.50
0 04	0.00	4.03	0.00	0.000	0.035	0.000	0.000	751.50	8.21
0 001593	1.	1	1.	0	0	0	0.00	35.03	43.24

*SECNO 890.000

D/S FIRST RAILROAD BRIDGE

890.00	5.10	757.10	0.00	0.00	757.40	0.30	0.36	0.02	753.80
580	1.	579.	0.	2.	131.	0.	3.	1.	756.10
0.06	0.51	4.41	0.29	0.080	0.035	0.080	0.000	752.00	891.38
0.001766	215.	215.	215.	0	0	0	0.00	34.62	926.00

*SECNO 989.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.20 ELREA= 761.20

989.00	5.30	757.30	0 00	0.00	757.57	0.28	0.16	0.01	753.80
580.	0.	580.	0.	0.	138.	0.	3.	1.	756.10
0.06	0 00	4.22	0.00	0.000	0.035	0.000	0.000	752.00	892.50
0.001519	99.	99.	99.	2	0	0	0.00	33.00	925.50

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

*SECNO 990.000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 761.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.20 ELREA= 761.20

D/S FACE FIRST RAILROAD BRIDGE

990.00	5.30	757.30	0.00	0.00	757.57	0.28	0.00	0.00	753.80
580.	0.	580.	0	0.	138.	0.	3.	1.	756.10
0.06	0.00	4.22	0.00	0.000	0.035	0.000	0.000	752.00	892.50
0.001805	1.	1.	1.	0	0	0	-0.36	33.00	925.50

*SECNO 1009 000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 761.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764.30

U/S FACE FIRST RAILROAD BRIDGE

1009.00	5.21	757 21	0.00	0.00	757.76	0.55	0.05	0 14	753.80
580.	0.	580.	0.	0.	97.	0.	3.	1.	756.10
0.06	0.00	5.96	0 00	0.000	0.035	0.000	0.000	752.00	897.00
0.003417	19.	19.	19.	2	0	0	-0.25	24.00	921.00

CCHV= 0.600 CEHV= 0.800
*SECNO 1010.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764 30

U/S RAILROAD BRIDGE - CROSS SECTION A

1010 00	5.21	757.21	0.00	0.00	757.76	0.55	0.00	0.00	753.80
580.	0.	580.	0.	0.	97.	0.	3.	1.	756.10
0.06	0.00	5.96	0.00	0.000	0.035	0 000	0.000	752.00	897.00
0.003220	1.	1.	1.	0	0	0	0.00	24.00	921 00

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

100 - YR

4) DOCUMENT TYPE: NATURAL RUN

SEGMENT 2

00BREAK00

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

*PROF 1

CCHV= 0.300 CEHV= 0.500
*SECNO 1009.000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 761.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764.30

U/S FACE FIRST RAILROAD BRIDGE

1009.00	5 21	757.21	0.00	757.21	757.76	0.55	0.00	0.00	753.80
580.	0.	580.	0.	0.	97	0.	0.	0.	756.10
0.00	0.00	5.96	0.00	0.000	0.020	0.000	0.000	752.00	897.00
0.001113	19.	19.	19.	0	0	0	-0.25	24.00	921.00

CCHV= 0.600 CEHV= 0 800
*SECNO 1010.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 764.30 ELREA= 764 30

U/S RAILROAD BRIDGE

1010.00	5.21	757.21	0.00	0.00	757.76	0.55	0.00	0.00	753.80
580.	0.	580	0.	0.	97	0.	0.	0	756.10
0.00	0.00	5.95	0.00	0.000	0.035	0.000	0.000	752.00	897.00
0.003215	1.	1.	1.	0	0	0	0.00	24.00	921.00

*SECNO 1059.000

50 FT. U/S RAILROAD BRIDGE

1059.00	5.75	757 95	0.00	0.00	758.07	0.12	0.05	0.26	756.30
580	1.	564.	14.	5.	197.	29.	0.	0.	755.50
0.00	0.30	2.86	0.49	0.100	0.035	0.100	0.000	752.20	890.42
0.000544	49.	49.	49.	2	0	0	0 00	62 54	952.95

CCHV= 0 300 CEHV= 0 500
*SECNO 1480 000

3470 ENCROACHMENT STATIONS= 802.0 852.0 TYPE= 1 TARGET= 50.000

D/S OF SECOND RAILROAD BRIDGE

1480 00	5.41	758.21	0.00	0.00	758.61	0 41	0.40	0.14	753.80
580.	22.	550	8.	18.	105.	9	2.	1.	755.20
0.03	1.22	5.24	0.83	0.100	0.035	0.100	0.000	752.80	808.97
0.002076	421.	421.	421.	2	0	0	0.00	37.15	846.12

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

*SECNO 1580.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.40 ELREA= 761.40

D/S FACE RAILROAD BRIDGE

1580.00	5.60	758.40	0.00	0.00	758.84	0 44	0.20	0.02	753.80
580	0.	580.	0.	0.	109.	0.	2.	1.	755.20
0.03	0.00	5.31	0.00	0.000	0.035	0.000	0.000	752.80	817.00
0.002019	100.	100.	100.	2	0	0	0.00	23.00	840.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1 87	3.00	0.00	23.20	1.20	147.00	0.00	753.40	753.30

*SECNO 1608.000
CLASS A LOW FLOW

3420 BRIDGE W.S. = 758.40 BRIDGE VELOCITY=, 5.22 CALCULATED CHANNEL AREA=, 110.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	758.90	0.06	0	580.	147.	147	760.10	762.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.80 ELREA= 762.80

U/S FACE RAILROAD BRIDGE - CROSS SECTION B

1608 00	5.56	758.46	0 00	0.00	758.90	0.44	0 07	0.00	753.90
580.	0.	580.	0.	0.	108.	0.	2.	1.	755.30
0.03	0.00	5.35	0.00	0.000	0.035	0.000	0.000	752.90	817.00
0.002074	28.	28.	28.	0	0	0	0.00	23.00	840.00

*SECNO 1658.000

3470 ENCROACHMENT STATIONS= 802.0 852.0 TYPE= 1 TARGET= 50.000

50 FT. U/S RAILROAD BRIDGE

1658 00	5.79	758.69	0.00	0.00	759.03	0.34	0.09	0.03	753.90
580.	24.	547.	9	21.	114.	12	2.	1.	755 30
0.04	1.13	4.81	0.78	0.100	0.035	0.100	0.000	752.90	807 99
0.001575	50.	50.	50.	2	0	0	0.00	38.90	846.89

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

*SECNO 1850.000

3470 ENCROACHMENT STATIONS= 804.0 882.0 TYPE= 1 TARGET= 78.000

100 FT. D/S THIRD RAILROAD BRIDGE

1850.00	6.26	759.06	0.00	0 00	759.31	0.25	0.26	0.03	757.00
580.	8.	567.	5.	14.	141.	10.	3.	1.	757.00
0.05	0 54	4.02	0.50	0 100	0.035	0.100	0.000	752.80	812.90
0 001141	192.	192.	192	2	0	0	0.00	53.60	866.50

*SECNO 1950.000

3470 ENCROACHMENT STATIONS= 770.0 920.0 TYPE= 1 TARGET= 150.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762 00 ELREA= 762.00

D/S FACE RAILROAD BRIDGE - CROSS SECTION C

1950.00	5.74	759.14	0.00	0.00	759.52	0.38	0.14	0.07	753.50
580.	0.	580.	0	0.	117.	0.	3.	1.	757.20
0.06	0.00	4.95	0.00	0.000	0 035	0.000	0.000	753.40	832.00
0.001695	100	100	100.	2	0	0	0 00	24.00	856.00

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.00	1.50	3 00	0.00	24.00	0.00	115.00	0.00	754.20	754.20

*SECNO 1967 000

6070, LOW FLOW BY NORMAL BRIDGE

EGPRS= 759.728 EGLWC= 760.236 ELLC= 759.700 PCWSE= 759 135 ELTRD= 763.000

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 763.00 MAX ELLC= 759.70

3470 ENCROACHMENT STATIONS= 770.0 920.0 TYPE= 1 TARGET= 150.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.00 ELREA= 763.00

U/S FACE RAILROAD BRIDGE

1967.00	5.56	759.16	0.00	0.00	759.57	0.41	0.04	0.01	753.70
580.	0.	580.	0.	0.	113	0.	3.	1.	757.40
0.06	0.00	5.14	0.00	0.000	0.035	0.000	0.000	753.60	832.00
0.002706	17.	17.	17.	3	0	0	-1.28	24.00	856.00

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

*SECNO 2000.000

3470 ENCROACHMENT STATIONS= 853.0 943.0 TYPE= 1 TARGET= 90.000

2000.00	5 98	759.58	0.00	0.00	759 69	0.10	0.03	0.09	756.30
580.	29.	535.	16	53.	199	37.	4.	1.	756.80
0 06	0.55	2.69	0.43	0.100	0.035	0 100	0.000	753.60	853.00
0.000465	33.	33.	33.	2	0	0	0.00	90.00	943.00

*SECNO 2040.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.00 ELREA= 763.00

D/S FACE FOURTH RAILROAD BRIDGE

2040.00	6.04	759.64	0.00	0.00	759.72	0.07	0.02	0.01	758.00
580.	0.	580.	0.	0.	271	0.	4.	1.	759.40
0.07	0.00	2.14	0.00	0.000	0.035	0 000	0.000	753.60	609.00
0.000419	40.	40.	40.	0	0	0	0.00	67.00	676.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.95	2.11	3.00	0.00	59.00	45.00	110.00	0.39	753.60	753.60

*SECNO 2057.000
CLASS A LOW FLOW

3420 BRIDGE W.S.= 758.39 BRIDGE VELOCITY= 7.62 CALCULATED CHANNEL AREA= 76.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0 00	760.03	0.32	0	580.	110.	131.	761.30	763.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.60 ELREA= 763.60

U/S FACE R.R. BRIDGE

2057.00	6.37	759.97	0.00	0.00	760.03	0.06	0.31	0.00	758.00
580.	0.	580.	0.	0.	292	0.	4.	1.	759.40
0.07	0.00	1.99	0.00	0.000	0 035	0.000	0.000	753.60	609.00
0.000325	17.	17	17.	0	0	0	0.00	67.00	676.00

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

*SECNO 2157.000

100 FT. U/S RAILROAD BRIDGE

2157.00	6.38	759 98	0.00	0.00	760.08	0.10	0.04	0.02	756.30
580.	19.	553.	8.	44.	214	21.	5	1.	756.80
0.08	0.44	2.58	0.39	0.100	0.035	0.100	0.000	753.60	855.11
0 000389	150.	100.	70.	2	0	0	0.00	74.82	929.93

*SECNO 2339.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761:00

2339.00	5 93	760.03	0.00	0.00	760.26	0.23	0.11	0.06	758.00
580.	0	580.	0.	0.	152.	0.	6.	1.	757.90
0.09	0.00	3 82	0.00	0.000	0.035	0.000	0.000	754.10	451.00
0.001081	182.	182.	182.	1	0	0	0 00	32.00	483.00

*SECNO 2340.000

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE, NRD= 18 MIN ELTRD= 758.00 MAX ELLC= 760.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

D/S FACE RAILROAD BRIDGE

2340.00	5 65	759.75	0.00	0.00	760.54	0.78	0.00	0.28	758.00
580.	0.	580.	0	0	82.	0.	6.	1.	757.90
0 09	0.00	7.09	0.00	0.000	0.020	0.000	0.000	754.10	451.00
0.005228	1.	1.	1.	2	0	0	-61.16	32.00	483.00

*SECNO 2364.000

3370 NORMAL BRIDGE, NRD= 18 MIN ELTRD= 758.00 MAX ELLC= 760.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.00 ELREA= 762.00

U/S FACE 5TH RAILROAD BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
2364.00	5.87	759.97	0.00	0.00	760.67	0.71	0.12	0.02	758.00
580.	0.	580.	0.	0.	86.	0.	6.	2.	757.90
0.09	0.00	6.75	0.00	0 000	0.020	0.000	0.000	754.10	451.00
0.004601	24	24.	24.	2	0	0	-63.76	32.00	483.00

*SECNO 2365.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 762.00 ELREA= 762.00

2365.00	6.56	760.66	0.00	0.00	760.83	0.18	0.00	0.16	758.00
580.	0	580.	0.	0.	172.	0.	6.	2.	757.90
0.09	0.00	3.37	0.00	0.000	0.020	0 000	0.000	754.10	451.00
0.000233	1.	1.	1.	2	0	0	0 00	32.00	483.00

*SECNO 2376 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

2376.00	8.27	760.67	0.00	0.00	760.84	0 17	0.00	0.00	757.60
580.	0.	580.	0.	0.	175.	0.	6.	2.	756.90
0.10	0.00	3.31	0.00	0.000	0.020	0.000	0.000	752.40	445.00
0.000192	11	11	11.	1	0	0	0.00	28 20	473.20

*SECNO 2377.000

3370 NORMAL BRIDGE, NRD= 19 MIN ELTRD= 762.00 MAX ELLC= 761.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

D/S FACE 6TH RAILROAD BRIDGE

2377.00	8.26	760.66	0.00	0.00	760.85	0.20	0.00	0.01	757.60
580.	0.	580.	0.	0.	164.	0.	6.	2.	756.90
0.10	0.00	3.55	0 00	0.000	0.020	0.000	0.000	752 40	445.00
0.000770	1.	1.	1.	1	0	0	-52.17	28.20	473.20

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

*SECNO 2417.000

3370 NORMAL BRIDGE, NRD= 19 MIN ELTRD= 762.00 MAX ELLC= 761.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

U/S FACE RAILROAD BRIDGE

2417.00	8.29	760.69	0.00	0.00	760.88	0.19	0.03	0.00	757.60
580	0.	580.	0.	0.	164.	0.	6.	2.	756.90
0.10	0.00	3.54	0.00	0.000	0.020	0.000	0.000	752.40	445.00
0.000764	40.	40.	40.	1	0	0	-52.63	28.20	473.20

*SECNO 2418.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 761.00 ELREA= 761.00

2418.00	8.32	760.72	0.00	0.00	760.89	0.17	0.00	0.01	757.60
580.	0.	580	0.	0	176.	0.	6.	2	756.90
0.10	0.00	3.29	0.00	0.000	0.035	0.000	0.000	752.40	445.00
0.000572	1.	1.	1.	2	0	0	0.00	28.20	473.20

*SECNO 2468.000

3470 ENCROACHMENT STATIONS= 445.0 473.2 TYPE= 1 TARGET= 28.200

50 FT. U/S RAILROAD BRIDGE

2468.00	8.36	760.76	0.00	0.00	760.92	0.17	0.03	0.00	757.60
580	0.	580.	0	0.	177.	0.	6.	2.	100000.00
0.10	0.00	3.27	0.00	0.000	0.035	0.000	0.000	752.40	445.00
0.000742	50.	50	50.	0	0	0	0.00	28.20	473.20

*SECNO 2693.000

3470 ENCROACHMENT STATIONS= 1305.0 1360.0 TYPE= 1 TARGET= 55.000

2693.00	10.77	760.97	0.00	0.00	761.02	0.05	0.06	0.04	762.20
580.	0	580.	0.	0.	335	0.	7.	2.	100000.00
0.14	0.00	1.73	0.00	0.000	0.030	0.000	0.000	750.20	1306.79
0.000123	225	225.	225.	2	0	0	0.00	53.21	1360.00

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

*SECNO 2792 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.20 ELREA= 763.20

2792 00	10.79	760.99	0.00	0.00	761.03	0.04	0.01	0.00	763.20
580.	0.	580.	0.	0.	363	0.	8.	2	763 20
0.16	0.00	1.60	0.00	0.000	0.030	0.000	0.000	750.20	1318.00
0.000084	99.	99.	99.	2	0	0	0.00	43.00	1361.00

*SECNO 2793.000

3370 NORMAL BRIDGE, NRD= 15 MIN ELTRD= 761.30 MAX ELLC= 760.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.20 ELREA= 763.20

D/S FACE PITCHER ST. BRIDGE

2793.00	10 79	760 99	0 00	0.00	761.03	0.04	0.00	0.00	763 20
580	0	580.	0.	0.	351.	0.	8.	2.	763 20
0.16	0.00	1.65	0.00	0.000	0.030	0.000	0.000	750.20	1318.00
0 000228	1	1.	1.	0	0	0	-12.41	43.00	1361.00

*SECNO 2845.000

3370 NORMAL BRIDGE, NRD= 15 MIN ELTRD= 761.30 MAX ELLC= 760.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.20 ELREA= 763.20

U/S FACE PITCHER ST. BRIDGE

2845.00	10.80	761.00	0.00	0.00	761.04	0.04	0.01	0.00	763.20
580.	0.	580	0.	0.	351.	0.	9.	2.	763.20
0.17	0 00	1.65	0.00	0.000	0.030	0.000	0.000	750.20	1318.00
0.000228	52.	52.	52.	0	0	0	-12.70	43.00	1361.00

*SECNO 2846 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763 20 ELREA= 763.20

2846.00	10.80	761.00	0.00	0.00	761.04	0.04	0.00	0.00	763.20
580.	0.	580.	0.	0	364.	0.	9.	2.	763.20
0 17	0.00	1.59	0.00	0.000	0.030	0.000	0.000	750.20	1318.00
0.000083	1.	1.	1.	0	0	0	0.00	43.00	1361.00

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

1490 NH CARD USED
*SECNO 3218.000

3470 ENCROACHMENT STATIONS= 968.0 999.0 TYPE= 1 TARGET= 31.000
100 FT D/S GIBSON ST. BRIDGE

3218.00	6.57	760.97	0.00	0.00	761.24	0.27	0.08	0.11	760.40
580.	0.	580.	0.	0.	139.	0.	11.	2.	100000.00
0.19	0.00	4 16	0.00	0.000	0.035	0.000	0.000	754.40	968.00
0.001513	372.	372.	372.	2	0	0	0.00	30.63	998.63

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR NATURAL RUN

SEGMENT 3

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
8789.00	5.32	767.32	0.00	0.00	767.86	0.55	0.01	0.00	770.40
540.	0.	540.	0.	0.	91.	0.	43.	20.	770.50
0.45	0.00	5.93	0.00	0.000	0.035	0.000	0.000	762.00	250.00
0.004246	1.	1	1	0	0	0	0.00	19.00	269.00

CCHV= 0.100 CEHV= 0.300
*SECNO 8889.000
100 FT. D/S OF STRUCTURE U/S OF REED AVE.

8889.00	5.79	767.79	0.00	0.00	768.24	0.45	0.37	0.01	770.40
540.	0.	540.	0.	0.	100.	0	43.	20.	770.50
0.46	0.00	5.40	0.00	0.000	0.035	0.000	0.000	762.00	250.00
0.003244	100.	100.	100.	2	0	0	0.00	19.00	269.00

*SECNO 8989.000
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 780.00 ELREA= 780.00

D/S FACE OF STRUCTURE U/S OF REED AVE. -CROSS SEC. L

8989.00	5.57	767.97	0.00	0.00	768.56	0.59	0.28	0.04	762.60
540	0	540	0	0.	88	0.	43.	20.	763.80
0.46	0.00	6.14	0.00	0.000	0.035	0.000	0.000	762.40	24.50
0.002362	100.	100.	100.	2	0	0	0.00	17.00	41.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2.21	3.00	0.00	17.60	0.00	88.00	0.00	762.80	762.40

*SECNO 9071.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
769.26	768.81	0.00	0.	540	88.	81.	767 40	780.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 780.00 ELREA= 780.00

U/S FACE OF STRUCTURE U/S OF REED AVE. - CROSS SEC. M

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
9071.00	6.11	768.91	0.00	0.00	769.26	0.36	0.71	0.00	764.10
540.	0.	540.	0.	0.	113.	0.	43.	20.	763 40
0.47	0.00	4.79	0.00	0.000	0.035	0.000	0.000	762.80	8.00
0.001280	82.	82	82	2	0	0	0.00	20.00	28.00

*SECNO 9120.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.60 ELREA= 781.60

9120.00	6.72	769.22	0.00	0.00	769.32	0.10	0.03	0.03	785 00
540.	0.	540.	0.	0.	213.	0	43.	20.	765.00
0.47	0.00	2.54	0.00	0.000	0.035	0.000	0 000	762.50	0.18
0.000435	49.	49.	49.	2	0	0	0.00	39.82	40.00

*SECNO 9121.000

3370 NORMAL BRIDGE, NRD= 4 MIN ELTRD= 781.50 MAX ELLC= 771.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.60 ELREA= 781.60

D/S FACE OF 1ST CROSSWALK

9121.00	6 72	769.22	0.00	0.00	769.32	0.10	0.00	0.00	785.00
540.	0.	540.	0.	0.	213.	0.	43.	20	765.00
0.47	0 00	2 54	0.00	0.000	0.035	0.000	0.000	762.50	0.18
0.000435	1.	1.	1.	0	0	0	0.00	39.82	40.00

*SECNO 9129.000

3370 NORMAL BRIDGE, NRD= 4 MIN ELTRD= 781.50 MAX ELLC= 771.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.50 ELREA= 781.50

U/S FACE 1ST CROSSWALK

9129.00	6 73	769.23	0.00	0.00	769.33	0.10	0.00	0.00	785.00
540.	0.	540.	0.	0.	213.	0	43.	20.	765.00
0.47	0.00	2.53	0.00	0.000	0.035	0.000	0.000	762 50	0.18
0.000434	8.	8.	8.	0	0	0	0.00	39.82	40.00

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

*SECNO 9130.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 781.50 ELREA= 781.50

9130.00	6.73	769.23	0.00	0.00	769.33	0.10	0.00	0.00	785.00
540.	0.	540.	0.	0.	213.	0.	43	20.	765.00
0.47	0.00	2.53	0.00	0.000	0.035	0.000	0.000	762.50	0.18
0.000434	1	1.	1.	0	0	0	0.00	39.82	40.00

*SECNO 9340.000

100 FT. D/S 2ND CROSSWALK

9340.00	5.29	769.29	0.00	0.00	769.51	0.23	0.15	0.04	793.10
540.	0.	540.	0.	0.	141.	0.	44.	20.	793.10
0.49	0.00	3.82	0.00	0.000	0.035	0.000	0.000	764.00	17.78
0.001389	210.	210.	210.	2	0	0	0.00	28.62	46.40

*SECNO 9439.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793.10

9439.00	5.43	769.43	0.00	0.00	769.65	0.21	0.13	0.00	793.10
540.	0	540.	0.	0.	146.	0.	45.	20.	793.10
0.50	0.00	3.71	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001274	99.	99.	99.	2	0	0	0.00	28.63	46.40

*SECNO 9440.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 793.10 MAX ELLC= 780.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793.10

D/S FACE 2ND CROSSWALK

9440.00	5.44	769.44	0.00	0.00	769.65	0.21	0.00	0.00	793.10
540.	0.	540.	0.	0.	146.	0.	45.	20.	793.10
0.50	0 00	3.71	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001273	1.	1.	1	0	0	0	0 00	28.63	46.40

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

*SECNO 9451.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 793.10 MAX ELLC= 780.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793 10

	U/S FACE	2ND CROSSWALK							
9451.00	5.45	769.45	0.00	0.00	769.66	0.21	0.01	0.00	793.10
540.	0.	540.	0.	0.	146.	0.	45.	20.	793.10
0.50	0.00	3.70	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001263	11.	11.	11.	0	0	0	0.00	28.63	46.40

*SECNO 9452.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 793.10 ELREA= 793.10

9452.00	5.45	769.45	0.00	0.00	769.66	0.21	0.00	0.00	793.10
540.	0.	540.	0.	0	146.	0.	45.	20.	793.10
0.50	0.00	3.70	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001261	1.	1.	1.	0	0	0	0.00	28.63	46.40

*SECNO 9501.000

75 FT. U/S 2ND CROSSWALK & 150 FT. D/S BRYANT ST.

9501.00	5.52	769.52	0.00	0.00	769.73	0 21	0.06	0.00	793.10
540.	0.	540.	0.	0.	148.	0.	45.	20.	793.10
0.50	0.00	3.65	0.00	0.000	0.035	0.000	0.000	764.00	17.77
0.001216	49.	49.	49.	0	0	0	0.00	28.63	46 40

*SECNO 9650.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

9650.00	5.38	769.58	0.00	0.00	770.13	0.55	0.30	0.10	772.40
540.	0.	540.	0.	0.	91.	0.	45.	20.	772.40
0 51	0.00	5.96	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.004010	149.	149.	149.	2	0	0	0.00	17.50	58.75

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

*SECNO 9651.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 772.40 MAX ELLC= 771.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

D/S FACE BRYANT ST.

9651.00	5.38	769 58	0.00	0.00	770.13	0.55	0.00	0.00	772.40
540.	0.	540.	0.	0.	91.	0.	45.	20.	772.40
0.51	0.00	5 96	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.004005	1.	1.	1	0	0	0	0.00	17.50	58.75

*SECNO 9673.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 772.40 MAX ELLC= 771.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

U/S FACE BRYANT ST - CROSS SECTION N

9673.00	5.49	769.69	0.00	0.00	770.22	0.53	0.09	0.00	772.40
540.	0.	540.	0.	0.	93.	0.	45.	20.	772.40
0.51	0.00	5.83	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0 003768	22.	22.	22.	2	0	0	0.00	17.50	58.75

*SECNO 9674.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 775.00 ELREA= 775.00

9674.00	5.50	769.70	0.00	0.00	770.23	0.53	0 00	0.00	772.40
540.	0.	540.	0.	0.	93	0.	45.	20.	772.40
0.51	0.00	5.82	0.00	0.000	0.035	0.000	0.000	764.20	41.25
0.003761	1.	1.	1.	0	0	0	0.00	17.50	58.75

*SECNO 9685.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 780.00 ELREA= 780.00

D/S FACE OF STRUCTURE U/S OF BRYANT ST.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
9685.00	5.55	769.75	0.00	0.00	770.27	0.52	0.04	0.00	772.40
540.	0.	540.	0.	0.	93.	0.	45.	20.	772 40
0.51	0.00	5.78	0.00	0 000	0.035	0.000	0.000	764.20	41.25
0.003677	11.	11.	11.	0	0	0	0.00	17.50	58.75

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2.03	3.00	0.00	19.00	0.00	90.00	0.00	764.70	764.20

*SECNO 9837.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
770.89	770 67	0.00	0.	540.	90.	97.	769.80	790.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

U/S FACE OF STRUCTURE U/S OF BRYANT ST.

9837.00	5.80	770.50	0.00	0.00	770.89	0.38	0.62	0.00	776.20
540.	0.	540.	0.	0.	109.	0.	46.	20	771.50
0.52	0.00	4.97	0.00	0.000	0.035	0.000	0.000	764.70	40.30
0 002482	152.	152.	152.	2	0	0	0.00	19.40	59.70

*SECNO 9937.000

9937.00	5.34	770.74	0.00	0.00	771.17	0.42	0.27	0.01	776.20
540.	0.	540.	0.	0.	104.	0.	46.	20.	771.50
0.52	0.00	5.21	0.00	0.000	0.035	0.000	0.000	765.40	40.30
0.002892	100.	100.	100.	2	0	0	0.00	19.40	59.70

CCHV= 0.300 CEHV= 0.500
*SECNO 10034.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

10034.00	4.70	771.10	0.00	0.00	771.42	0.32	0.22	0.03	782.00
540.	0.	540.	0.	0.	119.	0.	46.	20.	766.40
0.53	0.00	4.53	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.001811	97.	97.	97	2	0	0	0.00	25.40	25.50

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

*SECNO 10035.000

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 782.00 MAX ELLC= 778.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

D/S FACE 2ND R.R. BRIDGE NORTH OF ALCOTT ST.

10035.00	4.67	771.07	0.00	0.00	771.45	0.38	0.00	0.03	782.00
540.	0.	540	0.	0.	109.	0.	46.	20.	766.40
0.53	0.00	4.96	0.00	0 000	0.035	0.000	0.000	766.40	0.10
0.004419	1.	1.	1.	2	0	0	-9.69	25.40	25.50

*SECNO 10049 000

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 782.00 MAX ELLC= 778.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

U/S FACE 2ND R.R. BRIDGE NORTH OF ALCOTT ST.

10049.00	4.74	771.14	0.00	0.00	771 51	0.37	0.06	0.00	782.00
540.	0.	540.	0.	0.	111.	0.	46	20.	766.40
0.53	0.00	4 88	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.004233	14.	14.	14.	2	0	0	-9.85	25.40	25.50

*SECNO 10050.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.00 ELREA= 782.00

10050.00	4.84	771.24	0 00	0.00	771.54	0.30	0.00	0 02	782.00
540.	0.	540	0.	0.	123.	0.	46.	20.	766.40
0.53	0.00	4.39	0.00	0.000	0.035	0.000	0.000	766.40	0.10
0.001652	1.	1.	1.	2	0	0	0.00	25.40	25.50

*SECNO 10064.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10064 00	4.15	771.05	0.00	0.00	771.81	0.76	0.04	0.23	791.60
540.	0.	540.	0.	0.	77.	0	46.	20.	791.50
0.53	0.00	7.01	0 00	0.000	0.035	0.000	0.000	766.90	0.00
0.006749	14.	14	14.	2	0	0	0.00	19.50	19.50

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

*SECNO 10065.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 781.50 MAX ELLC= 780.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

D/S FACE I-BEAM CROSSING

10065.00	4.15	771.05	0.00	0.00	771.82	0.76	0.01	0.00	791.60
540.	0.	540.	0.	0.	77.	0.	46.	20.	791.50
0.53	0.00	7.01	0.00	0.000	0.029	0 000	0.000	766.90	0.00
0.004626	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10070.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 781.50 MAX ELLC= 780.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

U/S FACE I-BEAM CROSSING

10070.00	4 19	771.09	0.00	0.00	771.84	0.75	0.02	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	46.	20.	791.50
0.53	0.00	6.95	0.00	0.000	0.029	0.000	0.000	766 90	0.00
0.004521	5.	5.	5.	0	0	0	0.00	19.50	19.50

*SECNO 10071 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10071.00	4.20	771.10	0.00	0.00	771.85	0.75	0.01	0.00	791.60
540.	0.	540.	0	0.	78	0.	46.	20.	791.50
0.53	0.00	6.93	0.00	0.000	0 035	0.000	0.000	766.90	0.00
0.006516	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10072.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10072.00	4 22	771.12	0.00	0.00	771.86	0 74	0.01	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	46.	20.	791.50
0.53	0.00	6 91	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.006453	1.	1.	1.	0	0	0	0.00	19 50	19.50

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

*SECNO 10073.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 791.60 MAX ELLC= 790.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

D/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES

10073.00	4.23	771.13	0.00	0.00	771.87	0.74	0 01	0.00	791.60
540.	0.	540.	0.	0.	78.	0.	46.	20.	791.50
0.53	0 00	6.88	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.006387	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10090 000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 791.60 MAX ELLC= 790.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

U/S FACE CONCRETE STRUCTURE BETWEEN R.R. BRIDGES

10090.00	4.42	771.32	0.00	0 00	771.99	0.67	0.10	0.02	791.60
540.	0.	540.	0.	0.	82.	0.	46.	20.	791.50
0.53	0.00	6 56	0.00	0.000	0.035	0 000	0.000	766.90	0.00
0.005562	17.	17	17.	2	0	0	0.00	19.50	19.50

*SECNO 10091.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 791.50 ELREA= 791.50

10091.00	4 43	771.33	0.00	0.00	771.99	0.67	0.01	0.00	791.60
540.	0.	540.	0.	0.	82.	0.	46.	20.	791.50
0.53	0 00	6.56	0.00	0.000	0.035	0.000	0.000	766.90	0.00
0.005541	1.	1.	1.	0	0	0	0.00	19.50	19.50

*SECNO 10099.000

3265 DIVIDED FLOW

10099.00	3.98	771.18	0.00	0.00	772.26	1.08	0.06	0.21	768.70
540.	0.	540.	0.	0.	65	0.	46.	20.	768.70
0.53	0.02	8.34	0.02	0 100	0.035	0.100	0.000	767.20	0.08
0.012821	8.	8	8.	2	0	0	0.00	23.21	29.02

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

*SECNO 10100.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 785.00 MAX ELLC= 782.00

	D/S FACE	1ST R.R.	BRIDGE	NORTH OF	ALCOTT ST.				
10100.00	3.87	771.07	771.06	0.00	772.41	1.34	0.02	0.13	768.70
540.	0.	540.	0.	0.	58.	0.	46.	20.	768.70
0.53	0.02	9.29	0.02	0.100	0.035	0.100	0.000	767.20	0.09
0.024368	1.	1	1.	4	15	0	-3.98	23.20	29.01

*SECNO 10116.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 785 00 MAX ELLC= 782.00

	U/S FACE	1ST R.R.	BRIDGE	NORTH OF	ALCOTT ST.				
10116.00	4.36	772.06	0.00	0 00	772.85	0.79	0.27	0.17	768.70
540.	0.	540.	0.	0	76	0.	46.	20.	768.70
0.53	0.02	7.12	0.02	0.100	0.035	0.100	0.000	767.70	0 08
0.012253	16.	16.	16.	5	0	0	-5.85	23.32	29.02

*SECNO 10117.000

3265 DIVIDED FLOW

10117.00	4.63	772.33	0.00	0.00	772.92	0 58	0.01	0.06	768 70
540.	0.	540.	0.	0.	88.	0.	46.	20.	768.70
0.53	0.01	6 12	0.01	0.100	0.035	0.100	0.000	767.70	0.08
0.005016	1.	1.	1.	2	0	0	0.00	23.36	29.02

*SECNO 10179.000
D/S ALCOTT ST. - CROSS SECTION 0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
10179.00	4.61	772.91	0.00	0.00	773.15	0.24	0.13	0.10	768.30
540.	0.	540.	0.	0	138.	0.	47.	20.	768.30
0.54	0.11	3.92	0.11	0.100	0.035	0.100	0.000	768.30	0.00
0.001111	62.	62.	62.	2	0	0	0.00	30.10	30.10

*SECNO 10180.000

3370 NORMAL BRIDGE, NRD= 16 MIN ELTRD= 787.40 MAX ELLC= 779.30

D/S FACE ALCOTT ST

10180.00	4.58	772.88	0.00	0.00	773.18	0.30	0.00	0.03	768.30
540.	0.	540.	0.	0.	123.	0.	47.	20.	768.30
0.54	0.10	4.38	0.10	0.100	0.035	0.100	0.000	768.30	0.00
0.002077	1.	1.	1.	2	0	0	-14.10	30.10	30.10

*SECNO 10237.000

3370 NORMAL BRIDGE, NRD= 16 MIN ELTRD= 787.40 MAX ELLC= 779.30

U/S FACE ALCOTT ST.

10237.00	4.71	773.01	0.00	0 00	773.30	0 28	0.11	0.01	768.30
540.	0.	540.	0.	0.	127.	0.	47.	20.	768.30
0.54	0.09	4.26	0.09	0.100	0.035	0.100	0.000	768.30	0.00
0.001905	57.	57.	57.	2	0	0	-14 54	30.10	30.10

*SECNO 10238.000

10238.00	4.79	773.09	0.00	0.00	773.32	0.22	0.00	0.02	768.30
540.	0.	540.	0.	0.	143.	0.	47.	20.	768.30
0.54	0.10	3.77	0.10	0.100	0 035	0.100	0.000	768.30	0.00
0.000973	1.	1.	1.	2	0	0	0.00	30.10	30.10

*SECNO 10246.000

5' D/S DAM

10246 00	4.47	773.07	0.00	0.00	773.35	0.28	0.01	0.03	768.60
540.	0.	540.	0.	0.	127.	0.	47.	20.	769.00
0.54	0.01	4.24	0.01	0.100	0 035	0.100	0.000	768.60	0.08
0.001437	8	8.	8.	2	0	0	0.00	29.84	29 92

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

*SECNO 10251.000

D/S FACE DAM (ELLIPTICAL OPENING) - CROSS SECTION P

10251.00	4.47	773.07	0.00	0.00	773.37	0.30	0.00	0.01	790.00
540.	0.	540.	0.	0.	123.	0.	47.	20.	790.00
0.54	0.00	4.40	0.00	0.000	0.017	0.000	0.000	768.60	0.18
0.000536	5.	5.	5.	1	0	0	0.00	29.84	30.02

THIS RUN EXECUTED 29 JUN 89 15:08:36

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

T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM U/S FOOTBRIDGE TO D/S FACE DAM
T3        100-YEAR FLOOD ENCROACHED RUN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.        3.        0.        0.  0.000000      0.00      0.0        0.   763.350     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15.000     0.000    -1.000     0.000     0.000     0 000     0.000     0.000     0.000     0.000
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR NATURAL RVN

SEGMENT 5

00BREAK00

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

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 10317.000

3470 ENCROACHMENT STATIONS= 30.0 192.0 TYPE= 1 TARGET= 162.000
50' U/S DAM - CROSS SECTION Q

10317.00	12.70	788.80	0.00	0.00	788.80	0.00	0.00	0.00	786.40
540.	0.	538.	1.	12.	1254.	32.	0.	0	786.40
0.00	0.04	0.43	0.04	0.120	0.045	0.120	0.000	776.10	30.00
0.000007	66	66.	66.	0	0	0	0.00	162.00	192.00

*SECNO 11674.000
VALLEY SECTION - CROSS SECTION R

11674.00	10.80	788.80	0.00	0.00	788.84	0.04	0.03	0.01	789.20
540.	0.	540	0.	0.	344.	0.	26.	3.	789.40
0.24	0.00	1.57	0.00	0.000	0.045	0.000	0.000	778.00	1246.29
0.000184	1357.	1357.	1357.	0	0	0	0.00	45.06	1291.34

*SECNO 13254.000
VALLEY SECTION - CROSS SECTION S

13254.00	7.00	789.10	0.00	0.00	789.13	0.03	0.29	0.00	787.90
540.	0.	505.	35.	2.	364	110.	40.	6.	785.40
0.57	0.12	1.39	0.32	0.120	0.045	0.120	0.000	782.10	492.18
0.000183	1800	1580.	1200.	2	0	0	0.00	113.56	605.74

*SECNO 13724.000

13724.00	5.12	789.22	0.00	0.00	789.30	0.07	0.15	0.01	789.90
540.	0.	530.	10.	0.	242.	32.	44.	7.	787.40
0.63	0.00	2.19	0.32	0.000	0.045	0.120	0.000	784.10	497.77
0.000749	470.	470.	470.	2	0	0	0.00	98.81	596.58

*SECNO 14194.000

14194.00	3.77	789.77	0.00	0.00	789.95	0.18	0.62	0.03	791.80
540.	0.	539.	1.	0.	159.	2.	46.	8.	789.30
0.67	0.00	3.39	0.25	0.000	0.045	0.120	0.000	786.00	501.31
0.002908	470	470.	470.	2	0	0	0.00	68.88	570.19

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

*SECNO 14600.000
CROSS SECTION T

14600.00	4.82	791.22	0.00	0.00	791.53	0.32	1.55	0.04	788.90
540.	4.	431.	105.	4.	86.	84.	48.	9.	789.00
0.70	0.88	5.01	1.26	0.120	0.045	0.120	0.000	786.40	2082.26
0.005196	406.	406.	406.	2	0	0	0.00	82.61	2164.87

*SECNO 15300.000

15300.00	5.88	794.08	0.00	0.00	794.40	0.32	2.86	0.00	790.70
540.	8.	522.	10.	9.	112.	13.	50.	10.	792.40
0.74	0.91	4.64	0 79	0.120	0.045	0.120	0.000	788.20	2080.54
0.003302	700	700.	700.	1	0	0	0.00	44.45	2124.99

*SECNO 16004.000
100 FT. D/S CORK ST. BRIDGE

16004.00	6.18	796 18	0.00	0.00	796.46	0.28	2.05	0.00	792.50
540.	9.	518	13.	11.	120.	16.	53.	10.	794.20
0.79	0.85	4.30	0.79	0 120	0 045	0 120	0.000	790.00	2080.07
0.002588	704.	704.	704.	3	0	0	0.00	46.13	2126.20

CCHV= 0.500 CEHV= 1.000
*SECNO 16037.000

16037.00	6.16	796.26	0.00	0.00	796.54	0.28	0.09	0.00	792.60
540.	9.	518.	13.	11.	120.	16.	53.	10.	794.30
0.79	0.85	4 31	0.79	0.120	0 045	0.120	0.000	790.10	2080.08
0.002606	33.	33	33.	1	0	0	0.00	46.08	2126.16

*SECNO 16070.000

3470 ENCROACHMENT STATIONS= 2086.0 2113.0 TYPE= 1 TARGET= 27.000

16070.00	6.17	796.37	0.00	0.00	796.68	0.32	0.10	0.04	792.70
540.	0.	540.	0.	0.	120	0.	53.	10.	100000.00
0.79	0.00	4 51	0.00	0.000	0.045	0 000	0.000	790.20	2086.00
0.003611	33.	33.	33.	1	0	0	0.00	27.00	2113.00

*SECNO 16104.000

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

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 798.40 ELREA= 798.40

	D/S FACE	CORK ST.	BRIDGE					
16104.00	6.25	796 55	0.00	0.00	798.75	2.20	0.18	1.89	794.10
540.	0.	540.	0.	0.	45.	0.	53.	11.	794 10
0.79	0.00	11.90	0.00	0.000	0 027	0.000	0.000	790.30	2093.90
0.008858	34.	34.	34.	2	0	0	0.00	8.40	2102.30

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2 44	3.00	0.00	6.00	0.00	50.30	0.00	790.00	790.00

*SECNO 16194.000

3301 HV CHANGED MORE THAN HVINS

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
800.91	798.72	0.00	0	540.	50.	50.	798.40	801.90

3470 ENCROACHMENT STATIONS= 2093.9 2102.3 TYPE= 1 TARGET= 8 400

	U/S FACE	CORK ST.	BRIDGE						
16194.00	9.82	800 12	0.00	0.00	800.91	0.80	2 17	0.00	794.10
540.	0.	540	0.	0.	75.	0.	53	11.	100000.00
0.80	0.00	7.16	0.00	0.000	0.027	0.000	0.000	790.30	2093.90
0.003897	90.	90.	90.	2	0	0	0.00	8 40	2102.30

CCHV= 0.300 CEHV= 0 500
*SECNO 16244.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 2045.0 2180.0 TYPE= 1 TARGET= 135.000

16244.00	9 83	801.13	0.00	0.00	801.16	0.04	0.02	0 23	792.50
540.	22.	421	97.	60.	244.	253.	53.	11.	794.20
0.81	0.36	1.73	0.38	0.120	0.045	0.120	0 000	791 30	2072.08
0.000153	50.	50.	50.	2	0	0	0.00	107.92	2180.00

*SECNO 16514.000

3470 ENCROACHMENT STATIONS= 1238.0 1442.0 TYPE= 1 TARGET= 204.000

100 FT. D/S 1ST R.R. BRIDGE S. OF CORK ST.

16514 00	8.67	801.17	0.00	0.00	801.22	0.05	0.05	0.01	793.70
540.	22.	483.	35.	52.	256.	89	56.	11.	796.00
0.85	0.43	1.89	0.40	0 120	0.045	0.120	0.000	792.50	1300.16
0.000242	300.	270.	250.	2	0	0	0.00	84.73	1384.89

*SECNO 16614.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 803.30 ELREA= 803.30

D/S FACE 1ST R.R BRIDGE S. OF CORK ST.

16614.00	7.53	801.23	0.00	0.00	801 25	0 03	0.02	0.01	801.00
540.	0.	540.	0.	0.	422.	0.	57.	11.	800 30
0.87	0.00	1.28	0.00	0.000	0.045	0.000	0.000	793.70	1295.30
0.000208	100.	100.	100.	2	0	0	0.00	93.90	1389.20

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.95	1.50	3.00	0.00	46.50	17.50	284.00	2.00	794.30	793.70

*SECNO 16629.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
801.31	801.26	0.01	0.	540.	284.	284.	801.00	803.30

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 803.30 ELREA= 803.30

	U/S FACE 1ST R R.	BRIDGE S.	OF CORK ST.	- CROSS SECTION U				
16629.00	6.98	801.28	0.00	0.00	801.31	0.03	0.06	0.00	801.00
540.	0.	540	0.	0.	420.	0.	57.	11.	800.30
0.87	0.00	1.29	0.00	0.000	0.045	0.000	0.000	794.30	1295.30
0.000211	15.	15	15.	2	0	0	0.00	93.90	1389.20

*SECNO 16679.000

3470 ENCROACHMENT STATIONS= 1178.0 1492 0 TYPE= 1 TARGET= 314.000

50 FT. U/S	1ST R.R.	S.	OF CORK ST.					
16679.00	6.77	801 27	0.00	0.00	801.35	0.08	0.01	0 03	794.80
540.	24.	496.	20.	45.	212.	44.	58.	12.	797.00
0 88	0.54	2.34	0.45	0.120	0.045	0.120	0.000	794.50	1300.13
0.000458	50.	50.	50.	2	0	0	0.00	76.25	1376.38

*SECNO 17000.000

3280 CROSS SECTION 17000.00 EXTENDED 2.43 FEET

100 FT. D/S	2ND R.R.	BRIDGE S.	OF CORK ST.						
17000.00	6.23	801.43	0.00	0.00	801.76	0.32	0.28	0.12	797.60
540.	24.	498.	18.	22.	105.	18.	60.	12.	796.80
0.90	1.09	4.75	1.03	0.120	0.045	0.120	0.000	795.20	1242.72
0.002344	321.	321	321.	2	0	0	0.00	35.28	1278.00

*SECNO 17099.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 807.60 ELREA= 807.60

D/S 2ND R.R	BRIDGE S.	OF CORK ST	-CROSS SECTION V					
17099.00	7.42	801.82	0.00	0.00	801.97	0.14	0.15	0.05	809.00
540.	0.	540	0	0.	179.	0.	60.	12.	809.00
0.91	0.00	3.02	0.00	0.000	0.045	0.000	0.000	794.40	1250.60
0.001095	99.	99.	99.	2	0	0	0.00	24.80	1275.40

*SECNO 17100.000

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

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 810.80 MAX ELLC= 807.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 807.60 ELREA= 807.60

D/S	FACE	2ND R	R. BRIDGE S.	OF CORK	ST.				
17100.00	7.42	801.82	0.00	0.00	801.97	0.14	0.00	0.00	809.00
540.	0.	540.	0.	0.	179.	0.	60.	12.	809.00
0.91	0.00	3.02	0.00	0.000	0.045	0.000	0.000	794.40	1250.60
0.001095	1	1.	1.	0	0	0	0.00	24.80	1275.40

*SECNO 17117.000

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 810.80 MAX ELLC= 807.66

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 810.80 ELREA= 810.80

U/S	FACE	2ND R.	R. BRIDGE S.	OF CORK	ST.				
17117.00	7.44	801.84	0.00	0.00	801.99	0.14	0.02	0.00	809.00
540.	0	540.	0.	0.	179.	0.	60.	12.	809.00
0.91	0.00	3.02	0.00	0.000	0.045	0.000	0.000	794.40	1250.60
0.001087	17.	17.	17.	0	0	0	0.00	24.80	1275.40

*SECNO 17118.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 810.80 ELREA= 810.80

17118.00	7.45	801.85	0.00	0.00	801.99	0.14	0.00	0.00	809.00
540.	0.	540.	0.	0.	179	0.	60.	12.	809.00
0.91	0.00	3.02	0.00	0.000	0.045	0.000	0.000	794.40	1250.60
0.001086	1	1	1.	0	0	0	0.00	24.80	1275.40

CCHV= 0.500 CEHV= 1.000
*SECNO 17132.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

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

3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 813.00 ELREA= 813.00

	D/S FACE	MONARK POND	DAM						
17132.00	2.30	802.20	802 20	0.00	803.37	1.17	0.04	1.02	809.00
495.	0.	495	0.	0.	57.	0	60.	12.	809.00
0.91	0.00	8.66	0 00	0 000	0.045	0.000	0.000	799.90	1250.60
0.028373	14.	14.	14.	2	17	0	0 00	24.80	1275.40

*SECNO 17135.000
WATER EL=X5 CARD= 812.250

	D/S FACE	CROSSWALK	3 FT. U/S	MONARCH	DAM				
17135.00	11.35	812 25	0.00	0.00	812.31	0.06	0.00	0.55	816.00
495.	0.	495.	0.	0.	257.	0.	60	12.	816.00
0.91	0.00	1.93	0.00	0.000	0.045	0.000	0.000	800.90	1.03
0.000322	3.	3	3	0	0	0	0.00	24.74	25.77

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.50	3.00	0.00	24.80	0.00	240.00	0.00	800.90	800.90

*SECNO 17145.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
812 35	812.31	0.00	0.	495.	240	263.	811.50	813.00

	U/S FACE	CROSSWALK	U/S OF	DAM					
17145 00	11.39	812 29	0.00	0.00	812.35	0.06	0.04	0.00	816.00
495.	0.	495.	0.	0.	258.	0.	60.	12.	816.00
0 91	0.00	1 92	0.00	0.000	0.045	0 000	0.000	800.90	1.03
0.000318	10	10.	10.	2	0	0	0.00	24.74	25.77

*SECND 17345.000

17345.00	10.38	812 38	0.00	0.00	812.38	0.00	0.00	0.03	810 00
495.	2.	492	0.	120.	2546.	16.	67	13.	810.00
1.20	0.02	0.19	0.02	0 120	0.045	0 120	0.000	802.00	9.39
0.000002	200.	200	200.	2	0	0	0 00	393.69	403.08

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

*SECNO 18939.000

18939.00	6.18	812.38	0.00	0.00	812.39	0.00	0.01	0.00	809.70
495.	18.	476	1.	233.	1347.	18.	145.	29.	809.10
2.49	0.08	0.35	0.07	0.120	0.045	0.120	0.000	806.20	532.07
0.000017	1594.	1594.	1594.	2	0	0	0.00	480.88	1012.95

*SECNO 19845.000

3470 ENCROACHMENT STATIONS= 494.0 580.0 TYPE= 1 TARGET= 86.000

50 FT D/S 2ND R.R. BRIDGE N. OF KIGORE RD.

19845.00	3.24	812.44	0.00	0.00	812.58	0.14	0.05	0.14	812.30
495.	0.	495.	0.	1.	166.	1.	163	35.	812.30
2.58	0.15	2.98	0.10	0.120	0.045	0.120	0.000	809.20	494.00
0.002231	800.	906.	1000.	2	0	0	0.00	86.00	580.00

*SECNO 19895.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 816.00 ELREA= 816.00

D/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD.

19895.00	3.36	812.56	0.00	0.00	812.68	0.13	0.10	0.01	812.30
495.	0.	495	0	0.	173.	0.	163.	35.	812.30
2.58	0.00	2.86	0.00	0.000	0.045	0.000	0.000	809.20	500.00
0.001929	50.	50.	50.	2	0	0	0.00	61.60	561.60

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1.63	3.00	0.00	61.80	4.40	201.00	0.00	809.70	809.70

*SECNO 19905.000
CLASS A LOW FLOW

3420 BRIDGE W.S = 812.54 BRIDGE VELOCITY= 3.04 CALCULATED CHANNEL AREA= 163.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	812.70	0.02	0.	495.	201.	201.	813.20	816.50

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 816.00 ELREA= 816.00

	U/S FACE	2ND R.R.	BRIDGE N.	OF KIGORE RD.	- CROSS SECTION W				
19905.00	3.37	812.57	0.00	0.00	812.70	0.13	0.02	0.00	812.30
495.	0	495.	0	0.	174.	0	163.	35.	812.30
2.58	0.00	2.84	0.00	0.000	0.045	0.000	0.000	809.20	500.00
0.001891	10.	10.	10.	0	0	0	0.00	61.60	561.60

*SECNO 19955.000

3470 ENCROACHMENT STATIONS= 450.0 611.0 TYPE= 1 TARGET= 161.000

19955.00	3.48	812.68	0.00	0.00	812.79	0.11	0.09	0.01	812.30
495.	5.	488.	2.	19.	181.	10.	164.	35.	812.30
2.59	0.26	2.70	0.17	0.120	0.045	0.120	0.000	809.20	450.00
0.001638	50.	50.	50.	1	0	0	0.00	161.00	611.00

*SECNO 20490.000

3470 ENCROACHMENT STATIONS= 920.0 1207.0 TYPE= 1 TARGET= 287.000

20490.00	3.78	813.08	0.00	0.00	813.09	0.01	0.25	0.05	810.00
495.	4.	293.	197.	17.	270.	566.	171.	38.	809.30
2.79	0.26	1.09	0.35	0.120	0.045	0.120	0.000	809.30	920.49
0.000196	350.	535.	700.	2	0	0	0.00	286.51	1207.00

CCHV= 0.100 CEHV= 0.300
*SECNO 20900.000

3470 ENCROACHMENT STATIONS= 475.0 583.0 TYPE= 1 TARGET= 108.000

20900.00	3.88	813.18	0.00	0.00	813.30	0.12	0.17	0.03	812.00
495.	15.	480.	0	28.	169.	0.	176.	40.	813.40
2.83	0.54	2.83	0.00	0.120	0.045	0.000	0.000	809.30	475.00
0.001750	650.	410.	300.	2	0	0	0.00	82.02	557.02

CCHV= 0.500 CEHV= 1.000
*SECNO 21000.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 818.00 ELREA= 818.00

	D/S FACE 1ST R.R	BRIDGE N. OF KILGORE RD. - CROSS SECTION X						
21000.00	3.98	813.28	0.00	0.00	813.41	0.12	0.11	0.00	812.00
495	0.	495.	0.	0.	175.	0.	176.	40.	813.40
2.84	0.00	2.82	0.00	0.000	0.030	0.000	0.000	809.30	500.00
0.000746	100	100.	100.	1	0	0	0.00	57.37	557.37

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1.61	3.00	0.00	57.90	4.40	257.00	0.00	810.00	810.00

*SECNO 21010.000
CLASS A LOW FLOW

3420 BRIDGE W.S.= 813 26 BRIDGE VELOCITY=, 2.83 CALCULATED CHANNEL AREA=, 175.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	813.42	0.02	0.	495.	257.	257	814.80	818.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 818.00 ELREA= 818.00

	U/S FACE 1ST R.R.	BRIDGE N. OF KILGORE RD.						
21010 00	4.00	813 30	0.00	0.00	813.42	0.12	0.01	0.00	812 00
495.	0	495	0.	0	177	0.	176.	40.	813.40
2.84	0.00	2 80	0.00	0 000	0.030	0.000	0.000	809.30	500.00
0.000730	10.	10.	10.	0	0	0	0.00	57.45	557.45

*SECNO 21060 000

3470 ENCROACHMENT STATIONS= 450.0 608 0 TYPE= 1 TARGET= 158.000

	50 FT. U/S 1ST R.R	BRIDGE N. OF KILGORE RD.						
21060.00	4.06	813.36	0 00	0.00	813.47	0.10	0.03	0 01	812.00
495.	22.	473.	0.	63.	180.	0.	176	40.	813.40
2.84	0.35	2.62	0.00	0 120	0.030	0.000	0.000	809 30	450.00
0.000625	50.	50.	50.	2	0	0	0.00	107.68	557.68

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

100-YR

4) DOCUMENT TYPE: SUMMARY

SEGMENT 2

00BREAK00

THIS RUN EXECUTED 26 JUN 89 10:43:19

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
1009.000	757.21	0.00	757.76	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1009.000	757.27	0.00	757.80	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1010.000	757.21	0.00	757.76	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1010.000	757.27	0.00	757.81	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1059.000	757.95	0.00	758.07	62.54	1.37	564.49	14.14	0.00	0.00	896.00	933.00	0.00
1059.000	757.98	0.04	758.11	62.53	1.45	564.08	14.48	62.53	890.42	896.00	933.00	952.95
1480.000	758.21	0.00	758.61	37.15	22.29	550.08	7.63	50.00	802.00	817.00	840.00	852.00
1480.000	758.25	0.04	758.69	25.83	11.22	568.77	0.00	0.04	814.17	817.00	840.00	840.00
1580.000	758.40	0.00	758.84	23.00	0.00	580.00	0.00	0.00	0.00	817.00	840.00	0.00
1580.000	758.51	0.12	758.93	23.00	0.00	580.00	0.00	0.00	817.00	817.00	840.00	840.00
1608.000	758.46	0.00	758.90	23.00	0.00	580.00	0.00	0.00	0.00	817.00	840.00	0.00
1608.000	758.56	0.10	758.99	23.00	0.00	580.00	0.00	0.00	0.00	817.00	840.00	0.00
1658.000	758.69	0.00	759.03	38.90	24.29	546.62	9.09	50.00	802.00	817.00	840.00	852.00
1658.000	758.74	0.05	759.10	27.15	16.84	563.16	0.00	0.03	812.85	817.00	840.00	840.00
1850.000	759.06	0.00	759.31	53.60	7.70	567.35	4.95	78.00	804.00	829.00	857.00	882.00
1850.000	759.18	0.11	759.41	53.60	8.72	565.68	5.60	53.60	812.90	829.00	857.00	866.50
1950.000	759.14	0.00	759.52	24.00	0.00	580.00	0.00	150.00	770.00	832.00	856.00	920.00
1950.000	759.24	0.10	759.60	24.00	0.00	580.00	0.00	150.00	770.00	832.00	856.00	920.00
1967.000	759.16	0.00	759.57	24.00	0.00	580.00	0.00	150.00	770.00	832.00	856.00	920.00
1967.000	759.26	0.10	759.65	24.00	0.00	580.00	0.00	150.00	770.00	832.00	856.00	920.00
2000.000	759.58	0.00	759.69	90.00	28.84	535.08	16.08	90.00	853.00	879.00	917.00	943.00
2000.000	759.65	0.07	759.77	57.53	19.76	551.76	8.48	0.04	866.85	879.00	917.00	924.38

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
2040.000	759.64	0.00	759.72	67.00	0.00	580.00	0.00	0.00	0.00	609.00	676.00	0.00
2040 000	759.73	0.08	759.80	67.00	0.00	580.00	0.00	0.00	609.00	609.00	676.00	676.00
2057.000	759.97	0.00	760.03	67.00	0.00	580.00	0.00	0.00	0.00	609.00	676.00	0.00
2057.000	760 07	0.10	760.12	67.00	0.00	580.00	0.00	0.00	0.00	609.00	676.00	0.00
2157.000	759 98	0.00	760.08	74 82	19.22	552.72	8 06	0.00	0.00	879.00	917 00	0.00
2157.000	760.08	0.10	760.18	43.85	10.24	569.76	0.00	0.03	873.15	879.00	917.00	917 00
2339.000	760.03	0.00	760.26	32.00	0.00	580.00	0.00	0.00	0.00	451.00	483.00	0.00
2339.000	760 14	0.11	760.36	32.00	0.00	580.00	0.00	0.00	451.00	451.00	483.00	483.00
2340.000	759.75	0.00	760.54	32.00	0.00	580.00	0.00	0.00	0.00	451.00	483.00	0.00
2340.000	759.89	0.13	760.62	32.00	0.00	580.00	0.00	0.00	451.00	451 00	483.00	483.00
2364.000	759.97	0.00	760.67	32.00	0.00	580 00	0.00	0.00	0.00	451 00	483.00	0.00
2364.000	760.07	0.10	760.76	32.00	0.00	580.00	0 00	0.00	0.00	451.00	483.00	0.00
2365.000	760.66	0.00	760.83	32.00	0 00	580.00	0.00	0.00	0.00	451.00	483.00	0.00
2365.000	760.74	0.08	760.91	32.00	0.00	580.00	0.00	0 00	451.00	451.00	483.00	483.00
2376.000	760.67	0 00	760.84	28.20	0.00	580.00	0.00	0.00	0.00	445.00	473.20	0.00
2376.000	760.75	0.08	760.91	28.20	0.00	580.00	0.00	0.00	445.00	445.00	473.20	473.20
2377.000	760.66	0.00	760.85	28.20	0 00	580.00	0.00	0.00	0.00	445.00	473.20	0.00
2377.000	760.74	0.08	760.93	28 20	0.00	580.00	0.00	0.00	445.00	445.00	473.20	473.20
2417 000	760.69	0.00	760.88	28.20	0.00	580.00	0.00	0.00	0.00	445.00	473.20	0 00
2417.000	760.77	0.08	760.96	28.20	0.00	580.00	0.00	0.00	445.00	445.00	473.20	473.20
2418.000	760.72	0.00	760.89	28.20	0.00	580.00	0.00	0.00	0.00	445.00	473.20	0 00
2418.000	760 80	0.08	760.97	28.20	0.00	580.00	0.00	0.00	445.00	445.00	473.20	473.20
2468.000	760.76	0.00	760.92	28.20	0.00	580.00	0.00	28.20	445.00	445.00	473.20	473.20
2468.000	760.84	0.08	761.00	28.20	0.00	580.00	0.00	0 15	445.00	445.00	473.20	473.20
2693.000	760.97	0.00	761 02	53.21	0.00	580 00	0.00	55.00	1305.00	1305.00	1360.00	1360.00
2693.000	761.04	0.07	761.09	53.32	0.00	580.00	0.00	0.00	1305.00	1305.00	1360 00	1360.00
2792.000	760.99	0.00	761.03	43.00	0.00	580.00	0.00	0.00	0.00	1318.00	1361.00	0.00
2792.000	761.06	0.07	761.10	43.00	0.00	580.00	0 00	0.00	1318.00	1318.00	1361.00	1361.00
2793.000	760.99	0 00	761.03	43.00	0.00	580.00	0.00	0.00	0.00	1318.00	1361.00	0.00
2793.000	761.06	0 07	761.10	43.00	0.00	580 00	0.00	0.00	0.00	1318.00	1361.00	0.00
2845.000	761.00	0.00	761.04	43.00	0.00	580.00	0.00	0.00	0.00	1318.00	1361.00	0.00
2845.000	761.07	0 07	761.11	43.00	0.00	580.00	0.00	0.00	0.00	1318.00	1361.00	0.00
2846.000	761.00	0.00	761.04	43.00	0.00	580.00	0.00	0 00	0.00	1318.00	1361.00	0.00
2846.000	761.08	0.07	761.12	43.00	0 00	580.00	0 00	0 00	1318.00	1318.00	1361.00	1361.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
3218.000	760.97	0.00	761.24	30.63	0.00	580.00	0.00	31.00	968.00	968.00	999.00	999.00
3218.000	761.05	0.08	761 31	30 72	0.00	580.00	0.00	0.00	968.00	968.00	999.00	999.00

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
1009.000	0.00	763.00	761.20	752.00	580.00	757.21	0.00	757.76	11.13	5.96	97.39	173.82
1009.000	0.00	763.00	761.20	752.00	580.00	757.27	0.00	757.80	10.64	5.87	98.83	177.85
1010.000	1.00	0.00	0.00	752.00	580.00	757.21	0.00	757.76	32.15	5.95	97.42	102.28
1010.000	1.00	0.00	0.00	752.00	580.00	757.27	0.00	757.81	30.62	5.87	98.86	104.81
1059.000	49.00	0.00	0.00	752.20	580.00	757.95	0.00	758.07	5.44	2.86	231.05	248.57
1059.000	49.00	0.00	0.00	752.20	580.00	757.98	0.00	758.11	5.32	2.84	233.26	251.50
1480.000	421.00	0.00	0.00	752.80	580.00	758.21	0.00	758.61	20.76	5.24	132.44	127.30
1480.000	421.00	0.00	0.00	752.80	580.00	758.25	0.00	758.69	25.42	5.38	116.28	115.03
1580.000	100.00	0.00	0.00	752.80	580.00	758.40	0.00	758.84	20.19	5.31	109.23	129.07
1580.000	100.00	0.00	0.00	752.80	580.00	758.51	0.00	758.93	22.19	5.18	111.94	123.13
1608.000	28.00	762.60	760.10	752.90	580.00	758.46	0.00	758.90	20.74	5.35	108.36	127.37
1608.000	28.00	762.60	760.10	752.90	580.00	758.56	0.00	758.99	19.33	5.24	110.66	131.90
1658.000	50.00	0.00	0.00	752.90	580.00	758.69	0.00	759.03	15.75	4.81	146.73	146.17
1658.000	50.00	0.00	0.00	752.90	580.00	758.74	0.00	759.10	19.36	4.91	130.39	131.83
1850.000	192.00	0.00	0.00	752.80	580.00	759.06	0.00	759.31	11.41	4.02	165.21	171.73
1850.000	192.00	0.00	0.00	752.80	580.00	759.18	0.00	759.41	10.54	3.92	171.20	178.64
1950.000	100.00	0.00	0.00	753.40	580.00	759.14	0.00	759.52	16.95	4.95	117.24	140.89
1950.000	100.00	0.00	0.00	753.40	580.00	759.24	0.00	759.60	15.81	4.84	119.72	145.89
1967.000	17.00	763.00	759.70	753.60	580.00	759.16	0.00	759.57	27.06	5.14	112.91	111.50
1967.000	17.00	763.00	759.70	753.60	580.00	759.26	0.00	759.65	25.43	5.03	115.33	115.02
2000.000	33.00	0.00	0.00	753.60	580.00	759.58	0.00	759.69	4.65	2.69	288.79	268.93
2000.000	33.00	0.00	0.00	753.60	580.00	759.65	0.00	759.77	4.73	2.74	253.11	266.64
2040.000	40.00	0.00	0.00	753.60	580.00	759.64	0.00	759.72	4.19	2.14	270.63	283.38
2040.000	40.00	0.00	0.00	753.60	580.00	759.73	0.00	759.80	3.95	2.10	275.96	291.82
2057.000	17.00	763.60	761.30	753.60	580.00	759.97	0.00	760.03	3.25	1.99	291.98	321.61
2057.000	17.00	763.60	761.30	753.60	580.00	760.07	0.00	760.12	3.02	1.94	298.68	334.00
2157.000	100.00	0.00	0.00	753.60	580.00	759.98	0.00	760.08	3.89	2.58	278.42	294.14
2157.000	100.00	0.00	0.00	753.60	580.00	760.08	0.00	760.18	4.34	2.62	236.97	278.29
2339.000	182.00	0.00	0.00	754.10	580.00	760.03	0.00	760.26	10.81	3.82	151.84	176.44
2339.000	182.00	0.00	0.00	754.10	580.00	760.14	0.00	760.36	10.96	3.74	155.14	175.16
2340.000	1.00	758.00	760.40	754.10	580.00	759.75	0.00	760.54	52.28	7.09	81.82	80.21
2340.000	1.00	758.00	760.40	754.10	580.00	759.89	0.00	760.62	50.46	6.87	84.47	81.65

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	01K
2364.000	24.00	758 00	760 40	754.10	580.00	759.97	0.00	760.67	46.01	6.75	85.94	85.51
2364.000	24.00	758.00	760.40	754.10	580 00	760.07	0.00	760.76	52.42	6.64	87.34	80.11
2365.000	1.00	0.00	0.00	754.10	580.00	760.66	0.00	760.83	2.33	3.37	171.91	379.77
2365.000	1.00	0.00	0.00	754.10	580.00	760.74	0.00	760.91	2.47	3.32	174.50	368.72
2376 000	11.00	0.00	0.00	752.40	580.00	760.67	0.00	760 84	1.92	3.31	175.17	418.94
2376.000	11.00	0.00	0.00	752.40	580 00	760.75	0.00	760.91	2.17	3.28	177.01	393 71
2377.000	1.00	762.00	761.00	752.40	580 00	760.66	0.00	760.85	7.70	3.55	163.52	209.08
2377.000	1.00	762.00	761.00	752 40	580.00	760.74	0.00	760.93	7.46	3.50	165.61	212.28
2417.000	40.00	762.00	761.00	752.40	580.00	760.69	0.00	760.88	7.64	3.54	164.02	209.84
2417.000	40.00	762.00	761.00	752.40	580.00	760.77	0.00	760 96	7.40	3.49	166 22	213.22
2418.000	1.00	0.00	0.00	752.40	580.00	760.72	0.00	760.89	5.72	3.29	176.49	242.41
2418.000	1 00	0.00	0.00	752.40	580.00	760.80	0.00	760.97	6.45	3.25	178.71	228.32
2468.000	50.00	0.00	0.00	752.40	580.00	760.76	0.00	760.92	7.42	3.27	177.43	212.90
2468.000	50.00	0.00	0.00	752.40	580.00	760.84	0.00	761.00	7.17	3.23	179.58	216.61
2693.000	225.00	0.00	0.00	750.20	580.00	760 97	0.00	761.02	1.23	1.73	335.12	522.24
2693.000	225.00	0.00	0.00	750.20	580.00	761.04	0 00	761.09	1.19	1.71	339.08	531 33
2792 000	99.00	0.00	0.00	750.20	580.00	760.99	0.00	761.03	0.84	1.60	363.31	634.09
2792.000	99.00	0.00	0.00	750.20	580.00	761.06	0.00	761.10	0.82	1.58	366.11	641.24
2793.000	1.00	761.30	760.70	750.20	580.00	760.99	0.00	761.03	2.28	1.65	350.90	383.78
2793.000	1.00	761.30	760.70	750.20	580.00	761.06	0.00	761 10	2.28	1.65	350.90	383.78
2845.000	52.00	761.30	760.70	750.20	580.00	761.00	0.00	761.04	2.28	1.65	350.90	383.78
2845.000	52.00	761.30	760 70	750.20	580.00	761.07	0.00	761 11	2.28	1.65	350.90	383.78
2846 000	1.00	0.00	0.00	750.20	580.00	761.00	0.00	761.04	0.83	1.59	363.77	635.28
2846.000	1.00	0.00	0.00	750.20	580.00	761.08	0.00	761.12	0.81	1.58	366.91	643.29
3218.000	372 00	0.00	0.00	754.40	580.00	760.97	0.00	761.24	15.13	4.16	139.42	149.13
3218.000	372.00	0.00	0.00	754.40	580.00	761.05	0 00	761.31	14.41	4.09	141.77	152.77

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1009 000	580.00	757.21	0.00	0.00	0.00	24.00	0.00
1009.000	580.00	757.27	0.06	0.00	0.00	24.00	0.00
1010.000	580.00	757.21	0.00	0.00	0.00	24.00	1.00
1010.000	580.00	757.27	0.06	0.00	0.00	24.00	1.00
1059.000	580.00	757.95	0.00	0.74	0 00	62.54	49.00
1059 000	580.00	757.98	0.04	0.71	0.04	62.53	49.00
1480.000	580.00	758.21	0.00	0.26	0.00	37 15	421.00
1480.000	580.00	758.25	0.04	0.26	0.04	25.83	421.00
1580.000	580.00	758.40	0.00	0.19	0.00	23 00	100.00
1580.000	580.00	758.51	0.12	0 27	0.12	23.00	100 00
1608.000	580.00	758.46	0.00	0 06	0.00	23.00	28.00
1608.000	580.00	758 56	0.10	0.04	0.10	23.00	28.00
1658.000	580.00	758.69	0.00	0.23	0.00	38.90	50.00
1658.000	580.00	758.74	0.05	0.18	0.05	27.15	50.00
1850.000	580.00	759.06	0.00	0.38	0.00	53.60	192.00
1850.000	580.00	759.18	0.11	0.44	0.11	53.60	192 00
1950.000	580.00	759.14	0.00	0.07	0.00	24.00	100.00
1950.000	580.00	759.24	0.10	0.06	0.10	24.00	100 00
1967.000	580.00	759.16	0.00	0 02	0.00	24.00	17.00
1967.000	580.00	759.26	0.10	0.02	0.10	24.00	17 00
2000.000	580.00	759.58	0.00	0 43	0.00	90.00	33 00
2000.000	580.00	759.65	0.07	0.40	0.07	57.53	33.00
2040.000	580.00	759.64	0.00	0.06	0.00	67.00	40.00
2040.000	580.00	759.73	0.08	0.07	0.08	67.00	40.00
2057.000	580.00	759.97	0.00	0.32	0.00	67.00	17.00
2057.000	580.00	760.07	0 10	0 34	0.10	67.00	17.00
2157 000	580.00	759 98	0.00	0.02	0.00	74 82	100.00
2157.000	580.00	760.08	0.10	0.01	0.10	43.85	100.00
2339.000	580.00	760.03	0.00	0 05	0.00	32.00	182.00
2339.000	580.00	760.14	0.11	0.06	0.11	32.00	182 00
2340.000	580 00	759.75	0.00	-0.27	0.00	32.00	1.00
2340.000	580.00	759.89	0.13	-0.26	0.13	32.00	1 00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
2364.000	580.00	759 97	0.00	0.21	0.00	32.00	24.00
2364.000	580.00	760.07	0.10	0.18	0.10	32.00	24.00
2365.000	580.00	760 66	0.00	0.69	0.00	32.00	1.00
2365.000	580.00	760.74	0.08	0.67	0.08	32.00	1 00
2376.000	580.00	760.67	0.00	0.01	0.00	28.20	11.00
2376.000	580.00	760.75	0.08	0.01	0.08	28.20	11.00
2377.000	580.00	760.66	0.00	-0.01	0.00	28.20	1.00
2377.000	580.00	760.74	0.08	-0.01	0.08	28.20	1.00
2417.000	580 00	760.69	0 00	0 03	0.00	28.20	40.00
2417.000	580.00	760.77	0.08	0.03	0.08	28.20	40.00
2418.000	580.00	760.72	0.00	0 04	0.00	28.20	1.00
2418.000	580.00	760.80	0.08	0.03	0.08	28.20	1.00
2468.000	580.00	760.76	0.00	0.03	0.00	28 20	50.00
2468.000	580 00	760.84	0.08	0.04	0.08	28.20	50.00
2693.000	580.00	760.97	0.00	0.21	0.00	53.21	225.00
2693.000	580.00	761.04	0 07	0.21	0.07	53.32	225.00
2792.000	580.00	760 99	0.00	0.02	0.00	43.00	99 00
2792.000	580.00	761 06	0 07	0.02	0.07	43.00	99.00
2793.000	580.00	760.99	0.00	0.00	0.00	43.00	1.00
2793.000	580.00	761.06	0 07	0.00	0.07	43.00	1.00
2845 000	580.00	761.00	0.00	0.01	0 00	43.00	52.00
2845.000	580.00	761.07	0.07	0.01	0.07	43.00	52 00
2846.000	580.00	761.00	0.00	0.00	0.00	43.00	1.00
2846.000	580.00	761.08	0.07	0 00	0.07	43.00	1.00
3218.000	580.00	760.97	0.00	-0.03	0.00	30.63	372.00
3218.000	580.00	761.05	0.08	-0.03	0.08	30.72	372.00

SUMMARY OF ERRORS AND SPECIAL NOTES

FLOODWAY DATA, 100-YEAR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1009.000	24.	99	5.9	757.3	757.2	0.1
1010.000	24.	99.	5.9	757.3	757.2	0.1
1059.000	63.	233	2.5	757.9	757.9	0.0
1480.000	26.	116	5.0	758.2	758.2	0.0
1580.000	23.	112.	5.2	758.5	758.4	0.1
1608.000	23.	111.	5.2	758.6	758.5	0 1
1658.000	27.	130.	4.4	758.8	758 7	0.1
1850.000	54.	171	3.4	759.2	759.1	0 1
1950.000	24.	120.	4.8	759.2	759.1	0.1
1967.000	24.	115.	5.0	759.3	759.2	0.1
2000 000	58.	253.	2.3	759.7	759.6	0.1
2040.000	67.	276.	2.1	759.7	759.6	0 1
2057.000	67.	299.	1.9	760.1	760.0	0.1
2157.000	44.	237.	2.4	760.1	760.0	0.1
2339.000	32.	155.	3.7	760.1	760.0	0.1
2340.000	32.	84.	6.9	759.9	759.8	0.1
2364.000	32.	87.	6.6	760.1	760.0	0.1
2365.000	32.	174.	3.3	760.8	760 7	0.1
2376.000	28	177.	3.3	760.8	760.7	0.1
2377.000	28	166.	3.5	760.8	760.7	0.1
2417.000	28.	166.	3.5	760.8	760 7	0.1
2418.000	28.	179.	3 2	760.8	760.7	0.1
2468.000	28.	180	3.2	760.9	760.8	0.1
2693.000	53.	339.	1.7	761.1	761.0	0.1
2792.000	43.	366.	1.6	761 1	761.0	0.1
2793.000	43.	351.	1.7	761.1	761.0	0 1
2845.000	43.	351.	1.7	761.1	761.0	0 1
2846.000	43.	367.	1.6	761.1	761.0	0.1
3218.000	31.	142	4.1	761.1	761.0	0.1

THIS RUN EXECUTED 26 JUN 89 10:43:22

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR SUMMARY SEGMENT 3



SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
7300.000	763.54	0.00	763.92	53.25	2.79	505.48	31.73	-1410.00	1410.00	1693.50	1712.50	1930.00
7300.000	763 65	0.12	764.02	38.20	2.87	504.15	32.98	39.00	1691.00	1693.50	1712.50	1730.00
7399.000	763 74	0.00	764.13	20.78	0.00	540.00	0.00	0.00	0.00	250.00	271.00	0.00
7399.000	763.84	0.10	764.22	20.79	0.00	540.00	0.00	0.00	0.00	250.00	271.00	0.00
7400.000	763.74	0 00	764.13	20.78	0.00	540.00	0.00	0.00	0.00	250.00	271.00	0.00
7400.000	763.84	0.10	764.22	20.79	0.00	540 00	0.00	0.00	0.00	250.00	271.00	0.00
7469 000	763.99	0.00	764.35	20.80	0 00	540.00	0.00	0.00	0.00	250.00	271.00	0.00
7469.000	764.08	0.09	764.42	20.81	0.00	540.00	0.00	0.00	0.00	250.00	271.00	0.00
7470.000	764.00	0.00	764.35	20.80	0.00	540.00	0.00	0 00	0.00	250.00	271.00	0.00
7470.000	764.08	0.09	764.43	20.81	0.00	540.00	0.00	0.00	0.00	250.00	271 00	0.00
7519.000	764.12	0.00	764.46	20.81	0.00	540.00	0 00	20.85	250.00	250.00	271.00	270.85
7519.000	764.21	0.08	764.54	20.82	0.00	540.00	0.00	20.85	250.00	250.00	271.00	270.85
7720.000	764.62	0.00	764.82	34.00	0.00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7720.000	764 69	0.06	764.88	34 00	0.00	540.00	0 00	0.75	830.00	830.00	864.00	864.00
7721.000	764.61	0.00	764.84	34.00	0.00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7721.000	764.67	0.06	764.90	34.00	0.00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7734.000	764.65	0.00	764.89	34.00	0 00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7734.000	764.71	0.06	764.95	34.00	0.00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7735.000	764.72	0.00	764.91	34.00	0.00	540.00	0.00	34.00	830.00	830.00	864.00	864.00
7735.000	764.79	0.07	764.97	34.00	0.00	540 00	0.00	34.00	830.00	830.00	864.00	864.00
7784.000	764.93	0.00	764.98	135.00	112 07	322.46	105 47	135.00	780.00	830.00	864.00	915.00
7784.000	764.99	0.06	765.04	135.00	112.58	321.27	106.15	135.00	780.00	830.00	864.00	915 00
8298.000	765.19	0.00	765.36	111.00	154 56	385.44	0 00	111.00	1662.00	1744.00	1776.00	1773.00
8298.000	765.24	0.05	765.40	111.00	157.10	382.90	0.00	111.00	1662.00	1744.00	1776.00	1773.00
8620.000	765.66	0.00	766.38	32.98	23.24	489.27	27.49	0.00	0.00	1354.00	1374.00	0.00
8620.000	765.69	0.03	766.40	32.51	23.42	488.79	27.79	32.51	1348.47	1354.00	1374.00	1380.98
8719.000	766 25	0.00	767.15	19.00	0.00	540.00	0.00	0 00	0.00	250.00	269.00	0.00
8719.000	766.26	0.01	767.16	19.00	0.00	540.00	0.00	0.00	250.00	250.00	269.00	269.00
8720.000	766.26	0.00	767.16	19 00	0.00	540.00	0.00	0.00	0.00	250.00	269.00	0.00
8720.000	766.27	0.01	767.17	19 00	0.00	540.00	0.00	0.00	250.00	250.00	269.00	269.00
8788.000	767.31	0.00	767.86	19.00	0.00	540.00	0.00	0.00	0.00	250.00	269.00	0.00
8788.000	767.31	0.00	767.86	19.00	0.00	540.00	0.00	0.00	250 00	250.00	269.00	269.00
8789.000	767.32	0.00	767.86	19.00	0.00	540.00	0.00	0.00	0.00	250.00	269.00	0.00
8789.000	767.32	0.00	767.86	19.00	0 00	540.00	0.00	0.00	250 00	250.00	269.00	269.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
8889.000	767.79	0.00	768.24	19 00	0 00	540.00	0.00	0.00	0.00	250.00	269.00	0.00
8889.000	767.79	0.00	768.24	19 00	0.00	540.00	0.00	0.00	250.00	250.00	269.00	269.00
8989.000	767.97	0.00	768 56	17 00	0.00	540.00	0.00	0.00	0.00	24.50	41.50	0.00
8989.000	768.02	0.05	768.59	17.00	0.00	540.00	0.00	17.00	24.50	24.50	41.50	41.50
9071.000	768.91	0.00	769.26	20.00	0.00	540.00	0.00	0.00	0.00	8.00	28.00	0.00
9071.000	768.96	0.06	769.31	20.00	0.00	540.00	0.00	0.00	0.00	8.00	28.00	0.00
9120.000	769.22	0 00	769 32	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9120.000	769.27	0.05	769.37	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9121.000	769.22	0.00	769.32	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9121.000	769.27	0.05	769.37	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40 00	0.00
9129.000	769.23	0.00	769.33	39 82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9129.000	769.28	0.05	769.37	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9130.000	769.23	0.00	769.33	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9130.000	769.28	0.05	769.37	39.82	0.00	540.00	0.00	0.00	0.00	0.10	40.00	0.00
9340.000	769.29	0.00	769.51	28 62	0.00	540.00	0.00	0.00	0.00	0.00	46 40	0.00
9340.000	769.34	0.05	769.56	28.62	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9439.000	769.43	0.00	769.65	28 63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9439.000	769.48	0.04	769.69	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9440.000	769.44	0.00	769.65	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9440.000	769.48	0.04	769.69	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46 40	0.00
9451.000	769.45	0.00	769.66	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9451 000	769.49	0.04	769.70	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9452.000	769.45	0.00	769 66	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9452.000	769.49	0.04	769.70	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9501.000	769.52	0.00	769.73	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9501.000	769.56	0.04	769.76	28.63	0.00	540.00	0.00	0.00	0.00	0.00	46.40	0.00
9650.000	769.58	0.00	770.13	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9650.000	769.62	0.04	770.16	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0 00
9651.000	769.58	0.00	770 13	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9651.000	769.62	0.04	770.16	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9673.000	769.69	0.00	770.22	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9673.000	769.73	0.03	770.25	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9674.000	769.70	0.00	770.23	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0 00
9674.000	769.73	0 03	770.25	17.50	0 00	540.00	0.00	0.00	0.00	41.25	58.75	0.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
9685.000	769.75	0.00	770.27	17.50	0.00	540.00	0.00	0.00	0.00	41.25	58.75	0.00
9685 000	769 78	0.03	770.29	17.50	0.00	540.00	0.00	0.00	0.00	41 25	58.75	0.00
9837.000	770.50	0.00	770.89	19.40	0.00	540.00	0.00	0.00	0.00	40.30	59.70	0.00
9837.000	770.54	0 04	770 92	19.40	0.00	540.00	0.00	0.00	0.00	40.30	59.70	0.00
9937.000	770.74	0 00	771.17	19.40	0.00	540.00	0.00	0.00	0.00	40.30	59.70	0.00
9937 000	770.78	0.03	771.19	19.40	0.00	540.00	0.00	0.00	0.00	40.30	59 70	0.00
10034.000	771.10	0.00	771.42	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10034.000	771.12	0.03	771.44	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10035.000	771.07	0.00	771.45	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10035.000	771.10	0.03	771.47	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10049.000	771.14	0.00	771.51	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10049.000	771.17	0.03	771.54	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0 00
10050.000	771.24	0 00	771.54	25.40	0.00	540.00	0.00	0.00	0.00	0.10	25.50	0.00
10050.000	771.26	0.02	771.56	25 40	0.00	540.00	0 00	0.00	0.00	0.10	25.50	0.00
10064.000	771.05	0.00	771 81	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0 00
10064.000	771.08	0.03	771.83	19.50	0 00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10065.000	771.05	0.00	771.82	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10065.000	771.08	0.03	771.83	19.50	0.00	540.00	0 00	0.00	0.00	0.00	19.50	0 00
10070.000	771.09	0.00	771.84	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10070.000	771.12	0.03	771.86	19.50	0.00	540.00	0 00	0.00	0.00	0.00	19.50	0 00
10071.000	771.10	0.00	771.85	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10071.000	771.13	0.03	771.87	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10072.000	771.12	0.00	771.86	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10072.000	771.14	0.03	771.87	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10073.000	771.13	0.00	771.87	19.50	0 00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10073.000	771.16	0.03	771.88	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10090.000	771 32	0.00	771.99	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10090.000	771.34	0.02	772.00	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19 50	0.00
10091.000	771.33	0.00	771.99	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0 00
10091.000	771.34	0.02	772 01	19.50	0.00	540.00	0.00	0.00	0.00	0.00	19.50	0.00
10099.000	771.18	0.00	772.26	23.21	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0 00
10099.000	771.21	0.02	772 27	23.22	0.00	540 00	0.00	0.00	0.00	0.10	29.00	0 00
10100.000	771.07	0.00	772.41	23.20	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0.00
10100.000	771.10	0.03	772.41	23 20	0 00	540.00	0.00	0.00	0.00	0.10	29 00	0.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
10116.000	772 06	0.00	772.85	23.32	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0.00
10116.000	772.04	-0.02	772.84	23.32	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0 00
10117.000	772.33	0.00	772.92	23.36	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0.00
10117.000	772.31	-0.02	772.91	23.36	0.00	540.00	0.00	0.00	0.00	0.10	29.00	0.00
10179.000	772.91	0.00	773.15	30.10	0.05	539.90	0.05	0.00	0.00	0.10	30.00	0.00
10179 000	772.90	-0.01	773.14	30.10	0.05	539.90	0.05	0.00	0.00	0.10	30.00	0.00
10180.000	772.88	0.00	773.18	30.10	0.02	539.95	0.02	0.00	0.00	0.10	30.00	0.00
10180 000	772.87	-0.01	773.17	30.10	0.02	539.95	0.02	0.00	0.00	0.10	30.00	0.00
10237.000	773.01	0.00	773.30	30.10	0.02	539.95	0.02	0.00	0.00	0.10	30.00	0.00
10237.000	773.01	-0.01	773.29	30.10	0.02	539.95	0.02	0.00	0.00	0.10	30.00	0.00
10238.000	773.09	0.00	773.32	30.10	0.05	539.91	0.05	0.00	0.00	0.10	30.00	0.00
10238.000	773.09	-0.01	773 31	30.10	0.05	539.91	0.05	0.00	0.00	0.10	30 00	0.00
10246.000	773.07	0.00	773.35	29.84	0.00	540.00	0.00	0.00	0.00	0.10	29.90	0.00
10246.000	773.07	-0.01	773.35	29.84	0.00	540.00	0.00	0.00	0.00	0.10	29.90	0 00
10251 000	773.07	0.00	773.37	29.84	0.00	540.00	0.00	0.00	0.00	0.10	30.10	0.00
10251.000	773.06	-0.01	773.36	29.84	0.00	540 00	0.00	0.00	0.00	0.10	30.10	0.00

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
5792.000	0.00	0.00	0.00	755.50	555.00	763.27	0.00	763.28	0.74	1.31	2175.72	647.12
5792.000	0.00	0.00	0.00	760.20	555.00	763.35	0.00	763.35	4.94	0.00	1181.12	249.67
6199.000	406.00	0.00	0.00	756.30	540.00	763.30	0 00	763.32	1.03	1.48	1173.63	532.76
6199.000	406 00	0.00	0 00	756.30	540.00	763.43	0 00	763.45	1.15	1.43	1393.33	503.96
6200.000	1.00	762.40	761.40	756.30	540.00	763.31	0.00	763.32	4.21	1 17	1060.28	263.23
6200.000	1.00	762.40	761 40	756 30	540.00	763.44	0.00	763.45	4.15	1.18	1294.51	264 96
6222.000	22.00	762.40	761.40	756.30	540.00	763.32	0.00	763.33	4.13	1.16	1052.02	265.75
6222.000	22 00	762.40	761.40	756.30	540.00	763.45	0.00	763.46	4.06	1.17	1304.14	268.05
6223.000	1.00	0.00	0.00	756.30	540.00	763.32	0.00	763.34	1.00	1.46	1172.09	539.19
6223.000	1 00	0.00	0.00	756.30	540.00	763.45	0.00	763.46	1.12	1.41	1411.95	511.15
6400.000	177.00	0.00	0.00	755.40	540.00	763.34	0.00	763.36	1.36	1.48	930.84	463.29
6400 000	177.00	0.00	0.00	755.40	540.00	763.47	0.00	763.49	1.32	1.48	900.28	469.91
6401.000	1.00	761.10	760.50	755.40	540.00	763.36	0.00	763.37	3.19	1.08	881.68	302.49
6401.000	1.00	761.10	760.50	755.40	540.00	763.48	0.00	763.49	3.12	1.08	853.62	305.93
6446.000	45.00	0.00	0.00	755.40	540.00	763.37	0.00	763.39	1.32	1.46	944.82	470.76
6446.000	45.00	0.00	0.00	755.40	540.00	763 49	0.00	763.51	1.28	1.46	914.33	477.04
6447.000	1.00	0.00	0.00	755.40	540.00	763.37	0.00	763.39	1.32	1.47	944.18	470.42
6447.000	1.00	0.00	0.00	755.40	540.00	763 49	0.00	763.51	1.28	1.46	912.52	476.39
6496 000	49.00	0.00	0.00	755.40	540.00	763.37	0.00	763.39	1.31	1.46	947.52	472.21
6496.000	49.00	0.00	0.00	755.40	540.00	763.50	0.00	763.52	1.28	1.46	915.42	478.02
6896.000	400.00	0.00	0.00	756.50	540.00	763.43	0.00	763.44	1.08	1.44	867.31	518 82
6896 000	400.00	0.00	0.00	756.50	540.00	763.55	0.00	763.56	1.07	1.45	857.11	523.08
7300.000	404.00	0.00	0.00	757.60	540.00	763.54	0.00	763.92	16.32	5.11	131.20	133.65
7300.000	404.00	0.00	0.00	757.60	540.00	763.65	0.00	764.02	15.08	4.99	132.45	139.05
7399.000	99.00	0.00	0.00	758.00	540.00	763.74	0.00	764.13	25.49	5.02	107.60	106.96
7399.000	99.00	0.00	0.00	758.00	540.00	763.84	0.00	764.22	24.08	4.92	109.75	110.04
7400.000	1.00	764.30	764.40	758.00	540.00	763.74	0.00	764.13	30.95	5.02	107 64	97.07
7400 000	1.00	764.30	764.40	758.00	540.00	763.84	0.00	764 22	29.32	4.92	109.79	99.72
7469.000	69.00	764.30	764.40	758.00	540.00	763.99	0.00	764.35	27.15	4.78	112.94	103.64
7469.000	69.00	764.30	764.40	758.00	540.00	764.08	0 00	764.42	25.99	4.71	114 77	105.93
7470.000	1.00	0 00	0.00	758.00	540.00	764.00	0.00	764.35	22.15	4.78	113.00	114.73
7470.000	1.00	0.00	0.00	758.00	540.00	764.08	0.00	764.43	21.16	4.70	114.82	117.39

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7519.000	49.00	0.00	0.00	758.00	540.00	764.12	0.00	764.46	20.80	4.67	115.51	118.39
7519.000	49.00	0.00	0.00	758.00	540.00	764.21	0.00	764.54	19.95	4.61	117.23	120.90
7720.000	201.00	0.00	0.00	759.50	540.00	764.62	0.00	764.82	12.18	3.55	151.95	154.72
7720.000	201.00	0.00	0.00	759.50	540.00	764.69	0.00	764.88	11.68	3.50	154.09	158.04
7721.000	1.00	766.00	764.50	759.50	540.00	764.61	0.00	764.84	35.31	3.92	137.78	90.88
7721.000	1.00	766.00	764.50	759.50	540.00	764.67	0.00	764.90	35.31	3.92	137.78	90.88
7734.000	13.00	766.00	764.50	759.50	540.00	764.65	0.00	764.89	35.31	3.92	137.78	90.88
7734.000	13.00	766.00	764.50	759.50	540.00	764.71	0.00	764.95	35.31	3.92	137.78	90.88
7735.000	1.00	0.00	0.00	759.50	540.00	764.72	0.00	764.91	11.43	3.48	155.15	159.69
7735.000	1.00	0.00	0.00	759.50	540.00	764.79	0.00	764.97	10.94	3.43	157.41	163.24
7784.000	49.00	0.00	0.00	759.70	540.00	764.93	0.00	764.98	3.16	2.07	472.85	303.65
7784.000	49.00	0.00	0.00	759.70	540.00	764.99	0.00	765.04	3.01	2.04	480.98	311.48
8298.000	514.00	0.00	0.00	761.40	540.00	765.19	0.00	765.36	17.93	3.82	240.48	127.52
8298.000	514.00	0.00	0.00	761.40	540.00	765.24	0.00	765.40	16.96	3.74	245.67	131.13
8620.000	161.00	0.00	0.00	762.20	540.00	765.66	0.00	766.38	54.31	7.12	90.88	73.27
8620.000	161.00	0.00	0.00	762.20	540.00	765.69	0.00	766.40	52.85	7.06	91.70	74.28
8719.000	99.00	0.00	0.00	762.00	540.00	766.25	0.00	767.15	89.09	7.64	70.66	57.21
8719.000	99.00	0.00	0.00	762.00	540.00	766.26	0.00	767.16	88.53	7.63	70.81	57.39
8720.000	1.00	769.30	768.90	762.00	540.00	766.26	0.00	767.16	124.67	7.63	70.76	48.36
8720.000	1.00	769.30	768.90	762.00	540.00	766.27	0.00	767.17	123.53	7.61	71.00	48.59
8788.000	68.00	769.30	768.90	762.00	540.00	767.31	0.00	767.86	63.11	5.94	90.90	67.97
8788.000	68.00	769.30	768.90	762.00	540.00	767.31	0.00	767.86	62.92	5.93	91.00	68.08
8789.000	1.00	0.00	0.00	762.00	540.00	767.32	0.00	767.86	42.46	5.93	91.00	82.87
8789.000	1.00	0.00	0.00	762.00	540.00	767.32	0.00	767.86	42.50	5.94	90.97	82.83
8889.000	100.00	0.00	0.00	762.00	540.00	767.79	0.00	768.24	32.44	5.40	99.92	94.81
8889.000	100.00	0.00	0.00	762.00	540.00	767.79	0.00	768.24	32.41	5.40	99.96	94.85
8989.000	100.00	0.00	0.00	762.40	540.00	767.97	0.00	768.56	23.62	6.14	87.91	111.10
8989.000	100.00	0.00	0.00	762.40	540.00	768.02	0.00	768.59	30.72	6.09	88.73	97.44
9071.000	82.00	780.00	767.40	762.80	540.00	768.91	0.00	769.26	12.80	4.79	112.66	150.92
9071.000	82.00	780.00	767.40	762.80	540.00	768.96	0.00	769.31	12.39	4.75	113.78	153.44
9120.000	49.00	0.00	0.00	762.50	540.00	769.22	0.00	769.32	4.35	2.54	212.90	258.97
9120.000	49.00	0.00	0.00	762.50	540.00	769.27	0.00	769.37	4.22	2.51	214.87	262.78
9121.000	1.00	781.50	771.10	762.50	540.00	769.22	0.00	769.32	4.35	2.54	212.92	259.02
9121.000	1.00	781.50	771.10	762.50	540.00	769.27	0.00	769.37	4.22	2.51	214.89	262.83

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
9129.000	8.00	781.50	771.10	762.50	540.00	769.23	0.00	769.33	4.34	2.53	213.04	259.26
9129.000	8.00	781.50	771.10	762.50	540.00	769.28	0.00	769.37	4.21	2.51	215.01	263.06
9130.000	1.00	0.00	0.00	762.50	540.00	769.23	0.00	769.33	4.34	2.53	213.07	259.30
9130.000	1.00	0.00	0.00	762.50	540.00	769.28	0.00	769.37	4.21	2.51	215.03	263.10
9340.000	210.00	0.00	0.00	764.00	540.00	769.29	0.00	769.51	13.89	3.82	141.42	144.88
9340.000	210.00	0.00	0.00	764.00	540.00	769.34	0.00	769.56	13.51	3.78	142.76	146.93
9439.000	99.00	0.00	0.00	764.00	540.00	769.43	0.00	769.65	12.74	3.71	145.59	151.29
9439.000	99.00	0.00	0.00	764.00	540.00	769.48	0.00	769.69	12.43	3.68	146.81	153.19
9440.000	1.00	793.10	780.70	764.00	540.00	769.44	0.00	769.65	12.73	3.71	145.63	151.35
9440.000	1.00	793.10	780.70	764.00	540.00	769.48	0.00	769.69	12.42	3.68	146.85	153.24
9451.000	11.00	793.10	780.70	764.00	540.00	769.45	0.00	769.66	12.63	3.70	146.03	151.98
9451.000	11.00	793.10	780.70	764.00	540.00	769.49	0.00	769.70	12.32	3.67	147.24	153.85
9452.000	1.00	0.00	0.00	764.00	540.00	769.45	0.00	769.66	12.61	3.70	146.10	152.09
9452.000	1.00	0.00	0.00	764.00	540.00	769.49	0.00	769.70	12.30	3.67	147.31	153.96
9501.000	49.00	0.00	0.00	764.00	540.00	769.52	0.00	769.73	12.16	3.65	147.88	154.84
9501.000	49.00	0.00	0.00	764.00	540.00	769.56	0.00	769.76	11.88	3.62	149.04	156.66
9650.000	149.00	0.00	0.00	764.20	540.00	769.58	0.00	770.13	40.10	5.96	90.63	85.27
9650.000	149.00	0.00	0.00	764.20	540.00	769.62	0.00	770.16	39.30	5.92	91.28	86.14
9651.000	1.00	772.40	771.50	764.20	540.00	769.58	0.00	770.13	40.05	5.96	90.67	85.33
9651.000	1.00	772.40	771.50	764.20	540.00	769.62	0.00	770.16	39.25	5.91	91.32	86.19
9673.000	22.00	772.40	771.50	764.20	540.00	769.69	0.00	770.22	37.68	5.83	92.65	87.97
9673.000	22.00	772.40	771.50	764.20	540.00	769.73	0.00	770.25	37.00	5.79	93.25	88.77
9674.000	1.00	0.00	0.00	764.20	540.00	769.70	0.00	770.23	37.61	5.82	92.72	88.06
9674.000	1.00	0.00	0.00	764.20	540.00	769.73	0.00	770.25	36.93	5.79	93.32	88.86
9685.000	11.00	0.00	0.00	764.20	540.00	769.75	0.00	770.27	36.77	5.78	93.46	89.05
9685.000	11.00	0.00	0.00	764.20	540.00	769.78	0.00	770.29	36.13	5.74	94.04	89.83
9837.000	152.00	790.00	769.80	764.70	540.00	770.50	0.00	770.89	24.82	4.97	108.75	108.39
9837.000	152.00	790.00	769.80	764.70	540.00	770.54	0.00	770.92	24.35	4.93	109.49	109.44
9937.000	100.00	0.00	0.00	765.40	540.00	770.74	0.00	771.17	28.92	5.21	103.67	100.42
9937.000	100.00	0.00	0.00	765.40	540.00	770.78	0.00	771.19	28.41	5.18	104.32	101.31
10034.000	97.00	0.00	0.00	766.40	540.00	771.10	0.00	771.42	18.11	4.53	119.31	126.88
10034.000	97.00	0.00	0.00	766.40	540.00	771.12	0.00	771.44	17.79	4.50	120.00	128.04
10035.000	1.00	782.00	778.80	766.40	540.00	771.07	0.00	771.45	44.19	4.96	108.87	81.23
10035.000	1.00	782.00	778.80	766.40	540.00	771.10	0.00	771.47	43.50	4.93	109.52	81.87

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10049.000	14.00	782.00	778.80	766.40	540.00	771.14	0.00	771.51	42.33	4.88	110.65	83.00
10049.000	14.00	782.00	778.80	766.40	540.00	771.17	0.00	771.54	41.72	4.85	111.26	83.61
10050.000	1.00	0.00	0.00	766.40	540.00	771.24	0.00	771.54	16.52	4.39	122.88	132.86
10050.000	1.00	0.00	0.00	766.40	540.00	771.26	0.00	771.56	16.26	4.37	123.51	133.93
10064.000	14.00	0.00	0.00	766.90	540.00	771.05	0.00	771.81	67.49	7.01	77.01	65.73
10064.000	14.00	0.00	0.00	766.90	540.00	771.08	0.00	771.83	66.10	6.96	77.55	66.42
10065.000	1.00	781.50	780.50	766.90	540.00	771.05	0.00	771.82	46.26	7.01	77.05	79.40
10065.000	1.00	781.50	780.50	766.90	540.00	771.08	0.00	771.83	45.31	6.96	77.60	80.23
10070.000	5.00	781.50	780.50	766.90	540.00	771.09	0.00	771.84	45.21	6.95	77.65	80.31
10070.000	5.00	781.50	780.50	766.90	540.00	771.12	0.00	771.86	44.31	6.91	78.19	81.13
10071.000	1.00	0.00	0.00	766.90	540.00	771.10	0.00	771.85	65.16	6.93	77.93	66.90
10071.000	1.00	0.00	0.00	766.90	540.00	771.13	0.00	771.87	63.89	6.88	78.45	67.56
10072.000	1.00	0.00	0.00	766.90	540.00	771.12	0.00	771.86	64.53	6.91	78.19	67.22
10072.000	1.00	0.00	0.00	766.90	540.00	771.14	0.00	771.87	63.30	6.86	78.70	67.87
10073.000	1.00	791.60	790.10	766.90	540.00	771.13	0.00	771.87	63.87	6.88	78.46	67.57
10073.000	1.00	791.60	790.10	766.90	540.00	771.16	0.00	771.88	62.69	6.84	78.96	68.20
10090.000	17.00	791.60	790.10	766.90	540.00	771.32	0.00	771.99	55.62	6.56	82.26	72.41
10090.000	17.00	791.60	790.10	766.90	540.00	771.34	0.00	772.00	54.87	6.53	82.64	72.90
10091.000	1.00	0.00	0.00	766.90	540.00	771.33	0.00	771.99	55.41	6.56	82.36	72.54
10091.000	1.00	0.00	0.00	766.90	540.00	771.34	0.00	772.01	54.67	6.53	82.74	73.04
10099.000	8.00	0.00	0.00	767.20	540.00	771.18	0.00	772.26	128.21	8.34	64.78	47.69
10099.000	8.00	0.00	0.00	767.20	540.00	771.21	0.00	772.27	124.87	8.27	65.34	48.32
10100.000	1.00	785.00	782.00	767.20	540.00	771.07	771.06	772.41	243.68	9.29	58.14	34.59
10100.000	1.00	785.00	782.00	767.20	540.00	771.10	771.06	772.41	236.98	9.20	58.74	35.08
10116.000	16.00	785.00	782.00	767.70	540.00	772.06	0.00	772.85	122.53	7.12	75.95	48.78
10116.000	16.00	785.00	782.00	767.70	540.00	772.04	0.00	772.84	124.42	7.16	75.51	48.41
10117.000	1.00	0.00	0.00	767.70	540.00	772.33	0.00	772.92	50.16	6.12	88.37	76.24
10117.000	1.00	0.00	0.00	767.70	540.00	772.31	0.00	772.91	51.37	6.17	87.67	75.34
10179.000	62.00	0.00	0.00	768.30	540.00	772.91	0.00	773.15	11.11	3.92	138.68	161.98
10179.000	62.00	0.00	0.00	768.30	540.00	772.90	0.00	773.14	11.17	3.93	138.46	161.56
10180.000	1.00	787.40	779.30	768.30	540.00	772.88	0.00	773.18	20.77	4.38	123.72	118.48
10180.000	1.00	787.40	779.30	768.30	540.00	772.87	0.00	773.17	20.87	4.39	123.53	118.20
10237.000	57.00	787.40	779.30	768.30	540.00	773.01	0.00	773.30	19.05	4.26	127.35	123.73
10237.000	57.00	787.40	779.30	768.30	540.00	773.01	0.00	773.29	19.13	4.26	127.18	123.48

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10238.000	1.00	0.00	0.00	768.30	540.00	773.09	0.00	773.32	9.73	3.77	144.33	173.13
10238 000	1.00	0.00	0.00	768.30	540 00	773 09	0.00	773 31	9.77	3.77	144.14	172.75
10246.000	8.00	0.00	0.00	768.60	540.00	773.07	0.00	773 35	14.37	4.24	127.48	142.46
10246.000	8.00	0.00	0.00	768.60	540.00	773.07	0 00	773.35	14.44	4.25	127.29	142.11
10251.000	5.00	0.00	0.00	768.60	540.00	773.07	0.00	773.37	5.36	4.40	122.83	233 25
10251.000	5.00	0.00	0.00	768.60	540.00	773.06	0.00	773.36	5.38	4.40	122.64	232.70

100-YEAR FLOOD

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
5792.000	555.00	763.27	0.00	0.00	0.00	1118.53	0.00
5792.000	555.00	763.35	0 08	0.00	0.08	500.00	0.00
6199.000	540.00	763.30	0.00	0.03	0.00	625.00	406.00
6199.000	540.00	763 43	0.13	0.08	0.13	562.64	406.00
6200.000	540 00	763.31	0.00	0.02	0.00	625.00	1.00
6200.000	540.00	763.44	0.13	0.01	0.13	564.42	1.00
6222.000	540.00	763.32	0.00	0.01	0.00	614.00	22.00
6222.000	540.00	763.45	0.13	0.01	0.13	565.20	22.00
6223.000	540.00	763 32	0.00	-0.01	0.00	614.00	1.00
6223.000	540.00	763.45	0.13	0.00	0.13	564.29	1.00
6400.000	540.00	763.34	0.00	0 02	0.00	525 05	177.00
6400.000	540.00	763.47	0.12	0.02	0 12	468 88	177.00
6401.000	540.00	763.36	0.00	0.02	0.00	525.05	1.00
6401.000	540.00	763.48	0.12	0.02	0.12	471.31	1.00
6446.000	540.00	763.37	0.00	0.01	0.00	525.05	45.00
6446.000	540.00	763.49	0.12	0.01	0.12	470.68	45.00
6447.000	540.00	763.37	0.00	0.00	0.00	525 05	1 00
6447.000	540.00	763.49	0.12	0.00	0.12	469.88	1.00
6496.000	540.00	763.37	0 00	0.01	0.00	525.05	49.00
6496.000	540.00	763.50	0.12	0.01	0.12	469.94	49.00
6896.000	540.00	763.43	0.00	0.05	0.00	270.00	400.00
6896.000	540.00	763.55	0.12	0.05	0.12	257.53	400.00
7300.000	540.00	763.54	0.00	0.11	0.00	53.25	404 00
7300.000	540.00	763.65	0 12	0.10	0.12	38.20	404.00
7399.000	540.00	763.74	0 00	0 20	0.00	20.78	99.00
7399 000	540.00	763.84	0.10	0.19	0 10	20.79	99.00
7400.000	540.00	763.74	0.00	0 00	0.00	20.78	1.00
7400 000	540.00	763.84	0.10	0 00	0.10	20.79	1.00
7469.000	540.00	763.99	0.00	0.25	0.00	20.80	69.00
7469.000	540.00	764 08	0.09	0 24	0.09	20.81	69.00
7470 000	540.00	764.00	0.00	0 00	0.00	20.80	1.00
7470.000	540 00	764.08	0.09	0 00	0.09	20.81	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
7519.000	540.00	764.12	0.00	0.13	0.00	20.81	49.00
7519.000	540.00	764.21	0.08	0.12	0.08	20.82	49.00
7720.000	540.00	764 62	0.00	0.50	0 00	34.00	201.00
7720.000	540.00	764.69	0.06	0.48	0.06	34.00	201.00
7721.000	540.00	764.61	0 00	-0.02	0.00	34.00	1.00
7721.000	540.00	764.67	0.06	-0.02	0.06	34.00	1.00
7734.000	540.00	764.65	0.00	0.05	0.00	34.00	13.00
7734.000	540.00	764.71	0.06	0 05	0 06	34.00	13.00
7735.000	540.00	764.72	0.00	0.07	0.00	34.00	1.00
7735.000	540.00	764.79	0.07	0.07	0.07	34.00	1.00
7784.000	540.00	764.93	0.00	0.22	0.00	135.00	49.00
7784.000	540.00	764.99	0.06	0.21	0.06	135.00	49.00
8298.000	540.00	765.19	0.00	0.26	0 00	111.00	514.00
8298.000	540.00	765.24	0.05	0.25	0.05	111.00	514.00
8620 000	540.00	765 66	0.00	0.47	0.00	32.98	161.00
8620.000	540.00	765.69	0.03	0.45	0.03	32.51	161.00
8719.000	540.00	766.25	0.00	0.59	0.00	19.00	99.00
8719.000	540.00	766.26	0.01	0.57	0.01	19.00	99.00
8720.000	540.00	766.26	0.00	0.01	0.00	19.00	1.00
8720.000	540.00	766.27	0.01	0.02	0.01	19.00	1.00
8788.000	540.00	767.31	0.00	1.05	0.00	19.00	68.00
8788.000	540.00	767.31	0.00	1.04	0.00	19.00	68.00
8789.000	540.00	767.32	0.00	0.01	0.00	19.00	1.00
8789.000	540.00	767.32	0 00	0.00	0.00	19.00	1.00
8889.000	540.00	767.79	0.00	0.47	0.00	19.00	100.00
8889.000	540 00	767.79	0.00	0.47	0.00	19.00	100.00
8989.000	540.00	767.97	0 00	0.18	0.00	17.00	100.00
8989.000	540.00	768.02	0.05	0.23	0.05	17.00	100 00
9071.000	540.00	768.91	0.00	0.94	0.00	20.00	82.00
9071.000	540.00	768 96	0.06	0.94	0.06	20.00	82 00
9120.000	540.00	769.22	0 00	0.32	0.00	39.82	49.00
9120.000	540.00	769.27	0.05	0.31	0.05	39 82	49.00
9121.000	540.00	769.22	0.00	0 00	0.00	39.82	1.00
9121.000	540.00	769.27	0.05	0.00	0.05	39.82	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
9129.000	540.00	769 23	0.00	0.00	0.00	39.82	8.00
9129.000	540.00	769.28	0.05	0 00	0.05	39.82	8.00
9130.000	540 00	769.23	0.00	0.00	0.00	39.82	1.00
9130.000	540.00	769.28	0.05	0.00	0.05	39.82	1.00
9340.000	540.00	769.29	0.00	0.06	0.00	28 62	210.00
9340.000	540.00	769 34	0.05	0.06	0.05	28 62	210.00
9439.000	540.00	769.43	0.00	0.15	0.00	28.63	99.00
9439.000	540.00	769.48	0.04	0.14	0.04	28.63	99.00
9440.000	540.00	769.44	0.00	0.00	0.00	28.63	1.00
9440.000	540.00	769.48	0.04	0 00	0.04	28.63	1.00
9451 000	540 00	769.45	0 00	0.02	0.00	28.63	11.00
9451.000	540.00	769.49	0.04	0.01	0.04	28.63	11.00
9452.000	540.00	769.45	0.00	0.00	0.00	28.63	1.00
9452.000	540.00	769.49	0.04	0.00	0.04	28.63	1.00
9501.000	540.00	769.52	0 00	0.07	0.00	28.63	49.00
9501.000	540.00	769.56	0.04	0.06	0.04	28.63	49.00
9650.000	540 00	769.58	0.00	0.06	0.00	17.50	149.00
9650.000	540 00	769.62	0.04	0.06	0.04	17.50	149.00
9651.000	540.00	769.58	0.00	0.00	0.00	17.50	1.00
9651.000	540.00	769.62	0.04	0.00	0.04	17.50	1.00
9673 000	540.00	769.69	0.00	0.11	0.00	17.50	22.00
9673.000	540.00	769.73	0.03	0.11	0.03	17.50	22.00
9674.000	540.00	769 70	0.00	0.00	0.00	17.50	1.00
9674.000	540.00	769.73	0.03	0.00	0.03	17.50	1.00
9685.000	540.00	769.75	0 00	0.05	0.00	17.50	11.00
9685.000	540.00	769.78	0.03	0.05	0.03	17.50	11.00
9837.000	540.00	770.50	0.00	0.75	0.00	19.40	152.00
9837 000	540.00	770.54	0 04	0.76	0.04	19.40	152.00
9937.000	540.00	770.74	0.00	0.24	0.00	19.40	100 00
9937.000	540.00	770.78	0.03	0.24	0.03	19.40	100.00
10034.000	540.00	771.10	0.00	0.35	0.00	25.40	97.00
10034.000	540.00	771.12	0.03	0 35	0 03	25.40	97.00
10035.000	540.00	771.07	0.00	-0.03	0.00	25.40	1.00
10035.000	540.00	771.10	0.03	-0.03	0.03	25 40	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10049.000	540.00	771.14	0.00	0.08	0 00	25.40	14 00
10049 000	540.00	771.17	0.03	0.07	0 03	25.40	14.00
10050 000	540.00	771.24	0.00	0.09	0.00	25.40	1.00
10050.000	540.00	771.26	0.02	0.09	0.02	25.40	1.00
10064.000	540.00	771.05	0.00	-0.19	0.00	19.50	14.00
10064.000	540.00	771 08	0.03	-0.19	0.03	19.50	14.00
10065.000	540.00	771.05	0.00	0.01	0.00	19.50	1.00
10065.000	540 00	771.08	0.03	0.01	0.03	19 50	1.00
10070.000	540.00	771.09	0 00	0.04	0.00	19.50	5.00
10070.000	540.00	771.12	0.03	0.04	0.03	19.50	5.00
10071.000	540.00	771.10	0.00	0.01	0.00	19.50	1.00
10071.000	540.00	771.13	0.03	0.01	0.03	19.50	1 00
10072.000	540.00	771.12	0.00	0.01	0 00	19.50	1.00
10072.000	540.00	771.14	0 03	0.01	0.03	19.50	1.00
10073 000	540.00	771.13	0.00	0.01	0.00	19.50	1.00
10073 000	540.00	771.16	0.03	0.01	0.03	19.50	1.00
10090 000	540.00	771.32	0.00	0.19	0.00	19.50	17 00
10090.000	540.00	771.34	0.02	0.18	0.02	19.50	17.00
10091.000	540.00	771.33	0.00	0.01	0.00	19.50	1.00
10091.000	540.00	771.34	0.02	0.01	0.02	19.50	1.00
10099.000	540.00	771.18	0.00	-0.14	0.00	23.21	8.00
10099.000	540.00	771.21	0.02	-0.14	0.02	23.22	8.00
10100.000	540.00	771.07	0.00	-0.11	0.00	23.20	1.00
10100.000	540.00	771.10	0 03	-0.11	0 03	23.20	1.00
10116.000	540 00	772.06	0.00	0.99	0.00	23.32	16.00
10116.000	540.00	772.04	-0.02	0.94	-0.02	23.32	16.00
10117.000	540.00	772.33	0.00	0.27	0.00	23.36	1.00
10117.000	540.00	772.31	-0.02	0.27	-0 02	23.36	1.00
10179.000	540.00	772.91	0.00	0.57	0.00	30.10	62.00
10179.000	540.00	772.90	-0.01	0.59	-0.01	30.10	62.00
10180.000	540.00	772.88	0.00	-0.03	0.00	30 10	1.00
10180.000	540.00	772.87	-0.01	-0 03	-0.01	30.10	1.00
10237.000	540.00	773.01	0.00	0.14	0.00	30.10	57.00
10237.000	540.00	773.01	-0.01	0.14	-0.01	30 10	57.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10238.000	540.00	773.09	0.00	0.08	0.00	30.10	1.00
10238.000	540.00	773.09	-0.01	0.08	-0 01	30 10	1.00
10246.000	540.00	773.07	0.00	-0.02	0.00	29.84	8.00
10246.000	540.00	773.07	-0.01	-0.02	-0.01	29.84	8.00
10251.000	540.00	773.07	0.00	-0 01	0.00	29.84	5.00
10251.000	540.00	773.06	-0.01	-0.01	-0 01	29.84	5 00

SUMMARY OF ERRORS AND SPECIAL NOTES

FLOODWAY DATA, 100-YEAR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
5792.000	500.	1181.	0.5	763.4	763 3	0.1
6199.000	563.	1393.	0.4	763.4	763.3	0 1
6200.000	564.	1295.	0.4	763.4	763.3	0.1
6222.000	565.	1304.	0.4	763.4	763.3	0.1
6223 000	564.	1412.	0.4	763.4	763.3	0 1
6400.000	469.	900.	0.6	763.4	763.3	0.1
6401.000	471	854.	0.6	763.5	763.4	0.1
6446.000	471.	914.	0.6	763.5	763.4	0.1
6447.000	470.	913.	0.6	763.5	763.4	0.1
6496.000	470.	915.	0.6	763 5	763.4	0.1
6896.000	258.	857.	0.6	763.5	763.4	0.1
7300.000	38.	132.	4.1	763.6	763.5	0.1
7399.000	21.	110.	4.9	763.8	763 7	0.1
7400.000	21.	110.	4.9	763.8	763.7	0.1
7469.000	21.	115.	4.7	764.1	764.0	0.1
7470.000	21.	115.	4.7	764.1	764.0	0.1
7519.000	21.	117.	4.6	764.2	764.1	0.1
7720 000	34.	154.	3.5	764.7	764.6	0.1
7721.000	34.	138.	3.9	764.7	764.6	0.1
7734.000	34.	138.	3.9	764.8	764.7	0.1
7735.000	34.	157.	3.4	764.8	764.7	0.1
7784.000	135.	481.	1.1	765.0	764.9	0.1
8298 000	111.	246.	2.2	765.2	765 2	0.0
8620.000	33.	92.	5.9	765.7	765.7	0.0
8719.000	19.	71.	7.6	766 2	766.2	0.0
8720 000	19.	71.	7.6	766.3	766.3	0.0
8788.000	19.	91.	5.9	767.3	767.3	0.0
8789.000	19.	91.	5.9	767.3	767.3	0.0
8889 000	19.	100.	5 4	767 8	767.8	0.0
8989 000	17.	89.	6.1	768.0	768.0	0 0
9071.000	20	114.	4.7	769.0	768.9	0.1
9120 000	40.	215.	2.5	769.2	769.2	0.0
9121 000	40.	215.	2.5	769.2	769.2	0.0
9129 000	40.	215.	2.5	769.2	769.2	0.0
9130.000	40.	215.	2.5	769.2	769.2	0.0
9340.000	29.	143.	3.8	769.3	769.3	0.0
9439.000	29.	147.	3.7	769 4	769.4	0.0
9440.000	29.	147.	3.7	769.4	769.4	0.0
9451 000	29.	147.	3.7	769.5	769.5	0.0
9452.000	29.	147.	3.7	769.5	769.5	0.0
9501 000	29.	149.	3.6	769.5	769.5	0.0
9650.000	18.	91.	5.9	769.6	769.6	0.0

FLOODWAY DATA, 100-YEAR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
9651.000	18.	91.	5.9	769.6	769 6	0 0
9673.000	18.	93.	5.8	769.7	769.7	0.0
9674.000	18.	93.	5.8	769.7	769 7	0.0
9685.000	18.	94.	5.7	769.7	769 7	0.0
9837.000	19.	109.	4.9	770 5	770.5	0.0
9937.000	19.	104	5.2	770.7	770.7	0.0
10034.000	25.	120.	4.5	771.1	771 1	0.0
10035.000	25	110	4.9	771 1	771.1	0.0
10049.000	25.	111.	4.9	771.1	771.1	0.0
10050.000	25.	124.	4.4	771.2	771 2	0.0
10064.000	20.	78.	7 0	771.0	771.0	0 0
10065.000	20.	78.	7.0	771.1	771.1	0.0
10070.000	20.	78.	6.9	771.1	771 1	0.0
10071.000	20.	78.	6.9	771.1	771.1	0 0
10072.000	20.	79.	6.9	771.1	771.1	0 0
10073.000	20.	79.	6.8	771.1	771.1	0 0
10090.000	20.	83.	6 5	771.3	771.3	0.0
10091.000	20.	83.	6.5	771.3	771.3	0.0
10099 000	29.	65.	8 3	771.2	771.2	0.0
10100.000	29.	59.	9.2	771.1	771.1	0.0
10116.000	29.	76.	7 2	772.1	772.1	0.0
10117.000	29.	88	6.2	772.3	772.3	0.0
10179.000	30.	138.	3.9	772.9	772.9	0.0
10180.000	30.	124.	4.4	772.9	772.9	0.0
10237.000	30.	127	4.2	773.0	773.0	0.0
10238.000	30.	144.	3.7	773 1	773.1	0 0
10246.000	30.	127.	4.2	773.1	773.1	0.0
10251.000	30.	123.	4.4	773.1	773.1	0.0

THIS RUN EXECUTED 29 JUN 89 15:08:51

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

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: 100-YR SUMMARY

SEGMENT 5

00BREAK00

THIS RUN EXECUTED 30 JUN 89 11:13:14

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
10317.000	788.80	0.00	788.80	162.00	0.43	538.40	1.17	162.00	30.00	45.00	160.00	192 00
10317.000	788.90	0.10	788.90	162.00	0.49	538.18	1.33	162.00	30.00	45.00	160.00	192.00
11674.000	788.80	0.00	788.84	45.06	0.00	540.00	0.00	0.00	0.00	1246.00	1292.00	0.00
11674.000	788.90	0.10	788.94	45.02	0.00	540.00	0.00	45.02	1246.30	1246.00	1292.00	1291.32
13254.000	789.10	0.00	789.13	113.56	0.26	504.84	34.89	0.00	0.00	496.00	561.00	0.00
13254.000	789.19	0.09	789.22	113.56	0 32	503.83	35.85	113.56	492.18	496.00	561.00	605.74
13724.000	789.22	0.00	789.30	98.81	0 00	529 66	10.34	0.00	0 00	496.00	561.00	0.00
13724.000	789.30	0.08	789 38	79.00	0.00	527.59	12.41	79.00	507.00	496.00	561.00	586.00
14194.000	789.77	0.00	789.95	68.88	0.00	539.45	0.55	0.00	0.00	496.00	561.00	0.00
14194.000	789.85	0.08	790 02	60.00	0.00	539.37	0.62	60.00	505.00	496.00	561.00	565.00
14600.000	791 22	0.00	791.53	82.61	3.83	430 89	105.28	0.00	0.00	2086.00	2113.00	0.00
14600.000	791 27	0 05	791.59	73.00	0.00	428.20	111.80	73.00	2087.00	2086.00	2113.00	2160.00
15300.000	794.08	0 00	794.40	44.45	8.36	521.62	10.02	0.00	0.00	2086.00	2113.00	0.00
15300.000	794.16	0.08	794 47	44.83	8.57	520.78	10.66	0.00	0.00	2086.00	2113.00	0.00
16004.000	796.18	0.00	796.46	46.13	9.26	517.87	12.86	0.00	0.00	2086.00	2113.00	0.00
16004.000	796.19	0.01	796 46	46.18	9.29	517.77	12.94	0.00	0.00	2086.00	2113.00	0.00
16037.000	796.26	0 00	796.54	46.08	9.24	517 99	12.78	0.00	0.00	2086.00	2113.00	0.00
16037.000	796.27	0.01	796.55	46.14	9.27	517.85	12.88	0.00	0.00	2086.00	2113.00	0.00
16070.000	796.37	0.00	796 68	27.00	0.00	540.00	0.00	27.00	2086.00	2086.00	2113.00	2113.00
16070.000	796.37	0.01	796.69	27.00	0.00	540.00	0.00	27.00	2086.00	2086.00	2113.00	2113.00
16104.000	796.55	0.00	798.75	8.40	0.00	540.00	0.00	0.00	0.00	2093.90	2102.30	0.00
16104.000	796.55	0.01	798.75	8.40	0.00	540.00	0.00	0.00	0.00	2093.90	2102.30	0.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	16194.000	800.12	0.00	800.91	8.40	0.00	540.00	0.00	8.40	2093.90	2093.90	2102.30	2102.30
	16194.000	800.13	0.01	800.92	8.40	0.00	540 00	0.00	8.40	2093.90	2093.90	2102.30	2102.30
	16244.000	801.13	0.00	801.16	107.92	21.90	421.28	96.82	135.00	2045.00	2086.00	2113.00	2180.00
	16244.000	801.14	0.01	801.18	103.84	0.00	414.26	125.74	0.18	2086.00	2086.00	2113.00	2189.84
	16514.000	801.17	0.00	801.22	84.73	22.01	482.73	35.26	204.00	1238.00	1314.00	1349 00	1442.00
	16514 000	801 19	0.02	801.25	58.16	19.70	492.17	28.13	0.04	1305.67	1314.00	1349.00	1363.84
	16614.000	801.23	0.00	801 25	93.90	0.00	540.00	0.00	0.00	0.00	1295.30	1389.20	0 00
	16614.000	801.25	0.03	801.28	93.90	0.00	540.00	0.00	0.00	1295.30	1295.30	1389.20	1389.20
	16629.000	801.28	0.00	801.31	93.90	0.00	540.00	0.00	0.00	0.00	1295.30	1389.20	0.00
	16629.000	801.38	0.10	801.41	93.90	0 00	540.00	0.00	0.00	0.00	1295.30	1389.20	0.00
	16679.000	801.27	0.00	801.35	76.25	24.39	496.07	19.54	314.00	1178.00	1314.00	1349.00	1492.00
	16679.000	801.37	0.10	801.45	48.35	24.84	509.83	5.33	0.05	1303.96	1314.00	1349.00	1352.31
	17000.000	801.43	0.00	801.76	35.28	24 32	497.56	18.12	0 00	0.00	1253.00	1273.00	0.00
	17000.000	801 52	0.09	801.86	27.80	18.58	511.59	9.83	0.03	1247.96	1253.00	1273.00	1275.76
	17099.000	801.82	0.00	801 97	24.80	0.00	540 00	0.00	0.00	0.00	1250.60	1275.40	0.00
	17099.000	801.94	0.11	802.07	24.80	0.00	540.00	0 00	0.00	1250.60	1250.60	1275.40	1275.40
	17100.000	801 82	0 00	801.97	24.80	0.00	540.00	0 00	0.00	0.00	1250.60	1275.40	0.00
	17100.000	801.94	0.11	802.08	24.80	0.00	540.00	0.00	0.00	1250.60	1250.60	1275.40	1275.40
	17117.000	801.84	0.00	801.99	24 80	0.00	540.00	0.00	0.00	0.00	1250.60	1275.40	0.00
	17117.000	801.96	0 11	802.09	24.80	0.00	540 00	0.00	0.00	1250.60	1250.60	1275 40	1275.40
	17118.000	801.85	0.00	801 99	24.80	0.00	540.00	0.00	0.00	0.00	1250.60	1275.40	0.00
	17118.000	801.96	0.11	802.09	24.80	0.00	540.00	0.00	0.00	1250.60	1250.60	1275.40	1275.40
*	17132.000	802.20	0.00	803.37	24.80	0.00	495.00	0.00	0.00	0.00	1250.60	1275.40	0.00
*	17132 000	802.20	0.00	803.37	24.80	0.00	495.00	0.00	0.00	1250.60	1250.60	1275.40	1275 40
*	17135.000	812.25	0.00	812.31	24.74	0.00	495.00	0.00	0.00	0.00	1.00	25.80	0.00
*	17135.000	812.30	0.05	812.36	24.74	0 00	495.00	0.00	0 00	1.00	1.00	25.80	25.80
	17145.000	812.29	0 00	812.35	24.74	0.00	495.00	0.00	0.00	0.00	1.00	25.80	0.00
	17145 000	812 30	0.01	812.37	24.74	0.00	495.00	0.00	0.00	0.00	1.00	25.80	0.00
	17345.000	812.38	0 00	812.38	393.69	2.24	492.47	0.29	0.00	0.00	110.00	390.00	0.00
	17345.000	812.41	0.03	812.41	170 00	0.00	495.00	0.00	170.00	160.00	110.00	390.00	330 00
	18939.000	812.38	0.00	812.39	480.88	17.77	475.98	1.25	0.00	0.00	677.00	1002.00	0.00
	18939 000	812.42	0.04	812.42	220.00	0.00	495.00	0.00	220 00	730.00	677.00	1002.00	950.00
	19845.000	812.44	0.00	812.58	86.00	0.13	494.75	0.13	86.00	494.00	500.00	561.60	580.00
	19845.000	812.54	0.11	812 67	61.60	0.00	495.00	0.00	0.05	500.00	500.00	561.60	561.60

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
19895.000	812.56	0.00	812.68	61.60	0.00	495.00	0.00	0.00	0.00	500.00	561.60	0.00
19895.000	812.65	0.09	812.77	61 60	0.00	495.00	0.00	0.00	500.00	500.00	561 60	561.60
19905.000	812.57	0.00	812.70	61.60	0.00	495.00	0.00	0.00	0.00	500.00	561.60	0.00
19905.000	812.67	0.10	812.79	61.60	0.00	495.00	0.00	0.00	0.00	500.00	561.60	0.00
19955.000	812.68	0.00	812.79	161.00	4.89	488 49	1.62	161.00	450.00	500.00	561.60	611.00
19955 000	812.77	0 08	812.88	61.60	0.00	495.00	0.00	0.13	500.00	500.00	561.60	561.60
20490 000	813.08	0.00	813.09	286.51	4.39	293.20	197.41	287.00	920.00	931.00	1006.00	1207.00
20490.000	813.16	0.08	813.18	242.25	0.00	304.87	190.13	0.07	931.00	931.00	1006.00	1173.25
20900.000	813.18	0 00	813.30	82.02	15.25	479.75	0.00	108.00	475.00	500.00	557.90	583.00
20900.000	813.26	0.09	813.39	57.32	0.00	495.00	0.00	0.12	500 00	500.00	557.90	557.90
21000.000	813.28	0.00	813.41	57.37	0.00	495.00	0.00	0.00	0.00	500.00	557.90	0.00
21000.000	813.38	0.09	813.49	57.74	0.00	495.00	0.00	0.00	500.00	500.00	557.90	557.90
21010 000	813.30	0.00	813.42	57.45	0.00	495.00	0 00	0.00	0.00	500.00	557.90	0.00
21010.000	813.40	0.10	813.52	57.90	0.00	495.00	0.00	0.00	0.00	500.00	557.90	0.00
21060.000	813.36	0.00	813 47	107.68	22.25	472.75	0.00	158.00	450.00	500.00	557.90	608.00
21060.000	813.44	0.07	813.55	57.90	0.00	495.00	0.00	0.11	500.00	500.00	557.90	557.90

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10317.000	0.00	0.00	0.00	776.10	540.00	788.80	0.00	788.80	0.07	0.43	1298.83	1986.75
10317.000	0.00	0.00	0.00	776.10	540.00	788.90	0.00	788.90	0.07	0.43	1315.03	2018.03
11674.000	1357.00	0.00	0.00	778.00	540.00	788.80	0.00	788.84	1.84	1.57	344.36	397.61
11674.000	1357.00	0.00	0.00	778 00	540.00	788.90	0.00	788.94	1.77	1.55	348.84	405.33
13254.000	1580.00	0.00	0.00	782.10	540.00	789.10	0.00	789.13	1.83	1.39	476.37	399.59
13254.000	1580.00	0.00	0.00	782.10	540.00	789.19	0.00	789.22	1.73	1.36	486.20	410.77
13724.000	470.00	0.00	0.00	784.10	540.00	789.22	0.00	789.30	7.49	2.19	274.85	197.34
13724.000	470.00	0.00	0.00	784.10	540.00	789.30	0.00	789.38	7.69	2.29	261.77	194.73
14194.000	470.00	0.00	0.00	786.00	540.00	789.77	0.00	789.95	29.08	3.39	161.39	100.14
14194.000	470.00	0.00	0 00	786.00	540.00	789.85	0.00	790.02	26.59	3.35	162.63	104.72
14600.000	406.00	0 00	0 00	786.40	540.00	791.22	0.00	791.53	51.96	5.01	174.06	74.92
14600.000	406.00	0 00	0.00	786.40	540.00	791.27	0.00	791.59	56.78	5.03	168.35	71.66
15300.000	700.00	0.00	0.00	788.20	540 00	794.08	0.00	794.40	33.02	4.64	134.19	93 97
15300.000	700.00	0.00	0.00	788.20	540.00	794.16	0.00	794.47	31.21	4.56	137.17	96.65
16004.000	704.00	0.00	0.00	790.00	540.00	796.18	0.00	796.46	25.88	4.30	147.61	106.15
16004.000	704.00	0.00	0.00	790.00	540.00	796.19	0.00	796.46	25.71	4.29	147.99	106.50
16037.000	33.00	0.00	0.00	790.10	540.00	796.26	0.00	796.54	26.06	4.31	147.20	105.77
16037.000	33.00	0.00	0.00	790 10	540.00	796.27	0.00	796.55	25.85	4.30	147.68	106.22
16070.000	33.00	0.00	0 00	790.20	540.00	796.37	0.00	796.68	36.11	4.51	119.76	89.86
16070.000	33.00	0.00	0.00	790.20	540.00	796.37	0.00	796.69	35.95	4.50	119.94	90.06
16104.000	34.00	0.00	0.00	790 30	540.00	796.55	0.00	798.75	88.58	11.90	45.36	57 37
16104.000	34.00	0.00	0.00	790.30	540.00	796.55	0.00	798.75	88.26	11.89	45.41	57.48
16194.000	90.00	801.90	798 40	790 30	540.00	800 12	0.00	800.91	38.97	7.16	75.42	86.50
16194.000	90.00	801.90	798.40	790.30	540.00	800.13	0.00	800.92	38.90	7.15	75.48	86.58
16244.000	50.00	0 00	0.00	791.30	540.00	801.13	0.00	801.16	1.53	1.73	557.43	435.88
16244.000	50.00	0.00	0.00	791.30	540 00	801.14	0.00	801.18	2.11	1.69	529.24	371.93
16514.000	270.00	0.00	0.00	792.50	540.00	801.17	0.00	801.22	2.42	1.89	396.01	347.26
16514.000	270.00	0.00	0.00	792.50	540.00	801.19	0.00	801.25	2.48	1.92	359.76	342.85
16614.000	100.00	0.00	0.00	793.70	540.00	801.23	0.00	801.25	2.08	1.28	421.99	374.61
16614.000	100.00	0.00	0.00	793.70	540 00	801.25	0.00	801.28	2.07	1.27	424.41	375.72
16629.000	15.00	803 30	801.00	794.30	540.00	801.28	0.00	801.31	2.11	1.29	419.77	371.70
16629.000	15.00	803.30	801.00	794.30	540.00	801.38	0.00	801.41	1.96	1.26	429.16	385.66

	SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	16679.000	50 00	0.00	0.00	794.50	540.00	801.27	0.00	801.35	4.58	2.34	300.90	252.20
	16679.000	50.00	0.00	0.00	794.50	540.00	801.37	0.00	801.45	4.59	2.37	271.16	251.96
	17000 000	321.00	0.00	0.00	795.20	540.00	801.43	0.00	801.76	23.44	4.75	144.65	111.54
	17000.000	321.00	0.00	0.00	795.20	540.00	801.52	0.00	801.86	23.39	4.80	133.81	111.67
	17099 000	99.00	0.00	0.00	794.40	540.00	801.82	0.00	801.97	10.95	3.02	178.53	163.16
	17099.000	99.00	0.00	0 00	794.40	540.00	801.94	0.00	802.07	10.48	2.98	181.33	166.80
	17100.000	1.00	810.80	807.60	794.40	540.00	801.82	0.00	801.97	10.95	3.02	178.57	163.20
	17100.000	1.00	810.80	807.60	794.40	540.00	801.94	0.00	802.08	10.48	2.98	181.35	166.83
	17117.000	17.00	810.80	807.66	794.40	540.00	801.84	0.00	801.99	10.87	3.02	179.01	163 79
	17117.000	17.00	810.80	807.66	794.40	540.00	801.96	0.00	802.09	10.41	2.97	181.80	167.41
	17118.000	1.00	0.00	0.00	794.40	540.00	801.85	0.00	801.99	10.86	3 02	179 06	163.85
	17118.000	1.00	0.00	0.00	794.40	540.00	801.96	0.00	802.09	10.40	2.97	181.84	167.47
*	17132.000	14.00	0.00	0 00	799.90	495.00	802.20	802.20	803.37	283.73	8.66	57.15	29.39
*	17132.000	14.00	0.00	0.00	799.90	495.00	802.20	802.20	803.37	283.69	8.66	57.15	29.39
*	17135.000	3.00	0.00	0.00	800.90	495.00	812.25	0.00	812.31	3.22	1.93	257.14	276.02
*	17135.000	3.00	0.00	0 00	800.90	495.00	812.30	0.00	812.36	3.17	1.92	258.37	277.82
	17145.000	10.00	813.00	811.50	800.90	495.00	812.29	0.00	812.35	3.18	1.92	258.18	277.53
	17145.000	10.00	813.00	811.50	800.90	495.00	812.30	0.00	812.37	7.27	2.07	238.58	183.53
	17345.000	200.00	0.00	0.00	802.00	495.00	812.38	0.00	812.38	0.02	0.19	2681.02	3668 93
	17345.000	200.00	0.00	0.00	802.00	495.00	812.41	0.00	812.41	0.04	0.28	1769.53	2579.44
	18939.000	1594.00	0.00	0.00	806.20	495.00	812.38	0.00	812.39	0.17	0.35	1598.42	1192.79
	18939.000	1594.00	0.00	0.00	807.30	495.00	812.42	0.00	812 42	0.45	0.55	898.88	738.81
	19845.000	906.00	0.00	0.00	809.20	495.00	812.44	0.00	812.58	22.31	2.98	168.03	104.80
	19845.000	906.00	0.00	0.00	809.20	495.00	812.54	0.00	812 67	19.85	2.87	172.42	111.09
	19895.000	50.00	0.00	0.00	809.20	495.00	812.56	0.00	812.68	19.29	2.86	173.37	112.69
	19895.000	50.00	0 00	0.00	809.20	495.00	812.65	0.00	812.77	17.62	2.77	178.54	117.92
	19905.000	10.00	816.50	813.20	809.20	495.00	812 57	0.00	812.70	18.91	2.84	174.41	113.82
	19905.000	10.00	816.50	813.20	809.20	495.00	812.67	0.00	812 79	16.85	2.74	180.57	120.60
	19955.000	50.00	0.00	0.00	809.20	495.00	812.68	0.00	812.79	16.38	2.70	209.08	122.29
	19955.000	50.00	0.00	0.00	809.20	495.00	812.77	0.00	812.88	15 51	2.66	186.19	125.68
	20490.000	535.00	0.00	0.00	809 30	495.00	813.08	0.00	813.09	1.96	1.09	852.26	353.22
	20490.000	535.00	0.00	0.00	809.30	495.00	813.16	0.00	813.18	2.06	1.10	786.23	344.75
	20900.000	410.00	0.00	0.00	809.30	495.00	813.18	0.00	813.30	17.50	2.83	197.46	118.33
	20900.000	410.00	0.00	0.00	809.30	495.00	813.26	0.00	813.39	17.56	2.84	174.34	118.14

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
21000.000	100.00	0.00	0.00	809 30	495.00	813.28	0.00	813.41	7.46	2.82	175.25	181.22
21000.000	100.00	0.00	0.00	809.30	495.00	813.38	0.00	813.49	6.72	2.73	181.28	190.89
21010.000	10.00	818.10	814.80	809.30	495.00	813.30	0.00	813.42	7.30	2.80	176.53	183.26
21010.000	10.00	818.10	814.80	809.30	495.00	813.40	0.00	813.52	6.62	2.72	182.29	192.32
21060.000	50.00	0.00	0.00	809.30	495.00	813.36	0.00	813.47	6.25	2.62	242.92	198 03
21060.000	50.00	0.00	0.00	809.30	495.00	813.44	0.00	813.55	6.64	2.69	183.96	192 09

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10317.000	540.00	788.80	0.00	0.00	0.00	162.00	0.00
10317.000	540.00	788.90	0.10	0.00	0.10	162.00	0.00
11674.000	540.00	788.80	0.00	0.00	0.00	45.06	1357.00
11674.000	540.00	788.90	0.10	0.00	0.10	45.02	1357.00
13254.000	540.00	789.10	0.00	0.30	0.00	113.56	1580.00
13254.000	540.00	789.19	0.09	0.29	0.09	113.56	1580.00
13724.000	540.00	789.22	0.00	0.12	0.00	98.81	470.00
13724.000	540.00	789.30	0.08	0.11	0.08	79.00	470.00
14194.000	540.00	789.77	0.00	0.55	0.00	68.88	470.00
14194.000	540.00	789.85	0.08	0.55	0.08	60.00	470.00
14600.000	540.00	791.22	0.00	1.45	0.00	82.61	406.00
14600.000	540.00	791.27	0.05	1.42	0.05	73.00	406.00
15300.000	540.00	794.08	0.00	2.86	0.00	44.45	700.00
15300.000	540.00	794.16	0.08	2.89	0.08	44.83	700.00
16004.000	540.00	796.18	0.00	2.10	0.00	46.13	704.00
16004.000	540.00	796.19	0.01	2.03	0.01	46.18	704.00
16037.000	540.00	796.26	0.00	0.09	0.00	46.08	33.00
16037.000	540.00	796.27	0.01	0.09	0.01	46.14	33.00
16070.000	540.00	796.37	0.00	0.10	0.00	27.00	33.00
16070.000	540.00	796.37	0.01	0.10	0.01	27.00	33.00
16104.000	540.00	796.55	0.00	0.18	0.00	8.40	34.00
16104.000	540.00	796.55	0.01	0.18	0.01	8.40	34.00
16194.000	540.00	800.12	0.00	3.57	0.00	8.40	90.00
16194.000	540.00	800.13	0.01	3.57	0.01	8.40	90.00
16244.000	540.00	801.13	0.00	1.01	0.00	107.92	50.00
16244.000	540.00	801.14	0.01	1.02	0.01	103.84	50.00
16514.000	540.00	801.17	0.00	0.04	0.00	84.73	270.00
16514.000	540.00	801.19	0.02	0.05	0.02	58.16	270.00
16614.000	540.00	801.23	0.00	0.05	0.00	93.90	100.00
16614.000	540.00	801.25	0.03	0.06	0.03	93.90	100.00
16629.000	540.00	801.28	0.00	0.06	0.00	93.90	15.00
16629.000	540.00	801.38	0.10	0.13	0.10	93.90	15.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	16679.000	540.00	801.27	0.00	-0.01	0.00	76.25	50 00
	16679.000	540.00	801 37	0.10	-0.01	0 10	48.35	50.00
	17000.000	540.00	801.43	0.00	0.16	0.00	35.28	321.00
	17000.000	540.00	801.52	0.09	0 15	0.09	27.80	321.00
	17099.000	540.00	801.82	0.00	0.39	0.00	24.80	99.00
	17099.000	540.00	801.94	0.11	0.41	0.11	24.80	99.00
	17100.000	540.00	801.82	0.00	0.00	0.00	24.80	1.00
	17100.000	540.00	801.94	0.11	0.00	0.11	24.80	1.00
	17117.000	540.00	801.84	0.00	0.02	0.00	24.80	17.00
	17117.000	540.00	801.96	0.11	0.02	0.11	24.80	17.00
	17118.000	540.00	801.85	0.00	0.00	0.00	24.80	1.00
	17118.000	540.00	801.96	0.11	0.00	0.11	24.80	1.00
*	17132.000	495.00	802.20	0 00	0.36	0.00	24.80	14.00
*	17132.000	495.00	802.20	0.00	0.25	0.00	24.80	14.00
*	17135.000	495.00	812.25	0.00	10.05	0.00	24.74	3.00
*	17135.000	495.00	812.30	0.05	10.10	0.05	24.74	3.00
	17145.000	495.00	812.29	0.00	0.04	0 00	24.74	10.00
	17145.000	495.00	812.30	0.01	0.00	0.01	24.74	10.00
	17345.000	495.00	812 38	0.00	0.09	0.00	393.69	200.00
	17345.000	495.00	812.41	0.03	0.10	0.03	170.00	200.00
	18939.000	495.00	812.38	0.00	0.01	0.00	480 88	1594.00
	18939.000	495.00	812.42	0.04	0.01	0.04	220.00	1594.00
	19845.000	495.00	812.44	0.00	0.05	0.00	86.00	906.00
	19845.000	495.00	812.54	0 11	0.12	0 11	61.60	906.00
	19895.000	495.00	812.56	0.00	0.12	0.00	61.60	50.00
	19895.000	495.00	812 65	0.09	0.11	0.09	61.60	50.00
	19905.000	495.00	812.57	0.00	0.02	0.00	61.60	10.00
	19905.000	495 00	812.67	0 10	0.03	0.10	61.60	10.00
	19955.000	495.00	812.68	0.00	0.11	0.00	161.00	50.00
	19955.000	495.00	812.77	0.08	0.09	0.08	61.60	50.00
	20490.000	495.00	813.08	0.00	0.40	0.00	286.51	535.00
	20490.000	495.00	813.16	0 08	0.40	0.08	242 25	535 00
	20900.000	495.00	813.18	0.00	0 10	0.00	82.02	410.00
	20900.000	495.00	813.26	0.09	0.10	0.09	57.32	410.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
21000.000	495.00	813.28	0.00	0.11	0.00	57.37	100.00
21000.000	495.00	813.38	0.09	0.12	0.09	57.74	100.00
21010.000	495.00	813.30	0.00	0.02	0.00	57.45	10.00
21010.000	495.00	813.40	0.10	0.02	0.10	57.90	10.00
21060.000	495.00	813.36	0.00	0.06	0.00	107.68	50.00
21060.000	495.00	813.44	0 07	0.04	0.07	57.90	50.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION   SECNO= 17132.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION   SECNO= 17132.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION   SECNO= 17132.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION   SECNO= 17132.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY

NOTE      SECNO= 17135.000  PROFILE= 1  WSEL BASED ON X5 CARD
NOTE      SECNO= 17135 000  PROFILE= 2  WSEL BASED ON X5 CARD
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FLOODWAY DATA, 100-YEAR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
10317.000	162.	1315.	0.4	788.9	788.8	0.1
11674.000	45.	349	1.5	788.9	788.8	0.1
13254.000	114.	486.	1.1	789.2	789.1	0.1
13724.000	79.	262.	2.1	789.3	789.2	0.1
14194.000	60.	163	3.3	789.9	789.8	0.1
14600.000	73.	168.	3.2	791.2	791.2	0.0
15300.000	45.	137.	3.9	794.2	794.1	0.1
16004.000	46.	148.	3.6	796.2	796.2	0.0
16037.000	46.	148.	3.7	796.3	796.3	0.0
16070.000	27.	120.	4.5	796.4	796.4	0.0
16104.000	8.	45.	11.9	796.5	796.5	0.0
16194.000	8.	75.	7.2	800.1	800.1	0.0
16244 000	104.	529.	1.0	801.1	801.1	0.0
16514.000	58.	360.	1.5	801 2	801.2	0.0
16614.000	94.	424.	1.3	801.2	801.2	0.0
16629.000	94.	429.	1.3	801.4	801.3	0.1
16679.000	48.	271.	2.0	801.4	801.3	0.1
17000.000	28.	134.	4.0	801.5	801.4	0.1
17099.000	25.	181.	3.0	801.9	801.8	0.1
17100.000	25.	181.	3.0	801.9	801.8	0.1
17117 000	25.	182.	3.0	801.9	801.8	0.1
17118.000	25.	182.	3.0	801.9	801 8	0.1
17132.000	25.	57.	8.7	802.2	802.2	0.0
17135.000	25.	258.	1.9	812.3	812.3	0.0
17145.000	25.	239.	2.1	812.3	812.3	0.0
17345.000	170.	1770.	0.3	812.4	812.4	0.0
18939.000	220.	899	0.6	812.4	812.4	0.0
19845.000	62.	172.	2.9	812.5	812.4	0.1
19895.000	62.	179.	2.8	812.7	812.6	0 1
19905.000	62.	181.	2.7	812 7	812.6	0.1
19955 000	62.	186.	2.7	812.8	812 7	0.1
20490.000	242.	786.	0.6	813 2	813.1	0.1
20900.000	57.	174.	2.8	813.3	813.2	0.1
21000.000	58.	181.	2.7	813.4	813.3	0.1
21010.000	58.	182.	2.7	813.4	813.3	0 1
21060.000	58.	184.	2.7	813.5	813.4	0.1

THIS RUN EXECUTED 30 JUN 89 11:13:20

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

ER

   UNEXPECTED END OF FILE ABORT IN SUBROUTINE  H2MAIN
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE ~~[illegible]~~ INPUT DATA

SEGMENT 1

00BREAK00

Comment	Response
1	X-sec. 3218 - channel "n" value changed to .035.
2	X-sec. 3514-6896 have been encroached to get .1 foot increase.
3	Bridge at Pitcher Street has been recoded based on information provided by MDNR and HEC-2 model rerun.
4	Between Portage Street and Walnut Street "n" values have been changed to .03 for the channel and overbanks.
5	For the Railroad upstream of Stockbridge Street, the flow has been encroached to the width of railroad bridge. Also BT cards at stations 900 and 1100 have been changed to 766.1 and 766.0, respectively.
6	X-sec. 21000 - channel "n" value changed to .03.

THIS RUN EXECUTED 21 JUN 89 8:32:14

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM CONFLUENCE WITH KALAMAZOO RIVER TO U/S OF FIRST R R
T3        10-YEAR FLOOD
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0	0.	0.001140	0 00	0.0	0.	757.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
J3	VARIABLE CODES FOR SUMMARY PRINTOUT									
	150.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	4.000	500.000	560.000	580.000	630.000	0.000	0.000	0.000	0.000	0.000
NC	0 100	0.100	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	PORTAGE CREEK, CONFLUENCE WITH KALAMAZOO RIVER									
X1	0.000	19.000	408.000	490 000	0.000	0.000	0.000	0.000	0.000	0.000
GR	768.400	232.000	767.000	244.000	764.700	256.000	762.200	268.000	761.600	294.000
GR	760.400	362.000	759.200	394.000	757.300	400.000	753.300	408.000	752.300	438.000
GR	752 400	449.000	752.000	468.000	753.600	490.000	759.700	507.000	763.700	518.000
GR	764.800	566.000	765.600	592 000	766.000	640.000	766.700	690.000	0 000	0.000
X1	229.000	14.000	820.850	861.150	375.000	150.000	229.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.400	761.400	0.000
GR	766.700	0.000	766.700	0.000	767.200	142.000	766.200	222.000	766.400	384.000
GR	765.500	798.000	755.400	820.850	752.500	831.000	751.200	841.000	751.800	858.000
GR	755.300	861.150	765.200	884.000	766.000	946.000	766.800	1108.000	0.000	0.000
NC	0.100	0.100	0.020	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	D/S FACE MICHIGAN AVE. BRIDGE									
X1	230.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	761.400	765.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.400	761.400	0.000
	U/S FACE MICHIGAN AVE. BRIDGE									
X1	322.000	0.000	0.000	0.000	92.000	92.000	92.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	762.400	766.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766 400	0.000

NC	0.080	0.080	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	323.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000
	50 FT. U/S MICHIGAN AVE BRIDGE									
X1	372.000	19.000	796.000	822.000	49.000	49.000	49.000	0.000	0.000	0.000
GR	767.200	0.000	767.200	0.000	767.000	216.000	766.600	300 000	765.800	400.000
GR	765.200	502.000	766.000	544.000	766.200	606.000	764.800	752.000	764.800	773.000
GR	756.200	796.000	752.500	797.000	750.600	808.000	752.500	819.000	755.300	822.000
GR	761.500	832.000	764.000	846.000	766.200	982.000	767.000	1100.000	0.000	0.000
X1	669.000	13.000	0.100	56.000	297.000	297 000	297.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0.000
X4	4.000	757.000	7.600	757.000	8.100	757.000	43.600	757.000	44.100	0.000
GR	780.000	0.000	759.500	0.100	757 000	7.500	757.000	8.000	752.800	10.000
GR	751.500	23.000	753.000	39.000	757.000	43.500	757.000	44.000	762.500	56.000
GR	763.200	62.000	767.800	262.000	767.900	400.000	0.000	0.000	0.000	0.000
	D/S FACE FOOTBRIDGE									
X1	670.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0 000
BT	14.000	0.000	780.000	0.000	0.100	762.000	761.900	7.500	762.500	761.900
BT	7.600	762.500	0.000	8.000	762.500	0.000	8.100	762.500	761.900	43.500
BT	762.500	761.900	43.600	762.500	0.000	44.000	762.500	0.000	44.100	762.500
BT	761.900	56.000	762.500	0.000	62.000	763.200	0.000	262.000	767.800	0.000
BT	400.000	767.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S FACE FOOTBRIDGE									
X1	674.000	0.000	0.000	0.000	4.000	4.000	4.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	0.000	0.000	0 000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0.000
X1	675.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.500	762.500	0.000
	D/S FIRST RAILROAD BRIDGE									
X1	890.000	15 000	892.500	925.500	215.000	215.000	215.000	0.000	0.000	0.000
GR	763.000	560.000	763.600	628.000	763.000	774.000	764.400	844.000	764.000	870.000
GR	761.200	890.000	753.800	892.500	752.000	909.000	753.100	919.000	756.100	925.500
GR	761.100	928.000	762.300	978.000	761.700	1064.000	761.200	1226.000	762.000	1302.000
X1	989.000	0.000	0.000	0.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.200	761.200	0.000
	D/S FACE FIRST RAILROAD BRIDGE									
X1	990.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0 000	0.000	0.000	761.200	761.200	0.000
BT	13.000	560.000	763.000	0.000	628.000	763.600	0.000	774.000	763 800	0.000
BT	844.000	764.400	0.000	870.000	764.000	0.000	892.500	764.300	0.000	892.500
BT	764.300	761.200	925.500	764.300	761.200	925.500	764.300	0.000	978.000	763.800
BT	0.000	1064.000	764.000	0.000	1226.000	764.200	0.000	1302.000	764.000	0.000

U/S FACE FIRST RAILROAD BRIDGE

X1	1009.000	15.000	897.000	921.000	19.000	19.000	19.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	764.300	764.300	0.000
BT	13.000	560.000	763 000	0.000	628.000	763.600	0.000	774.000	763.800	0.000
BT	844.000	764.400	0.000	870.000	764.000	0.000	895.000	764.300	0.000	895.000
BT	764.300	761.200	921.000	764.300	761.200	921.000	764.300	0.000	978.0	
OO	763.800									
BT	0.000	1064.000	764.000	0.000	1226.000	764.200	0.000	1302.000	764.000	0.000
GR	763.000	560.000	763.600	628.000	763.000	774.000	764.400	844.000	764.000	870.000
GR	761.200	895.000	753.800	897.000	752.000	909.000	753.100	916.000	756.100	921.000
GR	761.100	923.000	762.300	978.000	761.700	1064.000	761.200	1226.000	762.000	1302.000
NC	0.100	0.100	0.035	0.600	0.800	0.000	0.000	0.000	0.000	0.000

U/S RAILROAD BRIDGE - CROSS SECTION A

X1	1010.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	764.300	764.300	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000



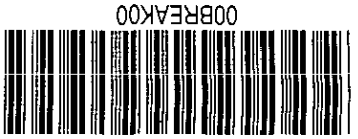
1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI PROFILE INPUT DATA

SEGMENT 2



THIS RUN EXECUTED 23 JUN 89 15:12:27

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM DIVERSION AT FIRST R.R. BRIDGE TO D/S GIBSON ST.
T3        10-YEAR FLOOD

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        2.         0.         0.   0.000000       0.00       0.0        0.     756.880     0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000     0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
   150.000     0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

QT     4.000    500.000    560.000    580.000    630.000      0.000      0.000      0.000      0.000      0.000
QT     4.000    500.000    560.000    580.000    630.000      0.000      0.000      0.000      0.000      0.000
NC     0.100      0.100      0.020      0.300      0.500      0.000      0.000      0.000      0.000      0.000
           U/S FACE FIRST RAILROAD BRIDGE
X1  1009.000     15.000    897.000    921.000     19.000     19.000     19.000      0.000      0.000      0.000
X3    10.000      0.000      0.000      0.000      0.000      0.000      0.000    764.300    764.300      0.000
BT    13.000    560.000    763.000      0.000    628.000    763.600      0.000    774.000    763.800      0.000
BT   844.000    764.400      0.000    870.000    764.000      0.000    895.000    764.300      0.000    895.000
BT   764.300    761.200    921.000    764.300    761.200    921.000    764.300      0.000    978.000    763.800
BT     0.000   1064.000    764.000      0.000   1226.000    764.200      0.000   1302.000    764.000      0.000
GR   763.000    560.000    763.600    628.000    763.000    774.000    764.400    844.000    764.000    870.000
GR   761.200    895.000    753.800    897.000    752.000    909.000    753.100    916.000    756.100    921.000
GR   761.100    923.000    762.300    978.000    761.700   1064.000    761.200   1226.000    762.000   1302.000

NC     0.100      0.100      0.035      0.600      0.800      0.000      0.000      0.000      0.000      0.000
           U/S RAILROAD BRIDGE
X1  1010.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
X3    10.000      0.000      0.000      0.000      0.000      0.000      0.000    764.300    764.300      0.000

           50 FT U/S RAILROAD BRIDGE
X1  1059.000     15.000    896.000    933.000     49.000     49.000     49.000      0.000      0.000      0.000
GR   763.000    560.000    763.600    628.000    763.000    774.000    764.400    844.000    764.000    870.000
GR   756.300    896.000    753.000    898.000    752.200    909.000    752.300    930.000    755.500    933.000
GR   756.400    944.000    762.300    978.000    761.700   1064.000    761.200   1226.000    762.000   1302.000
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NC	0.100	0.100	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	D/S OF SECOND RAILROAD BRIDGE									
X1	1480.000	21.000	817.000	840 000	421.000	421.000	421.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	802.000	0.000	852.000	0.000	0.000	0.000	0.000
GR	766.200	0.000	766.000	58.000	760.000	188.000	760.400	290.000	763.000	320.000
GR	762.600	430 000	763.500	520.000	763.000	642.000	763.000	778.000	762.400	798.000
GR	758.200	809.000	756.400	812.000	753.800	817.000	752.800	823.000	753.900	828.400
GR	753.900	829.600	753.300	834.000	755.200	840.000	761.100	852.000	762.400	868.000
GR	800.000	1094.000	0.000	0.000	0.000	0.000	0:000	0.000	0.000	0.000
	D/S FACE RAILROAD BRIDGE									
X1	1580.000	0 000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.400	761.400	0.000
SB	1.050	1.870	3.000	0.000	23.200	1.200	147.000	0.000	753.400	753.300
	U/S FACE RAILROAD BRIDGE - CROSS SECTION B									
X1	1608.000	0.000	0.000	0.000	28.000	28.000	28.000	0.000	0.100	0.000
X2	0.000	0.000	1.000	760.100	762.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.800	762.800	0.000
BT	21.000	0.000	766.300	0.000	58.000	766.100	0.000	188.000	763.500	0.000
BT	290.000	763.400	0.000	320.000	763.200	0.000	430.000	763.200	0.000	520.000
BT	763.600	0.000	642.000	763.100	0.000	778.000	763.100	0.000	798.000	762.500
BT	0.000	817.000	762.600	0.000	817.000	762.600	760.100	828.400	762.600	760.100
BT	828.400	762.600	0.000	829.600	762.600	0.000	829.600	762.600	760:100	840.000
BT	762.600	762.100	840.000	762.600	0.000	852.000	762.800	0.000	868.000	762.800
BT	0.000	1094.000	800.900	0.000	0 000	0.000	0.000	0.000	0.000	0.000
	50 FT. U/S RAILROAD BRIDGE									
X1	1658.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	802.000	0.000	852.000	0.000	0.000	0.000	0.000
	100 FT. D/S THIRD RAILROAD BRIDGE									
X1	1850.000	18.000	829.000	857.000	192.000	192.000	192.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	804.000	0.000	882.000	0.000	0.000	0.000	0.000
GR	767.200	0.000	765.200	160.000	767.000	248.000	765.800	352.000	761.800	592.000
GR	760.000	734.000	760.100	802.000	758.200	822.000	757.000	829.000	753.300	834.000
GR	752 800	844.000	754.900	854.000	757.000	857.000	762.000	880.000	760.000	1004.000
GR	759.800	1178.000	760.700	1342.000	800.000	1343.000	0.000	0.000	0.000	0.000
	D/S FACE RAILROAD BRIDGE - CROSS SECTION C									
X1	1950.000	19.000	832.000	856.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	770.000	0.000	920.000	0.000	762.000	762.000	0.000
GR	767.200	0.000	765.200	160.000	767.000	248.000	765.800	352.000	761.800	592.000
GR	760.000	734.000	760.100	802.000	762.500	829.000	760.800	829.000	753.500	832.000
GR	753.400	844.000	754.800	850.000	757.200	856.000	760.800	859.000	762.500	859.000
GR	762.000	880.000	760.000	1004.000	759.800	1178.000	800.000	1342.000	0 000	0.000
SB	0.000	1.500	3.000	0.000	24.000	0.000	115.000	0.000	754.200	754.200

	U/S FACE RAILROAD BRIDGE									
X1	1967.000	0.000	0.000	0.000	17.000	17.000	17.000	0.000	0.200	0.000
X2	0.000	0.000	1.000	759.700	763.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	770.000	0.000	920.000	0.000	763.000	763.000	0.000
BT	13.000	0.000	800.000	0.000	160.000	800.000	0.000	248.000	800.000	0.000
BT	352.000	800.000	0.000	592 000	800.000	0.000	769.000	763 000	0.000	802.000
BT	763.200	0.000	832.000	764.000	0.000	832.000	764.000	759.700	856.000	764.000
BT	759.700	856.000	764.000	0.000	880.000	763.500	0.000	921.000	763.000	0.000
X1	2000.000	19.000	879.000	917.000	33.000	33.000	33 000	0.000	0.000	0.000
X3	0.000	0.000	0.000	853.000	0.000	943.000	0.000	0.000	0.000	0.000
GR	771.100	0.000	770.000	224 000	767 800	286.000	765.800	470.000	764.500	576.000
GR	763.600	734.000	763.200	820.000	760.400	844.000	757.600	864.000	756.300	879.000
GR	754.900	881.000	753.600	898.000	754.700	915.000	756.800	917.000	757.900	925.000
GR	759.200	944.000	760.600	1104.000	761.200	1184.000	800.000	1370.000	0.000	0.000
	D/S FACE FOURTH RAILROAD BRIDGE									
X1	2040.000	25.000	609.000	676.000	40.000	40.000	40.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.000	763.000	0.000
GR	763.600	539.000	763.200	574.000	760.000	601.000	758.000	609.000	757.500	612.000
GR	755.500	615.000	755.500	620.000	754.000	623.000	754.000	629.000	753.600	631.000
GR	753.600	637.000	755.200	640.000	755.200	645.000	755.200	648.000	755.200	654.000
GR	756.000	657.000	756.000	662.000	756.900	665.000	756.900	671.000	759.400	673.000
GR	759.400	676.000	760 000	680.000	762.000	685.000	760.000	720.000	762.000	745.000
SB	0.950	2.110	3.000	0.000	59.000	45.000	110.000	0.390	753.600	753.600
	U/S FACE R.R. BRIDGE									
X1	2057.000	0.000	0.000	0.000	17.000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	761.300	763.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.600	763.600	0.000
BT	4.000	539.000	764.200	0 000	609.000	763.900	0.000	676.000	763.500	0.000
BT	745.000	762.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	100 FT. U/S RAILROAD BRIDGE									
X1	2157.000	14.000	879.000	917.000	150.000	70.000	100.000	0.000	0.000	0.000
GR	800.000	819.000	761.800	820.000	760.000	855.000	756 300	879.000	754.900	881.000
GR	753.600	898.000	754.700	915.000	756.800	917.000	760.000	930.000	762.500	950.000
GR	760.000	975.000	760.000	1000.000	761.000	1025.000	800.000	1026.000	0.000	0.000
X1	2339.000	29.000	451 000	483.000	182.000	182.000	182.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
GR	800.000	409.000	763.000	410.000	762.800	442.000	758.000	451.000	758.000	451.100
GR	755.400	456.000	755.400	456.100	754.400	460.000	754.400	460.100	754.100	464.000
GR	754.100	464.100	754.700	468.000	754.700	468.100	754.700	472.000	754.700	472.100
GR	754.700	476.000	754.700	476.100	757.900	483.000	757.900	483.100	758.000	493 000
GR	760.000	503.000	758.000	513.000	758.000	560.000	760 000	568.000	762.200	580.000
GR	760.000	595.000	760.000	625 000	761.000	655.000	800.000	656.000	0.000	0.000
NC	0.000	0.000	0.020	0.000	0.000	0 000	0.000	0.000	0.000	0.000

	D/S FACE RAILROAD BRIDGE									
X1	2340.000	0.000	0.000	0 000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
BT	18.000	442.000	762.800	0.000	451.000	763.100	758.000	451.100	763.100	760.300
BT	456.000	763.100	760.300	456.100	763.100	755.400	460.000	763.100	754.400	460.100
BT	763.100	760.000	464.000	763 100	760.000	464.100	763.100	754.100	468.000	763.100
BT	754.700	468.100	763.100	760.000	472.000	763.100	760.000	472.100	763.100	754.700
BT	476.000	763.100	754.700	476.100	763.100	760.400	483.000	763.100	760.400	483.100
BT	763.100	757.900	493.000	758.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S FACE 5TH RAILROAD BRIDGE									
X1	2364.000	0.000	0.000	0.000	24.000	24.000	24.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0 000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.000	762.000	0.000
X1	2365.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.000	762.000	0.000
X1	2376.000	34.000	445.000	473.200	11.000	11.000	11.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
GR	800.000	414.000	762.000	415.000	757.600	445.000	757.600	445.100	754.600	449.000
GR	754.400	451.500	754.400	451.600	754.400	452.100	754.400	452.200	752.400	457.800
GR	752.400	457.900	752.400	458.400	752.400	458.500	753.900	463.800	753.900	463.900
GR	753.900	464.400	753.900	464.500	755.300	468.300	755.300	468.400	755.300	468.900
GR	755.300	469.000	756.900	473.100	756.900	473.200	762.400	505.000	762.000	515.000
GR	760.000	550.000	758.000	560.000	758.000	580.000	760.000	585.000	761.800	600.000
GR	760.000	620.000	760.000	650.000	761.600	660.000	800.000	661.000	0.000	0.000
	D/S FACE 6TH RAILROAD BRIDGE									
X1	2377.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
BT	19.000	415.000	762.000	0.000	445.000	763.500	757.600	445.100	763.500	761.000
BT	451.500	763.500	761.000	451.600	763.500	754.400	452.100	763.500	754.400	452.200
BT	763.500	761.000	457.800	763.500	761.000	463.800	763.500	761.000	463.900	763.500
BT	753.900	464.400	763.500	753.900	464.500	763.500	761.000	468.300	763.500	761.000
BT	468.400	763.500	755.300	468.900	763.500	755.300	469.000	763.500	761.000	473 100
BT	763.500	761.000	473.200	763.500	756.900	505.000	762.400	0.000	0.000	0.000
	U/S FACE RAILROAD BRIDGE									
X1	2417.000	0.000	0.000	0.000	40.000	40.000	40.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
NC	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0 000
X1	2418.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.000	761.000	0.000
	50 FT. U/S RAILROAD BRIDGE									
X1	2468.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	445.000	0.000	473.200	0.000	0.000	0.000	0.000

NC	0.080	0.080	0.030	0.000	0.000	0.000	0.000	0 000	0.000	0.000
X1	2693.000	20.000	1305.000	1360.000	225.000	225.000	225 000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1305.000	0.000	1360.000	0.000	0.000	0.000	0.000
GR	800.000	1289.000	761.800	1290.000	762.300	1300.000	762.200	1305.000	750.500	1322.000
GR	750.200	1325.000	750.600	1330.000	751.300	1332 000	751.500	1334.000	754.400	1340.000
GR	756.000	1345.000	757.000	1350.000	757.800	1356.000	758.700	1360.000	761.400	1360.000
GR	761.500	1370 000	761.900	1380.000	762.000	1400.000	762.000	1500.000	800.000	1505.000
NC	0.080	0.080	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	2792.000	20.000	1318.000	1361.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0 000
GR	800.000	1149.000	761.300	1150.000	761.500	1200.000	762.300	1250.000	763.000	1300.000
GR	763.200	1318.000	755.900	1318.000	751.000	1330.000	750 200	1340.000	752.700	1350.000
GR	755.900	1361.000	763.200	1361.000	763.300	1376.000	762.800	1400.000	762.400	1450.000
GR	762.000	1500.000	761.700	1550.000	761.600	1600.000	761.300	1650.000	800.000	1651.000
	D/S FACE PITCHER ST. BRIDGE									
X1	2793.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
BT	15.000	1150 000	761.300	0.000	1200.000	761.500	0.000	1250.000	762.300	0.000
BT	1300.000	763.000	0.000	1318.000	763.200	0.000	1318.000	763.200	760.700	1361.000
BT	763.200	760.700	1361.000	763.200	0.000	1376.000	763.300	0.000	1400 000	762.800
BT	0.000	1450.000	762.400	0.000	1500.000	762.000	0.000	1550.000	761.700	0.000
BT	1600.000	761.600	0.000	1650.000	761.300	0.000	0.000	0.000	0.000	0.000
	U/S FACE PITCHER ST BRIDGE									
X1	2845.000	0 000	0.000	0.000	52.000	52.000	52.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
X1	2846.000	0.000	0.000	0.000	1.000	1.000	1 000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
NH	5.000	0.070	968.000	0.035	999.000	0.060	1050.000	1.000	1400.000	0.050
NH	1500.000	0.000	0.000	0.000	0 000	0.000	0 000	0.000	0.000	0.000
	100 FT. D/S GIBSON ST. BRIDGE									
X1	3218.000	14.000	968.000	999.000	372.000	372.000	372.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	968.000	0.000	999.000	0.000	0.000	0.000	0.000
GR	800.000	950.000	762.000	950.000	762.000	958.000	760.400	968.000	755.100	978.000
GR	754.400	985.000	755.000	992.000	761.300	999.000	761.600	1008.000	762.400	1026.000
GR	762.200	1050.000	762.000	1400.000	762.000	1500.000	800.000	1500.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE INPUT DATA

SEGMENT 3

00BREAK00

THIS RUN EXECUTED 27 JUN 89 15:41:29

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM D/S GIBSON ST.  TO U/S OF FOOTBRIDGE
T3        10-YEAR FLOOD

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.         2.         0.          0   0.000000       0.00       0.0         0.    760.440     0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
   150.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

QT      4.000    500.000    560.000    580.000    630.000      0.000      0.000      0.000      0.000      0.000
NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
NH      5.000      0.070    968.000      0.035    999.000      0.060   1050.000      1.000   1400.000      0.050
NH   1500.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          100 FT.  D/S GIBSON ST.
X1   3218.000     14.000    968.000    999.000    350.000    350.000    351.000      0.000      0.000      0.000
X3      0.000      0.000      0.000    968.000      0.000    999.000      0.000      0.000      0.000      0.000
GR    800.000    950.000    762.000    950.000    762.000    958.000    760.400    968.000    755.100    978.000
GR    754.400    985.000    755.000    992.000    761.300    999.000    761.600   1008.000    762.400   1026.000
GR    762.200   1050.000    762.000   1400.000    762.000   1500.000    800.000   1500.000      0.000      0.000

NH      5.000      0.060    972.500      0.035    997.500      0.060   1080.000      1.000   1480.000      0.050
NH   1580.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          D/S GIBSON ST.  - CROSS SECTION D
X1   3317.000     14.000    972.500    997.500     99.000     99.000     99.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    763.400    763.400      0.000
GR    800.000    920.000    762.000    920.000    762.000    958.000    760.400    968.000    756.300    971.000
GR    755.200    972.500    754.900    985.000    754.900    997.500    761.200   1008.000    762.400   1026.000
GR    762.500   1080.000    763.000   1480.000    762.500   1580.000    800.000   1580.000      0.000      0.000

          D/S FACE GIBSON ST.  BRIDGE
X1   3318.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    763.400    763.400      0.000
BT      6.000    958.000    762.000      0.000    972.500    763.400      0.000    972.500    763.400    761.600
BT    997.500    763.400    761.600    997.500    763.400      0.000   1008.000    762.800      0.000      0.000
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		U/S FACE GIBSON ST. BRIDGE								
X1	3414.000	0.000	0.000	0.000	96.000	96.000	96.000	0.000	0.000	0 000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.400	763.400	0.000
X1	3415.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.400	763.400	0.000
NH	5.000	0.070	968.000	0.035	999.000	0.060	1008 000	1.000	1560.000	0.050
NH	1640.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		100 FT. U/S GIBSON ST.								
X1	3514.000	12.000	968.000	999.000	110.000	110.000	99.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	945.000	0.000	1168.000	0.000	0.000	0.000	0.000
GR	800.000	945.000	762.200	945.000	762.000	958.000	760.400	968.000	755.100	978.000
GR	754.400	985.000	755.000	992.000	761.300	999.000	761.600	1008.000	762.500	1560.000
GR	761.800	1640.000	800.000	1640.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.070	0.060	0.035	0 500	1.000	0.000	0.000	0.000	0.000	0.000
		D/S PORTAGE ST. BRIDGE								
X1	3617.000	34.000	250 000	295.000	110.000	230.000	103.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	58.000	0.000	487.000	0.000	762.100	762.500	0.000
GR	800.000	0.000	762.500	0.000	762.500	25.000	762.300	50.000	762.200	75.000
GR	761.800	100.000	761.800	125.000	761.600	150.000	761.400	175.000	761.400	200.000
GR	761.700	225.000	762.100	250.000	755.300	251 000	755.000	255.000	755.300	260.000
GR	754.900	270.000	755.100	273.000	755.900	278.000	756.000	285.000	755.600	290.000
GR	755.300	294.000	762.500	295.000	762.500	300.000	762.000	325.000	761.600	350.000
GR	762.300	375.000	761.900	400.000	762.000	425.000	762.600	450.000	762.700	475.000
GR	762.700	500.000	762.800	525 000	762.900	550 000	800.000	550.000	0.000	0.000
		D/S FACE PORTAGE ST. BRIDGE								
X1	3618.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	58.000	0.000	487.000	0.000	762.100	762.500	0 000
BT	31.000	0.000	762.500	0.000	25.000	762.500	0.000	50.000	762.300	0.000
BT	75.000	762.200	0.000	100.000	761.800	0.000	125.000	761.800	0.000	150.000
BT	761.600	0.000	175.000	761.400	0.000	200.000	761.400	0.000	225.000	761.700
BT	0.000	250.000	762.100	0.000	251.000	762.100	755.300	251.000	762.100	760.100
BT	270.000	762.200	760.300	270.000	762.200	754.900	273.000	762.300	755.100	273.000
BT	762.300	760.300	294 000	762.500	760.700	294.000	762 500	755.300	295.000	762.500
BT	0.000	300.000	762 500	0.000	325.000	762.000	0.000	350.000	761.600	0.000
BT	375.000	762.300	0.000	400.000	761.900	0.000	425.000	762.000	0.000	450.000
BT	762.600	0.000	475.000	762.700	0.000	500.000	762.700	0.000	525.000	762.800
BT	0.000	550.000	762.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		U/S FACE PORTAGE ST. BRIDGE								
X1	3688.000	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0 000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.100	762.500	0.000

NC	0.030	0.030	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S PORTAGE ST. - CROSS SECTION E									
X1	3689.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.100	762.500	0.000
GT	4.000	500.000	540.000	555.000	600.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.030	944.000	0.030	975.000	0.030	1000.000	1.000	1810.000	0.050
NH	1890.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	3788.000	11.000	944.000	975.000	99.000	440.000	99.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	852.000	0.000	1467.000	0.000	0.000	0.000	0.000
GR	800.000	880.000	761.000	880.000	760.000	944.000	756.200	948.000	754.900	960.000
GR	755.000	972.000	762.500	975.000	762.400	1000.000	763.500	1810 000	763.500	1890.000
GR	765.000	1890.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	1.000	0.000	0.000	0.000	0.000	0.000
X1	3919.000	32.000	250 000	298.000	131.000	131.000	131.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	96.000	0.000	452.000	0.000	761.700	761.400	0.000
GR	800.000	0.000	761.600	0.000	761.600	50 000	761.600	100.000	761.700	150.000
GR	761.800	175.000	761.900	200.000	761.700	225.000	761.700	250.000	755.900	250.000
GR	756.200	255.000	756.100	260.000	755.800	265.000	755.700	270.000	755.400	275.000
GR	755.600	280.000	755.400	285 000	755 100	290.000	755.100	295.000	755.500	298 000
GR	761.400	298.000	761.300	325.000	761.300	350.000	761.100	375.000	760.900	400.000
GR	760.900	425.000	761.000	450.000	761.300	475.000	761.700	500.000	762.000	525.000
GR	762.200	550.000	800.000	550.000	0.000	0 000	0.000	0.000	0.000	0.000
	D/S FACE WALNUT ST. BRIDGE									
X1	3920.000	0.000	0.000	0.000	1.000	1 000	1.000	0.000	0.000	0 000
X3	10.000	0 000	0.000	96.000	0.000	452.000	0.000	761.700	761.400	0.000
BT	21.000	0.000	761.600	0 000	50.000	761.600	0.000	100.000	761.600	0.000
BT	150.000	761.700	0.000	175.000	761.800	0.000	200.000	761.900	0.000	225.000
BT	761.700	0.000	250.000	761.700	755 900	250.000	761.700	758.900	298.000	761.400
BT	758.600	298.000	761.400	755.500	325.000	761.300	0.000	350.000	761.300	0.000
BT	375.000	761.100	0.000	400.000	760.900	0.000	425.000	760 900	0.000	450.000
BT	761.000	0.000	475.000	761.300	0.000	500.000	761.700	0 000	525.000	762.000
BT	0 000	550.000	762.200	0.000	0.000	0.000	0.000	0 000	0 000	0.000
	U/S FACE WALNUT ST. BRIDGE									
X1	3996.000	0.000	0.000	0.000	76.000	76.000	76.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	12.000	0.000	520.000	0.000	761.700	761.400	0.000
NC	0.070	0.070	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	U/S WALNUT ST. - CROSS SECTION F									
X1	3997 000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	12.000	0.000	520.000	0 000	761.700	761.400	0.000
X1	4046 000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.100	0.000

NH	7.000	0.100	670.000	1.000	1010.000	0.080	1033.000	0.035	1057.000	0.080
NH	1120.000	1.000	2140.000	0.040	2200.000	0.000	0 000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0 000	0.000	0 000	0.000
X1	4370.000	14.000	1033.000	1057.000	550.000	270.000	324.000	0.000	0.000	0.000
X3	0.000	753.700	0.000	550.000	0.000	1748.000	0 000	0.000	0.000	0.000
GR	800.000	470.000	770.000	470.000	764.000	570.000	761.800	670.000	761 200	1010.000
GR	761.300	1027.000	754.900	1033.000	752.100	1045.000	756.000	1057.000	761.300	1063.000
GR	760.800	1120.000	764.000	2140.000	765.200	2200.000	800.000	2200.000	0.000	0.000
X1	4469.000	0.000	0.000	0.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	753.700	0.000	0.000	0.000	0.000	0.000	759.600	759.600	0.000
	D/S FACE DUTTON ST. BRIDGE									
X1	4470.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	753.700	0.000	658.000	0.000	1557.000	0.000	759.600	759.600	0.000
BT	6.000	1027.000	761.300	0.000	1033.000	761.500	0.000	1033.000	761.500	759.600
BT	1057.000	761.500	759.600	1057.000	761.500	0.000	1063.000	761.300	0.000	0.000
	U/S FACE DUTTON ST. BRIDGE									
X1	4525.000	0.000	0.000	0.000	55.000	55.000	55.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	761.500	761.500	0.000
X1	4526.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0 000	0.000	0 000	761.500	761.500	0.000
X1	4575.000	0.000	0.000	0 000	49.000	49.000	49.000	0.000	0.000	0.000
NH	7.000	0.100	1030.000	1.000	1320.000	0.070	1344.500	0.035	1369.500	0.070
NH	1420 000	1.000	2560.000	0.050	2620.000	0 000	0.000	0.000	0.000	0.000
X1	4780.000	14.000	1344.500	1369.500	390.000	120.000	205.000	0.000	0.000	0.000
X3	0.000	754.600	0.000	1248.000	0 000	2313.000	0.000	0.000	0.000	0.000
GR	800.000	720.000	769.000	720.000	763 500	1030.000	761.500	1320.000	759.200	1340.000
GR	756.200	1344.500	753.300	1357.000	756.200	1369.500	754.800	1373.000	760.700	1373.000
GR	761.200	1420.000	761.000	2560.000	762.000	2620.000	800.000	2620.000	0.000	0.000
X1	4879.000	0.000	0.000	0 000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	754.600	0.000	1245 000	0.000	2261.000	0.000	760.300	760.300	0.000
	D/S FACE VINE ST.									
X1	4880.000	0.000	0.000	0.000	1.000	1.000	1 000	0.000	0.000	0.000
X3	10.000	754.600	0.000	1245.000	0.000	2261.000	0.000	760.300	760 300	0.000
BT	6.000	1320.000	761.500	0.000	1344.500	761.600	0.000	1344.500	761.600	760.300
BT	1369.500	761.600	760.300	1369.500	761.600	0.000	1373.000	760.700	0.000	0.000
	U/S FACE VINE ST.									
X1	4948.000	0.000	0.000	0.000	68.000	68.000	68.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1232.000	0.000	2214.000	0.000	761.700	761.700	0.000

X1	4949.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1232.000	0.000	2214.000	0.000	761.700	761.700	0.000
X1	4998.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1231.000	0.000	2188.000	0.000	0.000	0.000	0.000
NH	7.000	0.100	1390.000	1.000	1560.000	0.080	1700.000	0.035	1724.000	0.080
NH	2050.000	1.000	2750.000	0.050	2840.000	0.000	0.000	0.000	0.000	0.000
	D/S FACE CROSSTOWN PKWY.									
X1	5320.000	24.000	1700.000	1724.000	370.000	130.000	322.000	0.000	0.000	0.000
X3	10.000	755.600	0.000	0.000	0.000	0.000	0.000	760.000	760.000	0.000
GR	800.000	1150.000	764.500	1150.000	762.000	1390.000	762.000	1560.000	759.400	1690.000
GR	755.600	1700.000	755.600	1702.200	755.600	1703.800	755.600	1705.400	755.600	1707.100
GR	755.600	1708.700	755.600	1710.700	755.600	1713.300	755.600	1715.300	755.600	1716.900
GR	755.600	1718.600	755.600	1720.200	755.600	1721.800	755.600	1724.000	755.600	1724.000
GR	762.400	1728.000	762.000	2050.000	760.000	2750.000	800.000	2750.000	0.000	0.000
SB	0.000	1.610	3.000	0.000	24.000	0.000	65.000	0.000	755.600	755.600
	U/S FACE CROSSTOWN PKWY.									
X1	5401.000	0.000	0.000	0.000	81.000	81.000	81.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	760.000	762.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	755.600	0.000	0.000	0.000	0.000	0.000	760.000	760.000	0.000
BT	22.000	1560.000	762.000	0.000	1690.000	762.400	0.000	1700.000	762.400	755.600
BT	1700.000	762.400	755.600	1702.200	762.400	758.600	1703.800	762.400	759.800	1705.400
BT	762.400	760.000	1707.100	762.400	759.800	1708.700	762.400	758.600	1710.700	762.400
BT	755.600	1710.700	762.400	755.600	1713.300	762.400	755.600	1713.300	762.400	755.600
BT	1715.300	762.400	758.600	1716.900	762.400	759.800	1718.600	762.400	760.000	1720.200
BT	762.400	759.800	1721.800	762.400	758.600	1724.000	762.400	755.600	1724.000	762.400
BT	755.600	1728.000	762.400	0.000	2050.000	762.400	0.000	0.000	0.000	0.000
NH	7.000	0.100	920.000	1.000	1360.000	0.070	1510.250	0.035	1533.750	0.070
NH	1900.000	1.000	2430.000	0.100	2505.000	0.000	0.000	0.000	0.000	0.000
	D/S FACE OF FOOTBRIDGE									
X1	5771.000	17.000	1510.250	1533.700	300.000	250.000	370.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.100	762.100	0.000
GR	800.000	749.000	767.500	750.000	763.500	920.000	763.300	1360.000	761.800	1505.000
GR	757.400	1510.250	755.500	1522.000	757.100	1533.700	760.200	1538.000	760.200	1760.000
GR	761.000	1900.000	762.000	2430.000	762.000	2470.000	764.000	2480.000	764.000	2497.000
GR	762.000	2505.000	800.000	2505.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	0.000	1.820	3.000	0.000	23.000	0.000	102.250	0.000	755.500	755.500
	U/S FACE OF FOOTBRIDGE									
X1	5792.000	0.000	0.000	0.000	21.000	21.000	21.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	760.800	762.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.100	762.100	0.000
BT	6.000	1505.000	761.800	0.000	1510.250	762.100	0.000	1510.250	762.100	760.800
BT	1533.700	762.100	760.800	1533.700	762.100	0.000	1538.000	760.200	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE INPUT

SEGMENT 4

00BREAK00

THIS RUN EXECUTED 29 JUN 89 7:48:43

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM U/S FOOTBRIDGE TO D/S FACE DAM
T3        10-YEAR FLOOD

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        2.         0.         0.   0.000000       0 00       0.0         0.    763.070      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    150.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

QT      4.000    500.000    540 000    555.000    600.000      0.000      0.000      0.000      0.000      0.000
NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
NH      7.000      0.100    920.000      1.000   1360.000      0.070   1510.250      0.035   1533.700      0.070
NH   1900.000      1.000   2430.000      0.100   2505.000      0.000      0 000      0.000      0.000      0.000
X1   5792.000     17.000   1510.250   1533 700     21 000     21.000     21 000      0.000      0.000      0.000
X3     10.000    756.400      0.000      0 000      0.000      0.000      0.000    762.100    762.100      0.000
GR    800.000    749.000    767.500    750.000    763.500    920.000    763.300   1360.000    761.800   1505.000
GR    757.400   1510.250    755.500   1522.000    757.100   1533.700    761.800   1538.000    760.200   1760 000
GR    761.000   1900.000    762.000   2430.000    762.000   2470.000    764.000   2480.000    764.000   2497.000
GR    762.000   2505.000    800.000   2505.000      0.000      0.000      0.000      0.000      0.000      0.000

QT      4.000    480.000    520.000    540.000    570.000      0.000      0.000      0.000      0.000      0.000
NH      7.000      0.100    990.000      1.000   1400.000      0.070   1521.500      0.035   1557.500      0.070
NH   1820.000      1.000   2070 000      0.100   2300.000      0 000      0.000      0.000      0.000      0.000
X1   6199.000     22.000   1521.500   1557 500    407.000    407.000    407.000      0.000      0.000      0.000
X3     10.000      0.000      0.000   1226 000      0.000   1851.000      0.000    761.400    760.000      0.000
X4      3.000    757.300   1521.600    757.100   1540.800    758.200   1557.400      0.000      0.000      0.000
GR    800.000    740 000    762.000    740.000    763.000    990.000    761.400   1400.000    762.400   1518.000
GR    757.300   1521.500    756.500   1524 000    756.300   1530.000    757.100   1539.300    757.100   1540.750
GR    756.500   1550.000    757.600   1554.000    758.200   1557.500    761.800   1585.000    761.800   1600.000
GR    761.800   1820.000    760.000   2070.000    760.000   2170.000    763.000   2185.000    760.000   2200.000
GR    761 200   2300.000    800.000   2300.000      0.000      0.000      0.000      0.000      0 000      0.000
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X1	6200.000	0.000	0.000	0.000	1.000	1.000	1.000	0 000	0.000	0.000
X3	10 000	0.000	0.000	1226 000	0.000	1851.000	0.000	761.400	760.000	0.000
BT	10.000	1518.000	762.400	0.000	1521.500	762 400	757.300	1521.600	762.400	761.400
BT	1539.300	762.400	761.400	1539.300	762.400	757.100	1540.750	762.400	757.100	1540.800
BT	762.400	761.400	1557 400	762.400	761.400	1557.500	762.400	758.200	1585.000	762 400
BT	0.000	0.000	0.000	0.000	0 000	0.000	0.000	0.000	0.000	0.000
X1	6222.000	0.000	0.000	0.000	22 000	22.000	22.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1231.000	0.000	1845 000	0.000	761.400	760.000	0.000
X1	6223.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1231.000	0.000	1845.000	0.000	761.400	760.000	0.000
NC	0.070	0 070	0.035	0.500	1 000	0.000	0.000	0.000	0.000	0.000
X1	6400.000	30.000	249.000	275.000	270 000	150.000	177.000	0.000	0:000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.400	762.200	0.000
GR	800.000	0.000	761.800	0.000	762.000	25.000	762.100	50.000	762.200	75.000
GR	762.300	100.000	762.400	125.000	762.400	150.000	762.400	175.000	762.600	200.000
GR	762.600	225.000	762.400	249.000	755.900	250 000	755.600	255.000	755.500	260.000
GR	755.500	265.000	755.700	270.000	755 400	274.000	762.200	275.000	762.200	280.000
GR	762.000	300.000	761 700	325.000	761.400	350.000	761.200	375.000	761.100	400.000
GR	761.100	450.000	761.400	475.000	761.400	500 000	761.500	525.000	800.000	526.000
X1	6401.000	0.000	0 000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	762.400	762.200	0.000
BT	24.000	0.000	761.800	0.000	25.000	762.000	0.000	50.000	762.100	0.000
BT	75.000	762.200	0.000	100.000	762.300	0.000	125.000	762.400	0.000	150.000
BT	762.400	0.000	175.000	762.400	0.000	200.000	762.600	0.000	249.000	762.400
BT	0.000	250.000	762.400	755.900	250.000	762.400	760.500	274.000	762.200	760.200
BT	274.000	762.200	755.400	275.000	762.200	0.000	300.000	762.000	0.000	325.000
BT	761.700	0.000	350.000	761.400	0.000	375.000	761.200	0.000	400.000	761.100
BT	0.000	450.000	761 100	0.000	475.000	761.400	0.000	500.000	761.400	0.000
BT	525.000	761.500	0.000	0.000	0.000	0 000	0.000	0.000	0.000	0.000
X1	6446.000	0.000	0.000	0.000	45 000	45.000	45.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0 000	0.000	0 000	0.000	762.400	762.200	0.000
X1	6447.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0 000	0.000	0.000	0.000	762 400	762.200	0.000
X1	6496.000	0.000	0.000	0.000	49 000	49.000	49.000	0.000	0.000	0.000
NH	5.000	0.100	1335.000	1.000	1590.000	0.070	1819.000	0.035	1843.000	0.070
NH	2150.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	6896.000	19.000	1819.000	1843.000	350.000	450.000	400.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1696.000	0.000	1966.000	0.000	0.000	0.000	0.000
GR	800.000	1130.000	760.500	1135.000	760.600	1335.000	760.500	1590.000	759.800	1710.000
GR	762.200	1808.000	757.800	1819.000	756.500	1830.000	757.200	1841.000	760.100	1843.000
GR	761.900	1849.000	760.000	1875.000	760.000	1965.000	762.900	1975.000	762 900	1985.000
GR	760.000	2005.000	760.000	2100.000	761.700	2150.000	800.000	2150.000	0.000	0.000

NH	7 000	0. 100	1410. 000	1. 000	1600. 000	0. 070	1693. 500	0. 035	1712. 500	0. 070
NH	1790. 000	1. 000	1875. 000	0. 100	1920. 000	0. 000	0. 000	0. 000	0. 000	0. 000
X1	7300. 000	14. 000	1693. 500	1712. 500	325. 000	425. 000	404. 000	0. 000	0. 000	0. 000
X3	0. 000	0. 000	0. 000	1410. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0 000
X4	2. 000	758. 900	1693. 600	759. 200	1712. 400	0. 000	0. 000	0. 000	0. 000	0. 000
GR	800. 000	1270. 000	763. 500	1280. 000	764. 000	1410. 000	765. 000	1600. 000	765. 900	1691. 000
GR	758. 900	1693. 500	757. 600	1703. 000	759. 200	1712. 500	761. 600	1716. 000	763. 000	1726. 000
GR	764. 800	1790. 000	764. 000	1875. 000	764. 000	1920. 000	800. 000	1930. 000	0. 000	0. 000
NC	0. 070	0. 070	0. 035	0. 500	1. 000	0. 000	0. 000	0. 000	0. 000	0. 000
X1	7399. 000	27. 000	250. 000	271. 000	99. 000	99. 000	99. 000	0. 000	0. 000	0. 000
X3	10. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	765. 800	766. 000	0. 000
GR	764. 300	0. 000	764. 300	25. 000	764. 600	50. 000	764. 700	75. 000	764. 800	100. 000
GR	765. 000	125. 000	765 200	150. 000	765. 300	175. 000	765. 400	200. 000	765. 700	225. 000
GR	765. 800	250. 000	759. 000	250. 000	758. 000	255. 000	758. 200	260. 000	758. 800	265. 000
GR	758. 900	270. 300	766. 000	271. 000	766. 000	300. 000	766. 100	325. 000	765. 800	350. 000
GR	765. 400	375. 000	764 900	400. 000	764. 500	425. 000	764. 500	450. 000	764 400	475. 000
GR	764. 400	500. 000	764. 600	525. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000
X1	7400. 000	0. 000	0. 000	0. 000	1. 000	1. 000	1. 000	0. 000	0. 000	0. 000
X3	10. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	765. 800	766. 000	0. 000
BT	24. 000	0. 000	764. 300	0. 000	25. 000	764. 300	0. 000	50. 000	764. 600	0. 000
BT	75. 000	764. 700	0. 000	100. 000	764. 800	0. 000	125. 000	765. 000	0. 000	150. 000
BT	765. 200	0 000	175. 000	765. 300	0. 000	200. 000	765. 400	0. 000	225. 000	765. 700
BT	0. 000	250. 000	765. 800	759. 000	250. 000	765. 800	764. 200	271. 000	766. 000	764. 400
BT	271 000	766. 000	758. 900	300. 000	766. 000	0. 000	325. 000	766. 100	0. 000	350. 000
BT	765. 800	0. 000	375. 000	765. 400	0. 000	400. 000	764. 900	0. 000	425. 000	764. 500
BT	0. 000	450. 000	764. 500	0. 000	475. 000	764. 400	0. 000	500. 000	764. 400	0. 000
BT	525. 000	764. 600	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000
X1	7469. 000	0. 000	0. 000	0. 000	69. 000	69. 000	69. 000	0. 000	0. 000	0. 000
X2	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	1. 000	0 000	0. 000	0 000
X3	10. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	765. 800	766. 000	0. 000
X1	7470 000	0. 000	0. 000	0 000	1. 000	1. 000	1. 000	0. 000	0. 000	0. 000
X3	10. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	765. 800	766. 000	0. 000
X1	7519. 000	0. 000	0 000	0. 000	49. 000	49. 000	49. 000	0. 000	0. 000	0. 000
X3	0. 000	757. 900	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000
NC	0. 080	0. 080	0. 035	0. 300	0. 500	0. 000	0. 000	0. 000	0. 000	0. 000
X1	7720. 000	12. 000	830. 000	864. 000	175 000	280. 000	201. 000	0. 000	0. 000	0. 000
X3	0. 000	0. 000	0. 000	830 000	0. 000	864 000	0. 000	0. 000	0. 000	0. 000
X4	6. 000	761 500	830. 100	759. 900	840. 100	759. 900	841. 100	759. 500	853. 100	759. 500
X4	854. 100	761. 100	863. 900	0. 000	0. 000	0 000	0. 000	0. 000	0. 000	0. 000
GR	800. 000	580. 000	761. 500	580. 000	761. 500	830. 000	759. 900	840. 000	759. 900	841. 000
GR	759. 600	847. 000	759. 500	853. 000	759. 500	854. 000	761. 100	864. 000	762. 000	900. 000
GR	762. 400	1100. 000	800. 000	1100. 000	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000

NC	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0 000
X1	7721.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0 000
X3	0.000	0.000	0.000	830.000	0 000	864.000	0.000	0.000	0.000	0.000
BT	15.000	580.000	768.000	0.000	830.000	766 200	761.500	830.100	767.500	764.500
BT	840.000	767.500	764.500	840.100	767.500	759.900	841.000	767.500	759.900	841.100
BT	767.500	764.500	853 000	767.500	764.500	853.100	767.500	759.500	854.000	767.500
BT	759.500	854.100	767.500	764.500	863.900	767.500	764.500	864.000	766.200	761.100
BT	900.000	766 100	0.000	1100.000	766.000	0.000	0 000	0 000	0.000	0.000
X1	7734.000	0.000	0.000	0 000	13.000	13.000	13.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0 000
X3	0.000	0.000	0.000	830.000	0.000	864.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	7735.000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	830.000	0.000	864.000	0.000	0.000	0.000	0.000
X1	7784.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.200	0 000
X3	0.000	0.000	0.000	780.000	0.000	915.000	0.000	0.000	0.000	0.000
X1	8298.000	10.000	1744.000	1776.000	514.000	514.000	514.000	0.000	0.000	0.000
X3	0.000	0.000	0 000	1662.000	0.000	1773.000	0.000	0.000	0.000	0.000
GR	763.000	1530.000	763.000	1670.000	764.200	1739.000	762.600	1741 000	762.200	1744.000
GR	761.800	1754.000	761.400	1765.000	761.700	1775.000	765.700	1776.000	766.000	1810.000
NC	0.080	0.060	0.035	0.500	1.000	0.000	0.000	0.000	0.000	0.000
X1	8620.000	13.000	1354.000	1374.000	161.000	161.000	161.000	0.000	0.000	0.000
GR	769.200	1175.000	768.000	1222.000	769.600	1314.000	769.100	1348.000	765.000	1348.500
GR	762.200	1354.000	762.200	1364.000	762.300	1374.000	765.000	1379.000	766.100	1383.000
GR	768.200	1388.000	768.500	1405 000	800.000	1405.000	0.000	0.000	0.000	0.000
NC	0.090	0.060	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	8719.000	28.000	250.000	269 000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770 500	0.000
GR	771.400	0.000	770.500	25.000	770.100	50.000	769.800	75.000	769.500	100.000
GR	769.300	125.000	769.300	150.000	769.400	175.000	769.600	200.000	770.000	225 000
GR	770.400	250.000	762.000	250.000	762.300	255.000	762.800	260.000	762.700	265.000
GR	762.700	269.000	770.500	269.000	770.500	273.000	770.300	300 000	770.200	325.000
GR	770.000	350.000	770.400	375.000	770.600	400.000	770.800	425.000	771.600	450 000
GR	772.500	475.000	773.500	500.000	774.200	525.000	0.000	0.000	0.000	0.000
X1	8720.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
BT	25.000	0.000	771.400	0.000	25.000	770.500	0.000	50.000	770.100	0.000
BT	75.000	769.800	0.000	100 000	769.500	0.000	125.000	769.300	0.000	150.000
BT	769.300	0.000	175.000	769.400	0.000	200.000	769.600	0.000	225.000	770.000
BT	0.000	250.000	770.400	762.000	250.000	770.400	768.800	269.000	770.500	768.900
BT	269.000	770.500	762.700	273.000	770.500	0 000	300.000	770 300	0 000	325.000
BT	770.200	0.000	350 000	770.000	0.000	375.000	770.400	0.000	400.000	770.600
BT	0.000	425.000	770 800	0.000	450.000	771.600	0.000	475.000	772.500	0.000
BT	500.000	773.500	0.000	525.000	774.200	0.000	0.000	0.000	0.000	0.000

X1	8788.000	0.000	0.000	0.000	68.000	68.000	68.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
X1	8789.000	0.000	0 000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.400	770.500	0.000
NC	0.000	0.000	0.000	0 100	0.300	0.000	0.000	0.000	0.000	0.000
X1	8889.000	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X1	8989 000	9.000	24.500	41.500	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	780.000	780.000	0 000
GR	780.000	0.000	769.100	1.000	769.100	22.000	762.600	24.500	762.400	33.000
GR	763.800	41.500	769.100	44.000	769.100	65.000	780.000	66.000	0.000	0.000
SB	0.000	2.210	3.000	0.000	17.600	0.000	88.000	0.000	762.800	762.400
X1	9071 000	9.000	8.000	28.000	82.000	82.000	82.000	0.000	0.000	0.000
X2	0 000	0.000	1.000	767.400	780.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	780.000	780.000	0.000
GR	780.000	0.000	769.100	1.000	769 100	6.000	764.100	8.000	762.800	18.000
GR	763.400	28 000	769.100	30.000	769 100	35.000	780.000	36.000	0.000	0.000
X1	9120.000	5.000	0.100	40.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	781.600	781.600	0.000
GR	785 000	0.100	765.500	0.200	762.500	20.000	765.000	40.000	785.000	40.100
X1	9121.000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0 000	0.000	781.600	781.600	0.000
BT	4.000	0 100	781.500	765.500	0.100	781.500	771.100	40.000	785.000	771.100
BT	40.100	785.000	765 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	9129 000	0.000	0.000	0.000	8 000	8.000	8 000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0 000	0.000	1.000	0.000	0.000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0.000	781.500	781.500	0.000
X1	9130.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	781.500	781.500	0.000
X1	9340.000	7.000	0.000	46.400	210.000	210.000	210.000	0.000	0.000	0.000
GR	793.100	0.000	773.500	0.000	773 500	17.600	764.100	18.000	764.000	32.000
GR	765 200	46.400	793.100	46.400	0.000	0.000	0.000	0.000	0.000	0.000
X1	9439.000	0.000	0.000	0.000	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
X1	9440.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0 000	0 000	780.700	793.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000

X1	9451.000	0.000	0.000	0.000	11.000	11.000	11.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	780.700	793.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
X1	9452.000	0.000	0.000	0.000	1.000	1 000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	793.100	793.100	0.000
X1	9501.000	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X1	9650.000	9.000	41.250	58.750	149.000	149.000	149.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	775.000	775.000	0.000
GR	780.000	0.000	772.600	0.000	772.400	41.250	764.700	41 250	764.200	50.000
GR	764.500	58.750	772.400	58.750	772.600	100.000	780.000	100.000	0.000	0.000
X1	9651.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	771.500	772.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	775.000	775.000	0.000
X1	9673.000	0.000	0.000	0.000	22.000	22.000	22 000	0.000	0.000	0.000
X2	0.000	0.000	0.000	771.500	772.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	775.000	775.000	0.000
X1	9674.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	775 000	775.000	0.000
X1	9685.000	0.000	0.000	0.000	11.000	11.000	11.000	0 000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0 000	0.000	780.000	780.000	0.000
SB	0.000	2.034	3.000	0.000	19.000	0 000	90.000	0.000	764.700	764.200
X1	9837.000	8.000	40.300	59.700	152.000	152.000	152.000	0.000	0.000	0 000
X2	0.000	0 000	1.000	769.800	790.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0 000	0.000	790.000	790.000	0.000
GR	790.000	0.000	776.200	0.000	776.200	40.300	765.400	40.300	764.700	50.000
GR	764.800	59.700	771.500	59.700	777.700	100.000	0.000	0.000	0.000	0.000
X1	9937.000	0.000	0 000	0.000	100 000	100.000	100.000	0.000	0.000	0.000
X3	0.000	765.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.100	0 100	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	10034.000	9.000	0.100	25 500	97.000	97.000	97.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782.000	0 000
X4	4.000	766.400	5 400	766.400	6 500	766.400	19.500	766.400	20.600	0.000
GR	782.000	0.000	782.000	0.100	766.400	0.100	766 400	5.300	766.400	6.400
GR	766 400	19 400	766 400	20.500	766.400	25.500	782.000	25.600	0.000	0.000
X1	10035.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782.000	782.000	0.000
BT	12.000	0.000	782.000	766.400	0.100	782.000	778.800	5.300	782.000	778.800
BT	5.400	782.000	766.400	6.400	782.000	766.400	6.500	782.000	778.800	19.400
BT	782.000	778.800	19.500	782.000	766.400	20.500	782.000	766.400	20.600	782.000
BT	778.800	25.500	782.000	778.800	25.600	782.000	766.400	0.000	0.000	0.000

X1	10049.000	0 000	0.000	0.000	14.000	14.000	14.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	782 000	782.000	0.000
X1	10050.000	0.000	0.000	0.000	1.000	1.000	1 000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0 000	782.000	782.000	0.000
X1	10064.000	5.000	0.000	19.500	14.000	14.000	14.000	0 000	0 000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
GR	791.600	0 000	767.300	0.000	766.900	9.750	767 300	19.500	791.500	19.500
NC	0.000	0.000	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	10065.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	780.500	781 500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791 500	0.000
X1	10070.000	0.000	0.000	0.000	5.000	5.000	5.000	0 000	0.000	0.000
X2	0.000	0 000	0.000	780.500	781.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
NC	0.000	0.000	0 035	0 000	0.000	0.000	0.000	0.000	0.000	0.000
X1	10071.000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0 000	0 000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0 000	791.500	791 500	0.000
X1	10072 000	0.000	0.000	0.000	1.000	1.000	1.000	0 000	0.000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10073.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0 000	0.000	790.100	791.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10090.000	0.000	0.000	0.000	17.000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	790.100	791.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10091.000	0.000	0 000	0 000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10 000	0.000	0.000	0.000	0.000	0.000	0.000	791.500	791.500	0.000
X1	10099.000	13 000	0.100	29 000	8.000	8.000	8.000	0.000	0.000	0.000
X4	4.000	768 700	9.600	768.700	10.600	769.100	24.100	769.100	25.100	0.000
GR	785.000	0 000	768.700	0.100	768.700	2.500	777.500	3.000	777.500	8.000
GR	768.700	8.500	768.700	9 500	768.700	10.500	767.200	17.000	769.100	24.000
GR	769.100	25.000	768.700	29.000	785.000	29.100	0.000	0.000	0.000	0.000
X1	10100.000	0.000	0.000	0.000	1.000	1.000	1 000	0 000	0.000	0.000
BT	12.000	0.000	785.000	768.700	0.100	785.000	782.000	9.500	785.000	782.000
BT	9.600	785.000	768.700	10.500	785.000	768.700	10.600	785 000	782.000	24.000
BT	785.000	782.000	24.100	785.000	769 100	25.000	785.000	769.100	25.100	785.000
BT	782.000	29.000	785.000	782 000	29 100	785.000	768.700	0.000	0.000	0.000

X1	10116.000	0.000	0 000	0 000	16 000	16.000	16.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	0.000	767.700	0 000	0.000	0 000	0.000	0.000	0.000	0.000	0.000
X1	10117.000	0.000	0 000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	0.000	767.700	0.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000
X1	10179.000	14 000	0 100	30.000	62.000	62.000	62.000	0 000	0.000	0.000
X3	0.000	768 300	0 000	0.000	0.000	0.000	0.000	0 000	0.000	0.000
X4	4 000	768.300	13.600	768.300	16.600	768.300	1.000	768.300	12.500	0.000
GR	787.400	0 000	768.300	0.000	768.300	0.100	768.300	7.000	768 300	13.500
GR	768.300	16 500	768.300	18.000	768.300	20.000	768.300	23.000	768.300	26.000
GR	768.300	28.000	768.300	30.000	768.300	30.100	787.400	30 100	0.000	0.000
X1	10180.000	0.000	0.000	0 000	1.000	1.000	1.000	0.000	0.000	0.000
X3	0.000	768.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	16 000	0.000	787.400	768 300	0.100	787.400	773.400	1.000	787.400	776.000
BT	7.000	787.400	779.300	12.500	787.400	776.000	13.500	787.400	773.400	13.600
BT	787.400	768 300	16.500	787.400	768.300	16.600	787.400	773.400	18.000	787.400
BT	776.600	20.000	787.400	778.200	23.000	787.400	779.300	26.000	787.400	778.600
BT	28.000	787.400	777.200	30.000	787.400	773.400	30 100	787.400	768.300	0.000
X1	10237.000	0.000	0.000	0.000	57.000	57.000	57.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X1	10238 000	0.000	0.000	0.000	1 000	1.000	1.000	0.000	0.000	0.000
X1	10246.000	4.000	0.100	29.900	8.000	8.000	.8.000	0.000	0.000	0.000
GR	790.000	0.000	768.600	0.100	769.000	29.900	790.200	30.000	0.000	0.000
NC	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0 000	0.000
X1	10251.000	6.000	0.100	30.100	5.000	5.000	5.000	0.000	0.000	0.000
GR	790.000	0.000	790.000	0.100	769.000	0.200	769.100	16.000	768 600	30.000
GR	790 000	30.100	0.000	0.000	0.000	0.000	0.000	0 000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE INPUT

SEGMENT 5

00BREAK00

THIS RUN EXECUTED 23 JUN 89 13:57:00

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

C
T1        CITY OF KALAMAZOO FIS
T2        PORTAGE CREEK FROM DAM TO 1ST R.R.  N OF KILGORE RD
T3        10-YEAR FLOOD

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.         2.         0.         0.   0.000000       0.00       0.0         0.    788.400      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0 000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0 000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    150.000      0.000      0.000      0.000      0.000      0.000      0.000      0 000      0.000      0.000

GT        4.000    480.000    520 000    540.000    570.000      0.000      0.000      0.000      0.000      0.000
NC        0.120      0.120      0.045      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          50' U/S DAM - CROSS SECTION Q
X1    10317.000     10.000     45.000    160.000     66.000     66.000     66.000      0.000      0.000      0.000
X3        0.000      0.000      0.000     30.000      0.000    192.000      0.000      0.000      0.000      0.000
GR      793.000      0.000    790.000     15.000    788.000     40.000    786.400     45.000    776.100     65 000
GR      776.100    140.000    786.400    160.000    788.000    170.000    790.000    550.000    794.000    610.000

          VALLEY SECTION - CROSS SECTION R
X1    11674 000     15.000   1246.000   1292.000   1357.000   1357.000   1357.000      0.000      0.000      0.000
GR      810.800    346.000    805.400    424.000    800.800    566.000    793.000    880.000    791.800   1112.000
GR      791.800   1230.000    789.200   1246.000    781.100   1252.000    778.000   1267.000    780.400   1282.000
GR      789.400   1292.000    789.100   1424 000    793.000   1564.000    800.000   1742.000    810.500   2036.000

          VALLEY SECTION - CROSS SECTION S
X1    13254.000     15.000    496 000    561.000   1800.000   1200.000   1580.000      0.000      0.000      0.000
GR      810.000    180.000    807.000    316.000    804.100    396.000    798.000    460.000    794.200    476.000
GR      787.900    496.000    783.700    507.000    782.400    514.000    782.100    528.000    782.100    542.000
GR      783.900    546 000    785.400    561.000    787.400    600.000    804.000    656.000    821.400    706.000

X1    13724.000      0.000      0.000      0.000    470.000    470.000    470.000      0.000      2.000      0.000

X1    14194.000      0.000      0.000      0.000    470.000    470.000    470.000      0 000      1.900      0.000
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CROSS SECTION T

X1	14600.000	8.000	2086.000	2113.000	406.000	406.000	406.000	0.000	0.000	0.000
GR	800.000	2065.000	798.200	2071 000	788.900	2086.000	788.500	2098.000	786.400	2110.000
GR	789.000	2113.000	790.000	2160.000	800.000	2200.000	0.000	0.000	0.000	0.000
X1	15300.000	7.000	2086.000	2113.000	700.000	700.000	700.000	0.000	0.000	0.000
GR	800.000	2071.000	790.700	2086.000	790.300	2098.000	788.200	2110.000	792.400	2113.000
GR	793.100	2121.000	796.300	2134.000	0.000	0.000	0.000	0.000	0.000	0.000

100 FT D/S CORK ST. BRIDGE

X1	16004.000	19 000	2086.000	2113.000	704.000	704.000	704.000	0.000	0.000	0.000
GR	830.200	804 000	825.800	892.000	821.000	936.000	813 000	1022.000	808.400	1140.000
GR	804 000	1490.000	802.400	1894.000	799.400	1950.000	801.800	2071.000	792.500	2086.000
GR	792 100	2098 000	790.000	2110.000	794.200	2113.000	794.900	2121.000	798.100	2134.000
GR	798.000	2230 000	814.000	3008.000	820.000	3190.000	831.400	3284.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	1.000	0.000	0.000	0.000	0 000	0.000
X1	16037.000	0.000	0.000	0.000	33.000	33.000	33.000	0.000	0.100	0.000
X1	16070.000	0.000	0.000	0.000	33.000	33.000	33.000	0.000	0.100	0.000
X3	0.000	0.000	0.000	2086.000	0.000	2113.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE CORK ST. BRIDGE

X1	16104.000	24.000	2093.900	2102.300	34.000	34.000	34.000	0.000	0.000	0 000
X3	10 000	790.300	0.000	0.000	0.000	0.000	0.000	798 400	798.400	0.000
X4	2.000	794.100	2094.000	794.100	2102.200	0.000	0.000	0.000	0.000	0.000
GR	830.200	804.000	825.800	892.000	821.000	936.000	813.000	1022.000	808.400	1140.000
GR	804.000	1490.000	802 400	1894.000	799.400	1950.000	801 800	2071.000	794.100	2093.900
GR	793.800	2094.100	791.000	2095.000	790.000	2097.000	790.000	2099.000	791.000	2101.000
GR	793.600	2102.000	794.100	2102.300	794.200	2113.000	794 900	2121.000	798.100	2134.000
GR	798.000	2230.000	814.000	3008.000	820.000	3190.000	831 400	3284.000	0.000	0.000
SB	0.000	2.440	3.000	0.000	6.000	0.000	50.300	0.000	790.000	790.000

U/S FACE CORK ST. BRIDGE

X1	16194.000	0.000	0.000	0.000	90.000	90.000	90.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	798.400	801.900	0.000	0.000	0.000	0.000	0.000
X3	10.000	790.300	0.000	2093.900	0.000	2102.300	0.000	798.400	798.400	0.000
BT	26.000	804.000	830.200	0.000	892.000	825.800	0.000	936.000	821.000	0.000
BT	1022.000	813 000	0.000	1140.000	808.400	0.000	1490.000	804.000	0.000	1894 000
BT	803.500	0.000	1950.000	804.200	0.000	2071.000	802.600	0.000	2093.900	801.900
BT	0.000	2094.000	801.900	794.100	2094.100	801.900	795.200	2095 000	801.900	797.000
BT	2097 000	801.900	798.400	2099.000	801.900	798.400	2101.000	801.900	797.000	2102.000
BT	801.900	795.600	2102.200	801.900	794.100	2102.300	801.900	0.000	2113.000	801.900
BT	0.000	2121.000	801.900	0.000	2134.000	801.900	0.000	2230.000	801.900	0.000
BT	3008.000	814.000	0.000	3190.000	820.000	0.000	3284.000	831.400	0.000	0.000
NC	0.000	0.000	0.045	0.300	0.500	0 000	0.000	0.000	0.000	0.000
X1	16244.000	19.000	2086.000	2113.000	50.000	50.000	50 000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2045.000	0.000	2180.000	0.000	0.000	0.000	0.000
GR	830.200	804.000	825.800	892 000	821.000	936.000	813.000	1022.000	808.400	1140.000
GR	804 000	1490.000	802 400	1894 000	801.800	1950.000	801.800	2071 000	792.500	2086.000
GR	792 100	2098.000	791.300	2110.000	794.200	2113.000	794.900	2121.000	798.100	2134.000

GR	798.000	2230.000	814.000	3008.000	820.000	3190.000	831.400	3284.000	0.000	0.000
		100 FT. D/S 1ST R R. BRIDGE S. OF CORK ST.								
X1	16514.000	17.000	1314.000	1349.000	300.000	250.000	270.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1238.000	0.000	1442.000	0.000	0.000	0.000	0.000
GR	815.000	0.000	810.400	286.000	810.000	450.000	804 000	708 000	800.600	962.000
GR	801.600	1200.000	804 000	1242.000	801.800	1299.000	793.700	1314.000	793.400	1326.000
GR	792.500	1338.000	795.400	1341.000	796.000	1349.000	798.100	1362.000	803.200	1400.000
GR	804.000	1500 000	820.000	1500.000	0 000	0.000	0.000	0.000	0.000	0.000
		D/S FACE 1ST R.R. BRIDGE S. OF CORK ST.								
X1	16614.000	25.000	1295.300	1389.200	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	803.300	803.300	0.000
X4	16.000	801.000	1295.400	799.300	1300 900	799.300	1303.900	799.100	1313.400	799.100
X4	1316.400	796.700	1326.100	796.700	1329.100	794.800	1338.900	794.800	1341.900	793.700
X4	1351.900	793.700	1354 900	795.500	1364.600	795.500	1367.600	796.200	1376.600	796.200
X4	1379.600	800.300	1389 100	0.000	0 000	0.000	0.000	0.000	0.000	0.000
GR	815.000	0.000	810.400	286 000	810 000	450 000	804.000	708 000	800.600	962.000
GR	801.600	1200.000	804.000	1242.000	801.000	1295.300	799.300	1300.800	799.300	1303.800
GR	799.100	1313.300	799.100	1316.300	796.700	1326.000	796.700	1329.000	794 800	1338.800
GR	794.800	1341.800	793.700	1351.800	793.700	1354.800	795.500	1364.500	795.500	1367.500
GR	796.200	1376.500	796.200	1379 500	800 300	1389.200	803.200	1399.900	820.000	1400.000
SB	0.950	1.500	3.000	0 000	46.500	17 500	284.000	2.000	794.300	793.700
		U/S FACE 1ST R.R. BRIDGE S. OF CORK ST. - CROSS SECTION U								
X1	16629.000	0.000	0.000	0.000	15.000	15.000	15.000	0.000	0.000	0.000
X2	0.000	0 000	1.000	801.000	803.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	794.300	0 000	0.000	0.000	0 000	0.000	803.300	803.300	0.000
BT	41.000	0.000	815.000	0.000	286.000	810 400	0.000	450.000	810.000	0.000
BT	708.000	804.000	0 000	962.000	804.000	0.000	1200.000	804.000	0.000	1242.000
BT	804.000	0.000	1295.300	803.700	0.000	1295.400	803.700	801.200	1300 800	803.700
BT	801.200	1300.900	803.700	0.000	1303.800	803.700	0.000	1303.900	803.700	801.200
BT	1313.300	803.600	801.100	1313.400	803.600	0.000	1316.300	803.600	0.000	1316.400
BT	803.600	801.100	1326.000	803.400	800.900	1326 100	803 400	0.000	1329.000	803.400
BT	0.000	1329.100	803.400	800.900	1338.800	803 300	800.800	1338.900	803.300	0.000
BT	1341.800	803.300	0 000	1341.900	803.300	800.800	1351 800	803.200	800.700	1351.900
BT	803.200	0.000	1354.800	803.200	0.000	1354.900	803 200	800 700	1364.500	803.100
BT	800.600	1364 600	803 100	0 000	1367.500	803.100	0.000	1367.600	803.100	800.600
BT	1376.500	802.900	800.400	1376.600	802.900	0.000	1379.500	802.900	0 000	1379.600
BT	802.900	800 400	1389.100	802.800	800.300	1389.200	802.800	0.000	1399.900	803.200
BT	0.000	1400.000	820.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		50 FT. U/S 1ST R.R. S. OF CORK ST.								
X1	16679.000	17 000	1314.000	1349.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1178.000	0.000	1492.000	0.000	0.000	0.000	0.000
GR	815.000	0.000	810.400	286 000	810.000	450.000	804.000	708.000	800.600	962.000
GR	801.600	1200.000	804.000	1242.000	801.800	1299.000	794 800	1314.000	794.500	1326.000
GR	795.000	1338.000	796.200	1341.000	797.000	1349.000	800.100	1362.000	803.200	1400.000
GR	803.200	1450 000	820.000	1450.000	0.000	0.000	0.000	0.000	0.000	0.000

		100 FT. D/S 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17000.000	15.000	1253.000	1273.000	321.000	321.000	321.000	0.000	0.000	0.000
GR	819.400	0.000	815.000	162.000	813.000	364.000	809.200	600.000	806.000	750.000
GR	805.800	894.000	807.100	1100.000	810.200	1220.000	809.200	1228.000	799.700	1246.000
GR	798.800	1249.000	797.600	1253.000	795.200	1263.000	796.800	1273.000	799.000	1278.000
		D/S 2ND R.R BRIDGE S. OF CORK ST. -CROSS SECTION V								
X1	17099.000	17.000	1250.600	1275.400	99.000	99.000	99.000	0.000	0.000	0.000
X3	10.000	794.400	0.000	0.000	0.000	0.000	0.000	807.600	807.600	0.000
GR	819.400	0.000	815.000	162.000	813.000	364.000	809.200	600.000	806.000	750.000
GR	805.800	894.000	807.100	1100.000	810.200	1220.000	809.200	1228.000	809.000	1250.600
GR	794.300	1250.600	793.600	1263.000	795.300	1275.400	809.000	1275.400	810.000	1332.000
GR	815.800	1390.000	818.800	1554.000	0.000	0.000	0.000	0.000	0.000	0.000
		D/S FACE 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17100.000	0 000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	807 600	810.800	0.000	0.000	0.000	0.000	0 000
X3	10.000	794.400	0.000	0.000	0.000	0.000	0.000	807.600	807.600	0 000
		U/S FACE 2ND R.R. BRIDGE S. OF CORK ST.								
X1	17117.000	0.000	0.000	0.000	17.000	17.000	17.000	0.000	0.000	0.000
X2	0.000	0.000	0 000	807.660	810.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	810.800	810.800	0.000
X1	17118.000	0.000	0 000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	810.800	810.800	0.000
QT	4.000	480.000	490.000	495.000	500.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	1.000	0.000	0.000	0.000	0.000	0.000
		D/S FACE MONARK POND DAM								
X1	17132.000	0.000	0.000	0.000	14.000	14.000	14.000	0.000	0.000	0.000
X3	10.000	799.900	0.000	0.000	0.000	0.000	0.000	813.000	813.000	0.000
		D/S FACE CROSSWALK 3 FT. U/S MONARCH DAM								
X1	17135 000	5 000	1.000	25.800	3.000	3.000	3.000	0.000	0.000	0.000
X5	4 000	812.250	812.300	812.330	812.350	0.000	0 000	0.000	0.000	0.000
GR	816.000	1.000	802.700	1.100	800.900	13.400	802.800	25.700	816.000	25.800
SB	0.000	1.500	3.000	0.000	24.800	0.000	240.000	0.000	800 900	800.900
		U/S FACE CROSSWALK U/S OF DAM								
X1	17145.000	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	811.500	813.000	0.000	0.000	0.000	0.000	0.000
X1	17345.000	7.000	110.000	390.000	200.000	200.000	200.000	0.000	0.000	0.000
GR	812.600	0.000	810.000	110.000	802.000	160.000	802.000	225.000	802.000	350.000
GR	810.000	390.000	830.000	500.000	0.000	0.000	0 000	0.000	0.000	0.000
X1	18939.000	13.000	677.000	1002.000	1594.000	1594.000	1594.000	0.000	0.000	0.000
GR	815.800	454.000	811.600	550.000	811.100	577.000	809.700	677.000	809.300	682.000
GR	808.200	732.000	809.100	782.000	808.600	832.000	807.300	872.000	808.600	932.000
GR	806.200	982 000	809.100	1002.000	815.100	1022.000	0.000	0.000	0 000	0.000

	50 FT. D/S 2ND R.R. BRIDGE N OF KIGORE RD.									
X1	19845.000	15.000	500.000	561.600	800.000	1000 000	906.000	0 000	0.000	0.000
X3	0.000	0 000	0.000	494.000	0.000	580.000	0.000	0.000	0.000	0.000
X4	10.000	812.300	500.100	809.800	510 000	809.900	511.100	809.400	523.400	809.400
X4	524.500	809.200	536.800	809.200	537.900	809.300	549.700	809 300	550.800	312.300
X4	561.500	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000	0.000
GR	815.300	0.000	812.300	0.000	812.300	500.000	809.900	505.000	809.800	509.900
GR	809.800	511.000	809.400	523.300	809.400	524.400	809.200	536.700	809.200	537.800
GR	809.300	549.600	809.300	550.700	809.800	556.000	812.300	561.600	814.600	875.000
	D/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD.									
X1	19895.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	816.000	816.000	0.000
SB	1.050	1.630	3.000	0.000	61.800	4.400	201.000	0.000	809.700	809.700
	U/S FACE 2ND R.R. BRIDGE N. OF KIGORE RD. - CROSS SECTION W									
X1	19905.000	0 000	0 000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	813.200	816.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0 000	0.000	0.000	0.000	0.000	816.000	816.000	0.000
BT	22 000	0.000	815.300	0.000	500.000	816.500	0.000	500.100	816.500	813.200
BT	509.900	816.500	813.200	510.000	816 500	0.000	511.000	816.500	0.000	511.100
BT	816.500	813.200	523.300	816.500	813.200	523.400	816.500	0.000	524.400	816.500
BT	0.000	524 500	816.500	813.200	536.700	816.500	813.200	536.800	816.500	0.000
BT	537.800	816 500	0.000	537.900	816.500	813.200	549.600	816.500	813.200	549.700
BT	816.500	0.000	550.700	816.500	0.000	550.800	816.500	813.200	561.500	816.500
BT	813.200	561 600	816.500	0.000	875.000	816.800	0.000	0.000	0.000	0.000
X1	19955.000	0.000	0.000	0.000	50.000	50 000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	450.000	0.000	611.000	0.000	0.000	0.000	0.000
X1	20490.000	13.000	931.000	1006 000	350.000	700.000	535.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	920.000	0.000	1207.000	0.000	0 000	0.000	0.000
GR	823.200	844.000	819.100	907.000	814.900	915 000	811.900	924.000	810.000	931.000
GR	809.300	968.000	809.300	1006.000	810.300	1018.000	809.500	1061.000	810.400	1124.000
GR	811 000	1199.000	813.900	1292.000	816.700	1312.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
X1	20900.000	12.000	500.000	557.900	650.000	300.000	410.000	0.000	0.000	0.000
X3	0.000	0.000	0 000	475.000	0 000	583.000	0.000	0.000	0.000	0.000
X4	10.000	812.000	500 100	809.600	511.000	809.600	512.100	809.500	522.400	809.500
X4	523.500	809 300	534 400	809.300	535.600	810.300	545.800	810.300	546 900	813.400
X4	557 800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	814.200	0.000	812.000	500.000	809.600	510.900	809.600	512.000	809.500	522 300
GR	809.500	523.400	809.300	534.300	809.300	535.400	810.300	545.700	810.300	546.800
GR	813.400	557.900	815.000	800.000	0 000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.030	0.500	1.000	0.000	0 000	0.000	0.000	0.000
	D/S FACE 1ST R R. BRIDGE N. OF KILGORE RD. - CROSS SECTION X									
X1	21000.000	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0 000	0.000	0.000	0.000	0.000	0.000	818.000	818.000	0.000

SB	1.050	1 610	3.000	0.000	57.900	4.400	257 000	0.000	810.000	810.000
	U/S FACE 1ST R.R. BRIDGE N. OF KILGORE RD.									
X1	21010.000	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	814.800	818.100	0.000	0.000	0.000	0 000	0.000
X3	10.000	0.000	0.000	0 000	0.000	0.000	0.000	818.000	818.000	0.000
BT	22.000	0.000	816.800	0.000	500.000	818.100	0.000	500.100	818.100	814.800
BT	510.900	818.100	814.800	511.000	818.100	0.000	512.000	818.100	0.000	512.100
BT	818.100	814.800	522.300	818.100	814.800	522.400	818.100	0.000	523.400	818.100
BT	0.000	523.500	818.100	814.800	534.300	818.100	814.800	534.400	818.100	0.000
BT	535.400	818.100	0.000	535.600	818.100	814.800	545.700	818.100	814.800	545 800
BT	818.100	0.000	546.800	818.100	0.000	546.900	818.100	814 800	557.800	818.100
BT	814.800	557.900	818.100	0.000	800.000	819.000	0.000	0.000	0.000	0.000
	50 FT. U/S 1ST R.R. BRIDGE N. OF KILGORE RD.									
X1	21060.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	450.000	0.000	608.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY
SEGMENT 1

00BREAK00

THIS RUN EXECUTED 21 JUN 89 8:32:22

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	752.00	500.00	754.98	0.00	755.08	11.33	2.55	200.90	148.56
0.000	0.00	0.00	0.00	752.00	560.00	755.15	0.00	755.26	11.39	2.67	215.43	165.92
0.000	0.00	0.00	0.00	752.00	580.00	755.20	0.00	755.32	11.33	2.70	220.67	172.33
0.000	0.00	0.00	0.00	752.00	630.00	755.34	0.00	755.46	11.20	2.78	233.39	188.21
229.000	229.00	0.00	0.00	751.20	500.00	755.27	0.00	755.55	25.67	4.27	117.06	78.69
229.000	229.00	0.00	0.00	751.20	560.00	755.43	0.00	755.75	27.28	4.53	123.63	107.21
229.000	229.00	0.00	0.00	751.20	580.00	755.48	0.00	755 81	27.54	4.61	125.91	110 52
229.000	229.00	0.00	0.00	751.20	630 00	755.61	0.00	755.97	28.36	4.80	131.16	118.30
230.000	1.00	765.60	761.40	751 20	500.00	755.27	0.00	755.55	8.38	4.27	117.08	172.75
230.000	1.00	765.60	761 40	751.20	560.00	755.43	0.00	755.75	8.94	4.53	123.50	187 28
230.000	1.00	765.60	761.40	751.20	580.00	755.48	0.00	755.81	9.05	4.61	125.68	192.82
230.000	1.00	765 60	761.40	751.20	630 00	755.61	0.00	755.97	9.31	4.81	130.97	206.53
322.000	92.00	766.60	762 40	751.20	500.00	755.36	0.00	755.63	7.61	4.13	120.94	181.22
322.000	92.00	766.60	762.40	751.20	560.00	755.53	0.00	755.83	8.00	4.39	127.69	197.98
322.000	92.00	766.60	762.40	751.20	580 00	755.59	0.00	755.90	8.10	4.46	129.93	203.81
322 000	92.00	766.60	762 40	751.20	630 00	755.72	0.00	756.06	8.33	4.65	135.41	218.34
323 000	1.00	0.00	0.00	751.20	500.00	755 37	0.00	755.63	23.30	4.13	120.96	103.58
323.000	1.00	0.00	0.00	751.20	560.00	755.53	0.00	755.83	24.49	4.38	127 71	113.17
323 000	1.00	0.00	0.00	751.20	580 00	755.59	0.00	755.90	24.78	4.46	129.96	116.50
323.000	1.00	0.00	0.00	751.20	630.00	755.73	0.00	756.06	25.48	4.65	135.44	124.81
372.000	49 00	0.00	0.00	750.60	500.00	755.41	0 00	755.88	37.92	5.53	90.48	81.20
372.000	49.00	0.00	0.00	750.60	560.00	755.56	0.00	756.11	41.34	5.92	94.63	87.10
372.000	49.00	0.00	0.00	750.60	580.00	755.62	0.00	756.18	42.40	6.05	96.00	89.07
372.000	49.00	0.00	0.00	750.60	630.00	755.74	0.00	756.37	44.98	6.35	99.36	93.94
669.000	297.00	0.00	0.00	751.50	500 00	756.41	0.00	756.64	15.43	3.80	131.54	127.28
669 000	297.00	0.00	0 00	751.50	560.00	756.67	0.00	756.92	15.92	3.99	140.48	140.37
669.000	297.00	0.00	0.00	751.50	580.00	756.76	0.00	757.01	16.06	4.04	143.41	144.75
669.000	297.00	0.00	0.00	751.50	630.00	756.96	0.00	757 23	16.37	4.18	150.63	155 69

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
670.000	1.00	762.00	761.90	751.50	500.00	756.42	0.00	756.64	15.40	3.80	131.64	127.42
670.000	1.00	762.00	761.90	751.50	560.00	756.67	0.00	756.92	15.88	3.98	140.58	140.53
670.000	1.00	762.00	761.90	751.50	580.00	756.76	0.00	757.01	16.02	4.04	143.52	144.92
670.000	1.00	762.00	761.90	751.50	630.00	756.96	0.00	757.23	16.34	4.18	150.75	155.87
674.000	4.00	762.00	761.90	751.50	500.00	756.42	0.00	756.65	15.33	3.79	131 83	127 69
674.000	4.00	762.00	761.90	751.50	560.00	756.68	0.00	756.93	15.81	3.98	140.78	140.82
674.000	4.00	762.00	761.90	751.50	580.00	756.76	0.00	757.02	15.95	4.04	143.72	145.21
674.000	4.00	762.00	761.90	751.50	630.00	756.97	0.00	757.24	16.27	4.17	150.95	156.18
675.000	1.00	0.00	0.00	751.50	500.00	756.42	0.00	756.65	15.30	3.79	131.91	127.81
675.000	1.00	0.00	0.00	751.50	560.00	756.68	0.00	756.93	15.79	3.98	140.86	140.94
675.000	1.00	0.00	0.00	751.50	580.00	756.77	0.00	757.02	15.92	4.03	143.81	145.34
675.000	1.00	0.00	0.00	751.50	630.00	756.97	0.00	757.24	16.24	4.17	151.04	156.32
890 000	215.00	0.00	0.00	752.00	500 00	756.76	0.00	757.03	17.93	4.17	121.20	118.08
890.000	215.00	0 00	0.00	752.00	560.00	757.02	0 00	757.31	17.72	4.35	130.44	133.04
890.000	215.00	0.00	0.00	752.00	580.00	757.10	0.00	757.40	17.65	4.41	133.46	138.05
890.000	215.00	0.00	0.00	752.00	630.00	757.31	0.00	757.63	17.59	4.55	140.63	150.23
989.000	99.00	0.00	0.00	752.00	500.00	756.95	0.00	757.20	15.04	3.96	126.20	128.91
989.000	99.00	0.00	0 00	752.00	560.00	757.21	0 00	757.48	15.16	4.16	134.77	143.83
989 000	99.00	0.00	0.00	752.00	580.00	757.30	0.00	757.57	15.19	4.22	137.55	148.82
989.000	99.00	0.00	0.00	752.00	630.00	757.51	0.00	757.80	15.24	4.36	144.42	161.40
990.000	1.00	763.00	761.20	752.00	500.00	756.95	0.00	757.20	17.44	3.96	126.25	119.72
990.000	1.00	763.00	761.20	752.00	560.00	757.21	0.00	757 48	17.90	4.15	134.82	132.36
990.000	1.00	763.00	761.20	752.00	580.00	757.30	0.00	757.57	18.04	4.21	137.60	136.54
990.000	1.00	763.00	761.20	752.00	630.00	757.51	0.00	757 80	18.36	4.36	144.47	147.03
1009.000	19.00	763.00	761.20	752.00	500.00	756.88	0.00	757.36	33.09	5.59	89.44	86.92
1009.000	19.00	763.00	761.20	752.00	560 00	757.13	0.00	757.66	33.91	5.87	95.40	96.16
1009.000	19.00	763.00	761 20	752.00	580.00	757.21	0.00	757.76	34.16	5.96	97.33	99.23
1009 000	19.00	763.00	761.20	752.00	630.00	757.41	0.00	758.00	34.72	6.17	102.10	106.92
1010.000	1.00	0 00	0 00	752.00	500.00	756.88	0.00	757.37	31.70	5.59	89.49	88.80
1010.000	1.00	0.00	0.00	752.00	560.00	757.13	0.00	757.67	32.08	5.87	95.45	98.87
1010.000	1.00	0.00	0 00	752.00	580.00	757.21	0.00	757.76	32.19	5.96	97.38	102.23
1010.000	1.00	0.00	0.00	752.00	630.00	757.41	0.00	758.00	32.38	6 17	102.15	110.71

10-YEAR FLOOD,

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	500.00	754.98	0.00	0.00	-2.02	89.22	0.00
0.000	560.00	755.15	0.16	0.00	-2.85	90.00	0.00
0.000	580.00	755.20	0.06	0.00	-3.80	90.28	0.00
0.000	630.00	755.34	0.14	0.00	-4.66	90.95	0.00
229.000	500.00	755.27	0.00	0.28	0.00	39.81	229.00
229.000	560.00	755.43	0.16	0.28	0.00	40.30	229.00
229.000	580.00	755.48	0.05	0.28	0.00	40.30	229.00
229.000	630.00	755.61	0.13	0.27	0.00	40.30	229.00
230.000	500.00	755.27	0.00	0.00	0.00	39.81	1.00
230.000	560.00	755.43	0.16	0.00	0.00	40.30	1.00
230.000	580.00	755.48	0.05	0.00	0.00	40.30	1.00
230.000	630.00	755.61	0.13	0.00	0.00	40.30	1.00
322.000	500.00	755.36	0.00	0.10	0.00	40.18	92.00
322.000	560.00	755.53	0.17	0.10	0.00	40.30	92.00
322.000	580.00	755.59	0.06	0.11	0.00	40.30	92.00
322.000	630.00	755.72	0.14	0.11	0.00	40.30	92.00
323.000	500.00	755.37	0.00	0.00	0.00	40.18	1.00
323.000	560.00	755.53	0.17	0.00	0.00	40.30	1.00
323.000	580.00	755.59	0.06	0.00	0.00	40.30	1.00
323.000	630.00	755.73	0.14	0.00	0.00	40.30	1.00
372.000	500.00	755.41	0.00	0.04	0.00	25.95	49.00
372.000	560.00	755.56	0.16	0.03	0.00	26.25	49.00
372.000	580.00	755.62	0.05	0.03	0.00	26.35	49.00
372.000	630.00	755.74	0.13	0.02	0.00	26.59	49.00
669.000	500.00	756.41	0.00	1.01	0.00	34.47	297.00
669.000	560.00	756.67	0.26	1.11	0.00	34.88	297.00
669.000	580.00	756.76	0.08	1.14	0.00	35.01	297.00
669.000	630.00	756.96	0.21	1.22	0.00	35.34	297.00
670.000	500.00	756.42	0.00	0.00	0.00	34.48	1.00
670.000	560.00	756.67	0.26	0.00	0.00	34.89	1.00
670.000	580.00	756.76	0.08	0.00	0.00	35.02	1.00
670.000	630.00	756.96	0.21	0.00	0.00	35.34	1.00
674.000	500.00	756.42	0.00	0.01	0.00	34.49	4.00
674.000	560.00	756.68	0.26	0.01	0.00	34.89	4.00
674.000	580.00	756.76	0.08	0.01	0.00	35.03	4.00
674.000	630.00	756.97	0.21	0.01	0.00	35.35	4.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
675.000	500.00	756.42	0.00	0.00	0.00	34.49	1.00
675 000	560.00	756.68	0.26	0.00	0.00	34.90	1 00
675.000	580 00	756.77	0.08	0.00	0.00	35.03	1 00
675.000	630.00	756.97	0.21	0.00	0.00	35 36	1.00
890.000	500.00	756.76	0 00	0.33	0.00	34.32	215.00
890.000	560.00	757.02	0.26	0.34	0.00	34.55	215.00
890.000	580.00	757.10	0 08	0.34	0.00	34.62	215.00
890.000	630 00	757.31	0.21	0.34	0.00	34.80	215.00
989.000	500.00	756.95	0.00	0.20	0.00	33.00	99.00
989.000	560.00	757.21	0 26	0.20	0.00	33.00	99.00
989.000	580.00	757.30	0.08	0 19	0.00	33.00	99.00
989.000	630.00	757.51	0.21	0.19	0.00	33.00	99.00
990.000	500.00	756.95	0.00	0.00	0.00	33.00	1.00
990.000	560.00	757.21	0.26	0.00	0.00	33.00	1.00
990 000	580.00	757.30	0.08	0.00	0.00	33.00	1.00
990.000	630 00	757.51	0 21	0 00	0.00	33 00	1.00
1009 000	500 00	756.88	0 00	-0.08	0.00	24.00	19.00
1009.000	560.00	757 13	0.25	-0.09	0 00	24.00	19.00
1009.000	580.00	757.21	0.08	-0 09	0.00	24.00	19.00
1009.000	630.00	757.41	0.20	-0.10	0.00	24.00	19.00
1010 000	500.00	756.88	0.00	0.00	0.00	24.00	1.00
1010.000	560.00	757.13	0.25	0.00	0.00	24.00	1.00
1010.000	580.00	757.21	0.08	0.00	0.00	24.00	1.00
1010.000	630.00	757.41	0.20	0.00	0.00	24.00	1.00

SUMMARY OF ERRORS AND SPECIAL NOTES

THIS RUN EXECUTED 21 JUN 89 8:32:24

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY
SEGMENT 2

00BREAK00

THIS RUN EXECUTED 23 JUN 89 15:12:43

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
1009.000	0.00	763.00	761.20	752.00	500.00	756.88	0.00	757.36	10.79	5.59	89.47	152.19
1009.000	0.00	763.00	761 20	752.00	560.00	757.13	0.00	757.66	11.05	5.87	95.47	168 49
1009.000	0 00	763.00	761.20	752.00	580.00	757.21	0.00	757.76	11.13	5.96	97.39	173.82
1009.000	0.00	763.00	761.20	752.00	630.00	757.41	0.00	758.00	11.30	6.16	102.19	187.38
1010.000	1 00	0.00	0.00	752.00	500.00	756.88	0.00	757.37	31.70	5 59	89.50	88.80
1010.000	1.00	0.00	0.00	752.00	560.00	757.13	0.00	757.67	32.03	5.86	95.50	98.95
1010.000	1.00	0.00	0.00	752.00	580.00	757.21	0.00	757.76	32.15	5.95	97.42	102.28
1010.000	1.00	0.00	0.00	752.00	630.00	757.41	0.00	758.00	32.32	6.16	102.22	110.82
1059.000	49.00	0.00	0.00	752.20	500.00	757.53	0.00	757.64	5.39	2.69	205.80	215.45
1059.000	49.00	0.00	0.00	752.20	560.00	757.85	0.00	757.97	5.43	2.82	224.73	240.26
1059.000	49.00	0.00	0.00	752.20	580.00	757.95	0.00	758.07	5.44	2.86	231.05	248.57
1059.000	49.00	0.00	0.00	752.20	630.00	758.20	0.00	758.33	5.45	2.95	247 12	269.77
1480 000	421.00	0.00	0.00	752.80	500.00	757 81	0.00	758.18	21.28	4.99	117.76	108.39
1480.000	421.00	0.00	0.00	752.80	560.00	758 11	0.00	758.51	20.88	5.18	128.80	122.56
1480.000	421.00	0.00	0.00	752.80	580.00	758.21	0.00	758.61	20.76	5.24	132.44	127.30
1480.000	421.00	0.00	0.00	752.80	630.00	758.45	0.00	758.88	20.43	5.38	141.62	139 37
1580.000	100.00	0.00	0.00	752.80	500.00	758.00	0.00	758.39	20.03	4.99	100.17	111.72
1580.000	100 00	0.00	0.00	752.80	560.00	758.30	0.00	758.73	20.15	5.23	107.02	124 74
1580.000	100.00	0.00	0.00	752.80	580.00	758.40	0.00	758.84	20.19	5.31	109.23	129.07
1580.000	100.00	0.00	0.00	752.80	630.00	758.63	0.00	759.10	20.26	5.49	114.67	139.96
1608.000	28.00	762.60	760.10	752.90	500.00	758 06	0.00	758.45	20.76	5 05	99.10	109.74
1608.000	28.00	762.60	760.10	752.90	560.00	758 36	0.00	758.79	20.74	5.28	106.10	122.97
1608.000	28 00	762 60	760.10	752.90	580.00	758.46	0.00	758.90	20.74	5.35	108.36	127.37
1608.000	28.00	762.60	760.10	752.90	630.00	758.70	0.00	759.18	20.70	5.53	113.93	138 46
1658.000	50.00	0.00	0.00	752.90	500.00	758.26	0.00	758.57	16.04	4.57	130.57	124.85
1658.000	50.00	0.00	0.00	752.90	560.00	758.58	0.00	758.91	15.82	4.76	142.70	140.80
1658.000	50.00	0.00	0.00	752.90	580.00	758 69	0.00	759.03	15.75	4.81	146.73	146.17
1658.000	50.00	0.00	0.00	752.90	630.00	758.94	0.00	759.30	15.55	4.95	156.89	159.76

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
1850.000	192.00	0.00	0.00	752.80	500.00	758.63	0.00	758.86	11.73	3.83	142.95	146.01
1850.000	192.00	0.00	0.00	752.80	560.00	758.96	0.00	759.20	11.47	3.97	159.60	165.35
1850.000	192.00	0.00	0.00	752.80	580.00	759.06	0.00	759.31	11.41	4.02	165.21	171.73
1850.000	192.00	0.00	0.00	752.80	630.00	759.33	0.00	759.58	11.23	4.12	179.76	188.02
1950.000	100.00	0.00	0 00	753.40	500.00	758.71	0 00	759.05	17.01	4.67	107.14	121.25
1950.000	100.00	0.00	0.00	753.40	560.00	759.03	0.00	759.40	16.96	4.88	114.77	135.97
1950.000	100.00	0.00	0.00	753.40	580.00	759.14	0.00	759.52	16.95	4.95	117.24	140.89
1950.000	100.00	0.00	0.00	753.40	630.00	759.39	0.00	759.79	16.89	5.11	123.33	153.29
1967.000	17.00	763.00	759.70	753.60	500.00	758.74	0.00	759.10	26.59	4.87	102.72	96.97
1967.000	17.00	763.00	759.70	753.60	560.00	759 05	0.00	759.45	26.84	5.07	110.56	108.10
1967 000	17.00	763 00	759.70	753.60	580.00	759.16	0.00	759.57	27.06	5.14	112.91	111.50
1967.000	17.00	763.00	759.70	753.60	630.00	759.41	0.00	759.84	27.38	5.29	118.98	120.40
2000.000	33.00	0.00	0.00	753.60	500.00	759.12	0.00	759.22	4.92	2.60	246.67	225.50
2000.000	33.00	0.00	0.00	753.60	560 00	759.47	0.00	759.57	4.72	2.67	278.37	257.82
2000.000	33.00	0 00	0.00	753.60	580.00	759.58	0.00	759.69	4.65	2.69	288.79	268.93
2000.000	33.00	0.00	0.00	753.60	630.00	759.87	0.00	759.97	4.50	2.74	314.24	296.96
2040 000	40.00	0.00	0.00	753.60	500.00	759.18	0.00	759.24	4.36	2.08	239.95	239.45
2040.000	40.00	0.00	0.00	753.60	560.00	759.53	0.00	759.60	4.30	2.13	262.85	269 94
2040.000	40.00	0.00	0.00	753.60	580.00	759.64	0.00	759.72	4.19	2.14	270.63	283.38
2040.000	40.00	0 00	0.00	753.60	630.00	759.93	0.00	760.00	3.94	2.18	289.58	317.22
2057.000	17.00	763.60	761.30	753.60	500.00	759.49	0.00	759.54	3.57	1.92	259.76	264.67
2057 000	17.00	763.60	761.30	753.60	560.00	759.85	0.00	759.91	3.32	1.97	284.06	307.21
2057.000	17.00	763 60	761.30	753.60	580.00	759.97	0.00	760.03	3.25	1.99	291.98	321.61
2057.000	17.00	763.60	761.30	753.60	630.00	760.26	0.00	760 32	3.10	2.02	311.34	357.92
2157.000	100.00	0.00	0.00	753.60	500.00	759.51	0.00	759.60	3.96	2.46	243.98	251.28
2157.000	100.00	0.00	0.00	753.60	560.00	759.87	0.00	759.96	3.91	2.55	269.73	283.30
2157.000	100.00	0.00	0.00	753.60	580.00	759.98	0.00	760.08	3 89	2.58	278.42	294.14
2157.000	100.00	0.00	0.00	753.60	630.00	760 27	0.00	760.37	3.81	2.64	308.98	322.81
2339 000	182.00	0 00	0.00	754.10	500.00	759.56	0.00	759.77	11.37	3.66	136.79	148.27
2339.000	182.00	0.00	0.00	754.10	560.00	759.91	0.00	760.14	10.94	3.78	148.14	169.34
2339.000	182.00	0.00	0.00	754.10	580.00	760.03	0 00	760.26	10.81	3.82	151.84	176.44
2339.000	182.00	0.00	0 00	754.10	630.00	760.31	0.00	760.55	10.59	3.92	160.52	193.57
2340.000	1.00	758 00	760.40	754.10	500.00	759.30	0.00	760.03	52.74	6.86	72.86	68.85
2340.000	1.00	758.00	760 40	754 10	560.00	759.64	0.00	760.41	52.41	7.04	79.58	77.35
2340.000	1.00	758.00	760.40	754.10	580.00	759.75	0.00	760.54	52.28	7.09	81.82	80.21
2340.000	1.00	758.00	760.40	754.10	630 00	760.02	0.00	760.84	62.89	7.26	86.83	79.44
2364.000	24.00	758.00	760.40	754.10	500.00	759.52	0.00	760.17	45.22	6.47	77.23	74.36
2364.000	24.00	758.00	760 40	754.10	560.00	759.86	0.00	760.55	45.77	6.68	83.82	82.78
2364.000	24.00	758.00	760 40	754.10	580.00	759.97	0.00	760.67	46.01	6.75	85.94	85.51
2364.000	24.00	758.00	760 40	754.10	630.00	760.22	0.00	761.00	58.24	7.06	89 19	82.56

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
2365.000	1.00	0.00	0.00	754.10	500.00	760.16	0.00	760.32	2.39	3.20	156.08	323.28
2365.000	1 00	0.00	0.00	754.10	560.00	760.54	0.00	760.71	2.35	3.33	168.04	365.61
2365 000	1.00	0.00	0.00	754.10	580.00	760.66	0.00	760.83	2.33	3.37	171.91	379.77
2365.000	1.00	0.00	0.00	754.10	630.00	760 99	0.00	761.18	2.25	3.45	182.63	420.05
2376.000	11.00	0.00	0.00	752.40	500.00	760.18	0.00	760.33	1.88	3.10	161.28	365.07
2376.000	11.00	0.00	0.00	752.40	560.00	760.55	0.00	760.71	1.91	3.26	171.77	405 48
2376.000	11.00	0.00	0.00	752 40	580.00	760.67	0.00	760.84	1.92	3.31	175.17	418.94
2376.000	11.00	0.00	0.00	752.40	630.00	761.07	0.00	761.20	1.48	3.03	426.48	518 56
2377.000	1.00	762.00	761.00	752.40	500.00	760.17	0.00	760.34	6.95	3.32	150.82	189.61
2377.000	1.00	762.00	761 00	752.40	560.00	760.54	0 00	760.73	7.51	3.49	160.42	204.31
2377.000	1.00	762.00	761 00	752.40	580.00	760.66	0.00	760.85	7.70	3.55	163.52	209.08
2377.000	1.00	762.00	761.00	752.40	630.00	761.07	0.00	761.20	8.46	3.08	321.34	216.61
2417.000	40.00	762.00	761.00	752.40	500.00	760.20	0.00	760.37	6.90	3.31	151.28	190.31
2417.000	40.00	762.00	761.00	752.40	560.00	760.57	0.00	760 76	7.46	3.48	160.91	205.06
2417.000	40.00	762.00	761.00	752.40	580.00	760.69	0.00	760.88	7.64	3.54	164.02	209.84
2417.000	40 00	762.00	761.00	752.40	630.00	761.11	0.00	761.23	8.39	3.07	324.68	217.51
2418.000	1 00	0.00	0.00	752.40	500 00	760.23	0.00	760.37	5.60	3.08	162.50	211 25
2418.000	1 00	0.00	0 00	752.40	560.00	760.60	0.00	760.76	5.70	3 24	173.07	234 63
2418.000	1.00	0.00	0.00	752.40	580.00	760.72	0.00	760.89	5.72	3.29	176.49	242.41
2418.000	1 00	0.00	0.00	752.40	630.00	761.14	0.00	761.24	3.69	2.75	440.35	328.03
2468.000	50.00	0.00	0.00	752.40	500.00	760.26	0.00	760.41	7.00	3.06	163.38	188.93
2468.000	50.00	0.00	0.00	752.40	560.00	760.64	0.00	760.80	7.32	3.22	173.99	206.97
2468.000	50.00	0 00	0 00	752.40	580.00	760.76	0.00	760.92	7.42	3.27	177.43	212 90
2468.000	50.00	0.00	0.00	752.40	630.00	761.13	0.00	761.30	7.43	3.35	187.90	231 19
2693.000	225.00	0.00	0.00	750.20	500.00	760.45	0.00	760.49	1.18	1.63	307.67	460.26
2693.000	225 00	0.00	0.00	750.20	560.00	760.84	0.00	760.89	1.22	1.71	328.37	506.79
2693.000	225 00	0.00	0.00	750.20	580.00	760.97	0.00	761.02	1.23	1.73	335.12	522.24
2693.000	225.00	0.00	0.00	750.20	630.00	761.35	0.00	761.40	1.23	1.77	355.33	569.20
2792.000	99.00	0.00	0.00	750.20	500.00	760.47	0.00	760.50	0.75	1.47	340.97	577.76
2792.000	99.00	0.00	0.00	750.20	560.00	760.86	0.00	760.90	0.82	1.56	357.84	620.19
2792.000	99.00	0.00	0.00	750.20	580.00	760.99	0.00	761.03	0.84	1.60	363.31	634.09
2792.000	99.00	0.00	0.00	750.20	630.00	761.37	0.00	761.41	0.87	1.66	379.51	675.76
2793.000	1.00	761 30	760.70	750.20	500.00	760.47	0.00	760.50	0.92	1.47	340.97	520.48
2793.000	1.00	761.30	760.70	750.20	560.00	760.86	0.00	760.90	2.13	1.60	350.90	383.78
2793.000	1.00	761.30	760.70	750.20	580.00	760.99	0.00	761.03	2.28	1.65	350.90	383.78
2793.000	1.00	761.30	760 70	750.20	630.00	761.36	0.00	761.41	2.69	1.80	350.90	383 78
2845.000	52.00	761.30	760.70	750.20	500.00	760.47	0.00	760.51	0.92	1.47	341.16	520 86
2845.000	52.00	761.30	760.70	750.20	560.00	760.87	0.00	760.91	2.13	1.60	350.90	383 78
2845.000	52.00	761.30	760.70	750.20	580.00	761.00	0 00	761.04	2.28	1.65	350.90	383.78
2845.000	52.00	761.30	760.70	750.20	630.00	761.38	0.00	761.43	2 69	1.80	350.90	383.78

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
2846.000	1.00	0.00	0.00	750.20	500.00	760.47	0.00	760.51	0.75	1.47	341.18	578.29
2846.000	1.00	0.00	0.00	750.20	560.00	760.87	0.00	760.91	0.81	1.56	358.30	621.35
2846.000	1.00	0.00	0.00	750.20	580.00	761.00	0.00	761.04	0.83	1.59	363.77	635.28
2846.000	1.00	0.00	0.00	750.20	630.00	761.39	0.00	761.43	0.87	1.66	379.98	676.96
3218.000	372.00	0.00	0.00	754.40	500.00	760.44	0.00	760.69	16.08	4.06	123.30	124.69
3218.000	372.00	0.00	0.00	754.40	560.00	760.84	0 00	761.11	15.33	4.13	135.46	143.02
3218.000	372.00	0.00	0.00	754.40	580.00	760.97	0.00	761.24	15.13	4.16	139.42	149.13
3218.000	372.00	0.00	0.00	754.40	630.00	761.36	0.00	761.62	14.08	4.16	151.31	167.92

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1009.000	500.00	756.88	0.00	0.00	0.00	24.00	0.00
1009.000	560.00	757.13	0.25	0.00	0.00	24.00	0.00
1009.000	580.00	757.21	0.08	0.00	0.00	24.00	0.00
1009.000	630.00	757.41	0.20	0.00	0.00	24.00	0.00
1010.000	500.00	756.88	0.00	0.00	0.00	24.00	1.00
1010.000	560.00	757.13	0.25	0.00	0.00	24.00	1.00
1010.000	580.00	757.21	0.08	0.00	0.00	24.00	1.00
1010.000	630.00	757.41	0.20	0.00	0.00	24.00	1.00
1059.000	500.00	757.53	0.00	0.65	0.00	58.73	49.00
1059.000	560.00	757.85	0.31	0.72	0.00	61.61	49.00
1059.000	580.00	757.95	0.10	0.74	0.00	62.54	49.00
1059.000	630.00	758.20	0.25	0.79	0.00	64.84	49.00
1480.000	500.00	757.81	0.00	0.27	0.00	35.65	421.00
1480.000	560.00	758.11	0.30	0.26	0.00	36.78	421.00
1480.000	580.00	758.21	0.10	0.26	0.00	37.15	421.00
1480.000	630.00	758.45	0.24	0.25	0.00	38.28	421.00
1580.000	500.00	758.00	0.00	0.20	0.00	23.00	100.00
1580.000	560.00	758.30	0.30	0.19	0.00	23.00	100.00
1580.000	580.00	758.40	0.10	0.19	0.00	23.00	100.00
1580.000	630.00	758.63	0.24	0.18	0.00	23.00	100.00
1608.000	500.00	758.06	0.00	0.05	0.00	23.00	28.00
1608.000	560.00	758.36	0.30	0.06	0.00	23.00	28.00
1608.000	580.00	758.46	0.10	0.06	0.00	23.00	28.00
1608.000	630.00	758.70	0.24	0.07	0.00	23.00	28.00
1658.000	500.00	758.26	0.00	0.20	0.00	36.95	50.00
1658.000	560.00	758.58	0.32	0.22	0.00	38.41	50.00
1658.000	580.00	758.69	0.10	0.23	0.00	38.90	50.00
1658.000	630.00	758.94	0.26	0.24	0.00	40.10	50.00
1850.000	500.00	758.63	0.00	0.37	0.00	46.90	192.00
1850.000	560.00	758.96	0.33	0.38	0.00	51.99	192.00
1850.000	580.00	759.06	0.11	0.38	0.00	53.60	192.00
1850.000	630.00	759.33	0.26	0.38	0.00	57.56	192.00
1950.000	500.00	758.71	0.00	0.08	0.00	24.00	100.00
1950.000	560.00	759.03	0.32	0.07	0.00	24.00	100.00
1950.000	580.00	759.14	0.10	0.07	0.00	24.00	100.00
1950.000	630.00	759.39	0.25	0.06	0.00	24.00	100.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1967.000	500.00	758.74	0.00	0.02	0.00	24.00	17.00
1967.000	560.00	759.05	0.32	0.02	0.00	24.00	17.00
1967.000	580.00	759.16	0.10	0.02	0.00	24.00	17.00
1967.000	630.00	759.41	0.25	0.02	0.00	24.00	17.00
2000.000	500.00	759.12	0.00	0.38	0.00	89.63	33.00
2000.000	560.00	759.47	0.35	0.41	0.00	90.00	33.00
2000.000	580.00	759.58	0.12	0.43	0.00	90.00	33.00
2000.000	630.00	759.87	0.28	0.46	0.00	90.00	33.00
2040.000	500.00	759.18	0.00	0.06	0.00	63.82	40.00
2040.000	560.00	759.53	0.35	0.06	0.00	67.00	40.00
2040.000	580.00	759.64	0.12	0.06	0.00	67.00	40.00
2040.000	630.00	759.93	0.28	0.06	0.00	67.00	40.00
2057.000	500.00	759.49	0.00	0.31	0.00	67.00	17.00
2057.000	560.00	759.85	0.36	0.32	0.00	67.00	17.00
2057.000	580.00	759.97	0.12	0.32	0.00	67.00	17.00
2057.000	630.00	760.26	0.29	0.33	0.00	67.00	17.00
2157.000	500.00	759.51	0.00	0.02	0.00	69.79	100.00
2157.000	560.00	759.87	0.36	0.02	0.00	73.58	100.00
2157.000	580.00	759.98	0.12	0.02	0.00	74.82	100.00
2157.000	630.00	760.27	0.29	0.01	0.00	116.86	100.00
2339.000	500.00	759.56	0.00	0.06	0.00	32.00	182.00
2339.000	560.00	759.91	0.35	0.05	0.00	32.00	182.00
2339.000	580.00	760.03	0.11	0.05	0.00	32.00	182.00
2339.000	630.00	760.31	0.28	0.04	0.00	32.00	182.00
2340.000	500.00	759.30	0.00	-0.26	0.00	32.00	1.00
2340.000	560.00	759.64	0.34	-0.27	0.00	32.00	1.00
2340.000	580.00	759.75	0.11	-0.27	0.00	32.00	1.00
2340.000	630.00	760.02	0.27	-0.29	0.00	32.00	1.00
2364.000	500.00	759.52	0.00	0.22	0.00	32.00	24.00
2364.000	560.00	759.86	0.34	0.22	0.00	32.00	24.00
2364.000	580.00	759.97	0.11	0.21	0.00	32.00	24.00
2364.000	630.00	760.22	0.26	0.20	0.00	32.00	24.00
2365.000	500.00	760.16	0.00	0.64	0.00	32.00	1.00
2365.000	560.00	760.54	0.37	0.68	0.00	32.00	1.00
2365.000	580.00	760.66	0.12	0.69	0.00	32.00	1.00
2365.000	630.00	760.99	0.33	0.77	0.00	32.00	1.00
2376.000	500.00	760.18	0.00	0.02	0.00	28.20	11.00
2376.000	560.00	760.55	0.37	0.01	0.00	28.20	11.00
2376.000	580.00	760.67	0.12	0.01	0.00	28.20	11.00
2376.000	630.00	761.07	0.40	0.08	0.00	187.08	11.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
2377.000	500.00	760.17	0.00	-0.01	0.00	28.20	1.00
2377.000	560.00	760.54	0.37	-0.01	0.00	28.20	1.00
2377.000	580.00	760.66	0 12	-0.01	0.00	28.20	1.00
2377.000	630.00	761.07	0.41	0.00	0.00	187.09	1.00
2417.000	500.00	760.20	0 00	0.03	0.00	28.20	40.00
2417.000	560.00	760.57	0.37	0.03	0.00	28.20	40.00
2417.000	580.00	760.69	0.12	0.03	0.00	28 20	40.00
2417.000	630.00	761.11	0.42	0.04	0.00	188.75	40.00
2418.000	500.00	760.23	0.00	0.03	0.00	28.20	1.00
2418.000	560.00	760.60	0 37	0.03	0.00	28.20	1.00
2418.000	580 00	760.72	0.12	0.04	0.00	28.20	1.00
2418.000	630 00	761.14	0.42	0.04	0.00	191.17	1.00
2468.000	500.00	760.26	0.00	0.03	0.00	28.20	50.00
2468.000	560.00	760.64	0.38	0.03	0.00	28.20	50.00
2468.000	580.00	760.76	0.12	0.03	0.00	28.20	50.00
2468.000	630.00	761.13	0.37	-0.01	0.00	28.20	50.00
2693.000	500.00	760.45	0.00	0.19	0.00	52.46	225.00
2693.000	560 00	760.84	0.39	0.21	0.00	53.03	225.00
2693.000	580 00	760.97	0.13	0.21	0.00	53.21	225.00
2693.000	630.00	761.35	0.38	0.22	0.00	53.76	225.00
2792.000	500.00	760.47	0.00	0.02	0.00	43.00	99.00
2792 000	560.00	760.86	0 39	0.02	0.00	43.00	99.00
2792 000	580.00	760 99	0.13	0.02	0.00	43.00	99.00
2792.000	630.00	761.37	0.38	0.02	0.00	43.00	99.00
2793.000	500 00	760.47	0.00	0.00	0.00	43.00	1.00
2793.000	560 00	760.86	0.39	0 00	0.00	43.00	1.00
2793.000	580.00	760.99	0.13	0.00	0.00	43.00	1.00
2793.000	630.00	761.36	0.37	0.00	0.00	43.00	1.00
2845.000	500.00	760.47	0.00	0.00	0.00	43.00	52.00
2845.000	560.00	760.87	0 40	0.01	0.00	43.00	52.00
2845.000	580 00	761.00	0.13	0.01	0.00	43.00	52.00
2845.000	630.00	761.38	0.38	0.01	0.00	43.00	52.00
2846.000	500.00	760.47	0.00	0.00	0.00	43.00	1.00
2846.000	560.00	760.87	0.40	0.00	0.00	43.00	1.00
2846.000	580.00	761.00	0.13	0.00	0.00	43.00	1.00
2846.000	630.00	761.39	0.38	0 01	0.00	43.00	1 00
3218.000	500.00	760.44	0.00	-0.04	0.00	30.04	372.00
3218 000	560.00	760.84	0.40	-0.03	0.00	30.49	372.00
3218.000	580.00	760.97	0.13	-0.03	0.00	30.63	372.00
3218.000	630.00	761.36	0.39	-0.03	0.00	31.00	372.00

SUMMARY OF ERRORS AND SPECIAL NOTES

THIS RUN EXECUTED 23 JUN 89 15:12:46

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI PROFILE SUMMARY

SEGMENT 3

00BREAK00

THIS RUN EXECUTED 27 JUN 89 15:41:44

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
3218.000	0.00	0.00	0.00	754.40	500.00	760.44	0.00	760.70	16.06	4.05	123.35	124.76
3218.000	0.00	0.00	0.00	754.40	560 00	760.84	0.00	761.11	15.33	4.13	135.45	143.00
3218.000	0 00	0.00	0.00	754.40	580.00	760.97	0 00	761.24	15.13	4.16	139.43	149.13
3218 000	0.00	0.00	0.00	754.40	630.00	761.36	0.00	761.63	14.03	4.16	151.46	168.17
3317.000	99.00	0.00	0.00	754.90	500.00	760.62	0.00	760.81	6.98	3.55	140.83	189.28
3317 000	99.00	0.00	0.00	754.90	560.00	761.00	0.00	761.22	7.00	3.72	150.57	211.62
3317.000	99.00	0.00	0 00	754.90	580.00	761.13	0 00	761 35	7.01	3.77	153.75	219.10
3317.000	99 00	0.00	0.00	754.90	630.00	761.50	0.00	761.73	6.79	3.86	163.10	241.76
3318.000	1 00	762.00	761 60	754.90	500.00	760.62	0.00	760.81	11.33	3.54	141.09	148.53
3318 000	1.00	762.00	761.60	754.90	560.00	761.01	0.00	761.22	11.72	3.71	150.77	163.56
3318.000	1.00	762.00	761.60	754.90	580.00	761.13	0.00	761 35	11.85	3.77	153.91	168.52
3318.000	1.00	762.00	761.60	754.90	630.00	761 50	0 00	761.73	11.81	3.86	163.19	183.36
3414.000	96.00	762 00	761 60	754.90	500.00	760.74	0.00	760.92	10.68	3.47	144.00	153.02
3414.000	96.00	762.00	761.60	754.90	560.00	761.13	0.00	761.33	11.07	3.64	153.78	168 32
3414 000	96.00	762.00	761.60	754.90	580 00	761.25	0.00	761.47	11.19	3.70	156.96	173.36
3414 000	96.00	762.00	761.60	754.90	630.00	761.66	0.00	761.89	22.17	3.80	165.63	133.80
3415.000	1.00	0 00	0.00	754.90	500.00	760.74	0.00	760.92	6.47	3.47	144.03	196.52
3415.000	1.00	0.00	0.00	754.90	560.00	761.13	0.00	761.33	6.52	3.64	153.81	219.26
3415.000	1.00	0.00	0.00	754.90	580.00	761.25	0.00	761.47	6.54	3.69	156.99	226.86
3415 000	1 00	0.00	0.00	754.90	630.00	761.67	0.00	761.89	6.25	3.77	167.25	252.10
3514.000	99.00	0.00	0.00	754.40	500.00	760.81	0.00	761.02	12.19	3.71	135.34	143.18
3514.000	99.00	0.00	0.00	754.40	560.00	761 20	0.00	761.43	11.73	3.81	148.93	163.52
3514.000	99.00	0.00	0 00	754.40	580.00	761.33	0.00	761.56	11.56	3.84	153.61	170.60
3514.000	99 00	0 00	0.00	754.40	630.00	761.75	0.00	761.97	10.36	3.83	178.03	195.71
3617 000	103 00	0.00	0.00	754.90	500.00	761.09	0.00	761.15	2.96	2.01	249.37	290.66
3617.000	103.00	0.00	0.00	754.90	560.00	761.49	0.00	761.56	3.00	2.09	267.34	323.23
3617 000	103 00	0.00	0.00	754.90	580.00	761.62	0.00	761.69	3.02	2.12	273.17	334.01
3617.000	103 00	0.00	0.00	754 90	630.00	762.03	0.00	762.10	2.93	2.16	291.36	368.31

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
3618.000	1.00	761.40	760.70	754.90	500.00	761.09	0.00	761.19	14.65	2.54	197.00	130 64
3618.000	1.00	761.40	760.70	754.90	560.00	761.49	0.00	761.62	18.38	2.84	197.00	130.64
3618.000	1.00	761.40	760.70	754.90	580.00	761.62	0.00	761.76	19.71	2.94	197.00	130.64
3618.000	1.00	761 40	760.70	754.90	630 00	762.03	0.00	762.19	23.26	3.20	197.00	130.64
3688.000	70.00	761.40	760.70	754.90	500.00	761.19	0.00	761.29	14.65	2.54	197.00	130.64
3688.000	70.00	761.40	760.70	754.90	560.00	761.62	0.00	761.75	18.38	2.84	197.00	130.64
3688.000	70.00	761 40	760.70	754.90	580.00	761 76	0.00	761.90	19.71	2.94	197.00	130.64
3688.000	70.00	761.40	760.70	754.90	630.00	762.27	0 00	762.37	22.56	2.78	300.11	132.64
3689.000	1.00	0.00	0.00	754.90	500.00	761.26	0 00	761.31	1.99	1.95	256.75	354.56
3689.000	1.00	0.00	0.00	754.90	560 00	761.71	0.00	761.78	1.97	2.02	277.33	398.72
3689.000	1.00	0.00	0.00	754.90	580.00	761.87	0.00	761.93	1.97	2.04	284.11	413.60
3689.000	1.00	0.00	0.00	754.90	630 00	762.35	0.00	762.40	1.53	1.87	424.09	509.90
3788.000	99.00	0.00	0.00	754.90	500.00	761.28	0.00	761.39	4.13	2.76	215.50	245.99
3788.000	99.00	0.00	0.00	754.90	540.00	761.74	0.00	761 83	3.23	2.56	258.71	300.25
3788 000	99.00	0 00	0.00	754.90	555.00	761.89	0.00	761.97	3.01	2.50	272.95	319.89
3788.000	99.00	0.00	0 00	754.90	600.00	762.37	0.00	762.44	2.39	2.33	318.58	388.17
3919.000	131.00	0.00	0.00	755.10	500.00	761.41	0.00	761.46	1.60	1.75	321.56	395 32
3919.000	131 00	0.00	0.00	755 10	540.00	761.84	0.00	761.88	1.26	1.63	427.84	480 42
3919.000	131 00	0.00	0.00	755.10	555.00	761.99	0.00	762.02	1.14	1.57	479.18	519.01
3919.000	131.00	0.00	0.00	755.10	600.00	762.46	0.00	762.48	0.79	1.37	646.43	675.46
3920.000	1.00	760.90	758.90	755.10	500.00	761.41	0.00	761.53	23.42	2.95	194.99	103 33
3920.000	1.00	760.90	758.90	755.10	540.00	761.84	0.00	761.90	16.63	2 09	293.52	132.41
3920.000	1.00	760.90	758.90	755.10	555.00	761.99	0.00	762.03	12.03	1.83	344.84	160.01
3920 000	1.00	760.90	758 90	755.10	600.00	762.46	0.00	762.48	4.58	1.22	512.07	280.50
3996.000	76.00	760.90	758.90	755.10	500.00	761.66	0.00	761.72	19.94	2.27	253.77	111.98
3996.000	76.00	760.90	758.90	755.10	540.00	761.97	0.00	762.01	9.25	1.60	405.02	177.53
3996.000	76.00	760.90	758.90	755.10	555.00	762.09	0.00	762 11	6.96	1.41	461.69	210.31
3996 000	76.00	760.90	758.90	755.10	600.00	762.50	0.00	762.51	2.71	0.95	671.44	364.31
3997.000	1.00	0.00	0.00	755.10	500.00	761.70	0.00	761.74	1.81	1.64	398.23	372.12
3997 000	1.00	0 00	0.00	755.10	540.00	761.97	0.00	762.01	1.64	1.61	539.93	421.49
3997.000	1.00	0.00	0.00	755.10	555.00	762.09	0.00	762.12	1.56	1.59	596.52	444.79
3997.000	1.00	0.00	0.00	755.10	600.00	762.50	0.00	762 53	1.21	1.46	806.03	545.77
4046 000	49.00	0.00	0 00	755.20	500.00	761.71	0 00	761.75	1.93	1 68	376.54	359 79
4046.000	49.00	0.00	0.00	755.20	540.00	761.98	0.00	762.02	1.77	1.66	501.14	405.67
4046.000	49.00	0.00	0.00	755.20	555.00	762.09	0.00	762.13	1.69	1.64	557.65	427.12
4046.000	49.00	0.00	0 00	755.20	600.00	762.51	0.00	762.53	1.31	1.50	779.62	524 56
4370.000	324.00	0.00	0.00	753.70	500.00	761.76	0.00	761.84	2.40	2.43	504.94	323.04
4370.000	324.00	0.00	0.00	753.70	540.00	762.03	0.00	762.09	1.97	2.26	723.96	384.47
4370.000	324 00	0.00	0.00	753.70	555.00	762 14	0 00	762.20	1.80	2.18	819.53	414.21
4370.000	324.00	0.00	0.00	753.70	600.00	762.55	0.00	762 58	1.19	1.84	1210.22	549.03

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
4469.000	99.00	0.00	0.00	753.70	500.00	761.79	0.00	761.86	2.36	2.42	513.99	325.28
4469.000	99.00	0.00	0.00	753.70	540.00	762.06	0.00	762.11	1.94	2.25	734.11	387.56
4469.000	99.00	0.00	0.00	753.70	555.00	762.16	0.00	762.22	1.77	2.16	829.86	417.52
4469.000	99.00	0.00	0.00	753.70	600.00	762.56	0.00	762.59	1.18	1.83	1216.35	551.29
4470.000	1.00	761.30	759.60	753.70	500.00	761.79	0.00	761.86	19.89	2.57	435.05	112.10
4470.000	1.00	761.30	759.60	753.70	540.00	762.09	0.00	762.12	9.99	1.89	688.80	170.87
4470.000	1.00	761.30	759.60	753.70	555.00	762.20	0.00	762.22	7.88	1.70	785.42	197.70
4470.000	1.00	761.30	759.60	753.70	600.00	762.59	0.00	762.60	3.51	1.19	1131.15	320.39
4525.000	55.00	761.30	759.60	753.70	500.00	761.92	0.00	761.96	13.82	2.18	539.87	134.49
4525.000	55.00	761.30	759.60	753.70	540.00	762.15	0.00	762.18	8.60	1.77	739.21	184.15
4525.000	55.00	761.30	759.60	753.70	555.00	762.25	0.00	762.27	7.26	1.64	818.44	205.93
4525.000	55.00	761.30	759.60	753.70	600.00	762.61	0.00	762.62	3.59	1.20	1178.76	316.55
4526.000	1.00	0.00	0.00	753.70	500.00	761.91	0.00	761.97	2.00	2.25	618.36	353.47
4526.000	1.00	0.00	0.00	753.70	540.00	762.14	0.00	762.19	1.71	2.12	815.80	413.03
4526.000	1.00	0.00	0.00	753.70	555.00	762.23	0.00	762.28	1.58	2.06	903.15	441.39
4526.000	1.00	0.00	0.00	753.70	600.00	762.60	0.00	762.63	1.11	1.78	1262.65	568.49
4575.000	49.00	0.00	0.00	753.70	500.00	761.92	0.00	761.98	1.99	2.24	622.41	354.62
4575.000	49.00	0.00	0.00	753.70	540.00	762.15	0.00	762.20	1.68	2.11	825.35	416.07
4575.000	49.00	0.00	0.00	753.70	555.00	762.24	0.00	762.29	1.56	2.05	911.08	444.03
4575.000	49.00	0.00	0.00	753.70	600.00	762.60	0.00	762.63	1.10	1.78	1269.38	571.01
4780.000	205.00	0.00	0.00	754.60	500.00	761.96	0.00	762.04	2.95	2.55	1056.80	290.88
4780.000	205.00	0.00	0.00	754.60	540.00	762.18	0.00	762.26	2.91	2.58	1286.66	316.50
4780.000	205.00	0.00	0.00	754.60	555.00	762.27	0.00	762.35	2.87	2.58	1384.15	327.89
4780.000	205.00	0.00	0.00	754.60	600.00	762.61	0.00	762.69	2.58	2.53	1754.42	373.89
4879.000	99.00	0.00	0.00	754.60	500.00	761.99	0.00	762.07	2.93	2.54	1025.05	292.01
4879.000	99.00	0.00	0.00	754.60	540.00	762.21	0.00	762.29	2.89	2.58	1245.08	317.57
4879.000	99.00	0.00	0.00	754.60	555.00	762.30	0.00	762.38	2.85	2.58	1336.70	328.72
4879.000	99.00	0.00	0.00	754.60	600.00	762.64	0.00	762.72	2.58	2.54	1684.70	373.65
4880.000	1.00	760.70	760.30	754.60	500.00	761.98	0.00	762.08	25.69	2.93	936.96	98.64
4880.000	1.00	760.70	760.30	754.60	540.00	762.20	0.00	762.29	22.41	2.81	1158.17	114.07
4880.000	1.00	760.70	760.30	754.60	555.00	762.30	0.00	762.38	21.05	2.75	1249.97	120.97
4880.000	1.00	760.70	760.30	754.60	600.00	762.66	0.00	762.72	15.61	2.47	1622.79	151.87
4948.000	68.00	760.70	760.30	753.30	500.00	762.15	0.00	762.23	15.92	2.52	1066.87	125.31
4948.000	68.00	760.70	760.30	753.30	540.00	762.35	0.00	762.42	14.71	2.48	1264.47	140.80
4948.000	68.00	760.70	760.30	753.30	555.00	762.44	0.00	762.50	14.12	2.45	1347.48	147.72
4948.000	68.00	760.70	760.30	753.30	600.00	762.76	0.00	762.81	11.54	2.29	1668.20	176.63
4949.000	1.00	0.00	0.00	753.30	500.00	762.16	0.00	762.23	2.04	2.26	1167.37	350.17
4949.000	1.00	0.00	0.00	753.30	540.00	762.35	0.00	762.42	2.08	2.32	1359.78	374.85
4949.000	1.00	0.00	0.00	753.30	555.00	762.43	0.00	762.50	2.07	2.34	1442.72	385.89
4949.000	1.00	0.00	0.00	753.30	600.00	762.76	0.00	762.82	1.94	2.33	1763.10	430.78

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
4998.000	49.00	0.00	0.00	753 30	500 00	762.17	0.00	762 24	2.02	2.26	1154.21	351.66
4998.000	49 00	0.00	0.00	753.30	540.00	762.36	0.00	762.43	2.07	2.32	1335.42	375.46
4998 000	49 00	0.00	0.00	753.30	555.00	762.44	0.00	762.51	2.07	2.34	1414.28	386.19
4998.000	49.00	0.00	0.00	753.30	600.00	762.77	0.00	762.83	1.95	2.33	1720.99	430.06
5320 000	322.00	0.00	0.00	755.60	500.00	762.25	0.00	762 31	2.24	2.25	1369.44	333 88
5320.000	322.00	0.00	0.00	755.60	540.00	762.45	0.00	762.50	2.15	2.25	1632.11	368.12
5320.000	322 00	0.00	0.00	755.60	555.00	762.53	0 00	762.58	2.08	2.22	1750.56	385.26
5320 000	322.00	0.00	0 00	755.60	600.00	762.85	0 00	762.89	1.70	2.07	2210.26	460.47
5401 000	81.00	762.40	760 00	755.60	500.00	762.61	0.00	762.64	1.55	1.94	1857.49	401.56
5401.000	81.00	762.40	760 00	755.60	540.00	762.67	0.00	762.72	1.68	2.03	1953.93	416 91
5401.000	81 00	762.40	760 00	755.60	555.00	762.71	0.00	762.75	1.71	2.05	1999.16	424.31
5401.000	81.00	762.40	760.00	755.60	600.00	762.90	0.00	762.94	1.61	2.03	2276.83	472 40
5771.000	370.00	0.00	0.00	755.50	500.00	762.68	0.00	762.69	0.81	1.29	1705.69	557.05
5771.000	370.00	0.00	0.00	755.50	540.00	762.75	0.00	762.76	0.87	1.35	1780.63	580.21
5771.000	370.00	0.00	0.00	755.50	555.00	762 78	0.00	762.79	0.88	1.36	1814.70	590.88
5771.000	370.00	0.00	0.00	755.50	600.00	762.97	0.00	762.98	0.83	1 35	2026.78	659.16
5792.000	21.00	762 10	760.80	755.50	500 00	763.07	0.00	763.08	0.51	1.07	2143.82	698 19
5792.000	21.00	762 10	760 80	755.50	540.00	763 19	0.00	763.20	0.53	1.10	2276.67	743.62
5792 000	21.00	762.10	760.80	755.50	555.00	763.24	0.00	763.25	0.53	1.11	2331.78	762.81
5792.000	21.00	762 10	760.80	755.50	600.00	763.45	0 00	763.46	0.50	1.10	2594 16	848 76

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
3218.000	500.00	760 44	0.00	0.00	0.00	30.04	0.00
3218.000	560.00	760.84	0.40	0.00	0.00	30.49	0.00
3218.000	580.00	760.97	0.13	0.00	0.00	30.63	0.00
3218.000	630.00	761 36	0.39	0 00	0.00	31 00	0.00
3317.000	500.00	760.62	0.00	0.18	0.00	25.00	99.00
3317.000	560.00	761.00	0.39	0.16	0.00	25.00	99.00
3317.000	580.00	761.13	0.13	0.16	0.00	25.00	99.00
3317.000	630.00	761.50	0.37	0.14	0.00	25 00	99.00
3318.000	500.00	760.62	0.00	0.00	0.00	25.00	1.00
3318.000	560.00	761.01	0.39	0.00	0.00	25.00	1.00
3318.000	580.00	761.13	0.13	0.00	0.00	25.00	1.00
3318.000	630.00	761.50	0.37	0.00	0 00	25.00	1.00
3414.000	500.00	760.74	0.00	0.12	0 00	25.00	96.00
3414.000	560.00	761 13	0.39	0.12	0.00	25.00	96.00
3414 000	580.00	761.25	0 13	0.12	0.00	25.00	96.00
3414.000	630.00	761.66	0 41	0.16	0.00	25.00	96.00
3415.000	500.00	760.74	0.00	0 00	0.00	25.00	1.00
3415.000	560.00	761.13	0.39	0.00	0.00	25.00	1.00
3415.000	580.00	761.25	0.13	0.00	0.00	25.00	1 00
3415 000	630.00	761.67	0.42	0 01	0.00	25.00	1.00
3514 000	500.00	760.81	0.00	0.07	0.00	33 08	99.00
3514.000	560.00	761.20	0.39	0.08	0.00	35.98	99.00
3514.000	580.00	761.33	0.13	0.08	0.00	38.06	99.00
3514.000	630.00	761.75	0.41	0.08	0.00	136.80	99.00
3617.000	500.00	761.09	0.00	0.28	0.00	44.66	103.00
3617.000	560.00	761 49	0.40	0.29	0 00	44.77	103.00
3617.000	580.00	761.62	0.13	0.29	0.00	44 81	103 00
3617.000	630.00	762 03	0.41	0.28	0 00	44.92	103.00
3618.000	500.00	761.09	0.00	0.00	0.00	44.66	1.00
3618.000	560.00	761.49	0.40	0.00	0.00	44.77	1 00
3618.000	580.00	761 62	0.13	0.00	0.00	44.81	1.00
3618.000	630.00	762.03	0.41	0.00	0.00	44.92	1.00
3688.000	500.00	761.19	0.00	0.10	0.00	44.69	70.00
3688.000	560 00	761 62	0.43	0.13	0.00	44.81	70.00
3688.000	580.00	761.76	0.14	0.14	0.00	44.85	70.00
3688.000	630.00	762.27	0 51	0.24	0.00	236.27	70.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
3689 000	500 00	761.26	0.00	0.06	0.00	44.70	1.00
3689.000	560.00	761.71	0 46	0.09	0.00	44.83	1 00
3689.000	580.00	761.87	0.15	0.11	0.00	44.88	1.00
3689.000	630 00	762.35	0.49	0.09	0.00	251.52	1.00
3788 000	500.00	761.28	0.00	0.03	0.00	94.51	99.00
3788.000	540.00	761.74	0.46	0.02	0.00	94.70	99.00
3788.000	555 00	761.89	0.15	0.02	0.00	94.76	99.00
3788.000	600.00	762.37	0 48	0.02	0.00	94.95	99.00
3919 000	500.00	761.41	0.00	0 13	0.00	202.00	131.00
3919.000	540.00	761.84	0.43	0.10	0 00	334.23	131 00
3919.000	555.00	761.99	0.15	0.10	0.00	356.00	131.00
3919.000	600.00	762.46	0.47	0.09	0.00	356.00	131.00
3920.000	500.00	761.41	0 00	0.00	0.00	202.00	1.00
3920.000	540 00	761.84	0.43	0.00	0.00	334.32	1.00
3920.000	555.00	761.99	0 15	0.00	0.00	356.00	1.00
3920.000	600.00	762.46	0 47	0.00	0.00	356.00	1.00
3996.000	500 00	761.66	0.00	0.25	0.00	247.33	76 00
3996.000	540 00	761 97	0.32	0.13	0.00	508.00	76 00
3996 000	555.00	762.09	0.11	0.10	0.00	508.00	76.00
3996.000	600.00	762.50	0.41	0.04	0.00	508.00	76.00
3997.000	500.00	761.70	0 00	0.04	0.00	249.89	1 00
3997 000	540.00	761.97	0.28	0.00	0.00	508.00	1.00
3997.000	555.00	762.09	0.11	0 00	0.00	508.00	1.00
3997.000	600.00	762 50	0 41	0.00	0.00	508.00	1.00
4046 000	500.00	761.71	0.00	0.01	0.00	347.94	49.00
4046.000	540.00	761.98	0 28	0.01	0.00	512.95	49.00
4046.000	555.00	762.09	0.11	0.01	0.00	525.06	49.00
4046.000	600.00	762.51	0 41	0.01	0.00	550.00	49.00
4370 000	500 00	761.76	0.00	0.05	0.00	741.75	324.00
4370.000	540.00	762.03	0.27	0.05	0.00	856.58	324.00
4370.000	555.00	762.14	0.11	0.05	0.00	896.29	324.00
4370.000	600.00	762.55	0 40	0.04	0.00	1043.04	324 00
4469 000	500.00	761.79	0.00	0.03	0.00	752.47	99 00
4469.000	540.00	762.06	0.27	0.02	0.00	860.89	99.00
4469.000	555.00	762.16	0.11	0.02	0.00	900.49	99.00
4469.000	600 00	762.56	0.40	0.01	0.00	1045.18	99.00
4470.000	500.00	761.79	0.00	0.01	0.00	755.95	1.00
4470.000	540.00	762.09	0.30	0.04	0.00	874.82	1.00
4470.000	555.00	762.20	0.11	0.04	0.00	899.00	1.00
4470.000	600.00	762.59	0.38	0.03	0.00	899.00	1.00

SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
4525.000	500.00	761.92	0.00	0.12	0.00	811.97	55.00
4525.000	540.00	762.15	0.23	0.06	0.00	896.94	55.00
4525.000	555.00	762.25	0.10	0.04	0.00	928.55	55.00
4525.000	600.00	762.61	0.36	0.02	0.00	1060.51	55.00
4526.000	500 00	761 91	0 00	-0.01	0.00	810.44	1.00
4526.000	540.00	762.14	0.23	-0.01	0.00	894 78	1.00
4526.000	555.00	762.23	0.10	-0.01	0.00	929.65	1.00
4526.000	600.00	762.60	0.36	-0.01	0.00	1061.19	1.00
4575.000	500.00	761.92	0 00	0.01	0.00	812.26	49.00
4575.000	540.00	762.15	0 23	0.01	0.00	898.66	49.00
4575.000	555 00	762.24	0.10	0 01	0.00	932.76	49.00
4575.000	600.00	762.60	0.36	0.01	0.00	1063.50	49.00
4780.000	500.00	761.96	0.00	0.04	0.00	1060.71	205.00
4780.000	540.00	762.18	0.22	0.03	0 00	1065.00	205.00
4780.000	555.00	762.27	0 09	0.02	0.00	1065.00	205.00
4780 000	600.00	762.61	0.35	0.01	0.00	1065.00	205.00
4879.000	500 00	761.99	0.00	0.03	0.00	1011.01	99.00
4879.000	540.00	762.21	0 22	0.03	0.00	1016.00	99.00
4879.000	555.00	762 30	0 09	0.03	0.00	1016.00	99.00
4879.000	600.00	762.64	0.34	0.03	0.00	1016.00	99.00
4880.000	500.00	761.98	0.00	-0.01	0.00	1011.80	1.00
4880.000	540.00	762 20	0 23	0.00	0.00	1016.00	1.00
4880.000	555.00	762 30	0.09	0.00	0.00	1016.00	1.00
4880.000	600.00	762.66	0.36	0.02	0.00	1016.00	1.00
4948.000	500.00	762.15	0.00	0.17	0.00	982.00	68.00
4948.000	540.00	762.35	0.20	0.15	0 00	982.00	68.00
4948 000	555.00	762.44	0.08	0.14	0 00	982.00	68.00
4948 000	600.00	762.76	0 33	0.10	0.00	982.00	68.00
4949 000	500.00	762.16	0.00	0.01	0.00	982.00	1.00
4949.000	540.00	762.35	0.19	0 00	0.00	982.00	1.00
4949.000	555.00	762.43	0.08	0.00	0.00	982.00	1.00
4949.000	600.00	762.76	0 32	-0.01	0.00	982.00	1.00
4998.000	500.00	762.17	0.00	0.01	0.00	957.00	49.00
4998.000	540 00	762.36	0 19	0.01	0.00	957 00	49.00
4998 000	555.00	762.44	0.08	0.01	0.00	957 00	49.00
4998.000	600.00	762.77	0.32	0.01	0.00	957.00	49.00
5320.000	500.00	762 25	0.00	0.08	0.00	1264.72	322.00
5320.000	540.00	762.45	0 19	0.08	0.00	1402.87	322 00
5320.000	555 00	762.53	0.08	0.09	0.00	1410.95	322.00
5320.000	600.00	762.85	0.32	0.09	0.00	1441.89	322.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
5401.000	500.00	762.61	0.00	0.35	0.00	1418.21	81.00
5401.000	540.00	762.67	0.07	0.23	0.00	1424.72	81.00
5401.000	555.00	762.71	0.03	0.18	0.00	1427.77	81.00
5401.000	600.00	762.90	0.19	0.05	0.00	1446.32	81.00
5771.000	500.00	762.68	0.00	0.07	0.00	1055.23	370.00
5771.000	540.00	762.75	0.07	0.08	0 00	1062.71	370.00
5771.000	555.00	762.78	0.03	0.08	0.00	1066 09	370.00
5771.000	600.00	762.97	0.19	0.07	0.00	1086.91	370.00
5792.000	500.00	763.07	0.00	0.39	0.00	1098.23	21.00
5792.000	540.00	763.19	0.12	0.44	0.00	1110 94	21.00
5792.000	555.00	763.24	0.05	0.46	0.00	1116.17	21.00
5792.000	600.00	763.45	0.21	0.48	0.00	1469.21	21.00

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

SEGMENT 4

00BREAK00

THIS RUN EXECUTED 29 JUN 89 7:49:17

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
5792.000	0.00	0.00	0.00	756.40	500.00	763.07	0.00	763.08	0.82	1.30	1943.57	552.53
5792.000	0.00	0.00	0.00	756.40	540.00	763.19	0.00	763.20	0.83	1.32	2076.02	593.68
5792.000	0.00	0.00	0.00	756.40	555.00	763.24	0.00	763.25	0.82	1.33	2131.66	611.34
5792.000	0.00	0.00	0.00	756.40	600.00	763.45	0.00	763.46	0.76	1.30	2391.88	690.22
6199.000	407.00	0.00	0.00	756.30	480.00	763.10	0.00	763.12	1.00	1.43	1050.80	479.71
6199.000	407.00	0.00	0.00	756.30	520.00	763.22	0.00	763.24	1.03	1.47	1126.01	511.77
6199.000	407.00	0.00	0.00	756.30	540.00	763.27	0.00	763.29	1.06	1.49	1157.18	525.45
6199.000	407.00	0.00	0.00	756.30	570.00	763.48	0.00	763.50	0.95	1.45	1286.69	584.65
6200.000	1.00	762.40	761.40	756.30	480 00	763.11	0.00	763.13	4.65	1.20	935.80	222.57
6200.000	1.00	762.40	761.40	756.30	520.00	763.24	0.00	763.25	4.44	1.19	1011.54	246 89
6200.000	1.00	762.40	761.40	756.30	540.00	763.29	0.00	763.30	4.40	1.20	1043.06	257.39
6200.000	1.00	762.40	761.40	756.30	570.00	763.49	0.00	763.50	3.54	1.10	1172.44	302.86
6222.000	22.00	762.40	761.40	756.30	480.00	763.12	0.00	763.14	4.56	1.19	929.39	224.81
6222.000	22.00	762.40	761.40	756.30	520.00	763.25	0.00	763.26	4.35	1.18	1004.14	249.34
6222.000	22.00	762.40	761.40	756.30	540.00	763.30	0 00	763.31	4 31	1.19	1035.32	259.97
6222.000	22.00	762.40	761.40	756.30	570.00	763.50	0.00	763.51	3.49	1.09	1161.62	305.30
6223.000	1.00	0.00	0.00	756.30	480.00	763.12	0.00	763.14	0.98	1.42	1049.84	485.11
6223.000	1.00	0.00	0.00	756.30	520.00	763.24	0.00	763.26	1.01	1.46	1124.39	517.66
6223.000	1.00	0.00	0.00	756.30	540.00	763.29	0.00	763.31	1.03	1.48	1155.52	531.65
6223.000	1.00	0 00	0.00	756.30	570.00	763.50	0.00	763.52	0.93	1.44	1281.23	590.47
6400.000	177.00	0.00	0.00	755 40	480.00	763.14	0.00	763.16	1.37	1.47	825 60	409.59
6400.000	177.00	0.00	0.00	755.40	520.00	763.26	0.00	763.28	1 38	1.49	889.92	441.87
6400.000	177.00	0.00	0.00	755.40	540.00	763 32	0 00	763.34	1.40	1.51	916.89	455.91
6400.000	177.00	0.00	0.00	755.40	570.00	763.52	0 00	763.54	1.23	1.43	1023 85	514.43
6401.000	1.00	761.10	760.50	755.40	480.00	763.16	0.00	763.17	3.56	1.11	776.46	254 41
6401 000	1.00	761.10	760.50	755.40	520 00	763.28	0.00	763.29	3.37	1.10	840.85	283.30
6401.000	1.00	761.10	760.50	755.40	540.00	763.33	0.00	763.34	3.33	1.10	867.87	295.93
6401.000	1.00	761.10	760.50	755.40	570.00	763.53	0.00	763.54	2.68	1.01	974.25	348.38

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
6446.000	45.00	0.00	0.00	755.40	480.00	763.17	0.00	763.19	1.33	1.44	840.10	416.72
6446.000	45.00	0.00	0.00	755.40	520.00	763.29	0.00	763.31	1.34	1.47	904.33	449.34
6446.000	45.00	0.00	0.00	755.40	540.00	763.34	0.00	763.36	1.36	1.48	931.38	463.58
6446.000	45.00	0.00	0.00	755.40	570.00	763.54	0.00	763.56	1.19	1.42	1036.17	521.45
6447.000	1.00	0.00	0.00	755.40	480.00	763.17	0.00	763.19	1.33	1.45	839.24	416.29
6447.000	1.00	0.00	0.00	755.40	520.00	763.29	0.00	763.31	1.34	1.47	903.60	448.96
6447.000	1.00	0.00	0.00	755.40	540.00	763.34	0.00	763.36	1.36	1.49	930.69	463.21
6447.000	1.00	0.00	0.00	755.40	570.00	763.54	0.00	763.56	1.20	1.42	1035.72	521.20
6496.000	49.00	0.00	0.00	755.40	480.00	763.17	0.00	763.19	1.32	1.44	842.60	417.95
6496.000	49.00	0.00	0.00	755.40	520.00	763.30	0.00	763.32	1.33	1.46	906.99	450.73
6496.000	49.00	0.00	0.00	755.40	540.00	763.35	0.00	763.37	1.35	1.48	934.13	465.04
6496.000	49.00	0.00	0.00	755.40	570.00	763.55	0.00	763.56	1.19	1.41	1038.75	522.93
6896.000	400.00	0.00	0.00	756.50	480.00	763.23	0.00	763.24	1.02	1.37	813.48	474.13
6896.000	400.00	0.00	0.00	756.50	520.00	763.35	0.00	763.37	1.08	1.42	846.73	501.51
6896.000	400.00	0.00	0.00	756.50	540.00	763.40	0.00	763.42	1.11	1.45	860.87	513.38
6896.000	400.00	0.00	0.00	756.50	570.00	763.60	0.00	763.61	1.04	1.44	912.91	558.09
7300.000	404.00	0.00	0.00	757.60	480.00	763.33	0.00	763.67	15.01	4.77	121.05	123.90
7300.000	404.00	0.00	0.00	757.60	520.00	763.46	0.00	763.83	16.02	5.01	127.22	129.92
7300.000	404.00	0.00	0.00	757.60	540.00	763.52	0.00	763.90	16.58	5.14	130.07	132.60
7300.000	404.00	0.00	0.00	757.60	570.00	763.70	0.00	764.09	16.13	5.19	140.45	141.93
7399.000	99.00	0.00	0.00	758.00	480.00	763.51	0.00	763.85	22.86	4.66	102.97	100.40
7399.000	99.00	0.00	0.00	758.00	520.00	763.66	0.00	764.03	24.74	4.91	105.91	104.55
7399.000	99.00	0.00	0.00	758.00	540.00	763.72	0.00	764.11	25.76	5.04	107.21	106.40
7399.000	99.00	0.00	0.00	758.00	570.00	763.90	0.00	764.31	25.96	5.13	111.02	111.87
7400.000	1.00	764.30	764.40	758.00	480.00	763.52	0.00	763.85	27.59	4.66	103.01	91.38
7400.000	1.00	764.30	764.40	758.00	520.00	763.66	0.00	764.03	29.97	4.91	105.95	94.98
7400.000	1.00	764.30	764.40	758.00	540.00	763.72	0.00	764.11	31.26	5.03	107.25	96.59
7400.000	1.00	764.30	764.40	758.00	570.00	763.90	0.00	764.31	31.66	5.13	111.07	101.31
7469.000	69.00	764.30	764.40	758.00	480.00	763.74	0.00	764.05	24.46	4.46	107.64	97.06
7469.000	69.00	764.30	764.40	758.00	520.00	763.90	0.00	764.24	26.36	4.68	111.05	101.28
7469.000	69.00	764.30	764.40	758.00	540.00	763.98	0.00	764.33	27.36	4.80	112.61	103.23
7469.000	69.00	764.30	764.40	758.00	570.00	764.17	0.00	764.54	27.79	4.89	116.51	108.12
7470.000	1.00	0.00	0.00	758.00	480.00	763.74	0.00	764.05	20.09	4.46	107.69	107.09
7470.000	1.00	0.00	0.00	758.00	520.00	763.91	0.00	764.25	21.56	4.68	111.10	111.99
7470.000	1.00	0.00	0.00	758.00	540.00	763.98	0.00	764.34	22.34	4.79	112.67	114.26
7470.000	1.00	0.00	0.00	758.00	570.00	764.17	0.00	764.54	22.58	4.89	116.57	119.95
7519.000	49.00	0.00	0.00	758.00	480.00	763.86	0.00	764.15	18.92	4.37	109.96	110.34
7519.000	49.00	0.00	0.00	758.00	520.00	764.03	0.00	764.35	20.26	4.58	113.55	115.53
7519.000	49.00	0.00	0.00	758.00	540.00	764.11	0.00	764.45	20.96	4.69	115.21	117.94
7519.000	49.00	0.00	0.00	758.00	570.00	764.30	0.00	764.65	21.22	4.78	119.15	123.73

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7720.000	201.00	0.00	0.00	759.50	480.00	764.31	0.00	764.49	12.06	3.40	141.11	138.21
7720.000	201.00	0.00	0.00	759.50	520.00	764.51	0.00	764.71	12.19	3.51	148.21	148.96
7720.000	201.00	0.00	0.00	759.50	540.00	764.61	0.00	764.81	12.27	3.56	151.57	154.13
7720.000	201.00	0.00	0 00	759.50	570.00	764.81	0.00	765.01	11.97	3.60	158.36	164.74
7721.000	1.00	766.00	764.50	759.50	480.00	764.29	0.00	764.50	17.76	3.65	131.50	113.89
7721.000	1.00	766.00	764.50	759.50	520.00	764.50	0.00	764.72	32.74	3.77	137.78	90 88
7721.000	1.00	766.00	764.50	759.50	540.00	764.60	0.00	764.83	35.31	3.92	137.78	90.88
7721.000	1.00	766.00	764.50	759.50	570.00	764.78	0.00	765.05	39.34	4.14	137.78	90 88
7734.000	13.00	766.00	764.50	759.50	480.00	764.32	0.00	764.52	17.62	3.64	131.89	114.35
7734.000	13.00	766.00	764.50	759.50	520.00	764.54	0.00	764.77	32.74	3.77	137.78	90.88
7734.000	13.00	766.00	764.50	759.50	540.00	764.64	0.00	764.88	35.31	3.92	137.78	90.88
7734.000	13.00	766.00	764.50	759.50	570.00	764.83	0.00	765.10	39.34	4.14	137.78	90.88
7735.000	1.00	0.00	0.00	759.50	480.00	764.36	0.00	764.53	11.60	3.36	142.94	140 95
7735.000	1.00	0.00	0.00	759.50	520.00	764.59	0.00	764.78	11.54	3.45	150.90	153.09
7735.000	1.00	0.00	0.00	759.50	540.00	764.71	0.00	764.90	11.52	3.49	154.74	159.07
7735.000	1.00	0.00	0.00	759.50	570.00	764.93	0.00	765.12	11.08	3.51	162.44	171.20
7784.000	49.00	0.00	0.00	759.70	480.00	764.56	0.00	764.60	3.49	2.06	422.33	256.78
7784.000	49.00	0.00	0.00	759.70	520.00	764.81	0.00	764.85	3.28	2.07	455.40	287.10
7784.000	49.00	0.00	0.00	759.70	540.00	764.92	0.00	764.97	3.19	2.08	471.40	302.26
7784.000	49.00	0.00	0.00	759.70	570.00	765.15	0.00	765.19	2 94	2.06	502.26	332.36
8298.000	514.00	0.00	0.00	761.40	480.00	764.85	0.00	765.04	21.89	3.97	202.69	102.59
8298.000	514.00	0.00	0.00	761.40	520.00	765.08	0.00	765.25	19.21	3.87	227.44	118.64
8298.000	514.00	0.00	0.00	761.40	540.00	765.19	0.00	765.36	18.11	3.83	239.57	126 89
8298.000	514.00	0.00	0.00	761.40	570.00	765.39	0.00	765 55	15.89	3.72	262.32	143.01
8620.000	161.00	0.00	0.00	762.20	480.00	765.39	0.00	766.08	57.39	6.94	82.17	63.36
8620.000	161.00	0.00	0.00	762.20	520.00	765.57	0.00	766.28	55.56	7.07	87.83	69.76
8620.000	161.00	0.00	0.00	762.20	540.00	765.66	0.00	766.38	54.57	7.13	90.73	73.10
8620.000	161.00	0.00	0.00	762.20	570.00	765.81	0.00	766.54	51.68	7.16	96.03	79.29
8719.000	99.00	0.00	0.00	762.00	480.00	766.02	0.00	766.83	85.12	7.24	66.28	52 03
8719.000	99.00	0.00	0 00	762.00	520.00	766.17	0.00	767.05	87.92	7.52	69.19	55 46
8719.000	99.00	0.00	0.00	762.00	540.00	766.24	0.00	767.15	89.20	7.65	70.63	57.17
8719.000	99.00	0.00	0.00	762.00	570.00	766.37	0.00	767.31	90.31	7.81	72.95	59.98
8720.000	1.00	769.30	768 90	762.00	480.00	766.03	0.00	766.84	117.53	7.23	66.39	44.28
8720.000	1.00	769.30	768.90	762.00	520.00	766.18	0.00	767.06	122.49	7.50	69.30	46.99
8720.000	1.00	769.30	768.90	762.00	540.00	766.26	0.00	767.16	124.81	7.63	70.73	48.34
8720.000	1.00	769.30	768.90	762.00	570.00	766.38	0.00	767.33	127.23	7.80	73.05	50.53
8788 000	68.00	769.30	768.90	762.00	480.00	766.99	0.00	767.49	59.93	5.65	84.89	62.00
8788.000	68.00	769 30	768.90	762.00	520.00	767.21	0.00	767.74	62.09	5.85	88.91	65.99
8788 000	68.00	769.30	768.90	762.00	540.00	767.31	0.00	767.86	63.12	5.94	90.89	67.97
8788.000	68.00	769.30	768.90	762.00	570.00	767.46	0.00	768.04	64.56	6.07	93.85	70.94

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
8789.000	1.00	0.00	0.00	762.00	480.00	767.00	0.00	767.50	40.89	5.65	85.01	75.07
8789.000	1.00	0.00	0.00	762.00	520.00	767.21	0.00	767.74	41.96	5.84	89.02	80.28
8789.000	1.00	0 00	0.00	762.00	540.00	767.32	0.00	767.86	42.47	5.93	91.00	82.86
8789.000	1.00	0 00	0.00	762.00	570.00	767.47	0.00	768.04	43.15	6.07	93.95	86.78
8889.000	100.00	0.00	0.00	762.00	480.00	767.45	0.00	767.86	31.03	5.13	93.50	86.17
8889.000	100 00	0.00	0.00	762.00	520.00	767.68	0.00	768.12	31.98	5.32	97.81	91.95
8889.000	100.00	0.00	0.00	762.00	540.00	767.79	0.00	768.24	32.44	5.40	99.92	94.81
8889.000	100.00	0.00	0.00	762.00	570.00	767.95	0.00	768 43	33.08	5.53	103.07	99.10
8989.000	100.00	0.00	0.00	762.40	480.00	767.63	0.00	768.16	23.37	5.84	82.17	99.29
8989.000	100.00	0.00	0.00	762.40	520.00	767.86	0.00	768.43	23.55	6.05	86.02	107.16
8989.000	100.00	0.00	0.00	762.40	540.00	767.97	0.00	768.56	23.63	6.14	87.90	111 09
8989.000	100.00	0.00	0.00	762.40	570.00	768.13	0.00	768.75	23.72	6.28	90.70	117.05
9071.000	82.00	780.00	767.40	762.80	480.00	768.30	0.00	768.65	14.77	4 77	100.56	124.89
9071 000	82.00	780.00	767 40	762.80	520.00	768.70	0.00	769.06	13.43	4.79	108 58	141.92
9071.000	82.00	780.00	767.40	762 80	540.00	768.91	0.00	769.26	12.80	4.79	112.65	150.91
9071.000	82.00	780.00	767.40	762.80	570.00	769.22	0.00	769.57	11.92	4.79	118.89	165.09
9120.000	49.00	0.00	0 00	762.50	480.00	768.62	0.00	768.72	5.03	2.54	188.86	214 06
9120.000	49.00	0.00	0.00	762.50	520.00	769.02	0.00	769.12	4.56	2.54	204.80	243.51
9120.000	49 00	0.00	0.00	762.50	540.00	769.22	0.00	769.32	4.35	2.54	212 89	258.96
9120.000	49.00	0.00	0.00	762.50	570.00	769.53	0.00	769.63	4.05	2.53	225.24	283.15
9121.000	1.00	781.50	771.10	762.50	480.00	768.62	0.00	768.72	5.03	2.54	188.89	214 11
9121 000	1.00	781.50	771.10	762.50	520.00	769.02	0.00	769.12	4.56	2.54	204.82	243.56
9121.000	1.00	781.50	771.10	762.50	540.00	769.22	0.00	769.32	4.35	2.54	212.91	259.00
9121.000	1.00	781.50	771.10	762.50	570.00	769.53	0.00	769.63	4.05	2.53	225.27	283.20
9129 000	8.00	781.50	771.10	762.50	480.00	768.62	0.00	768.72	5.01	2.54	189.03	214.37
9129.000	8.00	781.50	771.10	762.50	520.00	769.02	0.00	769.12	4.55	2.54	204.95	243.80
9129.000	8.00	781.50	771.10	762.50	540.00	769.23	0.00	769.33	4.34	2 53	213.04	259.24
9129 000	8.00	781.50	771.10	762.50	570.00	769.54	0.00	769.64	4.04	2.53	225.38	283.42
9130.000	1.00	0.00	0 00	762.50	480 00	768.62	0.00	768 72	5.01	2.54	189.05	214.41
9130.000	1.00	0.00	0.00	762.50	520.00	769.02	0.00	769.12	4.55	2.54	204.97	243.84
9130.000	1.00	0.00	0.00	762.50	540.00	769.23	0.00	769.33	4.34	2.53	213.06	259.28
9130.000	1.00	0 00	0.00	762.50	570.00	769.54	0.00	769.64	4.04	2.53	225.40	283.46
9340.000	210 00	0.00	0.00	764.00	480.00	768.71	0.00	768 94	15.98	3.85	124.76	120.06
9340.000	210.00	0.00	0.00	764.00	520.00	769.09	0 00	769.32	14.55	3.83	135.79	136.34
9340.000	210.00	0.00	0.00	764.00	540.00	769.29	0.00	769.51	13.89	3.82	141.41	144.87
9340.000	210 00	0.00	0.00	764.00	570.00	769.59	0.00	769.81	12.98	3.80	150.03	158.21
9439.000	99 00	0.00	0.00	764.00	480.00	768.87	0.00	769 09	14.27	3.70	129.56	127.08
9439.000	99.00	0.00	0.00	764.00	520.00	769.24	0.00	769.46	13.23	3.71	140.15	142.95
9439.000	99 00	0.00	0.00	764.00	540.00	769.43	0 00	769.65	12.74	3.71	145.58	151.29
9439.000	99.00	0.00	0.00	764.00	570.00	769.73	0.00	769.94	12.03	3.70	153.93	164.34

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
9440.000	1.00	793.10	780.70	764.00	480.00	768 88	0.00	769.09	14.25	3.70	129.60	127.14
9440.000	1.00	793 10	780.70	764.00	520.00	769.25	0.00	769.46	13.22	3.71	140.19	143.01
9440.000	1.00	793.10	780.70	764.00	540.00	769.44	0.00	769.65	12.73	3.71	145.62	151.34
9440.000	1.00	793.10	780 70	764.00	570.00	769.73	0.00	769.94	12.02	3.70	153.96	164.39
9451.000	11.00	793.10	780.70	764.00	480.00	768.89	0.00	769.10	14.11	3.69	130.06	127.80
9451.000	11.00	793.10	780.70	764.00	520.00	769.26	0.00	769.47	13.10	3.70	140.61	143.65
9451.000	11.00	793.10	780.70	764.00	540.00	769.45	0.00	769.66	12.63	3.70	146.02	151.97
9451.000	11.00	793.10	780 70	764.00	570.00	769.74	0.00	769.95	11.93	3.69	154.35	165.00
9452.000	1.00	0.00	0 00	764.00	480.00	768.89	0.00	769.11	14.08	3.69	130.14	127.93
9452.000	1.00	0.00	0.00	764.00	520.00	769.26	0.00	769.48	13 08	3.70	140.69	143.76
9452.000	1.00	0.00	0.00	764.00	540.00	769.45	0.00	769.66	12.61	3.70	146.10	152.08
9452.000	1.00	0.00	0.00	764.00	570.00	769.74	0.00	769.95	11.92	3.69	154.41	165.10
9501.000	49.00	0.00	0 00	764.00	480.00	768.97	0.00	769.17	13.45	3.63	132.12	130.87
9501.000	49.00	0.00	0.00	764.00	520.00	769.33	0.00	769.54	12.58	3.65	142.53	146.58
9501.000	49.00	0.00	0.00	764.00	540.00	769.52	0.00	769.73	12.16	3.65	147 87	154.84
9501.000	49 00	0.00	0.00	764.00	570.00	769.80	0.00	770.01	11.54	3.65	156.09	167 76
9650.000	149.00	0.00	0.00	764.20	480.00	769.07	0.00	769.60	42.66	5.88	81.65	73.49
9650.000	149.00	0.00	0.00	764.20	520.00	769.40	0.00	769.95	41.00	5.94	87.57	81.21
9650.000	149.00	0.00	0.00	764.20	540.00	769.58	0.00	770.13	40.11	5.96	90.63	85.27
9650.000	149 00	0.00	0.00	764.20	570.00	769.85	0.00	770.40	38.71	5.98	95.36	91.62
9651.000	1.00	772.40	771.50	764.20	480.00	769.07	0.00	769.61	42.59	5.88	81.69	73 55
9651.000	1 00	772.40	771 50	764.20	520.00	769.41	0.00	769.96	40.94	5.94	87.61	81.27
9651.000	1.00	772.40	771 50	764.20	540.00	769.58	0.00	770.13	40.06	5.96	90.67	85.32
9651 000	1.00	772.40	771.50	764.20	570.00	769.85	0.00	770.41	38.66	5.97	95.40	91.67
9673.000	22.00	772.40	771.50	764.20	480.00	769.19	0.00	769.70	39.56	5.73	83.83	76.31
9673.000	22.00	772.40	771.50	764.20	520.00	769.52	0.00	770.05	38.36	5.80	89.65	83.96
9673.000	22.00	772.40	771.50	764.20	540.00	769.69	0.00	770.22	37.69	5.83	92.65	87.96
9673.000	22.00	772.40	771.50	764.20	570.00	769.96	0.00	770.49	36.59	5.86	97.29	94.24
9674.000	1.00	0.00	0.00	764.20	480.00	769.20	0.00	769.70	39.46	5.72	83.90	76.41
9674.000	1 00	0.00	0.00	764.20	520.00	769.53	0.00	770.05	38.28	5.80	89.71	84 05
9674.000	1.00	0.00	0.00	764.20	540.00	769.70	0.00	770.23	37.61	5.82	92.72	88.06
9674.000	1.00	0.00	0.00	764.20	570.00	769 96	0.00	770.50	36.52	5.85	97 36	94.33
9685.000	11.00	0.00	0.00	764.20	480.00	769.25	0 00	769.75	38.44	5.67	84.67	77.42
9685.000	11.00	0.00	0.00	764.20	520.00	769.58	0.00	770.09	37.38	5.75	90.47	85.05
9685.000	11.00	0.00	0.00	764.20	540.00	769.75	0.00	770.27	36.78	5.78	93.45	89.04
9685.000	11.00	0.00	0.00	764.20	570.00	770.01	0.00	770.54	35.77	5.81	98.08	95.30
9837.000	152.00	790.00	769.80	764.70	480.00	770.07	0.00	770.46	57.23	5.05	95.06	63.45
9837.000	152 00	790.00	769.80	764.70	520.00	770.24	0.00	770.63	26.35	5.01	103.70	101.30
9837.000	152.00	790.00	769.80	764.70	540.00	770.50	0.00	770.89	24.82	4.97	108.75	108.39
9837.000	152.00	790.00	769.80	764.70	570.00	770.91	0.00	771.28	22.71	4.89	116.60	119.61

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01%
9937.000	100.00	0.00	0.00	765.40	480.00	770.47	0.00	770.84	26.54	4.88	98.40	93.18
9937.000	100 00	0.00	0.00	765.40	520.00	770.50	0.00	770 93	30.67	5.26	98.92	93.89
9937.000	100.00	0.00	0.00	765.40	540.00	770.74	0.00	771.16	28.92	5.21	103.67	100.41
9937.000	100.00	0.00	0.00	765.40	570.00	771.13	0.00	771.54	26.46	5.13	111.10	110.82
10034.000	97 00	0.00	0.00	766.40	480.00	770.79	0.00	771.07	17.73	4.31	111.41	113.98
10034.000	97.00	0.00	0.00	766.40	520.00	770.87	0.00	771.19	19.63	4.58	113.50	117.35
10034.000	97.00	0.00	0.00	766.40	540.00	771.10	0.00	771.41	18.11	4.53	119.30	126.88
10034.000	97.00	0.00	0.00	766.40	570 00	771.46	0.00	771.76	16.03	4.44	128.45	142.37
10035.000	1.00	782.00	778.80	766.40	480.00	770.76	0.00	771.11	41.89	4.72	101.71	74.16
10035.000	1.00	782.00	778.80	766.40	520.00	770.84	0.00	771.23	46.87	5.02	103.54	75.95
10035.000	1.00	782.00	778.80	766 40	540.00	771.07	0.00	771.45	44.20	4.96	108.87	81.23
10035.000	1.00	782.00	778.80	766.40	570 00	771.43	0.00	771.80	40.43	4.86	117.27	89.64
10049.000	14.00	782.00	778.80	766.40	480.00	770.83	0.00	771.17	40.10	4.64	103.38	75.80
10049.000	14.00	782.00	778.80	766.40	520.00	770.92	0.00	771.30	44.62	4.93	105.46	77.84
10049.000	14.00	782.00	778.80	766.40	540.00	771.14	0.00	771.51	42.33	4.88	110.65	82.99
10049.000	14.00	782.00	778.80	766.40	570.00	771.50	0.00	771.85	39.02	4.80	118.86	91.24
10050.000	1.00	0.00	0.00	766.40	480.00	770.92	0.00	771.19	16.19	4.18	114.70	119.31
10050.000	1.00	0.00	0.00	766.40	520.00	771.02	0.00	771.32	17.72	4.43	117.29	123.54
10050.000	1.00	0.00	0.00	766.40	540.00	771.24	0.00	771.54	16.52	4.39	122.88	132.86
10050.000	1.00	0.00	0.00	766.40	570.00	771.59	0.00	771.88	14.82	4.33	131.72	148.05
10064.000	14.00	0.00	0.00	766.90	480.00	770.74	0.00	771.45	67.88	6.76	70.97	58.26
10064.000	14.00	0.00	0.00	766.90	520.00	770.82	0.00	771.61	74.76	7.17	72.50	60.14
10064.000	14.00	0.00	0 00	766.90	540.00	771.05	0.00	771.81	67.50	7.01	77.00	65.73
10064.000	14.00	0.00	0.00	766.90	570.00	771.41	0.00	772.12	58.10	6.78	84.09	74.78
10065.000	1.00	781.50	780.50	766.90	480.00	770 74	0.00	771.45	46.51	6.76	71.01	70.38
10065.000	1.00	781.50	780.50	766.90	520.00	770.82	0.00	771.62	51.24	7.17	72.54	72.64
10065.000	1.00	781.50	780.50	766.90	540.00	771.05	0.00	771.82	46.26	7.01	77.05	79.39
10065.000	1.00	781.50	780.50	766.90	570.00	771.42	0.00	772.13	39.82	6.77	84.14	90.33
10070.000	5.00	781.50	780.50	766.90	480.00	770.78	0.00	771.48	45.35	6.70	71.62	71.27
10070.000	5.00	781.50	780.50	766.90	520.00	770.87	0.00	771.65	49.63	7.09	73.33	73.81
10070.000	5.00	781.50	780.50	766.90	540.00	771.09	0.00	771.84	45.21	6.95	77.65	80.31
10070.000	5.00	781.50	780.50	766.90	570.00	771.45	0.00	772.15	39.11	6.73	84.66	91.14
10071.000	1.00	0.00	0.00	766.90	480.00	770.80	0.00	771.49	65.29	6.68	71.90	59.40
10071.000	1.00	0.00	0.00	766.90	520.00	770.88	0.00	771.66	71.47	7.06	73.62	61.51
10071.000	1.00	0.00	0.00	766.90	540.00	771.10	0.00	771.85	65.16	6.93	77.93	66.89
10071.000	1.00	0.00	0.00	766.90	570.00	771.46	0.00	772.16	56.57	6.72	84.86	75.78
10072 000	1.00	0.00	0.00	766.90	480.00	770.81	0.00	771.50	64.59	6.65	72.16	59.72
10072.000	1.00	0.00	0.00	766.90	520.00	770.90	0.00	771.67	70.65	7.04	73.91	61.87
10072.000	1.00	0.00	0.00	766.90	540.00	771.12	0.00	771.86	64.53	6.91	78.19	67 22
10072.000	1.00	0.00	0.00	766.90	570.00	771.47	0.00	772 16	56.20	6.70	85.05	76.04

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	01%
	10073.000	1.00	791.60	790.10	766.90	480.00	770.82	0.00	771.50	63.88	6.63	72.44	60.06
	10073 000	1.00	791.60	790.10	766.90	520.00	770.91	0.00	771.68	69.77	7.01	74.22	62.25
	10073.000	1.00	791.60	790.10	766.90	540.00	771.13	0.00	771.87	63.88	6.88	78.46	67.56
	10073.000	1.00	791.60	790 10	766.90	570.00	771.48	0.00	772.17	55.80	6.69	85.26	76.31
	10090.000	17.00	791.60	790 10	766.90	480.00	771.01	0.00	771.62	54.98	6.30	76.21	64.73
	10090.000	17.00	791.60	790.10	766.90	520.00	771.13	0.00	771.81	58.86	6.61	78.63	67.78
	10090.000	17.00	791.60	790.10	766.90	540.00	771.32	0.00	771.99	55.62	6.57	82.25	72.41
	10090.000	17.00	791.60	790.10	766.90	570.00	771.63	0.00	772.27	50.40	6.46	88.30	80.29
	10091.000	1.00	0.00	0 00	766.90	480.00	771.02	0.00	771.63	54.76	6.29	76.31	64.86
	10091.000	1.00	0.00	0 00	766.90	520.00	771.14	0.00	771.82	58.63	6.60	78.73	67.91
	10091.000	1 00	0.00	0.00	766.90	540.00	771.33	0.00	771.99	55.41	6.56	82.36	72.54
	10091.000	1.00	0.00	0.00	766.90	570.00	771.63	0.00	772.28	50.24	6.45	88.40	80.42
	10099.000	8.00	0.00	0.00	767.20	480.00	770.84	0.00	771.95	152.06	8.46	56.78	38.93
	10099.000	8.00	0.00	0.00	767.20	520.00	770.96	0.00	772.14	153.30	8.72	59.64	42.00
	10099.000	8.00	0.00	0.00	767.20	540.00	771.18	0.00	772.26	128.23	8.34	64.78	47.69
	10099.000	8.00	0.00	0.00	767.20	570.00	771.54	0.00	772.49	99.33	7.82	72 96	57.19
*	10100.000	1.00	785.00	782.00	767.20	480.00	770.84	770.84	772.11	246.10	9.04	53.12	30.60
*	10100.000	1.00	785.00	782.00	767.20	520.00	770.99	770.99	772.31	246.75	9.24	56.28	33.10
	10100.000	1.00	785.00	782 00	767.20	540.00	771.07	771.06	772.41	243.71	9.29	58.14	34.59
	10100.000	1.00	785.00	782.00	767.20	570.00	771 45	0.00	772.60	191.53	8.62	66.20	41.19
	10116.000	16 00	785.00	782.00	767.70	480.00	771.81	0.00	772.53	118.00	6.82	70.48	44 19
	10116.000	16 00	785 00	782.00	767.70	520.00	771.98	0.00	772.75	121.29	7.02	74.09	47.22
	10116.000	16.00	785.00	782.00	767.70	540.00	772.06	0 00	772.85	122.52	7.12	75.95	48.79
	10116.000	16.00	785.00	782.00	767.70	570.00	772.07	0.00	772.94	136.03	7.50	76.05	48.87
	10117 000	1.00	0.00	0.00	767.70	480.00	772.07	0.00	772.60	49.45	5.85	82.10	68.26
	10117.000	1.00	0.00	0.00	767.70	520.00	772.26	0.00	772.82	49.53	6.01	86.54	73.89
	10117.000	1.00	0 00	0.00	767.70	540.00	772.33	0.00	772.92	50.16	6.12	88.37	76.24
	10117.000	1.00	0.00	0.00	767.70	570.00	772 39	0.00	773.02	53.93	6.38	89.43	77.62
	10179.000	62.00	0.00	0.00	768.30	480.00	772.60	0.00	772.82	11.10	3.74	129.26	144.06
	10179.000	62.00	0.00	0.00	768.30	520.00	772.81	0.00	773.04	11.04	3.85	135.85	156.51
	10179 000	62.00	0.00	0.00	768 30	540.00	772.91	0.00	773.15	11.11	3.92	138.68	161.98
	10179.000	62.00	0.00	0.00	768.30	570.00	773.02	0.00	773.27	11.46	4.04	141.95	168.40
	10180.000	1.00	787 40	779.30	768.30	480.00	772.58	0.00	772.85	20.11	4.17	115.65	107 03
	10180.000	1.00	787.40	779.30	768.30	520.00	772.79	0.00	773.07	20.48	4.31	121.23	114 91
	10180.000	1.00	787.40	779.30	768.30	540.00	772.88	0.00	773 18	20.77	4.38	123.72	118.48
	10180.000	1.00	787.40	779.30	768.30	570.00	772.99	0.00	773.30	21.61	4.52	126.59	122 63
	10237.000	57.00	787.40	779.30	768.30	480.00	772.71	0.00	772.96	18.39	4.05	119.14	111.94
	10237.000	57.00	787.40	779 30	768.30	520.00	772.92	0.00	773.19	18.77	4.18	124.80	120.03
	10237.000	57.00	787.40	779.30	768.30	540.00	773.01	0.00	773.30	19.05	4.26	127.35	123.73
	10237.000	57.00	787.40	779.30	768.30	570.00	773.13	0.00	773.43	19.78	4.39	130.39	128.18

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10238.000	1.00	0.00	0.00	768.30	480.00	772.78	0.00	772.98	9.64	3.58	134.87	154.64
10238.000	1.00	0.00	0.00	768.30	520.00	773.00	0.00	773.21	9.67	3.70	141.38	167.26
10238.000	1.00	0.00	0.00	768.30	540.00	773.09	0.00	773.32	9.73	3.77	144.33	173.13
10238.000	1.00	0.00	0.00	768.30	570.00	773.21	0.00	773.45	9.99	3.88	147.90	180.33
10246.000	8.00	0.00	0.00	768.60	480.00	772.76	0.00	773.02	14.63	4.07	118.12	125.48
10246.000	8.00	0.00	0.00	768.60	520.00	772.98	0.00	773.25	14.39	4.18	124.56	137.07
10246.000	8.00	0.00	0.00	768.60	540.00	773.07	0.00	773.35	14.37	4.24	127.48	142.46
10246.000	8.00	0.00	0.00	768.60	570.00	773.19	0.00	773.49	14.62	4.35	131.00	149.07
10251.000	5.00	0.00	0.00	768.60	480.00	772.75	0.00	773.03	5.39	4.23	113.47	206.66
10251.000	5.00	0.00	0.00	768.60	520.00	772.97	0.00	773.26	5.35	4.34	119.91	224.85
10251.000	5.00	0.00	0.00	768.60	540.00	773.07	0.00	773.37	5.36	4.40	122.83	233.25
10251.000	5.00	0.00	0.00	768.60	570.00	773.19	0.00	773.50	5.48	4.51	126.35	243.50

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
5792.000	500.00	763.07	0.00	0.00	0.00	1097.40	0.00
5792.000	540.00	763.19	0.12	0.00	0.00	1110.08	0.00
5792.000	555.00	763.24	0.05	0.00	0.00	1115.36	0.00
5792.000	600.00	763 45	0.21	0.00	0.00	1453.05	0.00
6199.000	480 00	763.10	0 00	0.03	0.00	625.00	407.00
6199.000	520.00	763.22	0.12	0.03	0.00	625.00	407.00
6199.000	540.00	763.27	0.05	0.03	0.00	625.00	407.00
6199.000	570.00	763.48	0.21	0.03	0.00	625.00	407.00
6200.000	480 00	763.11	0.00	0.01	0.00	625.00	1.00
6200.000	520.00	763.24	0.12	0.01	0.00	625.00	1.00
6200.000	540.00	763.29	0.05	0.02	0.00	625.00	1.00
6200.000	570.00	763.49	0 21	0.01	0.00	625.00	1.00
6222.000	480.00	763.12	0.00	0.01	0.00	614.00	22.00
6222.000	520.00	763.25	0 12	0.01	0.00	614.00	22.00
6222.000	540.00	763.30	0 05	0.01	0.00	614.00	22.00
6222.000	570.00	763.50	0 20	0.01	0.00	614.00	22.00
6223.000	480.00	763.12	0.00	0.00	0.00	614.00	1.00
6223.000	520 00	763.24	0.12	-0.01	0.00	614.00	1.00
6223.000	540 00	763.29	0 05	-0.01	0.00	614.00	1.00
6223.000	570.00	763.50	0.20	-0.01	0.00	614.00	1.00
6400.000	480.00	763.14	0.00	0.02	0.00	525.04	177.00
6400.000	520.00	763.26	0.12	0.02	0.00	525.05	177.00
6400.000	540.00	763.32	0.05	0.02	0.00	525.05	177 00
6400 000	570 00	763.52	0.20	0.02	0.00	525.05	177.00
6401.000	480.00	763 16	0.00	0.02	0.00	525.04	1.00
6401.000	520.00	763.28	0.12	0.02	0 00	525.05	1.00
6401.000	540.00	763.33	0.05	0.02	0.00	525.05	1.00
6401.000	570.00	763.53	0.20	0.01	0.00	525.05	1.00
6446.000	480.00	763.17	0.00	0.01	0.00	525.04	45.00
6446.000	520.00	763.29	0.12	0.01	0.00	525.05	45.00
6446.000	540.00	763.34	0.05	0.01	0.00	525.05	45.00
6446.000	570.00	763.54	0.20	0.01	0 00	525.05	45.00
6447.000	480.00	763.17	0 00	0.00	0 00	525.04	1.00
6447.000	520.00	763 29	0.12	0.00	0.00	525.05	1.00
6447.000	540.00	763.34	0.05	0.00	0.00	525.05	1.00
6447.000	570 00	763.54	0.20	0 00	0 00	525.05	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
6496.000	480.00	763.17	0.00	0.01	0.00	525.04	49.00
6496.000	520.00	763.30	0.12	0.01	0.00	525.05	49.00
6496.000	540.00	763.35	0.05	0.01	0.00	525.05	49.00
6496.000	570.00	763.55	0.20	0.01	0.00	525.05	49.00
6896.000	480.00	763.23	0.00	0.06	0.00	270.00	400.00
6896.000	520.00	763.35	0.12	0.06	0.00	270.00	400.00
6896.000	540.00	763.40	0.05	0.06	0.00	270.00	400.00
6896.000	570 00	763.60	0.19	0 05	0.00	270.00	400.00
7300.000	480.00	763.33	0.00	0.10	0.00	45.90	404.00
7300.000	520.00	763.46	0.13	0.11	0.00	50.49	404.00
7300.000	540.00	763.52	0.06	0.11	0 00	52.48	404.00
7300.000	570 00	763.70	0 19	0.11	0.00	59.16	404.00
7399.000	480.00	763.51	0.00	0.18	0.00	20.75	99.00
7399.000	520.00	763.66	0.14	0.19	0.00	20.77	99.00
7399.000	540.00	763.72	0.06	0.20	0 00	20.77	99.00
7399.000	570.00	763.90	0.18	0.20	0.00	20.79	99.00
7400.000	480.00	763.52	0.00	0.00	0 00	20.76	1.00
7400.000	520.00	763.66	0.14	0.00	0.00	20.77	1.00
7400.000	540.00	763.72	0.06	0.00	0.00	20.78	1.00
7400.000	570.00	763.90	0.18	0.00	0.00	20.79	1 00
7469.000	480.00	763.74	0.00	0.22	0.00	20.78	69.00
7469.000	520.00	763.90	0.16	0.24	0.00	20.79	69.00
7469.000	540.00	763.98	0.08	0.26	0.00	20.80	69.00
7469.000	570.00	764.17	0.19	0.26	0.00	20.82	69.00
7470.000	480.00	763.74	0.00	0.00	0.00	20.78	1.00
7470.000	520.00	763.91	0.16	0.00	0.00	20.79	1.00
7470.000	540.00	763.98	0.08	0.00	0.00	20.80	1.00
7470.000	570.00	764.17	0.19	0.00	0.00	20.82	1.00
7519.000	480.00	763.86	0.00	0 11	0.00	20.79	49 00
7519.000	520.00	764.03	0.17	0.12	0.00	20.81	49.00
7519.000	540.00	764.11	0.08	0 13	0.00	20.81	49.00
7519.000	570.00	764.30	0.19	0.13	0.00	20.83	49.00
7720.000	480.00	764.31	0.00	0.45	0.00	34.00	201.00
7720.000	520.00	764.51	0.21	0.49	0.00	34.00	201.00
7720.000	540.00	764.61	0.10	0 50	0.00	34.00	201.00
7720.000	570.00	764.81	0 20	0.51	0.00	34.00	201.00
7721.000	480.00	764.29	0.00	-0.01	0.00	34.00	1.00
7721.000	520.00	764.50	0.21	-0.01	0.00	34.00	1.00
7721.000	540.00	764.60	0.09	-0.02	0 00	34.00	1.00
7721.000	570.00	764.78	0.19	-0.03	0.00	34.00	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
7734.000	480.00	764.32	0.00	0.02	0 00	34.00	13 00
7734.000	520.00	764.54	0.23	0.04	0.00	34.00	13.00
7734.000	540.00	764.64	0.10	0.05	0.00	34.00	13.00
7734.000	570.00	764.83	0.19	0.05	0.00	34.00	13.00
7735.000	480.00	764.36	0.00	0.04	0.00	34.00	1.00
7735.000	520.00	764.59	0.23	0.05	0.00	34.00	1.00
7735.000	540.00	764.71	0.11	0.07	0.00	34.00	1.00
7735.000	570.00	764.93	0.23	0 10	0.00	34.00	1.00
7784.000	480.00	764.56	0.00	0.20	0.00	135.00	49.00
7784.000	520.00	764.81	0.25	0 21	0.00	135.00	49.00
7784.000	540.00	764.92	0.12	0.22	0.00	135.00	49.00
7784.000	570.00	765.15	0.23	0.22	0.00	135.00	49.00
8298.000	480.00	764.85	0.00	0.29	0.00	111.00	514.00
8298.000	520.00	765.08	0.22	0.27	0.00	111.00	514.00
8298.000	540.00	765.19	0.11	0.26	0.00	111.00	514.00
8298.000	570.00	765.39	0.20	0.24	0.00	111.00	514.00
8620.000	480.00	765.39	0 00	0.54	0.00	31.97	161.00
8620.000	520.00	765.57	0.17	0.49	0.00	32.63	161.00
8620.000	540.00	765.66	0.09	0.47	0.00	32.96	161.00
8620.000	570.00	765.81	0.16	0 42	0.00	33.56	161.00
8719.000	480.00	766.02	0.00	0.62	0.00	19.00	99.00
8719 000	520.00	766.17	0 15	0 60	0.00	19.00	99.00
8719.000	540.00	766.24	0.08	0.59	0.00	19.00	99.00
8719.000	570.00	766 37	0.12	0 55	0 00	19.00	99.00
8720.000	480.00	766.03	0.00	0.01	0.00	19.00	1.00
8720.000	520.00	766.18	0.15	0.01	0.00	19.00	1.00
8720.000	540.00	766.26	0.08	0.01	0.00	19.00	1.00
8720.000	570.00	766.38	0.12	0.01	0.00	19.00	1.00
8788.000	480.00	766.99	0.00	0.96	0.00	19.00	68.00
8788.000	520.00	767.21	0.21	1.02	0 00	19.00	68.00
8788.000	540.00	767.31	0.10	1.05	0.00	19.00	68.00
8788.000	570.00	767.46	0.16	1.08	0.00	19.00	68.00
8789.000	480.00	767.00	0.00	0.01	0.00	19.00	1.00
8789.000	520.00	767.21	0.21	0.01	0.00	19.00	1.00
8789.000	540.00	767.32	0.10	0.01	0.00	19.00	1.00
8789.000	570.00	767.47	0.16	0.01	0.00	19.00	1.00
8889.000	480.00	767.45	0.00	0.45	0.00	19.00	100.00
8889.000	520.00	767 68	0.23	0.46	0.00	19.00	100.00
8889.000	540.00	767.79	0.11	0.47	0.00	19.00	100.00
8889.000	570.00	767.95	0.17	0.48	0.00	19.00	100.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
8989.000	480.00	767.63	0.00	0.18	0.00	17.00	100.00
8989.000	520.00	767.86	0.23	0.18	0.00	17.00	100.00
8989.000	540.00	767.97	0.11	0.18	0.00	17.00	100.00
8989.000	570.00	768.13	0.16	0.18	0.00	17.00	100.00
9071.000	480.00	768.30	0.00	0.67	0.00	20.00	82.00
9071.000	520.00	768.70	0 40	0.84	0.00	20.00	82.00
9071.000	540.00	768.91	0.20	0.94	0.00	20.00	82.00
9071.000	570.00	769 22	0.31	1.08	0.00	20.00	82.00
9120.000	480.00	768.62	0.00	0.32	0.00	39.82	49.00
9120.000	520.00	769.02	0.40	0.32	0 00	39.82	49.00
9120.000	540.00	769.22	0.20	0.32	0.00	39.82	49.00
9120 000	570.00	769.53	0.31	0.31	0.00	39.82	49.00
9121.000	480.00	768.62	0.00	0.00	0.00	39.82	1.00
9121.000	520.00	769.02	0.40	0.00	0 00	39.82	1.00
9121.000	540.00	769.22	0.20	0.00	0.00	39.82	1.00
9121.000	570.00	769.53	0.31	0.00	0.00	39.82	1.00
9129.000	480.00	768.62	0.00	0.00	0.00	39.82	8.00
9129.000	520.00	769.02	0.40	0.00	0.00	39.82	8.00
9129.000	540.00	769 23	0.20	0.00	0.00	39 82	8.00
9129.000	570.00	769.54	0 31	0.00	0.00	39.82	8.00
9130.000	480.00	768.62	0.00	0.00	0.00	39.82	1.00
9130.000	520.00	769.02	0.40	0.00	0 00	39.82	1.00
9130.000	540.00	769.23	0 20	0.00	0.00	39.82	1.00
9130.000	570.00	769 54	0 31	0.00	0.00	39.82	1.00
9340.000	480.00	768.71	0.00	0.08	0.00	28.60	210 00
9340.000	520.00	769 09	0 39	0.07	0.00	28.61	210.00
9340.000	540.00	769.29	0.20	0.06	0 00	28.62	210.00
9340.000	570.00	769.59	0.30	0.05	0.00	28.63	210.00
9439.000	480.00	768.87	0.00	0.17	0.00	28.60	99.00
9439.000	520.00	769.24	0.37	0.15	0.00	28.62	99.00
9439.000	540.00	769.43	0.19	0.15	0.00	28.63	99.00
9439.000	570.00	769.73	0.29	0.14	0.00	28.64	99.00
9440.000	480.00	768.88	0.00	0.00	0.00	28.60	1.00
9440.000	520.00	769.25	0 37	0.00	0.00	28.62	1.00
9440.000	540.00	769.44	0.19	0.00	0.00	28.63	1.00
9440.000	570.00	769.73	0.29	0.00	0 00	28.64	1.00
9451.000	480.00	768.89	0.00	0.02	0.00	28.60	11.00
9451.000	520.00	769.26	0.37	0.02	0.00	28.62	11.00
9451.000	540.00	769.45	0.19	0.02	0.00	28.63	11.00
9451.000	570.00	769.74	0.29	0.01	0.00	28 64	11.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
9452.000	480.00	768 89	0.00	0.00	0.00	28.60	1.00
9452.000	520.00	769.26	0.37	0.00	0.00	28.62	1.00
9452.000	540.00	769.45	0.19	0.00	0.00	28.63	1.00
9452.000	570.00	769.74	0.29	0.00	0.00	28.64	1.00
9501.000	480.00	768.97	0.00	0.07	0.00	28.61	49.00
9501.000	520.00	769.33	0.36	0.07	0.00	28.62	49.00
9501.000	540.00	769.52	0.19	0.07	0.00	28.63	49.00
9501 000	570.00	769 80	0 29	0.06	0.00	28.64	49 00
9650.000	480.00	769 07	0 00	0:10	0.00	17.50	149.00
9650.000	520 00	769 40	0.34	0.07	0.00	17.50	149.00
9650.000	540.00	769.58	0.17	0.06	0.00	17.50	149.00
9650.000	570.00	769.85	0 27	0.04	0.00	17.50	149.00
9651.000	480.00	769.07	0.00	0.00	0.00	17.50	1.00
9651.000	520.00	769.41	0.34	0.00	0.00	17.50	1.00
9651.000	540.00	769.58	0 17	0 00	0.00	17.50	1.00
9651.000	570.00	769.85	0 27	0.00	0.00	17.50	1.00
9673.000	480.00	769.19	0 00	0.12	0.00	17.50	22.00
9673.000	520.00	769.52	0.33	0.11	0.00	17.50	22 00
9673.000	540.00	769.69	0.17	0.11	0.00	17.50	22.00
9673.000	570.00	769.96	0.27	0.11	0.00	17.50	22.00
9674.000	480.00	769.20	0.00	0 00	0.00	17.50	1.00
9674.000	520.00	769.53	0.33	0.00	0.00	17.50	1.00
9674.000	540.00	769.70	0.17	0.00	0.00	17.50	1.00
9674.000	570.00	769.96	0.27	0.00	0.00	17.50	1.00
9685.000	480.00	769.25	0.00	0.05	0.00	17.50	11.00
9685.000	520.00	769.58	0.33	0.05	0.00	17.50	11.00
9685.000	540.00	769.75	0.17	0.05	0.00	17.50	11.00
9685.000	570.00	770.01	0.26	0.05	0.00	17.50	11.00
9837.000	480.00	770.07	0.00	0 82	0.00	19.40	152.00
9837.000	520.00	770.24	0 17	0.66	0.00	19.40	152.00
9837.000	540.00	770.50	0 26	0.75	0 00	19.40	152.00
9837.000	570.00	770.91	0.41	0.90	0.00	19.40	152.00
9937.000	480.00	770.47	0.00	0.40	0.00	19.40	100.00
9937.000	520.00	770.50	0.03	0.26	0.00	19.40	100.00
9937.000	540.00	770.74	0.24	0.24	0.00	19 40	100 00
9937.000	570.00	771.13	0.38	0.22	0.00	19.40	100.00
10034.000	480.00	770.79	0.00	0.31	0.00	25.40	97.00
10034.000	520.00	770.87	0.08	0.37	0.00	25.40	97.00
10034 000	540 00	771.10	0.23	0.35	0.00	25 40	97.00
10034 000	570.00	771.46	0.36	0.33	0.00	25.40	97.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10035.000	480.00	770.76	0.00	-0.03	0.00	25.40	1.00
10035.000	520.00	770.84	0.08	-0.03	0.00	25.40	1.00
10035.000	540.00	771.07	0.23	-0.03	0.00	25.40	1.00
10035.000	570.00	771.43	0.36	-0.03	0.00	25.40	1.00
10049.000	480.00	770.83	0.00	0.07	0.00	25.40	14.00
10049.000	520.00	770.92	0.09	0.08	0.00	25.40	14.00
10049.000	540.00	771.14	0.22	0.08	0.00	25.40	14.00
10049.000	570.00	771.50	0.35	0.07	0.00	25.40	14.00
10050.000	480.00	770.92	0.00	0.08	0.00	25.40	1.00
10050.000	520.00	771.02	0.10	0.10	0.00	25.40	1.00
10050.000	540.00	771.24	0.22	0.09	0.00	25.40	1.00
10050.000	570.00	771.59	0.35	0.09	0.00	25.40	1.00
10064.000	480.00	770.74	0.00	-0.18	0.00	19.50	14.00
10064.000	520.00	770.82	0.08	-0.20	0.00	19.50	14.00
10064.000	540.00	771.05	0.23	-0.19	0.00	19.50	14.00
10064.000	570.00	771.41	0.36	-0.17	0.00	19.50	14.00
10065.000	480.00	770.74	0.00	0.01	0.00	19.50	1.00
10065.000	520.00	770.82	0.08	0.01	0.00	19.50	1.00
10065.000	540.00	771.05	0.23	0.01	0.00	19.50	1.00
10065.000	570.00	771.42	0.36	0.01	0.00	19.50	1.00
10070.000	480.00	770.78	0.00	0.04	0.00	19.50	5.00
10070.000	520.00	770.87	0.09	0.05	0.00	19.50	5.00
10070.000	540.00	771.09	0.22	0.04	0.00	19.50	5.00
10070.000	570.00	771.45	0.36	0.03	0.00	19.50	5.00
10071.000	480.00	770.80	0.00	0.01	0.00	19.50	1.00
10071.000	520.00	770.88	0.09	0.01	0.00	19.50	1.00
10071.000	540.00	771.10	0.22	0.01	0.00	19.50	1.00
10071.000	570.00	771.46	0.35	0.01	0.00	19.50	1.00
10072.000	480.00	770.81	0.00	0.01	0.00	19.50	1.00
10072.000	520.00	770.90	0.09	0.01	0.00	19.50	1.00
10072.000	540.00	771.12	0.22	0.01	0.00	19.50	1.00
10072.000	570.00	771.47	0.35	0.01	0.00	19.50	1.00
10073.000	480.00	770.82	0.00	0.01	0.00	19.50	1.00
10073.000	520.00	770.91	0.09	0.02	0.00	19.50	1.00
10073.000	540.00	771.13	0.22	0.01	0.00	19.50	1.00
10073.000	570.00	771.48	0.35	0.01	0.00	19.50	1.00
10090.000	480.00	771.01	0.00	0.19	0.00	19.50	17.00
10090.000	520.00	771.13	0.12	0.22	0.00	19.50	17.00
10090.000	540.00	771.32	0.19	0.19	0.00	19.50	17.00
10090.000	570.00	771.63	0.31	0.15	0.00	19.50	17.00

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10091.000	480.00	771 02	0.00	0.01	0.00	19.50	1.00
	10091.000	520.00	771.14	0.12	0.01	0.00	19.50	1.00
	10091 000	540.00	771.33	0.19	0.01	0.00	19.50	1.00
	10091.000	570.00	771.63	0.31	0.01	0.00	19.50	1.00
	10099.000	480.00	770.84	0.00	-0.18	0 00	23.17	8.00
	10099.000	520.00	770.96	0.12	-0.18	0.00	23.19	8.00
	10099.000	540.00	771.18	0.22	-0.14	0.00	23.21	8.00
	10099.000	570.00	771.54	0.35	-0.10	0.00	23.26	8.00
*	10100 000	480.00	770.84	0.00	0.00	0.00	23.17	1.00
*	10100 000	520.00	770.99	0.15	0.03	0.00	23.19	1.00
	10100.000	540 00	771.07	0.08	-0.11	0.00	23.20	1.00
	10100.000	570.00	771.45	0.38	-0.09	0.00	23.25	1.00
	10116 000	480.00	771.81	0.00	0.98	0.00	23.29	16.00
	10116.000	520.00	771.98	0 17	1.00	0.00	23.31	16.00
	10116.000	540.00	772.06	0.08	0.99	0.00	23.32	16.00
	10116.000	570.00	772.07	0.01	0.62	0.00	23.32	16 00
	10117.000	480.00	772.07	0.00	0.25	0.00	23.33	1 00
	10117.000	520.00	772.26	0.19	0.27	0.00	23.35	1.00
	10117.000	540.00	772.33	0.08	0.27	0.00	23.36	1.00
	10117.000	570.00	772.39	0.06	0 32	0.00	23.36	1.00
	10179.000	480.00	772.60	0.00	0.54	0 00	30.10	62.00
	10179.000	520.00	772.81	0.21	0.56	0.00	30.10	62.00
	10179.000	540.00	772.91	0.09	0.57	0 00	30.10	62.00
	10179.000	570.00	773.02	0.11	0.62	0.00	30.10	62.00
	10180.000	480.00	772.58	0.00	-0.02	0.00	30.10	1.00
	10180.000	520.00	772.79	0.21	-0.03	0.00	30.10	1.00
	10180.000	540.00	772.88	0.09	-0.03	0.00	30.10	1.00
	10180.000	570.00	772.99	0.11	-0.03	0.00	30.10	1.00
	10237.000	480.00	772.71	0.00	0.13	0.00	30.10	57.00
	10237.000	520.00	772.92	0.21	0.13	0.00	30.10	57.00
	10237.000	540.00	773.01	0.10	0.14	0.00	30 10	57.00
	10237.000	570.00	773.13	0.11	0.14	0.00	30.10	57 00
	10238.000	480.00	772.78	0.00	0.07	0.00	30.10	1.00
	10238.000	520 00	773.00	0.22	0.08	0.00	30.10	1.00
	10238.000	540.00	773.09	0.10	0.08	0.00	30.10	1.00
	10238.000	570 00	773.21	0.12	0 09	0.00	30.10	1.00
	10246.000	480.00	772.76	0.00	-0.02	0.00	29.84	8.00
	10246.000	520.00	772.98	0.22	-0.02	0.00	29.84	8.00
	10246.000	540.00	773.07	0 10	-0.02	0.00	29.84	8.00
	10246 000	570 00	773.19	0.12	-0 02	0.00	29.84	8.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10251.000	480.00	772.75	0.00	-0.01	0.00	29.84	5.00
10251.000	520.00	772.97	0.22	-0 01	0.00	29.84	5.00
10251.000	540.00	773.07	0.10	-0.01	0.00	29.84	5.00
10251.000	570.00	773.19	0.12	-0.01	0.00	29.84	5.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION  SECNO= 10100.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO= 10100.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO= 10100.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO= 10100.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
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1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

SEGMENT 5



THIS RUN EXECUTED 23 JUN 89 13:57:17

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10317.000	0.00	0.00	0.00	776.10	480.00	788 40	0.00	788.40	0.07	0.40	1235.03	1864 26
10317.000	0.00	0.00	0.00	776.10	520.00	788.60	0.00	788.60	0.07	0.42	1266.68	1925.00
10317.000	0 00	0.00	0.00	776.10	540.00	788.80	0.00	788.80	0.07	0.43	1298.83	1986.75
10317.000	0.00	0.00	0.00	776.10	570 00	789.00	0.00	789.00	0.08	0.44	1331.23	2049.55
11674.000	1357.00	0.00	0.00	778.00	480.00	788.40	0.00	788.44	1.69	1.47	326.44	368 87
11674.000	1357.00	0.00	0.00	778.00	520.00	788 60	0.00	788.64	1.84	1.55	335.38	383.14
11674.000	1357.00	0.00	0.00	778.00	540.00	788.80	0.00	788.84	1.84	1.57	344.36	397.61
11674.000	1357.00	0.00	0.00	778.00	570 00	789.00	0.00	789.04	1.91	1.61	353.43	412.36
13254.000	1580.00	0.00	0.00	782.10	480 00	788.69	0.00	788.72	1.90	1.34	430.36	348.63
13254.000	1580.00	0.00	0.00	782.10	520.00	788.91	0.00	788.94	1.92	1.39	454.50	375 13
13254.000	1580.00	0.00	0.00	782.10	540.00	789.10	0.00	789.13	1.83	1.39	476.37	399.59
13254.000	1580.00	0.00	0.00	782.10	570.00	789.31	0.00	789.33	1.79	1.41	499.62	426.05
13724.000	470.00	0.00	0.00	784.10	480.00	788.82	0.00	788.90	8.45	2.18	237.00	165.11
13724.000	470.00	0.00	0.00	784.10	520.00	789.04	0.00	789.11	8.16	2.22	256.92	182 07
13724.000	470.00	0.00	0.00	784.10	540.00	789.22	0.00	789.30	7.49	2.19	274.85	197.34
13724.000	470.00	0.00	0.00	784.10	570.00	789.42	0.00	789.50	7.06	2.18	294.98	214.50
14194.000	470.00	0.00	0.00	786.00	480.00	789.46	0.00	789.64	34.19	3.41	140.82	82.09
14194.000	470.00	0 00	0.00	786.00	520.00	789.64	0.00	789.82	31.64	3.43	152.58	92.45
14194.000	470.00	0.00	0.00	786.00	540.00	789.77	0.00	789.95	29.08	3.39	161.39	100.14
14194.000	470.00	0.00	0 00	786.00	570.00	789 93	0.00	790.11	26.84	3.37	172.76	110.01
14600.000	406.00	0 00	0.00	786.40	480.00	791.05	0.00	791.35	50.78	4.78	160 35	67.36
14600.000	406.00	0.00	0.00	786.40	520.00	791.17	0.00	791.47	51.57	4.93	169.57	72.41
14600.000	406.00	0.00	0.00	786.40	540.00	791 22	0.00	791 53	51.96	5.01	174.06	74.92
14600.000	406.00	0 00	0.00	786.40	570.00	791.30	0.00	791.63	52.07	5.11	181.26	79.00
15300.000	700.00	0.00	0.00	788.20	480.00	793.84	0.00	794.14	32.10	4.40	123 74	84.71
15300.000	700.00	0.00	0.00	788.20	520.00	794.00	0.00	794.32	32.76	4.57	130.70	90.84
15300.000	700.00	0.00	0.00	788.20	540.00	794.08	0.00	794.40	33.02	4.64	134.19	93.97
15300.000	700.00	0.00	0.00	788.20	570 00	794.19	0.00	794.53	33.65	4.77	138.95	98.26

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
16004.000	704.00	0.00	0.00	790.00	480.00	795.90	0.00	796.15	25.67	4.11	135.04	94.73
16004.000	704.00	0.00	0.00	790.00	520.00	796.09	0.00	796.36	25.75	4.24	143.58	102.47
16004 000	704.00	0.00	0.00	790.00	540.00	796.18	0.00	796.46	25.88	4.30	147.61	106.15
16004.000	704.00	0.00	0.00	790.00	570.00	796.32	0.00	796.60	25.88	4.39	154.01	112.04
16037 000	33.00	0.00	0.00	790 10	480.00	795.99	0.00	796.24	25.89	4.12	134.59	94 33
16037.000	33.00	0 00	0:00	790.10	520.00	796.18	0 00	796.45	25.95	4.25	143.15	102.08
16037.000	33.00	0.00	0 00	790.10	540.00	796.26	0.00	796.54	26.06	4.31	147.20	105.77
16037.000	33 00	0.00	0.00	790.10	570.00	796.40	0.00	796.69	26.05	4.40	153.61	111.68
16070.000	33.00	0.00	0.00	790.20	480.00	796.09	0.00	796.37	34.69	4.28	112.22	81.50
16070.000	33.00	0.00	0.00	790.20	520.00	796.28	0.00	796.58	35.58	4.43	117.36	87.18
16070.000	33.00	0.00	0.00	790.20	540.00	796.37	0.00	796.68	36.11	4.51	119.76	89.86
16070.000	33.00	0.00	0.00	790 20	570.00	796.50	0.00	796.83	36.72	4.62	123.48	94.07
16104.000	34.00	0.00	0.00	790.30	480.00	796.26	0.00	798.20	84.03	11.18	42 94	52.36
16104.000	34.00	0.00	0.00	790.30	520.00	796.46	0.00	798.57	86.99	11.66	44.59	55.75
16104.000	34.00	0.00	0.00	790.30	540.00	796.55	0.00	798.75	88.58	11.90	45.36	57.37
16104.000	34.00	0.00	0.00	790.30	570.00	796.69	0.00	799.02	90.54	12.25	46.55	59.90
16194.000	90.00	801.90	798.40	790.30	480.00	797.90	0.00	799.29	99.40	9.48	50.64	48.14
16194.000	90.00	801.90	798.40	790.30	520.00	799.69	0.00	800 51	40.72	7.25	71.74	81 49
16194.000	90.00	801.90	798.40	790.30	540.00	800.12	0.00	800.91	38.97	7.16	75.42	86.50
16194.000	90.00	801.90	798.40	790.30	570.00	800.79	0.00	801.56	36.66	7.04	81.01	94 15
16244.000	50.00	0.00	0.00	791 30	480.00	799.68	0.00	799 73	2.50	1.96	403.61	303.84
16244.000	50.00	0.00	0 00	791.30	520.00	800.72	0.00	800.76	1.72	1.77	513.90	396.38
16244.000	50.00	0.00	0 00	791.30	540.00	801.13	0.00	801.16	1.53	1.73	557.43	435.88
16244.000	50.00	0.00	0.00	791.30	570.00	801.76	0.00	801.79	1.29	1.66	626.13	501.34
16514.000	270.00	0.00	0.00	792.50	480.00	799.76	0.00	799.83	4 20	2.16	285.22	234.16
16514.000	270.00	0.00	0.00	792.50	520.00	800.77	0.00	800.83	2.76	1 94	362.99	313.20
16514.000	270.00	0.00	0.00	792.50	540.00	801.17	0.00	801.22	2.42	1.89	396.01	347 26
16514.000	270.00	0.00	0.00	792.50	570.00	801.80	0.00	801.84	1.99	1.81	450.86	404.42
16614.000	100.00	0.00	0.00	793.70	480.00	799.84	0.00	799.88	5.05	1.63	294.50	213.52
16614.000	100.00	0.00	0.00	793.70	520.00	800.83	0.00	800.86	2.59	1.35	385.10	323.12
16614.000	100.00	0.00	0.00	793.70	540.00	801.23	0.00	801.25	2.08	1.28	421.99	374.61
16614.000	100.00	0.00	0.00	793.70	570.00	801.85	0.00	801.87	1.51	1.19	480.11	464.50
16629.000	15.00	803.30	801.00	794 30	480.00	799.85	0.00	799.90	5.44	1.67	288.00	205.81
16629.000	15.00	803.30	801.00	794.30	520.00	800.84	0.00	800 87	2.75	1.38	378.15	313.71
16629.000	15.00	803.30	801.00	794.30	540.00	801.28	0.00	801.31	2 11	1.29	419.77	371.70
16629.000	15.00	803.30	801 00	794.30	570.00	801.92	0.00	801.94	1.51	1.19	479.15	463.40
16679 000	50.00	0.00	0.00	794.50	480.00	799.85	0.00	799.97	9.34	2.79	206.94	157.05
16679.000	50.00	0.00	0.00	794.50	520.00	800.83	0.00	800.92	5.58	2.45	268.58	220 08
16679.000	50.00	0.00	0.00	794.50	540.00	801.27	0.00	801.35	4.58	2.34	300.90	252.20
16679.000	50.00	0.00	0.00	794.50	570.00	801.91	0.00	801.97	3.53	2.19	361 75	303.59

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	17000.000	321.00	0.00	0.00	795.20	480.00	800.25	0.00	800.71	45.49	5.58	104.27	71.16
	17000.000	321.00	0.00	0.00	795.20	520.00	801.04	0.00	801.40	28.59	4.98	130.92	97.25
	17000.000	321.00	0.00	0.00	795.20	540.00	801.43	0.00	801.76	23.44	4.75	144.65	111.54
	17000.000	321.00	0.00	0.00	795.20	570.00	802.01	0.00	802.30	18.05	4.48	165.47	134.17
	17099.000	99.00	0.00	0.00	794.40	480.00	800.87	0.00	801.02	12.99	3.10	154.89	133.16
	17099 000	99.00	0.00	0.00	794.40	520.00	801.49	0.00	801.63	11.63	3.05	170.26	152.51
	17099.000	99.00	0.00	0.00	794.40	540.00	801 82	0.00	801.97	10.95	3.02	178.53	163.16
	17099.000	99 00	0.00	0.00	794.40	570.00	802.34	0.00	802.47	10.05	2.98	191.24	179.81
	17100.000	1.00	810.80	807.60	794.40	480.00	800.87	0.00	801.02	12.98	3.10	154.96	133.25
	17100.000	1.00	810.80	807.60	794.40	520.00	801.49	0.00	801.64	11.62	3.05	170.30	152.56
	17100.000	1.00	810.80	807.60	794.40	540.00	801.82	0.00	801.97	10.95	3.02	178.57	163.20
	17100.000	1.00	810.80	807.60	794.40	570.00	802.34	0.00	802.47	10.04	2 98	191.27	179.86
	17117.000	17.00	810.80	807.66	794.40	480.00	800.90	0.00	801.04	12.85	3.09	155.47	133.88
	17117.000	17.00	810.80	807.66	794.40	520 00	801.51	0.00	801.66	11.53	3.04	170.77	153.17
	17117.000	17 00	810.80	807.66	794.40	540.00	801.84	0.00	801.99	10.87	3.02	179.01	163.79
	17117 000	17.00	810.80	807.66	794.40	570.00	802.35	0.00	802.49	9.98	2.97	191.68	180.41
	17118.000	1.00	0.00	0.00	794.40	480.00	800.90	0.00	801.04	12.84	3.09	155.53	133.96
	17118.000	1.00	0.00	0.00	794.40	520.00	801.51	0.00	801.66	11.52	3.04	170.83	153.23
	17118.000	1.00	0.00	0.00	794.40	540.00	801.85	0.00	801.99	10.86	3.02	179.06	163 85
	17118.000	1.00	0 00	0.00	794.40	570.00	802.36	0.00	802.49	9.98	2.97	191.73	180.46
*	17132.000	14.00	0.00	0.00	799.90	480.00	802.16	802.16	803.30	284.47	8.57	55.99	28.46
*	17132.000	14.00	0.00	0.00	799.90	490.00	802.19	802.19	803.35	283.88	8.63	56.77	29.08
*	17132.000	14.00	0.00	0.00	799.90	495.00	802.20	802.20	803.37	283.73	8.66	57.15	29.39
	17132.000	14.00	0.00	0.00	799.90	500.00	802.39	0.00	803 41	227.05	8.09	61.78	33.18
*	17135.000	3.00	0.00	0.00	800.90	480.00	812.25	0.00	812.30	3.02	1.87	257.14	276.02
*	17135.000	3.00	0.00	0.00	800.90	490.00	812.30	0.00	812.36	3.11	1.90	258.37	277.82
*	17135.000	3.00	0.00	0.00	800.90	495.00	812.33	0.00	812.39	3.15	1.91	259.12	278.89
*	17135.000	3.00	0.00	0.00	800.90	500.00	812.35	0.00	812.41	3.20	1.93	259.61	279.61
	17145.000	10.00	813.00	811.50	800.90	480.00	812.29	0.00	812.34	2.99	1.86	258.11	277.44
	17145.000	10.00	813.00	811.50	800.90	490.00	812.34	0.00	812.40	3.08	1.89	259.40	279.31
	17145.000	10.00	813.00	811.50	800.90	495.00	812.37	0 00	812.43	3.12	1.90	260.18	280.44
	17145.000	10.00	813.00	811.50	800.90	500.00	812.39	0.00	812.45	3.16	1.92	260.70	281.20
	17345.000	200.00	0.00	0.00	802.00	480.00	812.37	0.00	812.37	0.02	0.19	2678 02	3663.67
	17345.000	200.00	0.00	0.00	802.00	490.00	812.43	0.00	812.43	0.02	0.19	2699.63	3701.54
	17345 000	200.00	0.00	0.00	802.00	495.00	812.46	0.00	812.46	0.02	0.19	2712.48	3724.03
	17345.000	200.00	0.00	0.00	802.00	500.00	812.48	0.00	812.48	0.02	0.19	2721.43	3739.66
	18939.000	1594.00	0.00	0.00	806.20	480.00	812.38	0.00	812.38	0.16	0.34	1594.57	1188.76
	18939.000	1594.00	0 00	0.00	806.20	490.00	812.43	0.00	812.43	0.16	0.35	1620.98	1216.49
	18939.000	1594.00	0.00	0.00	806.20	495.00	812.46	0.00	812.47	0.16	0.35	1636.63	1233.01
	18939.000	1594.00	0.00	0.00	806.20	500.00	812.49	0.00	812.49	0.16	0.35	1647.51	1244.54

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
19845.000	906.00	0.00	0.00	809.20	480.00	812.43	0.00	812.56	21.26	2.90	167.11	104.09
19845.000	906.00	0.00	0.00	809.20	490.00	812.48	0.00	812.61	20.70	2.90	171.79	107.70
19845.000	906.00	0.00	0.00	809.20	495.00	812.51	0.00	812.64	20.30	2.90	174.55	109.85
19845.000	906.00	0.00	0.00	809.20	500.00	812.54	0.00	812.67	20.15	2.90	176.49	111.38
19895.000	50.00	0.00	0.00	809.20	480.00	812.54	0 00	812.66	18.51	2.79	172.33	111.57
19895.000	50.00	0.00	0.00	809.20	490.00	812.59	0.00	812 71	18.16	2.79	175.49	115.00
19895.000	50.00	0.00	0.00	809.20	495.00	812.62	0.00	812.74	17.90	2.79	177.32	117.00
19895.000	50.00	0.00	0.00	809 20	500.00	812.64	0 00	812.77	17.81	2.80	178.65	118 47
19905.000	10.00	816.50	813.20	809.20	480.00	812.56	0.00	812.68	18.17	2.77	173.30	112.62
19905.000	10.00	816.50	813.20	809.20	490.00	812.61	0.00	812.73	17.83	2.78	176.45	116.06
19905.000	10.00	816.50	813.20	809 20	495.00	812.64	0.00	812.76	17.58	2.78	178.28	118.07
19905.000	10.00	816.50	813.20	809.20	500 00	812.66	0.00	812.78	17.49	2.78	179.61	119.54
19955.000	50.00	0.00	0.00	809.20	480.00	812.66	0.00	812.77	15.85	2.65	205 46	120.57
19955.000	50.00	0.00	0.00	809.20	490.00	812.71	0.00	812.82	15.50	2.65	213.53	124.45
19955.000	50.00	0.00	0.00	809.20	495.00	812.74	0.00	812.85	15.26	2.64	218.15	126.71
19955.000	50.00	0.00	0.00	809.20	500.00	812.76	0.00	812.87	15.16	2.65	221.63	128.43
20490.000	535.00	0.00	0.00	809.30	480.00	813.04	0.00	813.05	1.92	1.07	842.12	346.81
20490.000	535.00	0.00	0.00	809.30	490.00	813.09	0.00	813.10	1.90	1.07	855.91	355.53
20490.000	535.00	0.00	0.00	809.30	495.00	813.12	0.00	813.13	1.89	1.07	863.53	360.38
20490.000	535.00	0.00	0.00	809.30	500 00	813.14	0.00	813.15	1.88	1.08	869.70	364.34
20900.000	410.00	0.00	0.00	809.30	480.00	813.14	0.00	813.25	17.16	2.78	194.35	115.87
20900.000	410.00	0.00	0.00	809.30	490.00	813.18	0.00	813.30	17.00	2.80	198.10	118.83
20900.000	410.00	0.00	0.00	809.30	495.00	813.21	0.00	813.33	16.89	2.80	200.15	120.45
20900.000	410.00	0.00	0.00	809.30	500.00	813.23	0.00	813.35	16.85	2.81	201.85	121.81
21000.000	100.00	0.00	0.00	809.30	480.00	813.24	0.00	813.36	7.30	2.78	172.97	177.61
21000.000	100.00	0.00	0 00	809.30	490.00	813.29	0.00	813.41	7.27	2.79	175.54	181.69
21000.000	100.00	0.00	0.00	809.30	495 00	813.31	0.00	813.44	7.24	2.80	176.94	183.92
21000 000	100.00	0.00	0.00	809.30	500.00	813.33	0.00	813.46	7.24	2.81	178.12	185.81
21010.000	10.00	818 10	814.80	809.30	480.00	813.26	0.00	813.38	7.15	2.76	174.19	179.54
21010.000	10.00	818.10	814.80	809.30	490.00	813.31	0.00	813.42	7.12	2.77	176.78	183.67
21010.000	10.00	818.10	814.80	809.30	495.00	813.33	0.00	813.45	7.09	2.78	178.19	185.92
21010.000	10.00	818.10	814.80	809.30	500.00	813.35	0 00	813.47	7.09	2.79	179.38	187.83
21060.000	50.00	0.00	0.00	809.30	480.00	813.32	0.00	813.42	6.15	2.58	238 27	193.54
21060.000	50.00	0.00	0.00	809.30	490.00	813.37	0.00	813.47	6.10	2.59	243.23	198.33
21060.000	50.00	0.00	0.00	809.30	495.00	813.39	0.00	813.49	6.07	2.60	245.90	200.94
21060.000	50.00	0.00	0.00	809 30	500.00	813.41	0.00	813.51	6.06	2.60	248.20	203.08

10-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10317.000	480.00	788.40	0.00	0.00	0.00	157.00	0.00
10317.000	520.00	788.60	0.20	0.00	0.00	159.50	0.00
10317.000	540.00	788.80	0 20	0.00	0.00	162.00	0.00
10317.000	570.00	789.00	0.20	0.00	0.00	162.00	0.00
11674.000	480.00	788.40	0.00	0.00	0.00	44.31	1357.00
11674.000	520 00	788.60	0.20	0.00	0.00	44.69	1357.00
11674.000	540.00	788.80	0.20	0.00	0.00	45.06	1357.00
11674.000	570.00	789.00	0.20	0.00	0.00	45.43	1357 00
13254.000	480.00	788.69	0.00	0.29	0.00	110.87	1580.00
13254.000	520 00	788.91	0.22	0.31	0.00	112.29	1580.00
13254.000	540.00	789.10	0.19	0.30	0.00	113.56	1580.00
13254.000	570.00	789.31	0.20	0.30	0.00	114.89	1580.00
13724.000	480.00	788.82	0.00	0.13	0.00	89.94	470.00
13724.000	520.00	789.04	0.22	0.13	0.00	94.71	470.00
13724.000	540.00	789.22	0.19	0.12	0.00	98.81	470.00
13724.000	570.00	789.42	0.20	0.12	0.00	102.83	470.00
14194.000	480 00	789.46	0.00	0.63	0.00	61.92	470.00
14194.000	520.00	789.64	0.18	0.60	0.00	65.99	470 00
14194.000	540.00	789.77	0.13	0.55	0.00	68.88	470.00
14194.000	570.00	789.93	0.16	0.51	0.00	72.44	470.00
14600.000	480.00	791.05	0.00	1.60	0.00	81.68	406.00
14600.000	520.00	791.17	0.11	1.53	0.00	82.31	406 00
14600.000	540 00	791.22	0.05	1.45	0.00	82 61	406.00
14600.000	570.00	791.30	0.08	1.37	0.00	83.10	406.00
15300.000	480.00	793.84	0.00	2.79	0.00	43.10	700.00
15300.000	520.00	794.00	0.16	2.84	0.00	44.00	700.00
15300 000	540.00	794.08	0.07	2.86	0.00	44.45	700.00
15300.000	570 00	794 19	0.11	2.89	0.00	45.05	700.00
16004.000	480.00	795.90	0.00	2.06	0.00	44.56	704.00
16004.000	520.00	796.09	0.19	2.09	0.00	45.63	704.00
16004.000	540.00	796.18	0.09	2.10	0.00	46.13	704.00
16004.000	570.00	796.32	0.14	2.13	0.00	46.91	704.00
16037.000	480.00	795.99	0.00	0.09	0.00	44.50	33 00
16037.000	520.00	796 18	0.19	0.09	0.00	45.58	33.00
16037.000	540.00	796.26	0.09	0.09	0.00	46.08	33.00
16037.000	570.00	796.40	0.14	0 09	0.00	46.86	33.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
16070.000	480.00	796.09	0.00	0.10	0.00	27.00	33.00
16070.000	520.00	796.28	0.19	0.10	0.00	27.00	33.00
16070.000	540.00	796.37	0.09	0.10	0.00	27.00	33.00
16070.000	570.00	796.50	0.14	0.10	0.00	27 00	33.00
16104.000	480.00	796.26	0 00	0 17	0.00	8.40	34.00
16104.000	520.00	796.46	0 20	0.18	0.00	8.40	34.00
16104.000	540.00	796.55	0.09	0.18	0.00	8.40	34.00
16104.000	570 00	796.69	0.14	0.19	0.00	8.40	34.00
16194.000	480.00	797.90	0.00	1.64	0.00	8.40	90 00
16194.000	520.00	799.69	1 79	3.23	0.00	8.40	90.00
16194 000	540.00	800.12	0.43	3.57	0.00	8.40	90.00
16194.000	570.00	800.79	0.67	4.10	0.00	8.40	90.00
16244.000	480.00	799.68	0.00	1 79	0 00	105.59	50.00
16244.000	520.00	800.72	1.04	1.03	0.00	107.26	50.00
16244.000	540.00	801.13	0.40	1.01	0.00	107.92	50.00
16244.000	570.00	801.76	0.63	0 97	0.00	108.94	50.00
16514.000	480.00	799.76	0 00	0.08	0.00	71.53	270.00
16514.000	520.00	800.77	1.01	0.05	0.00	81.02	270 00
16514.000	540.00	801.17	0.40	0.04	0 00	84.73	270.00
16514.000	570.00	801 80	0.63	0 04	0.00	90.55	270.00
16614.000	480.00	799.84	0.00	0.08	0.00	88.96	100.00
16614 000	520.00	800.83	0.99	0.06	0.00	93 27	100.00
16614 000	540.00	801.23	0 39	0.05	0.00	93.90	100.00
16614.000	570.00	801.85	0.62	0.05	0.00	93.90	100 00
16629.000	480.00	799.85	0.00	0.01	0.00	89.03	15.00
16629.000	520.00	800.84	0 99	0.01	0 00	93.29	15.00
16629.000	540.00	801.28	0.44	0.06	0.00	93.90	15.00
16629.000	570 00	801.92	0.63	0.07	0.00	93.90	15.00
16679.000	480.00	799.85	0.00	0.00	0.00	57.80	50.00
16679.000	520.00	800.83	0.98	-0.01	0.00	69.88	50.00
16679.000	540.00	801.27	0 44	-0 01	0.00	76.25	50.00
16679.000	570.00	801.91	0.63	-0.01	0.00	115.73	50.00
17000.000	480.00	800.25	0.00	0.40	0.00	33 04	321.00
17000.000	520.00	801.04	0.79	0.21	0 00	34.54	321.00
17000.000	540.00	801.43	0.39	0.16	0.00	35 28	321 00
17000.000	570.00	802.01	0.58	0.11	0.00	36.39	321 00
17099.000	480.00	800.87	0.00	0.62	0.00	24 80	99.00
17099.000	520.00	801.49	0.62	0.45	0.00	24.80	99.00
17099.000	540.00	801.82	0.33	0.39	0.00	24.80	99.00
17099.000	570.00	802.34	0.51	0.32	0.00	24.80	99.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	17100.000	480.00	800.87	0.00	0.00	0.00	24.80	1.00
	17100.000	520 00	801.49	0.62	0.00	0 00	24.80	1.00
	17100.000	540.00	801.82	0.33	0.00	0.00	24 80	1.00
	17100.000	570.00	802.34	0.51	0.00	0.00	24.80	1.00
	17117.000	480.00	800.90	0.00	0.02	0.00	24.80	17.00
	17117.000	520.00	801.51	0.62	0.02	0.00	24.80	17.00
	17117.000	540.00	801.84	0.33	0.02	0.00	24.80	17.00
	17117.000	570.00	802.35	0 51	0.02	0.00	24.80	17.00
	17118.000	480.00	800.90	0.00	0.00	0.00	24.80	1.00
	17118.000	520.00	801 51	0.62	0.00	0.00	24.80	1.00
	17118.000	540.00	801.85	0.33	0 00	0.00	24.80	1.00
	17118 000	570.00	802.36	0.51	0.00	0.00	24.80	1.00
*	17132.000	480.00	802.16	0.00	1.26	0.00	24.80	14.00
*	17132.000	490.00	802.19	0.03	0.68	0.00	24.80	14.00
*	17132.000	495.00	802.20	0.02	0 36	0.00	24.80	14.00
	17132.000	500.00	802.39	0.19	0.04	0.00	24.80	14.00
*	17135.000	480.00	812.25	0.00	10.09	0.00	24.74	3.00
*	17135.000	490.00	812.30	0.05	10.11	0.00	24.74	3 00
*	17135.000	495.00	812.33	0.03	10.13	0.00	24.74	3.00
*	17135.000	500.00	812.35	0.02	9.96	0.00	24.74	3 00
	17145.000	480.00	812.29	0 00	0.04	0.00	24.74	10 00
	17145.000	490.00	812.34	0.05	0.04	0.00	24.74	10.00
	17145.000	495.00	812.37	0.03	0.04	0.00	24.75	10.00
	17145.000	500.00	812.39	0.02	0.04	0.00	24.75	10.00
	17345.000	480.00	812.37	0.00	0.08	0.00	393.32	200.00
	17345.000	490.00	812.43	0.05	0.08	0.00	395.94	200.00
	17345.000	495 00	812.46	0.03	0.08	0.00	397.49	200.00
	17345.000	500.00	812.48	0 02	0.09	0.00	398.56	200.00
	18939.000	480.00	812.38	0.00	0 01	0 00	480 67	1594.00
	18939.000	490.00	812.43	0.05	0.01	0.00	482.11	1594.00
	18939.000	495.00	812.46	0.03	0.01	0.00	482.96	1594.00
	18939.000	500.00	812.49	0.02	0.01	0.00	483.55	1594.00
	19845.000	480.00	812.43	0 00	0.05	0.00	84.83	906.00
	19845.000	490.00	812.48	0.05	0.05	0.00	86.00	906 00
	19845.000	495.00	812.51	0.03	0.05	0.00	86.00	906.00
	19845.000	500.00	812.54	0.02	0.05	0.00	86.00	906.00
	19895.000	480.00	812.54	0.00	0.11	0.00	61.60	50.00
	19895.000	490.00	812.59	0.05	0 11	0.00	61.60	50.00
	19895.000	495.00	812.62	0.03	0.11	0.00	61.60	50.00
	19895.000	500.00	812.64	0.02	0.11	0.00	61.60	50.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
19905.000	480.00	812.56	0.00	0.02	0.00	61.60	10.00
19905.000	490.00	812.61	0.05	0.02	0 00	61.60	10.00
19905.000	495.00	812.64	0.03	0.02	0.00	61.60	10.00
19905.000	500.00	812.66	0.02	0.02	0.00	61.60	10.00
19955.000	480.00	812.66	0.00	0.10	0.00	159 79	50.00
19955.000	490.00	812.71	0 05	0 10	0.00	161.00	50.00
19955.000	495.00	812.74	0.03	0.10	0.00	161.00	50 00
19955.000	500.00	812 76	0.02	0.10	0.00	161.00	50.00
20490.000	480.00	813.04	0.00	0.38	0.00	286.40	535.00
20490.000	490.00	813.09	0.05	0.38	0.00	286.55	535.00
20490.000	495.00	813.12	0.03	0.38	0.00	286.63	535.00
20490.000	500 00	813.14	0.02	0.38	0.00	286.69	535.00
20900.000	480.00	813.14	0.00	0.10	0.00	81.88	410.00
20900.000	490.00	813.18	0.05	0.09	0.00	82.04	410.00
20900.000	495.00	813.21	0.02	0.09	0.00	82.13	410.00
20900.000	500.00	813.23	0.02	0.09	0.00	82.20	410.00
21000.000	480.00	813.24	0.00	0.11	0.00	57.23	100.00
21000.000	490.00	813.29	0.04	0.11	0.00	57.39	100.00
21000.000	495.00	813.31	0.02	0.11	0.00	57 48	100 00
21000.000	500.00	813.33	0.02	0.11	0.00	57.55	100.00
21010.000	480.00	813.26	0.00	0.02	0.00	57.31	10.00
21010.000	490 00	813.31	0.05	0.02	0.00	57.47	10.00
21010.000	495.00	813.33	0.02	0.02	0.00	57.55	10.00
21010.000	500.00	813.35	0.02	0.02	0.00	57.63	10.00
21060.000	480.00	813.32	0.00	0.06	0.00	107.52	50.00
21060.000	490.00	813.37	0.05	0.06	0.00	107.69	50.00
21060.000	495.00	813.39	0.02	0.06	0.00	107.77	50.00
21060.000	500.00	813.41	0.02	0.06	0.00	109.94	50.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION	SECNO= 17132.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO= 17132.000	PROFILE= 1	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO= 17132.000	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO= 17132.000	PROFILE= 2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO= 17132.000	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO= 17132.000	PROFILE= 3	MINIMUM SPECIFIC ENERGY
NOTE	SECNO= 17135.000	PROFILE= 1	WSEL BASED ON X5 CARD
NOTE	SECNO= 17135.000	PROFILE= 2	WSEL BASED ON X5 CARD
NOTE	SECNO= 17135 000	PROFILE= 3	WSEL BASED ON X5 CARD
NOTE	SECNO= 17135.000	PROFILE= 4	WSEL BASED ON X5 CARD

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: REPORT 1981

00BREAK00

HYDRAULIC REPORT
PORTAGE CREEK
AND APPROXIMATE STUDIES
CITY OF KALAMAZOO, MICHIGAN

Prepared By:

Wade, Trim & Associates, Inc.
25185 Goddard Road
Taylor, Michigan 48180

HUD 2027-07
April, 1981

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LIST OF EXHIBITS

EXHIBIT NO.	DESCRIPTION
1	Field Cross Section and 100-Year Flood Plain - Floodway Map
2	Computer Printouts, HEC-2 Backwater Analysis With Cross Section Plots (See Separate Folder)
3	Water Surface Profiles
4	Bridge Notes and Sketches
5	Diversion Rating Curves
6	Cork Street Bridge Computations for 500-Year Flood
7	Bryant Mill Pond and Monarch Paper Mill Dams Analyses

I INTRODUCTION

This report summarizes the hydraulic studies undertaken to support detailed studies of approximately 4.5 miles of the Portage Creek in the City of Kalamazoo, Michigan. In addition, approximate studies were conducted for the various streams within the community. Bill Weaver served as Project Manager for this study.

The Portage Creek Basin area consists of approximately 48 square miles of which approximately 6.3 square miles are within the City of Kalamazoo and approximately 12.0 square miles are within the City of Portage. The areas outside these communities are basically rural while the areas within the communities are urbanized.

A portion of the Portage Creek, located in the vicinity of the Lovers Lane Bridges, was studied by the Soil Conservation Service (SCS) in 1978 (Reference 1). This study included approximately 0.7 miles of the Creek, located within the City of Kalamazoo, beginning just downstream of the Lovers Lane bridges and ending at Kilgore Road. The SCS study was utilized for this reach of the Portage Creek; therefore, hydraulic analyses were not necessary. For the remainder of the creek, beginning at the Portage Creek/Kalamazoo River confluence and ending downstream of Lovers Lane, a total of two dam sections, 34 bridge sections, and 30 valley sections were field surveyed by Wade, Trim & Associates, Inc. in November, 1979. These cross sections were supplemented by Abrams aerial elevation information, 2-foot contour maps and U.S.G.S. quadrangle maps of the area (References 2, 3, and 4).

Cross section locations are shown on Exhibit 1. Table 1 cross references section designations by showing the computer section number which corresponds to each cross section letter shown in Exhibit 1. Table 2 lists discharges which have been approved by the Michigan Department of Natural Resources (M.D.N.R.) for the Portage Creek.

TABLE 1

PORTAGE CREEK

CITY OF KALAMAZOO

CROSS REFERENCE INDEX

X-SECTION	ABRAMS/ WTA NO.	COMPUTER NO.	DESCRIPTION
A	18	0	Portage Creek Confluence with Kalamazoo River
B	19	229	D/S Face Michigan Avenue
C	19	323	U/S Face Michigan Avenue
D	21	989	D/S Face Railroad
E	21	1010	U/S Face Railroad
F	22	1580	D/S Face Railroad
G	23	1608	U/S Face Railroad
H	24	1950	D/S Face Railroad
I	25	1967	U/S Face Railroad
J	26	2040	D/S Face Railroad
K	27	2057	U/S Face Railroad
L	28	2340	D/S Face Railroad
M	29	2417	U/S Face Railroad
N	30	2789	D/S Face Pitcher Street
O	31	2864	U/S Face Pitcher Street
P	32	3314	D/S Face Gibson Street
Q	32	3412	U/S Face Gibson Street
R	35	3664	D/S Face Portage Street
S	35	3761	U/S Face Portage Street
T	37	4004	D/S Face Walnut Street
U	37	4082	U/S Face Walnut Street
V	38	4564	D/S Face Dutton Street
W	39	4621	U/S Face Dutton Street
X	41	4989	D/S Face Vine Street
Y	41	5059	U/S Face Vine Street
Z	43	5449	D/S Face Crosstown Parkway

TABLE 1

PORTAGE CREEK

CITY OF KALAMAZOO

CROSS REFERENCE INDEX

(Continued)

X-SECTION	ABRAMS/ WTA NO.	COMPUTER NO.	DESCRIPTION
AA	43	5532	U/S Face Crosstown Parkway
AB	44	5949	D/S Face Footbridge
AC	44	5972	U/S Face Footbridge
AD	45	6407	D/S Face Footbridge
AE	45	6423	U/S Face Footbridge
AF	47	6654	D/S Face Lake Street
AG	47	6689	U/S Face Lake Street
AH	48	7138	Valley Section
AI	50	7619	D/S Face Stockbridge Avenue
AJ	50	7691	U/S Face Stockbridge Avenue
AK	52	7938	D/S Face Railroad
AL	52	7952	U/S Face Railroad
AM	53	8515	Valley Section
AN	55	8944	D/S Face Reed Avenue
AO	55	9015	U/S Face Reed Avenue
AP	56	9215	D/S Face Structure
AQ	56	9297	U/S Face Structure
AR	57	9889	D/S Face Bryant Street
AS	57	9913	U/S Face Bryant Street
AT	58A	10329	D/S Face Railroad
AU	58A	10345	U/S Face Railroad
AV	58C	10394	D/S Face Railroad
AW	58C	10412	U/S Face Railroad
AX	59	10435	D/S Face Alcott Street
AY	59	10494	U/S Face Alcott Street
AZ	60	10507	D/S Face Dam

TABLE 1

PORTAGE CREEK

CITY OF KALAMAZOO

CROSS REFERENCE INDEX

(Continued)

X-SECTION	ABRAMS/ WTA NO.	COMPUTER NO.	DESCRIPTION
BA	-	10573	50-foot U/S of Dam
BB	61	11930	Valley Section
BC	62	13510	Valley Section
BD	-	14910	Valley Section
BE	63	16409	D/S Face Cork Street
BF	64	16501	U/S Face Cork Street
BG	65	16920	D/S Face Railroad
BH	65	16934	U/S Face Railroad
BI	66	17459	D/S Face Railroad
BJ	66	17478	U/S Face Railroad
BK	69	19300	Valley Section
BL	71	20255	D/S Face Railroad
BM	71	20265	U/S Face Railroad
BN	72	20850	Valley Section
BO	71	21460	D/S Face Railroad
BP	71	21470	U/S Face Railroad
BQ	-	15.0*	D/S Face Lovers Lane
BR	-	15.0*	U/S Face Lovers Lane
BS	-	15.4*	D/S Face Dam
BT	-	16.0*	D/S Face Driveway
BU	-	16.0*	U/S Face Driveway
BV	-	17.0*	D/S Face Driveway
BW	-	17.0*	U/S Face Driveway
BX	-	17.4*	Valley Section
BY	-	18.0*	D/S Face Lovers Lane
BZ	-	18.0*	U/S Face Lovers Lane
CA	-	19.0*	D/S Face Kilgore Road
CB	-	19.0*	U/S Face Kilgore Road

*SCS Study (Reference 1)

TABLE 2

PORTAGE CREEK

CITY OF KALAMAZOO

FLOOD FLOW FREQUENCY DATA

LOCATION	10 YEAR CFS	50 YEAR CFS	100 YEAR CFS	500 YEAR CFS
Main Branch and West Fork Confluence to D/S of Monarch Paper Mill Dam	190	395	485	705
D/S of Monarch Paper Mill Dam to U/S of Axtell Creek	240	405	480	760
D/S of Axtell Creek to Portage Street	425	670	790	1065
Portage Street to Kalamazoo River	535	815	950	1215

II METHOD OF ANALYSIS

The HEC-2 backwater computer program was utilized in the development of water surface profiles (Reference 5). Table 3 presents water surface elevations at selected locations for the four storms (10, 50, 100 and 500-year) analyzed in this report. HEC-2 printouts including computer cross section plots are presented as Exhibit 2. (Exhibit 2 is contained in the 11" x 15" folder enclosed with this report.) Water surface profiles resulting from the backwater analyses are presented as Exhibit 3.

TABLE 3

PORTAGE CREEK

CITY OF KALAMAZOO

FLOOD ELEVATIONS*

LOCATION	FREQUENCY 10 YEAR	50 YEAR	100 YEAR	500 YEAR
U/S of Pitcher Street	761.4	763.4	764.1	764.7
U/S of Portage Street	763.0	764.2	764.6	765.2
U/S of Crosstown Parkway	763.3	764.5	764.9	765.5
U/S of Penn Central Railroad	763.6	764.8	765.2	765.9
U/S of Cork Street	796.6	800.0	801.9	802.6
U/S of Kilgore Road	818.8	819.9	820.3	821.1

*All elevations are based upon National Geodetic Vertical Datum.

III VARIABLES AND COEFFICIENTS

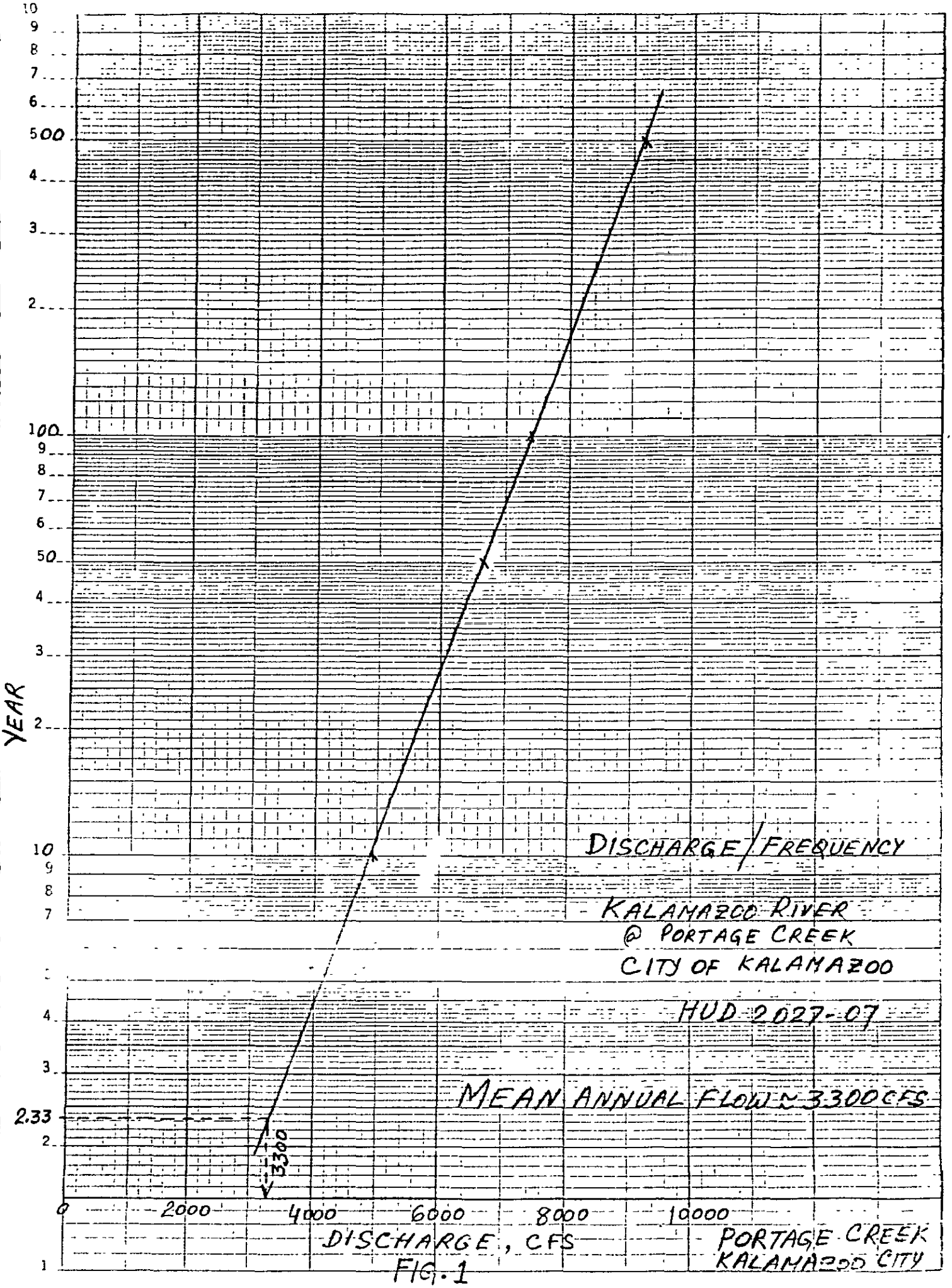
Roughness coefficients (Mannings "n") were estimated from field inspections, quad maps, and photographs. Typical roughness values for the main channel and overbank areas of Portage Creek are .02 to .035 and .06 to .10, respectively, for all floods. These values are indicative of summer month conditions and are consistent with values recommended and used in engineering practice (Reference 6). Contraction and expansion coefficients were selected as 0.3 and 0.5, respectively, at bridge sections and 0.1 and 0.3, respectively, for gradual channel transitions. Bridge notes and sketches along with loss coefficient computations are included in Exhibit 4.

IV HIGH WATER MARKS

There are no documented high water marks for the Portage Creek.

V STARTING CONDITIONS

The mean annual flood elevation of the Kalamazoo River (Reference 7), located at its confluence with Portage Creek, was utilized for the starting water surface elevation for the 10, 50, 100, and 500-year floods. As shown in Figure 1, the mean annual flood discharge of the Kalamazoo River, located at its confluence with Portage Creek, is approximately 3,300 cfs which corresponds to a frequency of 2.33 years. This results in a mean annual flood elevation of 757.4 as illustrated in Figure 2.



YEAR
10
9
8
7
6
500
4
3
2
100
9
8
7
6
50
4
3
2
10
9
8
7
4
3
2.33
2
1
0
2000
4000
6000
8000
10000
DISCHARGE, CFS
3300
DISCHARGE/FREQUENCY
KALAMAZOO RIVER
@ PORTAGE CREEK
CITY OF KALAMAZOO
HUD 2027-07
MEAN ANNUAL FLOW ≈ 3300 CFS
PORTAGE CREEK
KALAMAZOO CITY

FIG. 1

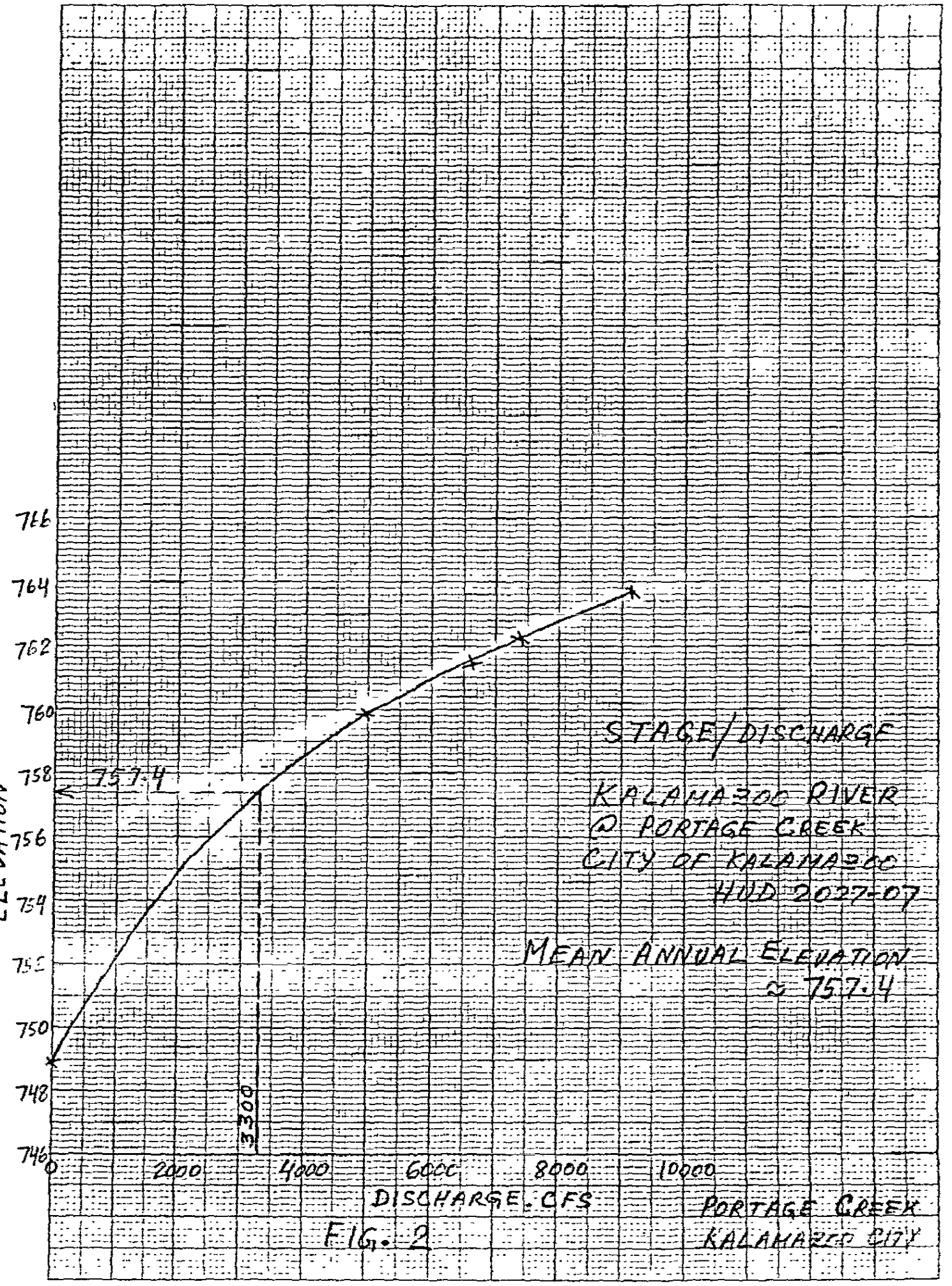

46 1320
10 X 10 TO ½ INCH 7 X 10 INCHES
KEUFFEL & ESSER CO MADE IN USA
ELEVATION
766
764
762
760
758
756
754
752
750
748
746
757.4
3300
0
2000
4000
6000
8000
10000
DISCHARGE, CFS
STAGE/DISCHARGE
KALAMAZOO RIVER
@ PORTAGE CREEK
CITY OF KALAMAZOO
HUD 2027-07
MEAN ANNUAL ELEVATION
≈ 757.4
PORTAGE CREEK
KALAMAZOO CITY

FIG. 2

VI SPECIAL PROBLEMS

A. DIVIDED FLOW

As shown in Exhibit 1, there is divided flow in the Creek between Sections E and P. Since the HEC-2 computer program is not set up to handle the divided flow in one step, the following analysis was performed:

1. Stage/discharge rating curves were developed separately for flow in the channel and overland flow.

2. The two rating curves were then combined, at the upstream end of the diversion, to form a rating curve for the total flow versus channel water surface elevation. This information was utilized to distribute the total flow between overland flow and channel flow.

The rating curves for the four storms are presented as Exhibit 5. Table 4 lists the flow distribution between channel and overland flow for the diversion.

B. EXTENSIVE OVERBANK FLOODING

The overbank areas of the Portage Creek, located between Pitcher Street and the Penn Central Railroad, are relatively flat and will experience extensive inundation during major floods. These areas were modelled by use of "NH" cards to eliminate ineffective flow areas caused by structures and other obstructions. These ineffective flow areas were determined from aerial topographic data (Reference 2).

TABLE 4

PORTAGE CREEK

CITY OF KALAMAZOO

DISTRIBUTION OF DIVIDED FLOW

LOCATION	FREQUENCY 10 YEAR CFS	50 YEAR CFS	100 YEAR CFS	500 YEAR CFS
Diversion Between Sections E and P				
Overland Flow	0	90	150	260
Channel Flow	535	725	800	955

C. CORK ST. BRIDGE

The special bridge routine was set-up for the Cork St. Bridge initially; however, the structure converted to low flow for the 10, 50, and 100 year floods. Therefore, to obtain better accuracy, the normal bridge routine was utilized for these floods. However, the normal bridge routine did not give accurate results for the 500 year flood because the flood elevation surpassed the low chord elevation. Therefore, as presented in Exhibit 6, hand computations were performed, for pressure flow, to determine the flood elevation for the 500 year flood. The computed elevation was incorporated into the computer model by use of an X5 card.

D. BRYANT MILL POND AND MONARCH PAPER MILL DAMS

Survey data along with National Dam Safety Reports, published by the U.S. Army Corps of Engineers (Reference 8), were utilized in the analyses of the Bryant Mill Pond and Monarch Paper Mill Dams. The Bureau of Public Roads Charts and other references (9, 10 and 11) were utilized in the development of stage/discharge rating curves for these structures. This information was utilized in the determination of water surface elevations on the upstream side of the dams for the 10, 50, 100 and 500 year floods. Detailed computations are presented as Exhibit 7.

E. SCS FLOOD HAZARD ANALYSES REPORT FOR PORTAGE CREEK

As mentioned earlier, the SCS Report (Reference 1) covers approximately 0.7 miles of the Creek within the City of Kalamazoo, beginning just downstream of Lovers Lane and ending at Kilgore Road. For this reach of the creek, elevations for the 10, 50, 100 and 500 year floods, along with 100 and 500 year flood boundary delineations, were extracted from the SCS Report.

The 100 year flood hazard area for this reach of the Portage Creek is well defined and inundation of overbank areas is not extensive. Therefore, the floodway was set at the 100 year flood hazard limits. However, ineffective flow areas at all bridges were deleted from the floodway based upon a 1:1 contraction ratio and 4:1 expansion ratio to provide a smooth transition between bridge and valley sections.

VII GENERAL

Computed water surface elevations were developed to an accuracy of 0.5 feet for floods of the selected recurrence intervals.

All elevations are referenced to the U.S. Geological Survey (U.S.G.S.) Datum. This datum is equivalent to the National Geodetic Vertical Datum (N.G.V.D.).

The hydraulic analyses for this study were based upon the effects of flow unobstructed by ice or debris. The flood elevations are considered valid only if hydraulic structures, in general, remain unobstructed and do not fail.

VIII APPROXIMATE STUDIES

A. DAVIS CREEK

This stream, located in the southwestern portion of the community, was studied by approximate methods for a length of about 2 1/2 miles. The following information and methodologies were utilized for the determination of the 100-year flood hazard limits: 1) detailed study for Davis Creek in Kalamazoo Township (Reference 12), 2) normal depth analyses, and 3) inspection of topographic maps.

Results of this approximate analysis indicated that the flood plain of the Davis Creek is well defined, and inundation of overbank areas, caused by the 100-year flood, would be minimal.

B. WEST FORK OF PORTAGE CREEK

This stream was studied in detail as part of the Soil Conservation Service (SCS), Flood Hazard Information Report for the West Fork of Portage Creek (Reference 1). The 100-year flood limits presented in the SCS report were utilized for approximate studies on about 1 1/4 miles of the stream, located within the City of Kalamazoo.

C. ASYLUM LAKE AND VICINITY

Asylum Lake and other lakes and depressions, located within the drainage basin of the West Branch of Portage Creek, were studied by approximate methods. These areas have no major inlets or outlets and will act as storage basins during a 100-year flood. Approximate analyses were performed for Asylum Lake to determine the 100-year flood limits which would be attained if a 100-year rainfall, with a 20% allowance for infiltration, were contained within Asylum Lake.

The 100-year flood limits for the depression areas, located between Asylum Lake and the West Branch of Portage Creek, were interpolated based upon inspection of topographic maps.

REFERENCES

1. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Analyses, Portage Creek, Kalamazoo County, Michigan, June, 1978.

2. Abrams Aerial Survey Corporation, Aerial Cross Section Survey for Portage Creek in Kalamazoo Township, 1979.

3. U.S. Department of the Interior, Geological Survey, Topographical Maps - Kalamazoo Quadrangle, Kalamazoo County, Michigan, 7.5 Minute Series, Photo Revised, 1973.

4. U.S. Department of the Interior, Geological Survey, Topographical Maps - Portage Quadrangle, Kalamazoo County, Michigan, 7.5 Minute Series, Photo Revised, 1973.

5. U.S. Department of the Army, Corps of Engineers, HEC-2 Water Surface Profiles - Users Manual, Davis, California, 1979.

6. Chow, Ven Te, Open Channel Hydraulics, McGraw Hill, Inc., New York, 1959.

7. Wade, Trim & Associates, Inc., Hydraulic Analysis of Kalamazoo River Basin, City of Kalamazoo and Comstock Township, Taylor, Michigan, March, 1980.

8. U.S. Department of the Army, Corps of Engineers, National Dam Safety Program Inspection Reports, Portage Creek, Monarch Paper Mill Dam and Bryant Mill Dam, Inventory Numbers 145 and 135, Detroit, Michigan, August, 1979.

9. Bureau of Public Roads, Hydraulic Charts for the Selection of Highway Culverts, Hydraulic Engineering Circular No. 5, Washington, D.C., January, 1963.

10. King Horace W. and Brater Ernest F., Handbook of Hydraulics, 5th Edition, McGraw Hill, Inc., New York, 1963.

11. Linsley, Ray K. and Franzini Joseph B., Water-Resources Engineering, 2nd Edition, McGraw Hill, Inc., New York, 1972.

12. Commonwealth Associates, Inc., Flood Insurance Study for Davis Creek (Preliminary), Kalamazoo Township, Jackson, Michigan, 1981.

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 1

Field Cross Section Location and

100-Year Flood Plain - Floodway Map

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 2

Computer Printouts

HEC-2 Backwater Analysis with

Cross Section Plots (See Separate Folder)

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 3

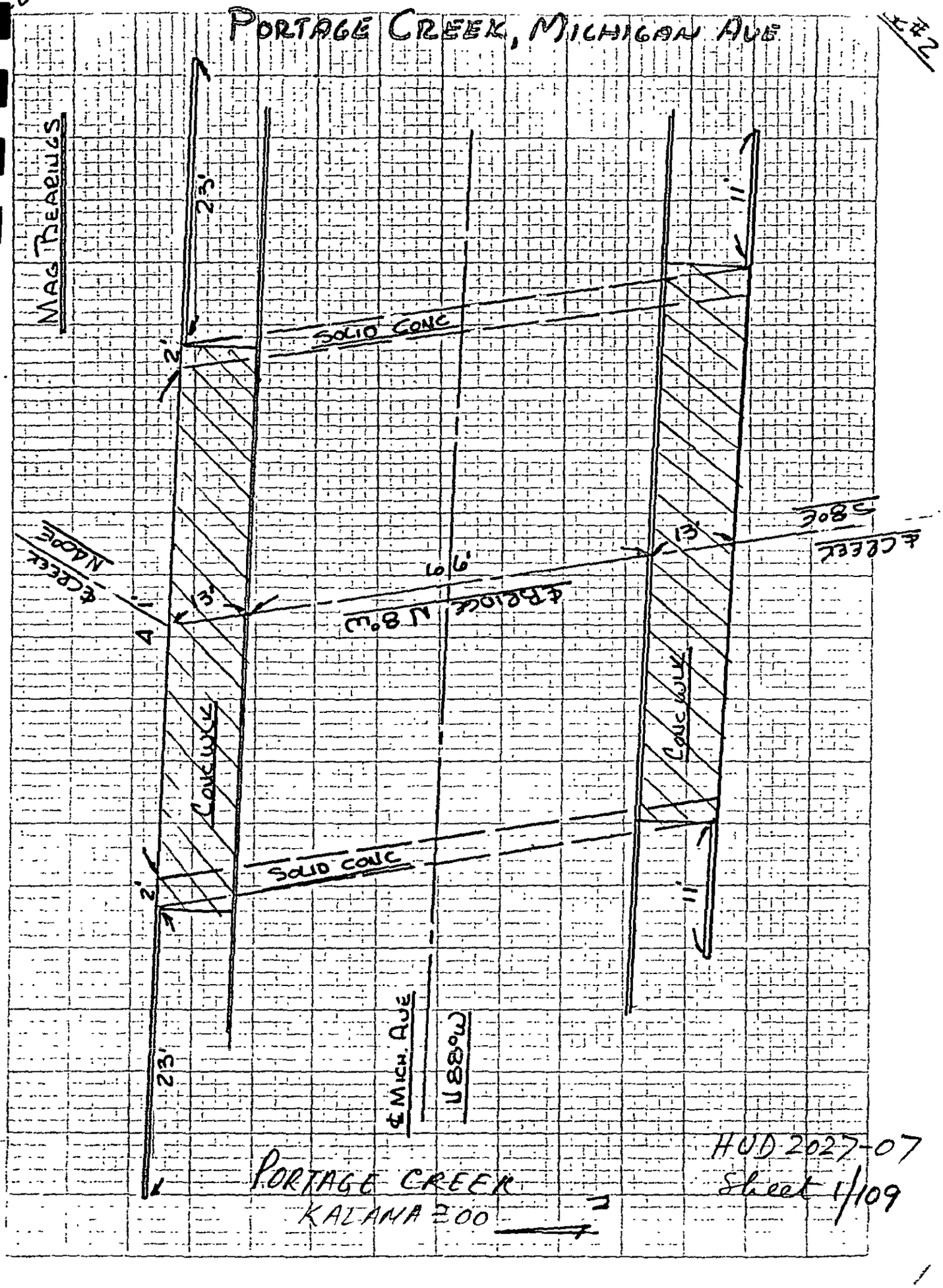
Water Surface Profiles

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

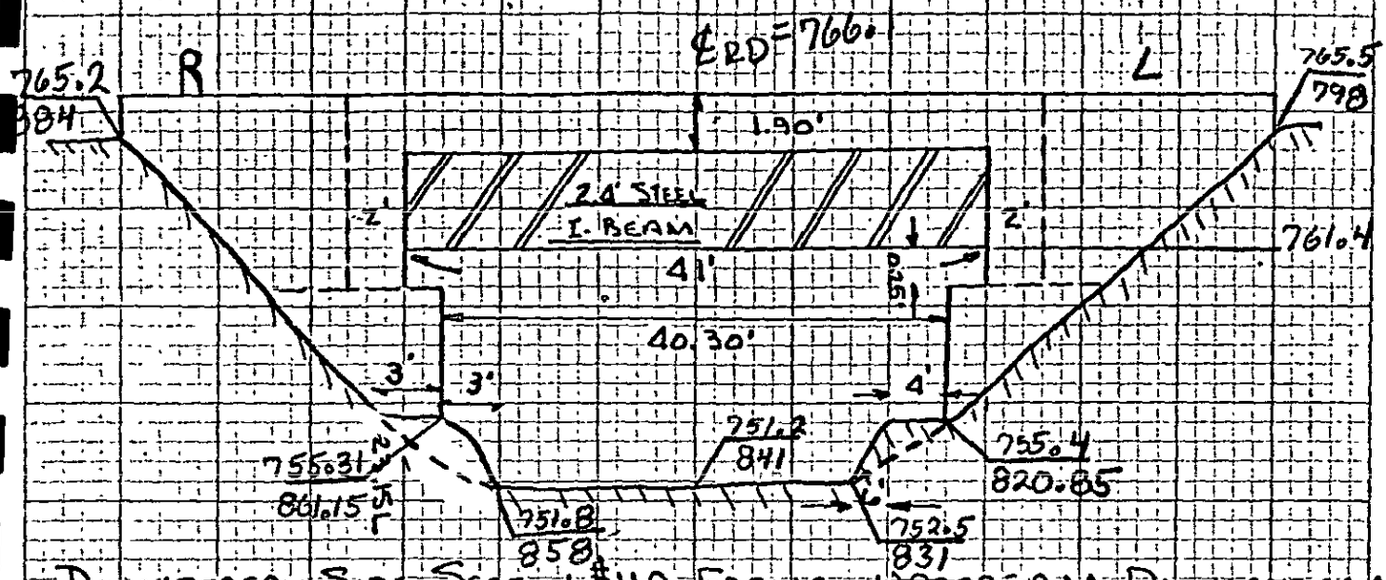
EXHIBIT 4

Bridge Notes and Sketches

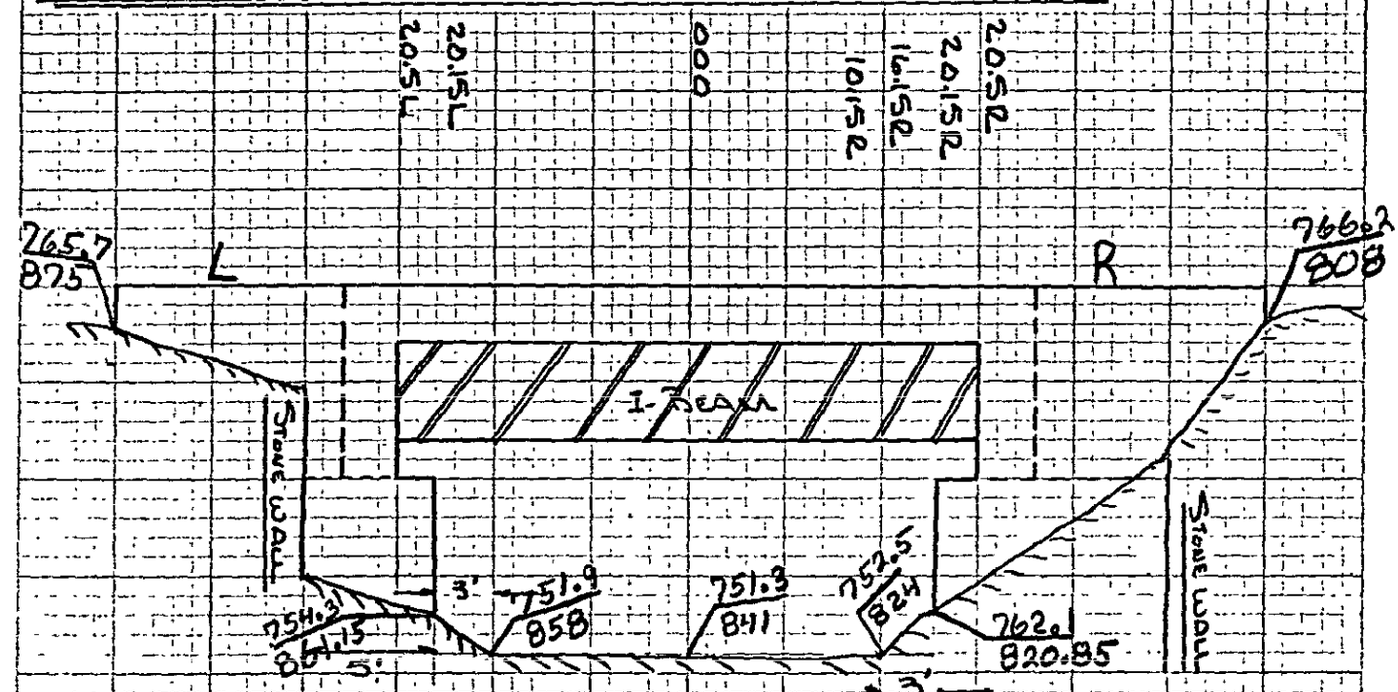


CROSS SECTION #11A PORTAGE CREEK @ MICH AVE

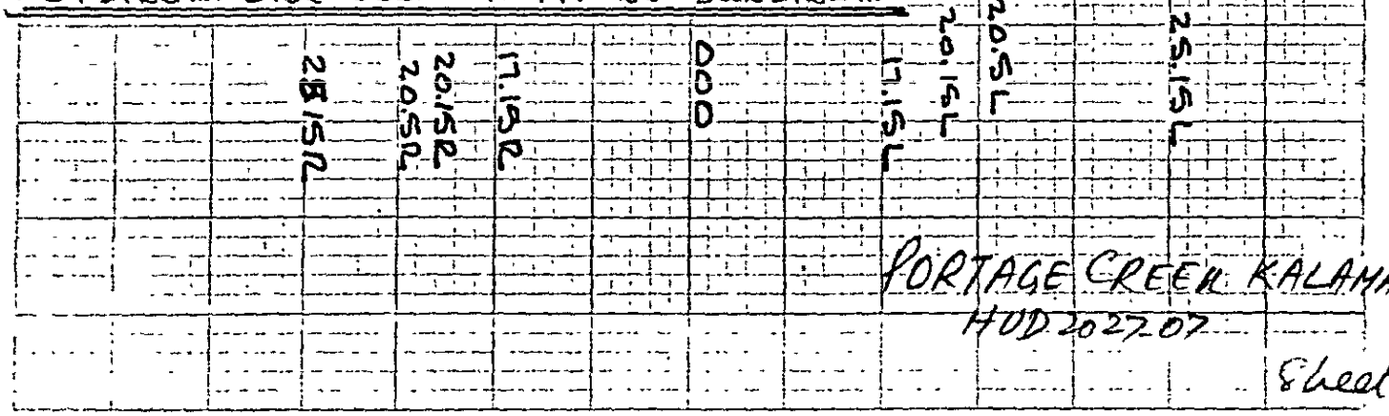
Cross-Sec. #11A Portage Creek At Mich Ave



Downstream Side Section #11A Facing Upstream Downstream

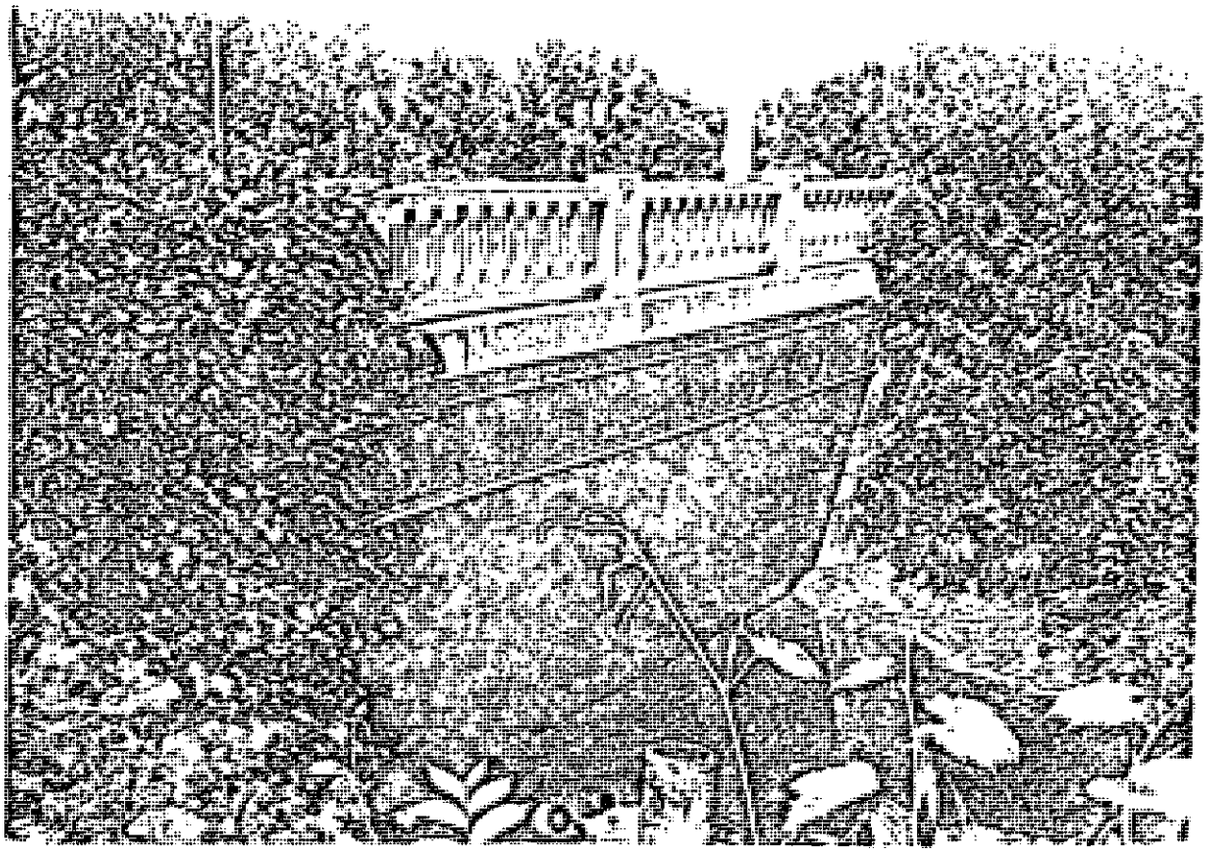


Upstream Side Sec. #11A Facing Downstream



Portage Creek Kalamazoo
HUD 202-07

Sheet 2/10



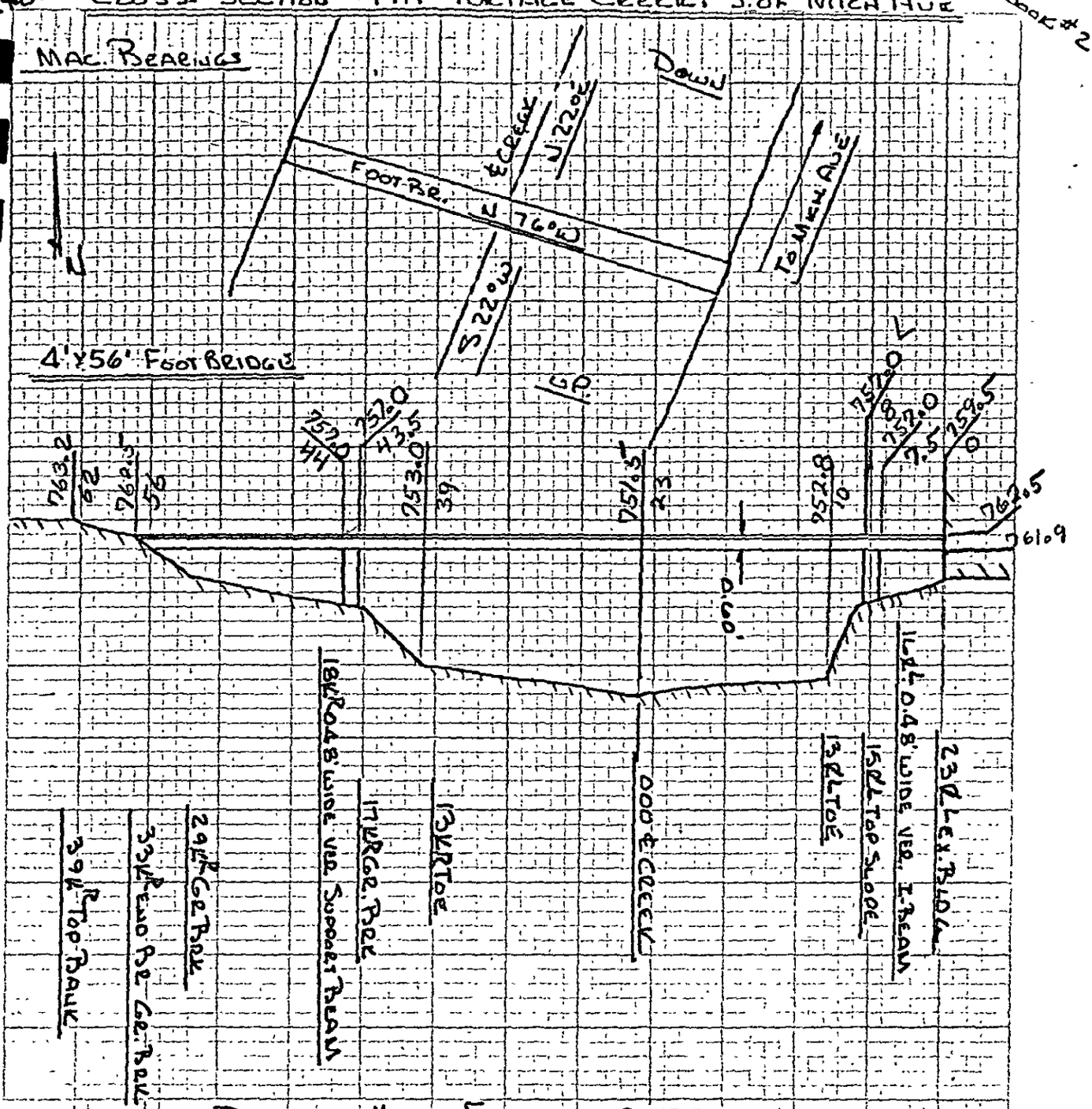
PORTAGE CREEK AT E. MICH AVE
UPSTREAM END CROSS SECTION #11A

PORTAGE CREEK, KALAMAZOO

HUD 2027-07

Cross-Section #19A Portage Creek, S. of Mich Ave

Book #2

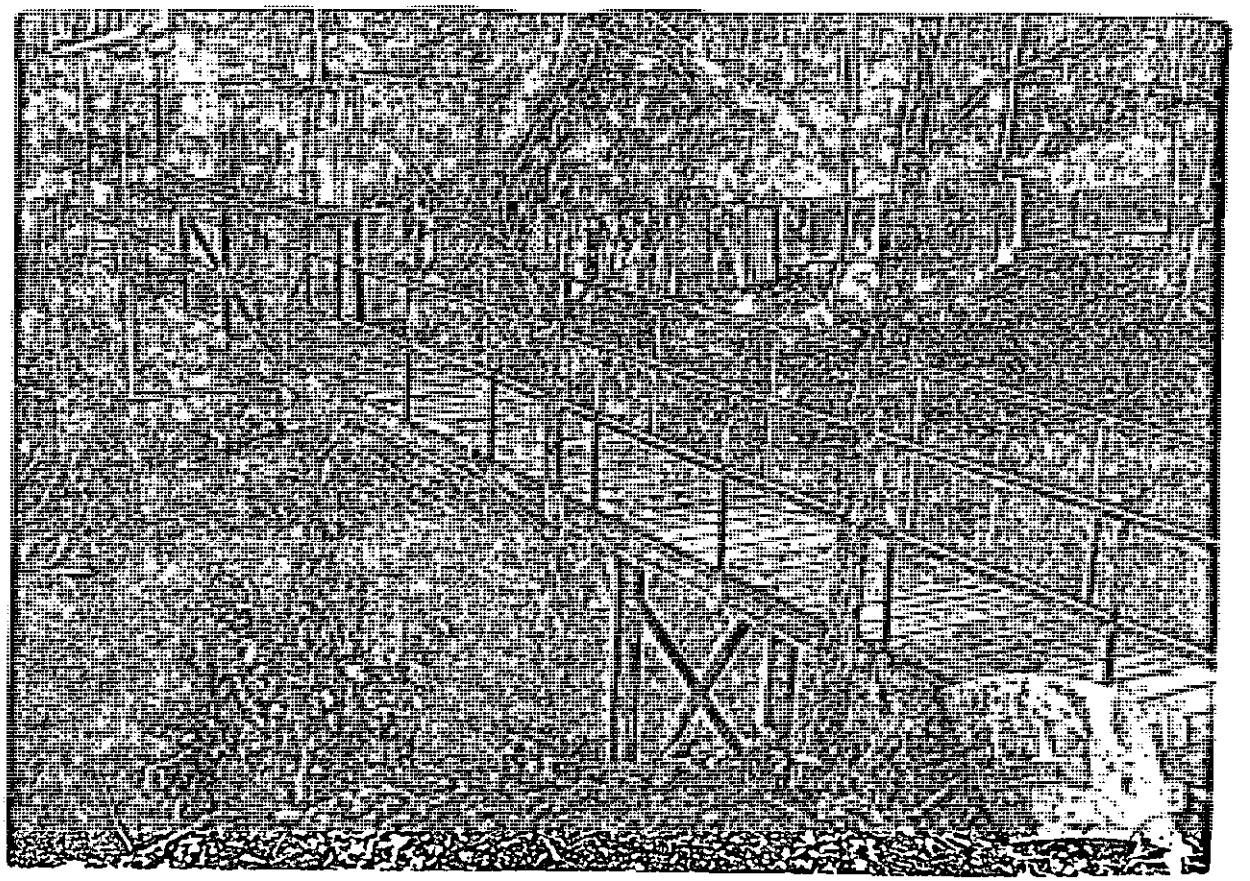


Downstr. View Facing Upstream

R & L Offsets From ℄ Creek Facing ~~Upstream~~ Downstream

FOOT BRIDGE (Computer Sec. 669)

PORTAGE CREEK KALAMAZOO
HUD 2027-07
Sheet 4/16



Cross Section #19A - Portage Creek

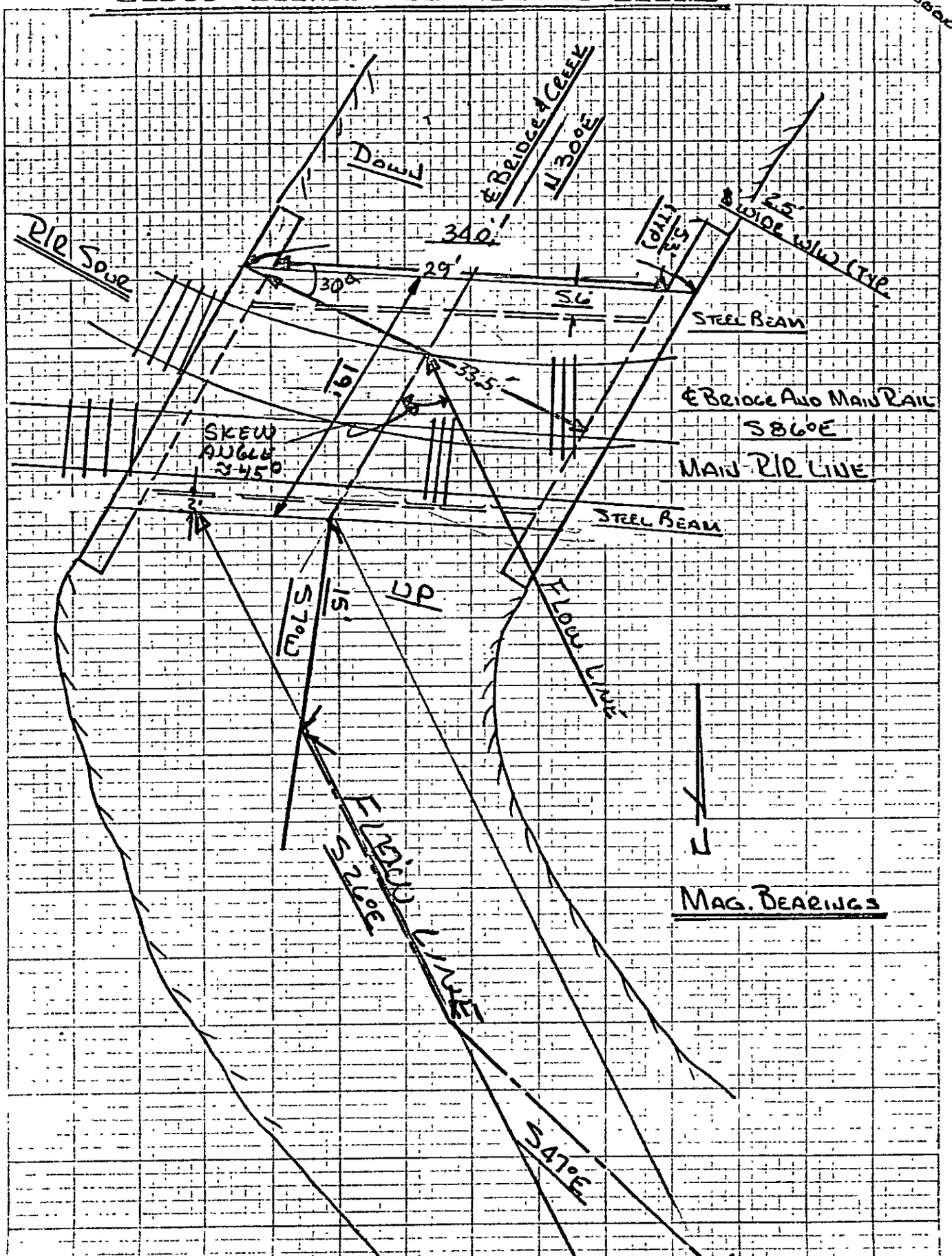
FOOT BRIDGE (Computer see. 669)

PORTAGE CREEK, KALAMAZOO

HUD 2027-07

Cross-Section #20 Portage Creek

Book #2



First Railroad Bridge (Computer Sec. 990)

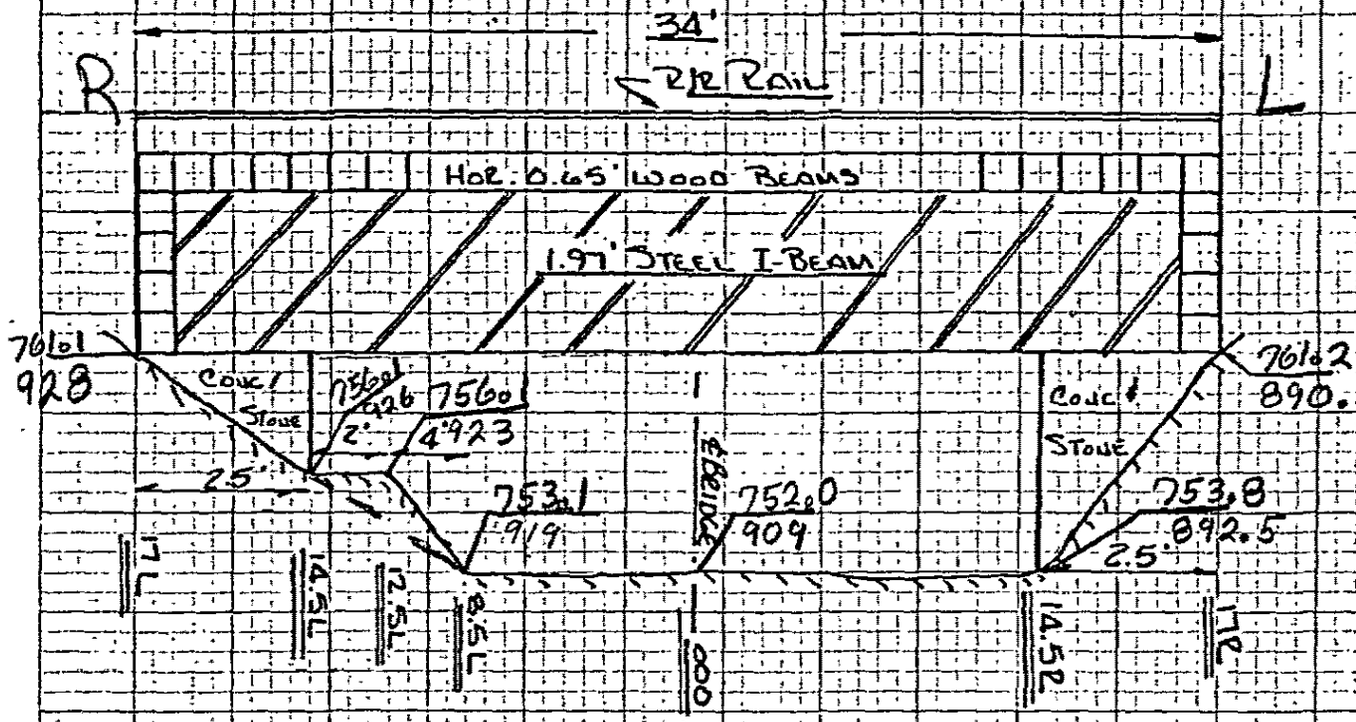
Portage Creek, Kalamazoo

HUD 2027-07

Sheet 6/109

HUD 2027-05 R&L OFFSETS FROM ℄ BR. FAC. UPSTR. OOK #2

CROSS-SECTION #20 PORTAGE CREEK



DOWNSTR END FACING UPSTR.

UPSTR END SAME WITH THESE EXCEPTIONS

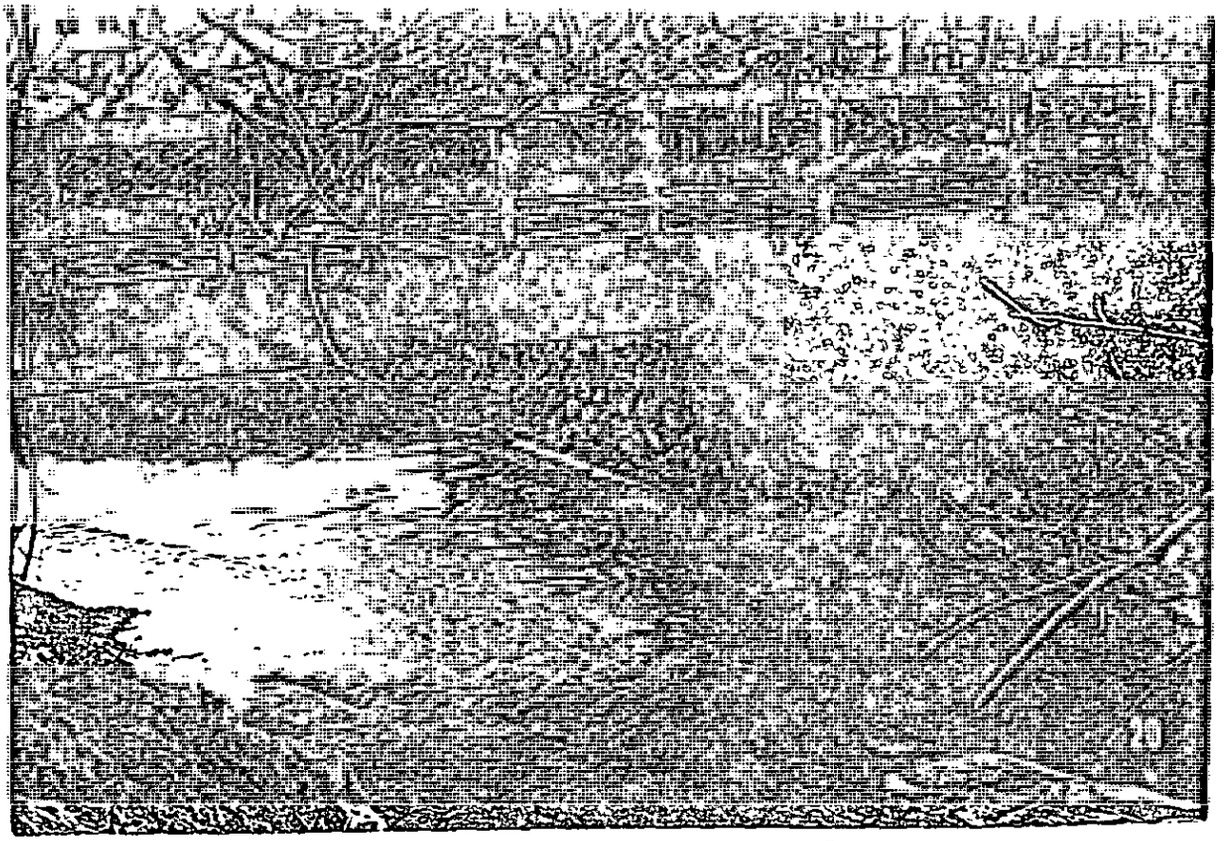
14.5L CR. BRK
11.5L L. TOE

UPSTREAM SECTION—USED DOWNSTREAM SECTION AND SKEWED AT 45°

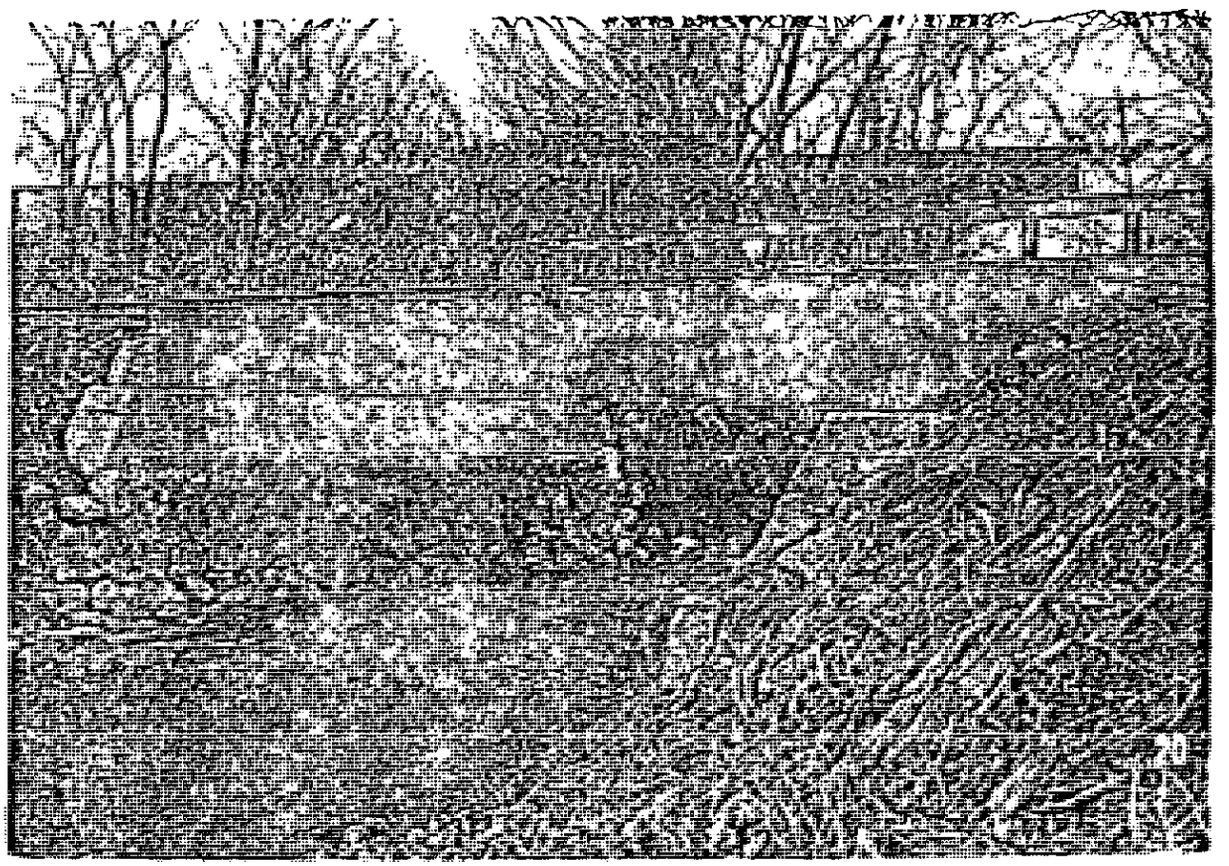
STA		STA SKEWED
928		923
925.5	R. BANK	921
923		919
919		916
909	℄	909
892.5	L. BANK	897
890		895

FIRST RAILROAD BRIDGE (Computer Sec. 990)
PORTAGE CREEK, KALAMAZOO
HUD 2027-07

Sheet 7/109



DOWNSTR. VIEW CROSS-SEC. #20 PORTAGE CREEK



UPSTR VIEW SECTION 20

HUD 2027-07

FIRST RAILROAD BRIDGE (COMPUTER SEC. 990)
PORTAGE CREEK, KALAMAZOO

Bridge Location: 2ND RAILROAD BR. STA. 16+08

Bridge Losses - SB Card 1580

REFERENCE

1. XK (Pier Shape Coefficient) 1.05 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk, Σk = $k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = 6.7×11×2 = 147 Wp = 70.8

$R = A/wp$ 147/70.8 $R^{4/3}$ = 2.65 L = 28

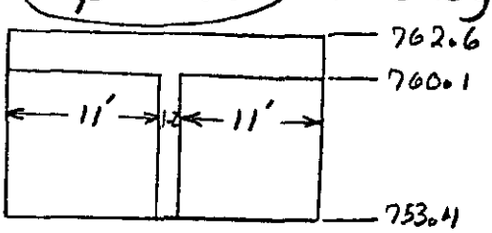
n (composite) =

$K_f = 29.1 \times (0.02)^2 \times 28 / 2.65 = 0.12$

K_e = 0.7 — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 43

K_p = 0 if bridge has no intermediate piers

(K_p = 0.05) if bridge has intermediate piers — HEC-2 manual



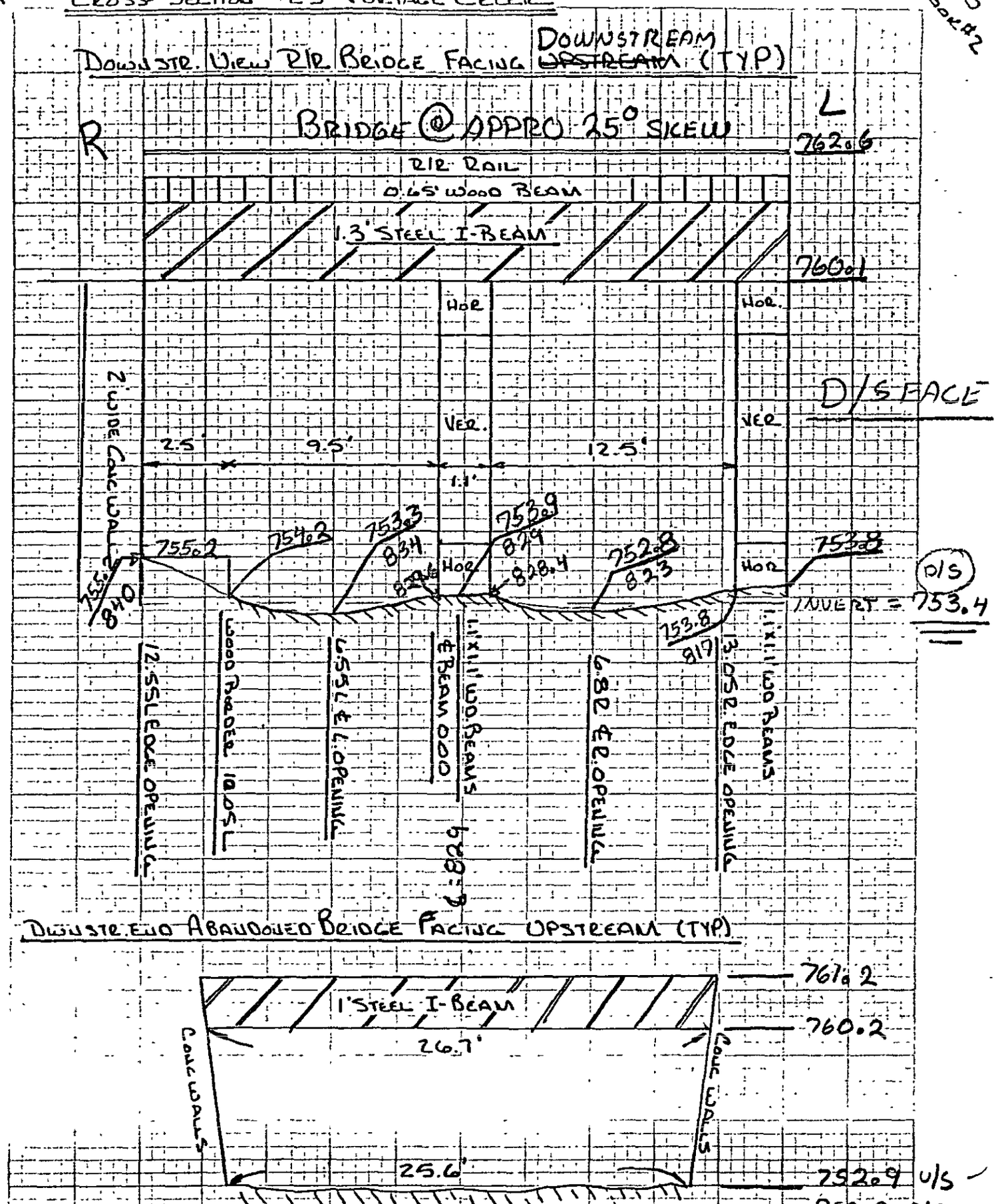
2. XKOR = 1 + 0.12 + 0.7 + .05 = 1.87
3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0. (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 23.2
6. BWP = total width of obstruction = 1.2 — field data
7. BAREA = bridge opening inc. piers = 147.
8. SS = side slope = 0.
(horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 753.4
(0 if equal to minimum elevation in previous x-sect.)
10. ELCHD = Elevation of channel invert D/S side = 753.3
(0 if equal to minimum elevation in previous x-sect.)

Sheet 9/109

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner Project Suffix
PORTAGE CREEK	DRB		___ OF ___	HOD •2027• 07
	DATE 1/80	DATE		

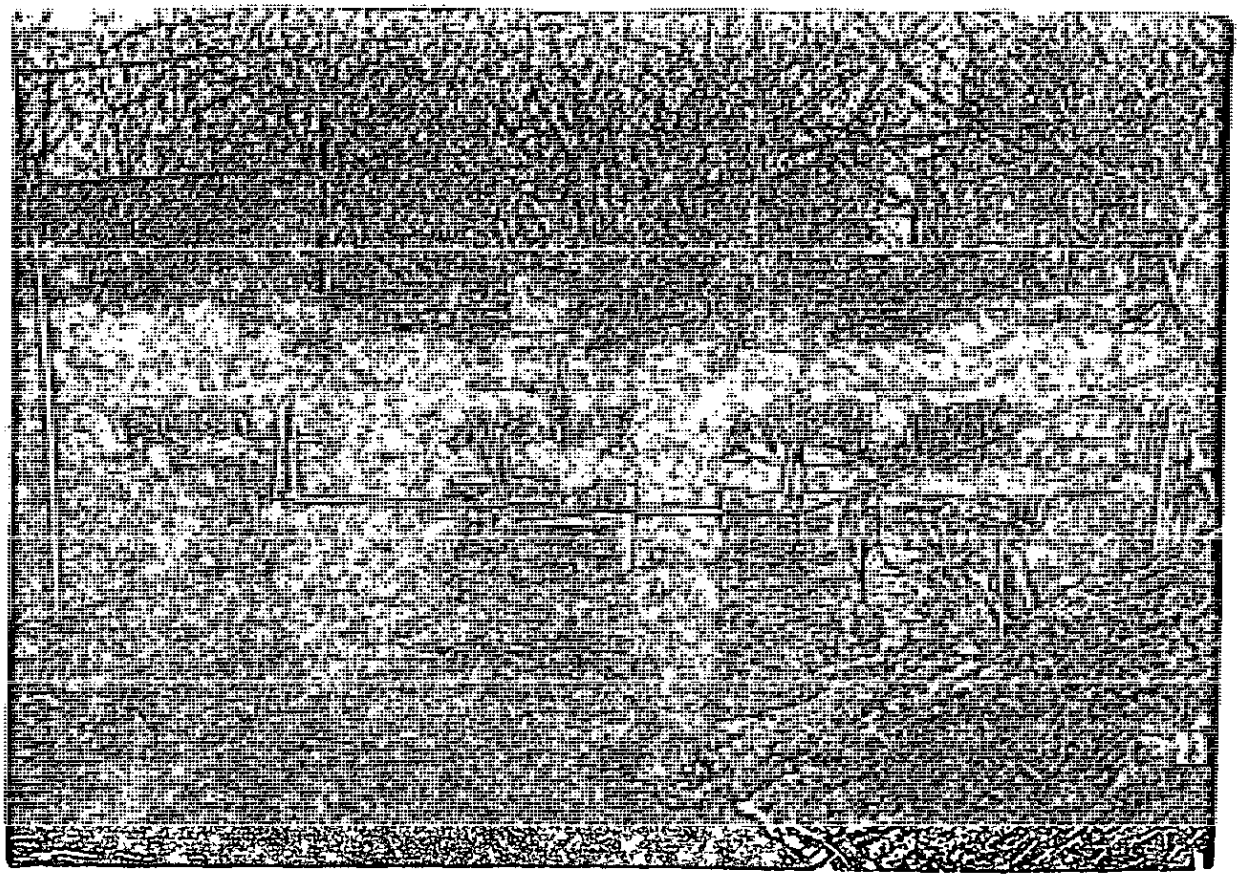
HUD 2027-07

Cross Section #23 Portage Creek

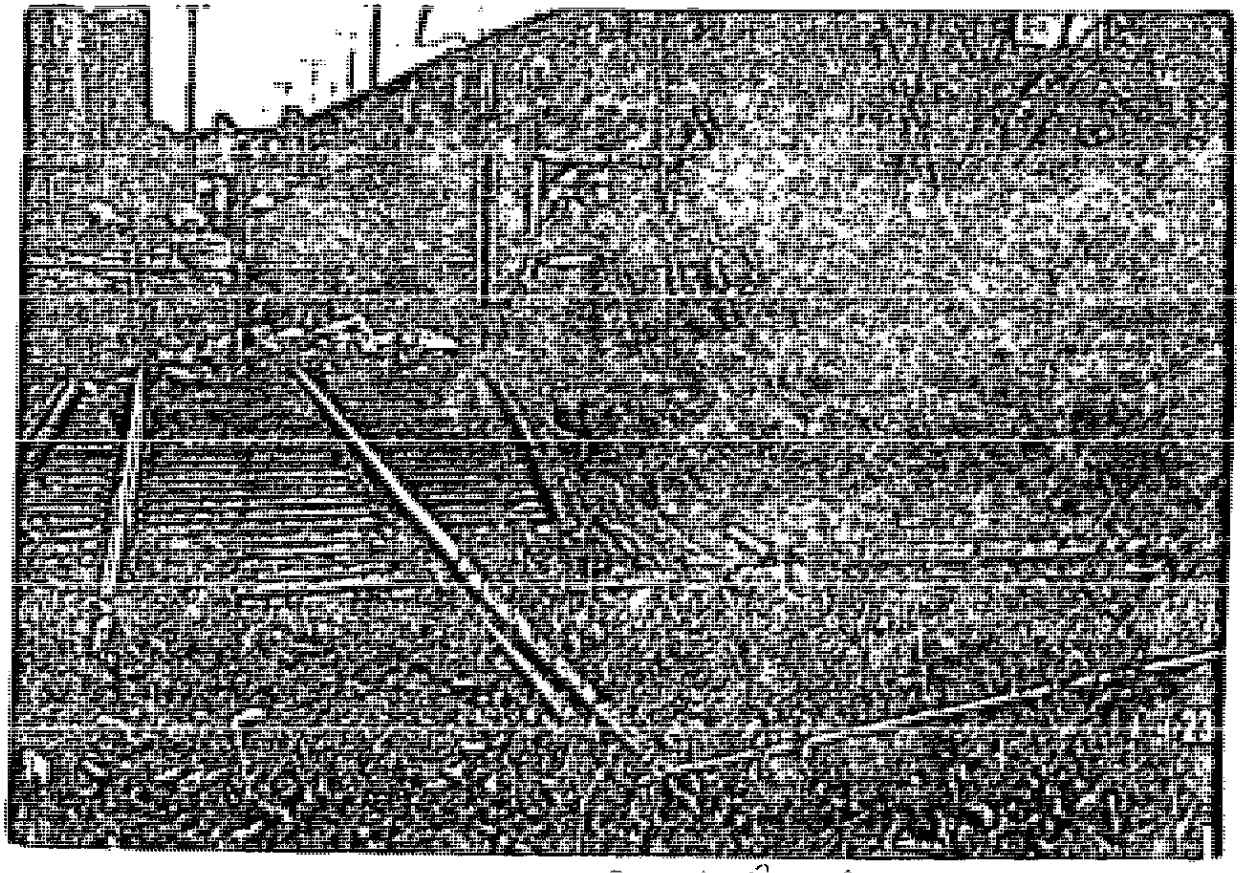


Second R.R. Bridge (Computer sees 1580–1608)

Sheet 10/109

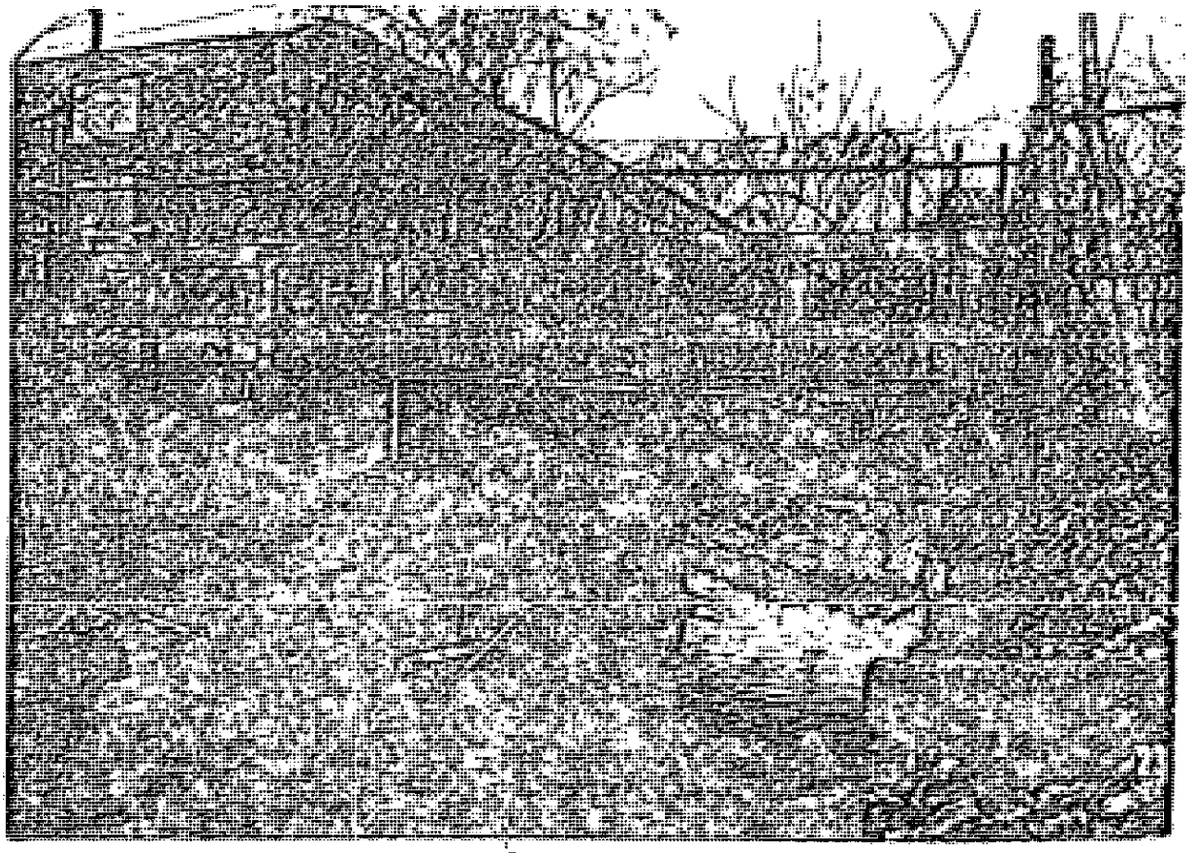


UPSTR. VIEW SEC 23 PORTAGE CREEK

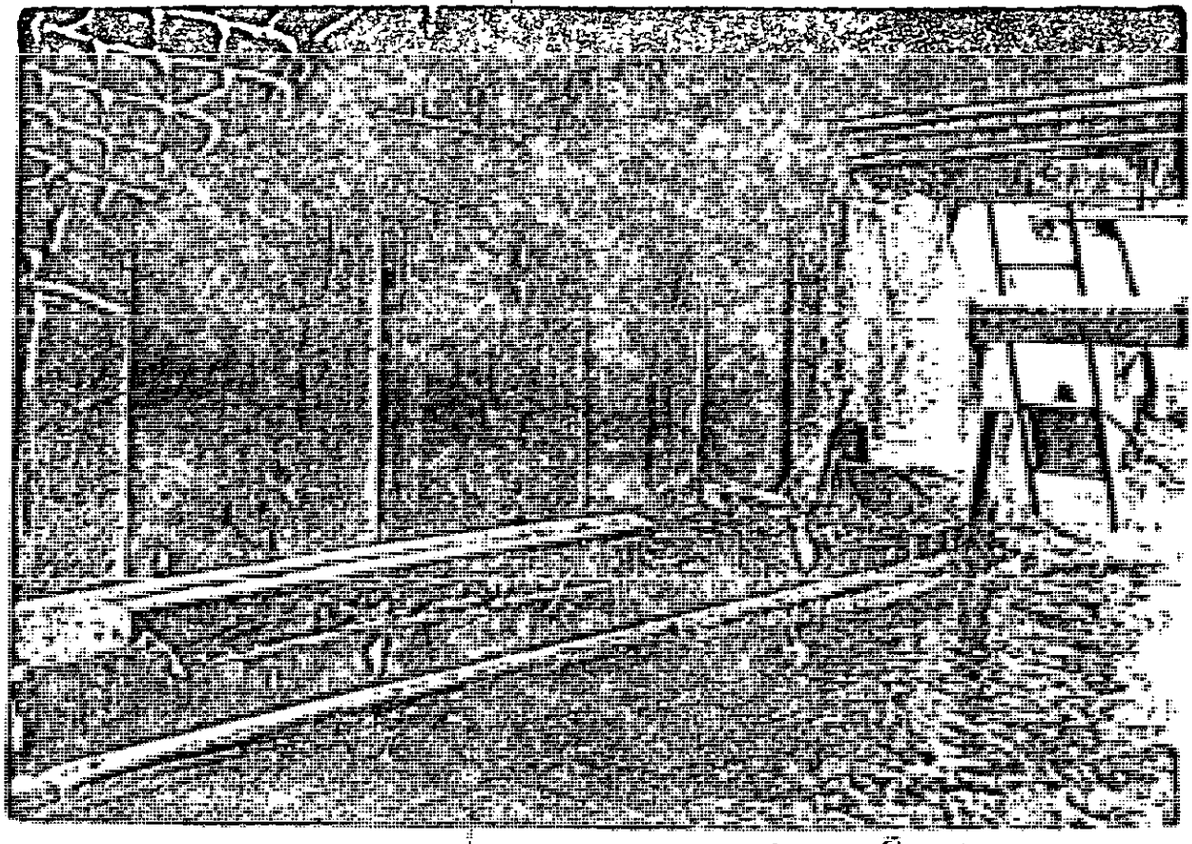


TOP VIEW SEC 23 2nd Railroad Bridge

HUD 2007-07 Chart 11 [illegible]



DOWNSTR. SEC. ~~20~~ 23 PORTAGE CREEK



L SIDE RR BRIDGE SEC 23 2nd Railroad Bridge

HUD 2007-07 Sheet 12/109

Bridge Location : 3RD R.R. BRIDGE STA. 19+67
Bridge Losses - SB Card 19+50

REFERENCE

1. XK (Pier Shape Coefficient): 0.0 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk, $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge :

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

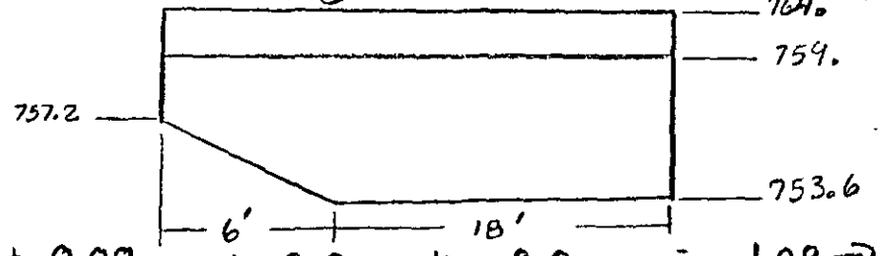
Area = = 115 Wp = 60
R = A/wp 115/60 $R^{4/3}$ = 2.38 L = 17
n (composite) =

$K_f = 29.1 \times (0.02)^2 \times 17 / 2.38 = 0.08$

K_e = 0.2 — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 43

(K_p = 0) if bridge has no intermediate piers

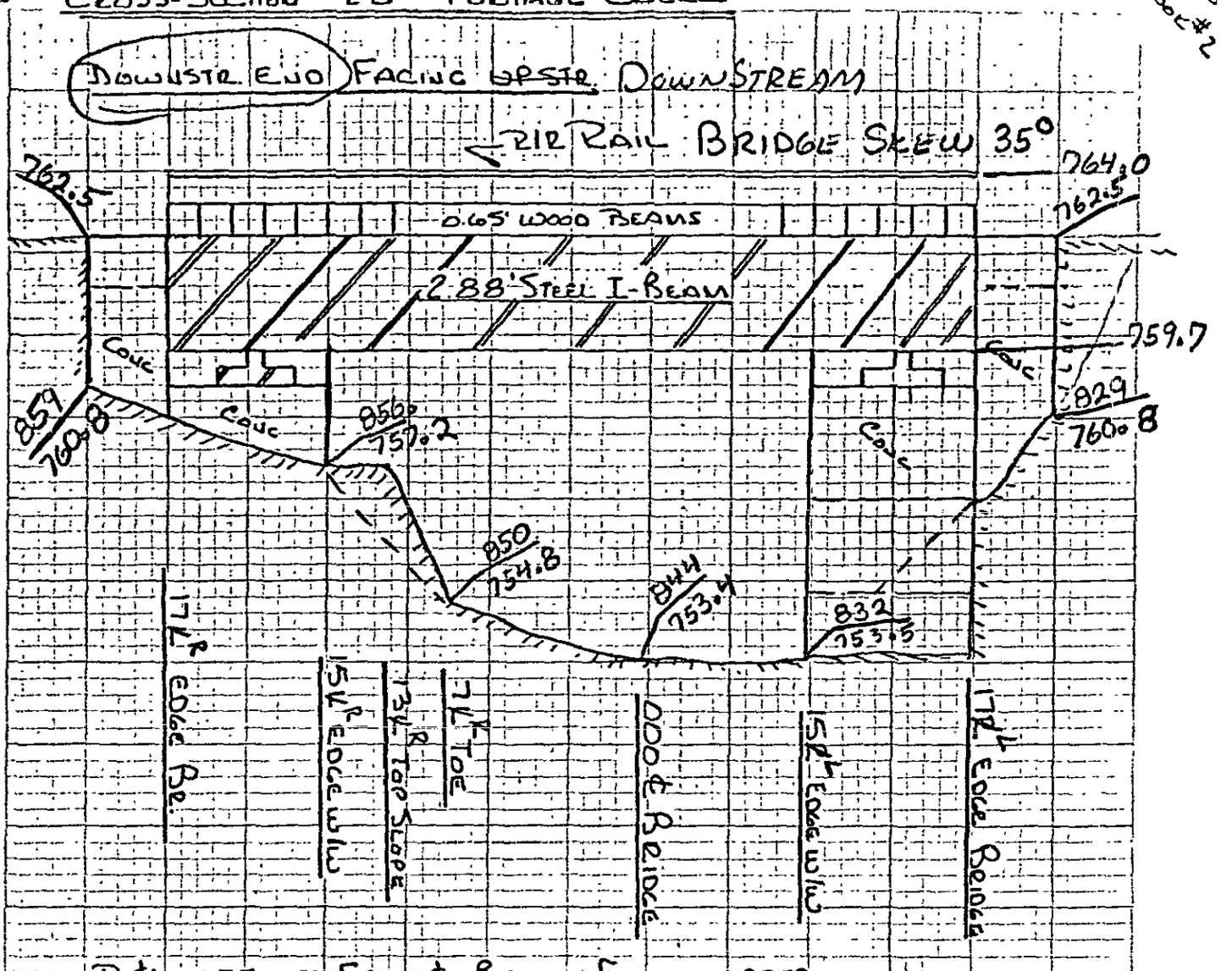
K_p = 0.05 if bridge has no intermediate piers — HEC-2 manual



2. XKOR = 1 + 0.08 + 0.2 + 0.0 = 1.28 ⇒ 1.5
3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0. (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 24.
6. BWP = total width of obstruction = 0.0 — field data
7. BAREA = bridge opening inc. piers = 115
8. SS = side slope = 0.0 (horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 754.2 (0 if equal to minimum elevation in previous X-sect.) — Sheet 13/109
10. ELCHD = Elevation of channel invert D/S side = 754.2 (0 if equal to minimum elevation in previous X-sect.)

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner Project Suffix
PORTAGE CR	DRB		___ OF ___	HOD 2027 07
	DATE 2/80	DATE		

Cross-Section #25 Portage Creek



R & L Offsets From ℄ Bridge Facing Upstr.

Upstream End Same Structure Except Both Toes

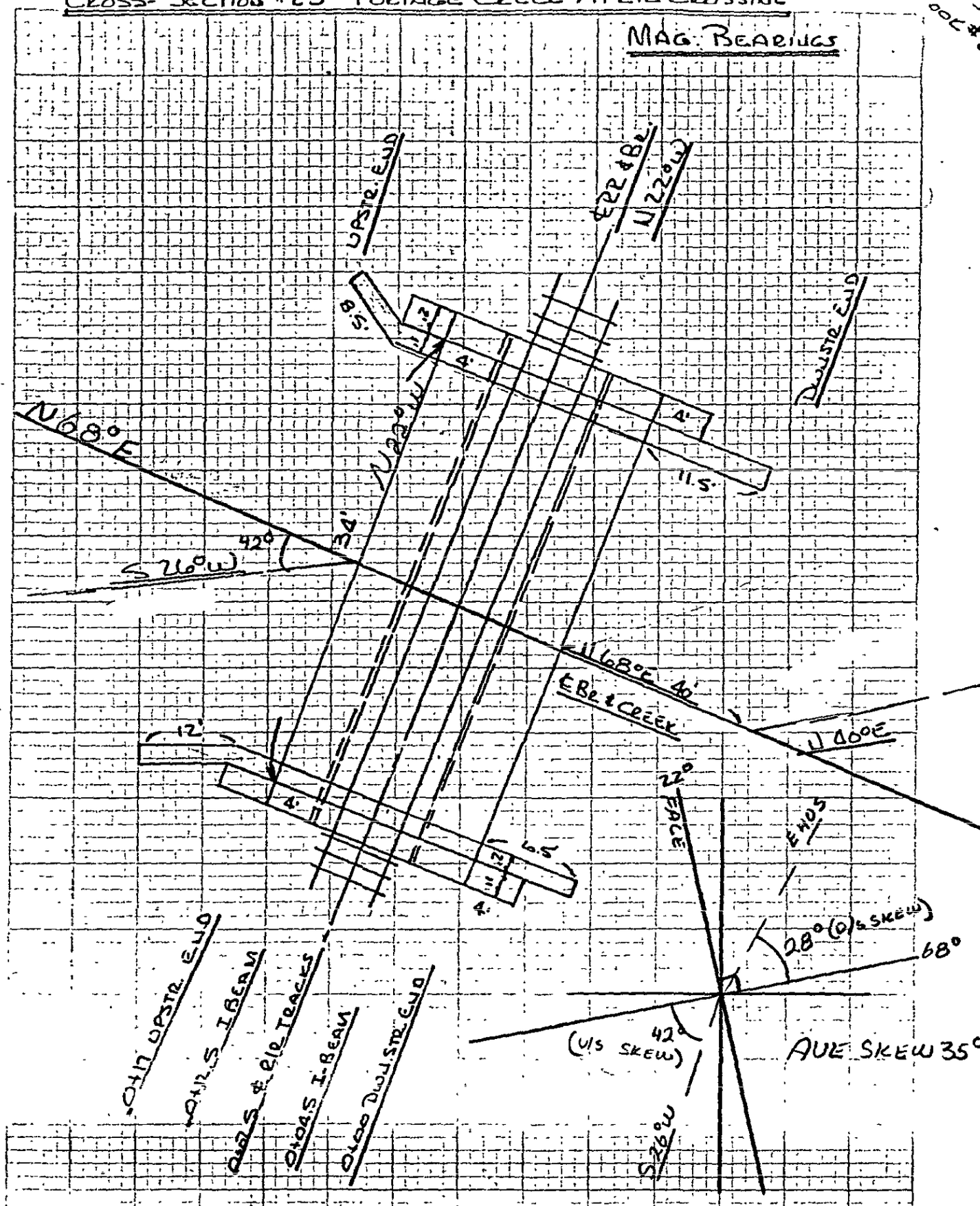
Are At Edge of W/W (15L & 15R

3rd Railroad Bridge (Computer Sees 1950-1967)

HUD 2027-07

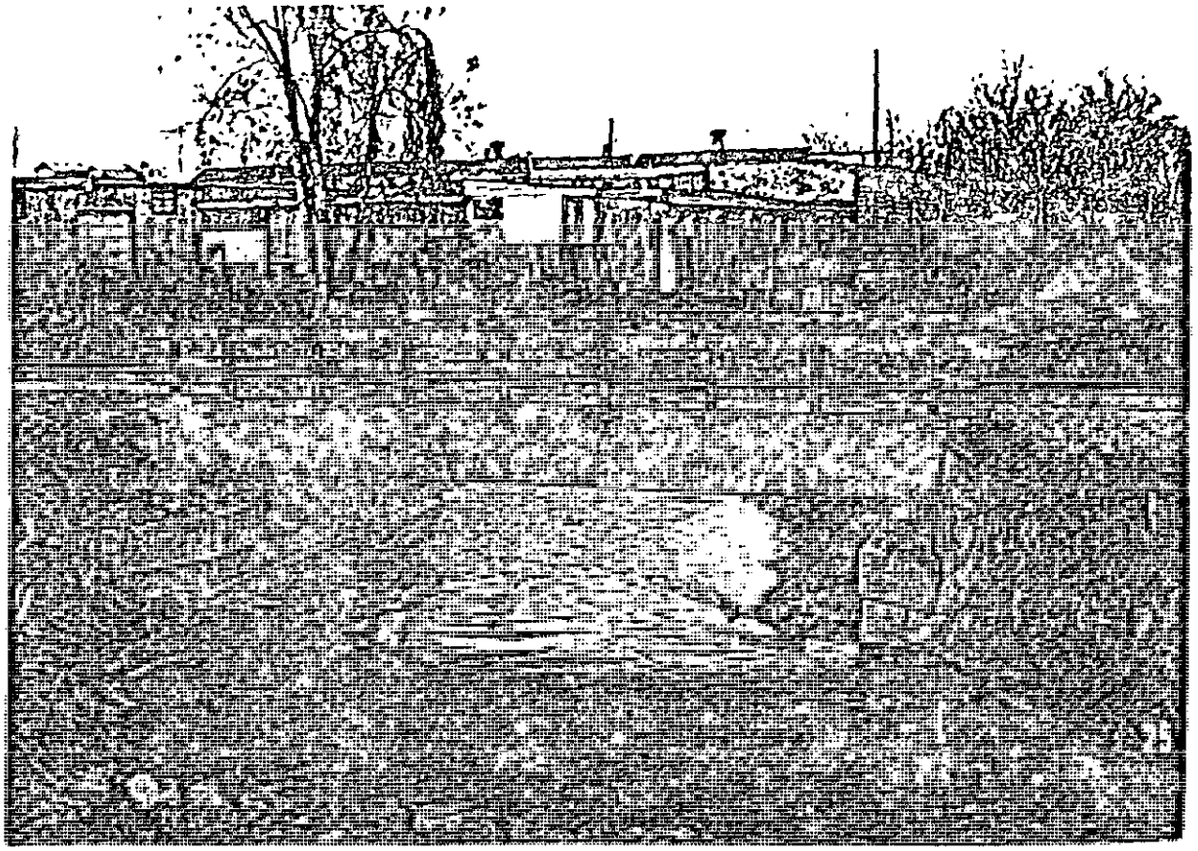
Sheet 14/109

Cross-Section #25 Portage Creek A.T.R.R. Crossing



3rd Railroad Bridge (Computer Sees 1950-1967)

HUD 2027-07



UPSTREAM VIEW SEC 25 PORTAGE CREEK

3rd Railroad Bridge
(Computer Secs. 1950-1967)

HUD 2027-07

Wade Trim & Associates, Inc.
Civil Engineers • Land Surveyors
25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

WORK SHEET

Bridge Location: STA 2040/2057
Bridge Losses - SB Card

REFERENCE

1. XK (Pier Shape Coefficient) 0.095 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk, $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

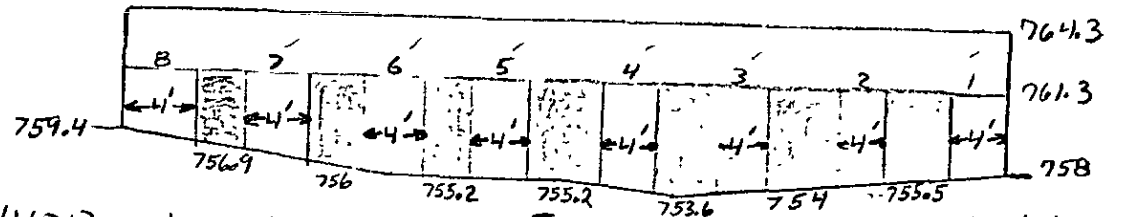
Area = 181 $= \frac{181}{R^{4/3}}$ Wp = 280
$R = A/wp$ 181/280 $R^{4/3} = 0.55$ L = 17
n (composite) =

$K_f = 29.1 \times (0.025)^2 \times 17 / 0.55 = 0.56$

$K_e = 0.5$ — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 4

$K_p = 0$ if bridge has no intermediate piers

$K_p = 0.05$ if bridge has intermediate piers — HEC-2 manual

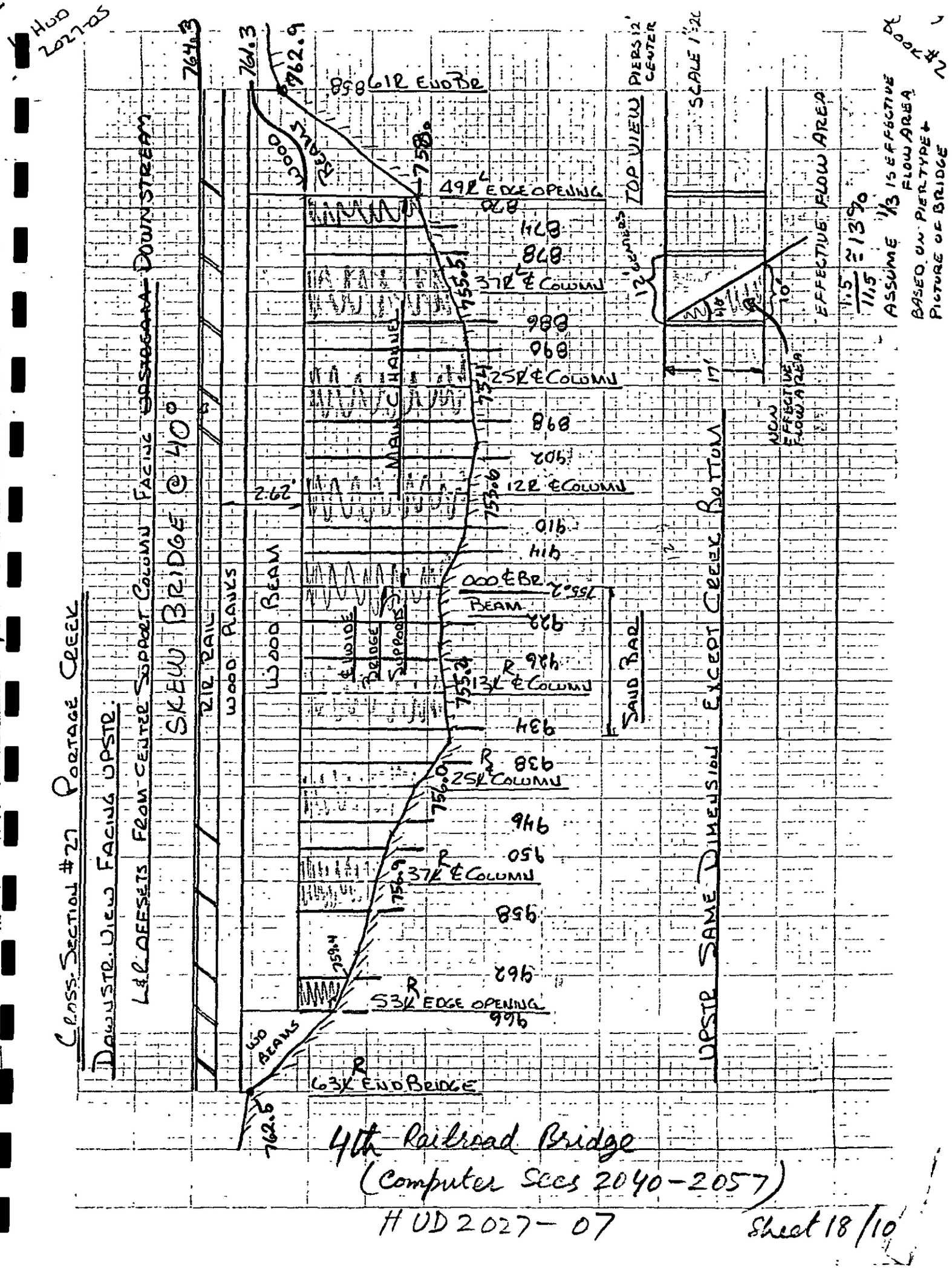


$A_1 = 18.2$
$A_2 = 26.2$
$A_3 = 30.0$
$A_4 = 27.6$
$A_5 = 24.4$
$A_6 = 22.8$
$A_7 = 19.4$
$A_8 = 12.6$

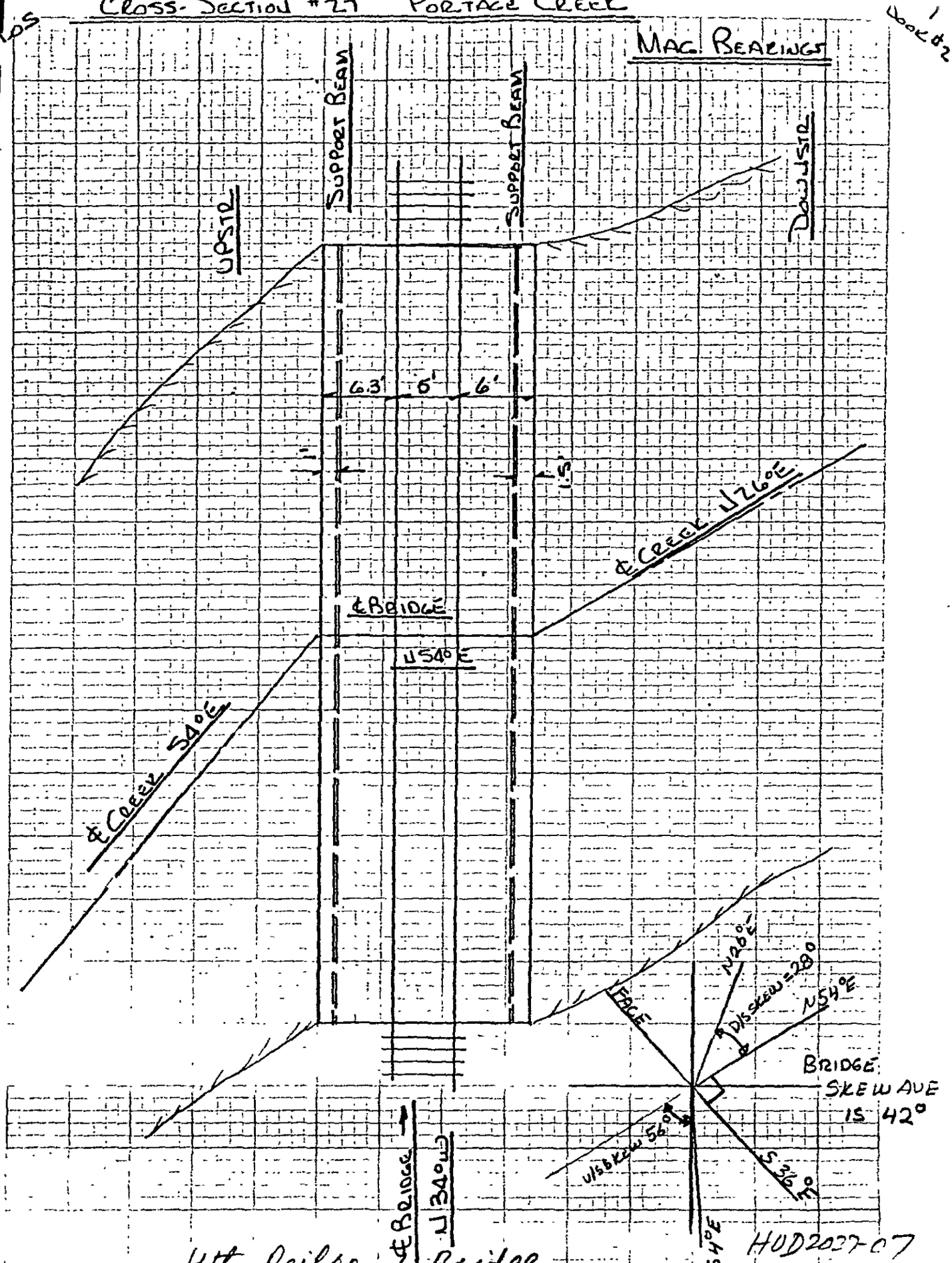
2. XKOR = 1 + 0.56 + 0.5 + 0.05 = 2.11
3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0. (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers): 96.
6. BWP = total width of obstruction = 64. — field data
7. BAREA = bridge opening inc. piers = 181.
8. SS = side slope = 0.39
(horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 753.6
(0 if equal to minimum elevation in previous X-sect.)
10. ELCHD = Elevation of channel invert D/S side = 753.6
(0 if equal to minimum elevation in previous X-sect.)

Sheet 17/109

SUBJECT	BY	CHK	SHEET NO.	File Code No (Job No) Owner Project Suffix
Portage Creek	DRB			HOD •2027•
	DATE 1/80	DATE	OF	

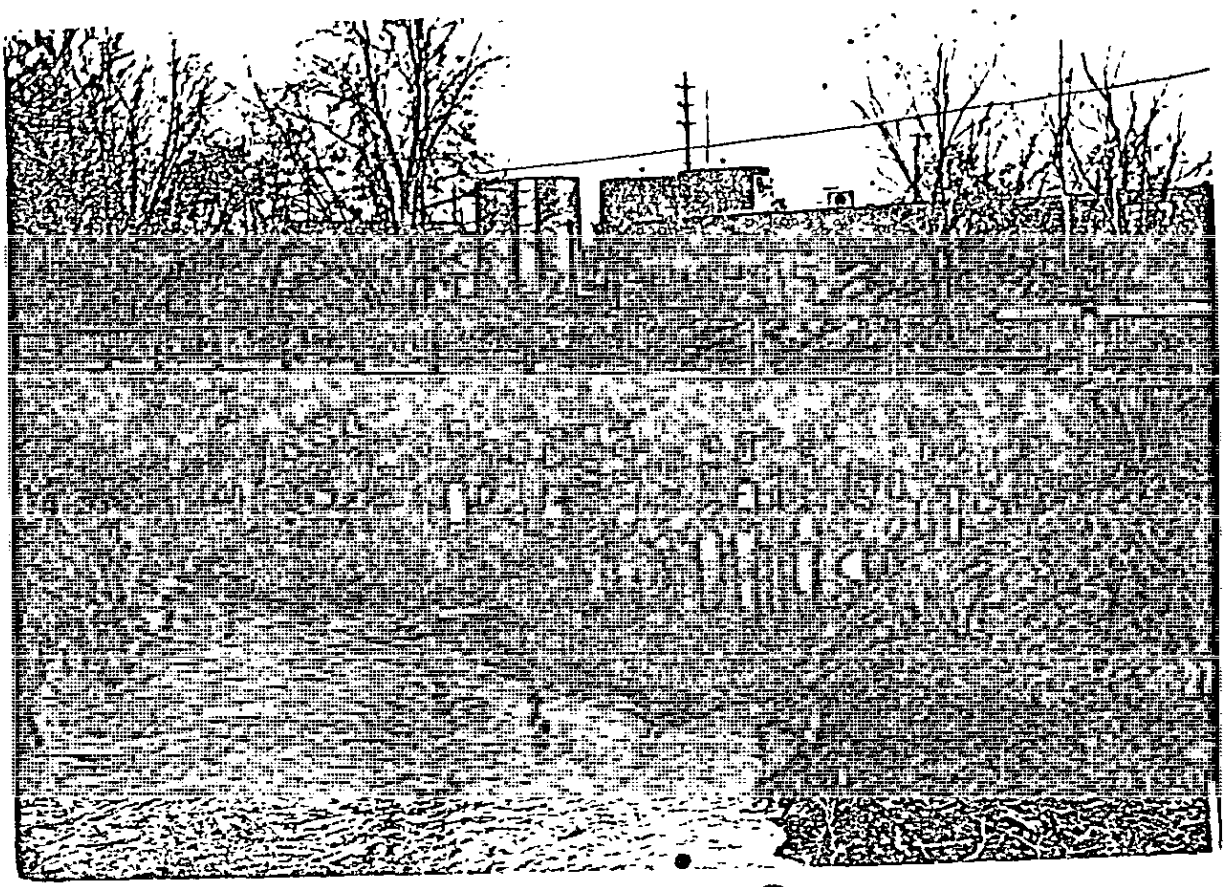

HUD 2027-05
Cross-Section #27 Portage Creek
Downstr. View Facing Upstr.
L&L Offsets From Center Support Column Facing Downstream
SKEW BRIDGE @ 40°
764.3
762.9
762.6
898 61R End Br
300
75.8
49R Edge Opening
98
148
848
37R € Column
755.5
988
968
25R € Column
754
868
205
12R € Column
753.6
916
816
000 € Br
755.2
Beam
928
926
13R € Column
755.2
934
838
25R Column
756.0
946
956
37R € Column
756.6
896
259.4
296
53R Edge Opening
996
63R End Bridge
2.62'
Wood Planks
2" Rail
Wood Beams
Wood Beam
Main Channel
€ Bridge
Supports
Sand Bar
Top View
Piers 12' Center
12 Columns
Scale 1"=20'
Effective Flow Area
10'
17'
Non Effective Flow Area
Upstr Same Dimension Except Creek Bottom
1.5/11.5 ≈ 13%
Assume 1/3 is Effective Flow Area
Based on Pier Type & Picture of Bridge
4th Railroad Bridge
(Computer Secs 2040-2057)
HUD 2027-07
Sheet 18/10

Cross-Section #27 Portage Creek



4th Railroad Bridge
(Computer Secs 2040-2057)

HUD2037-07
Sheet 19/109



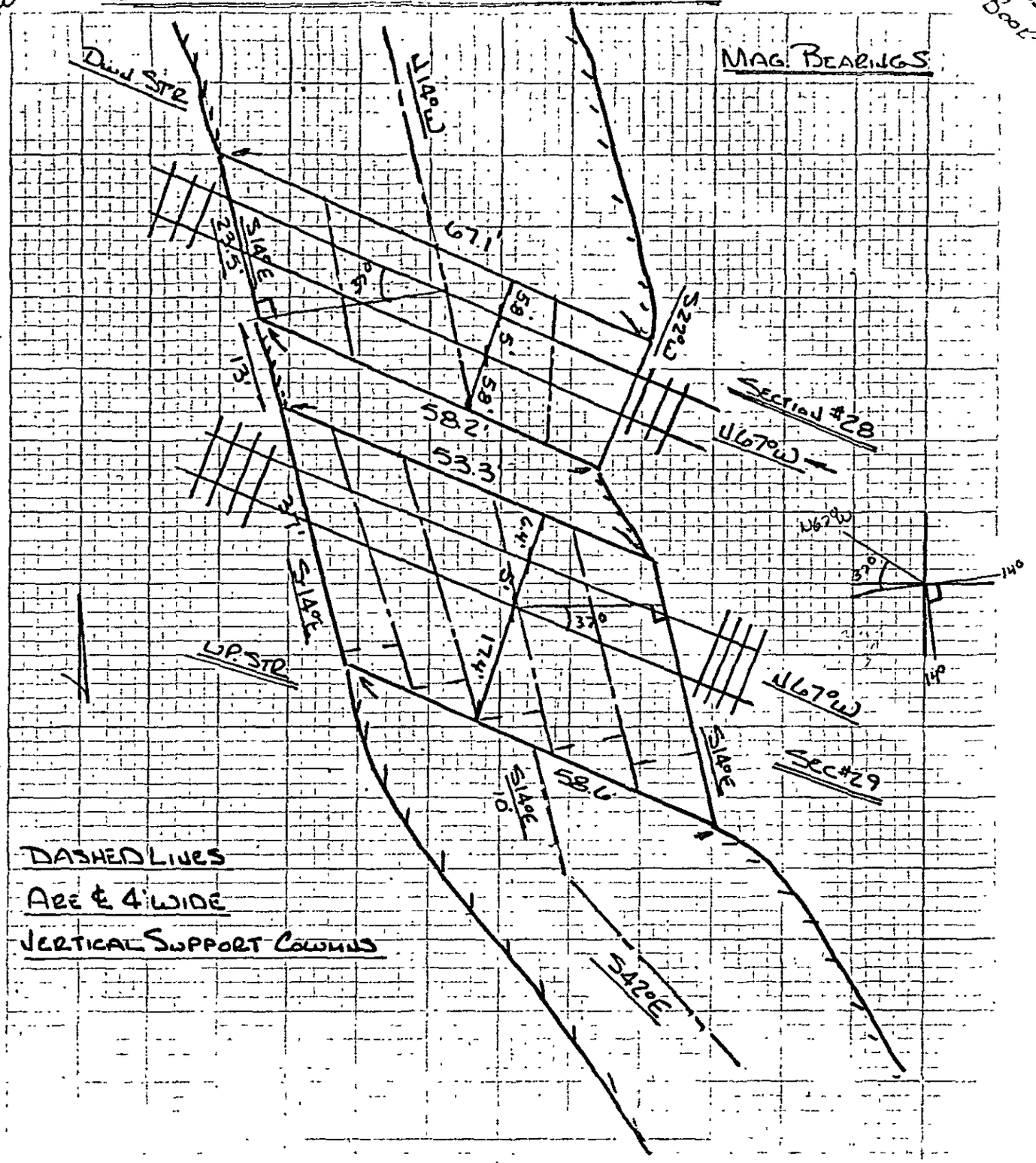
Doubl Ste View Sec 27 Portage Creek

4th Railroad Bridge
Computer Sections 2040-2057

HUD 2027-07

HUD 2027-05

Cross-Sections #28 & 29 Portage Creek



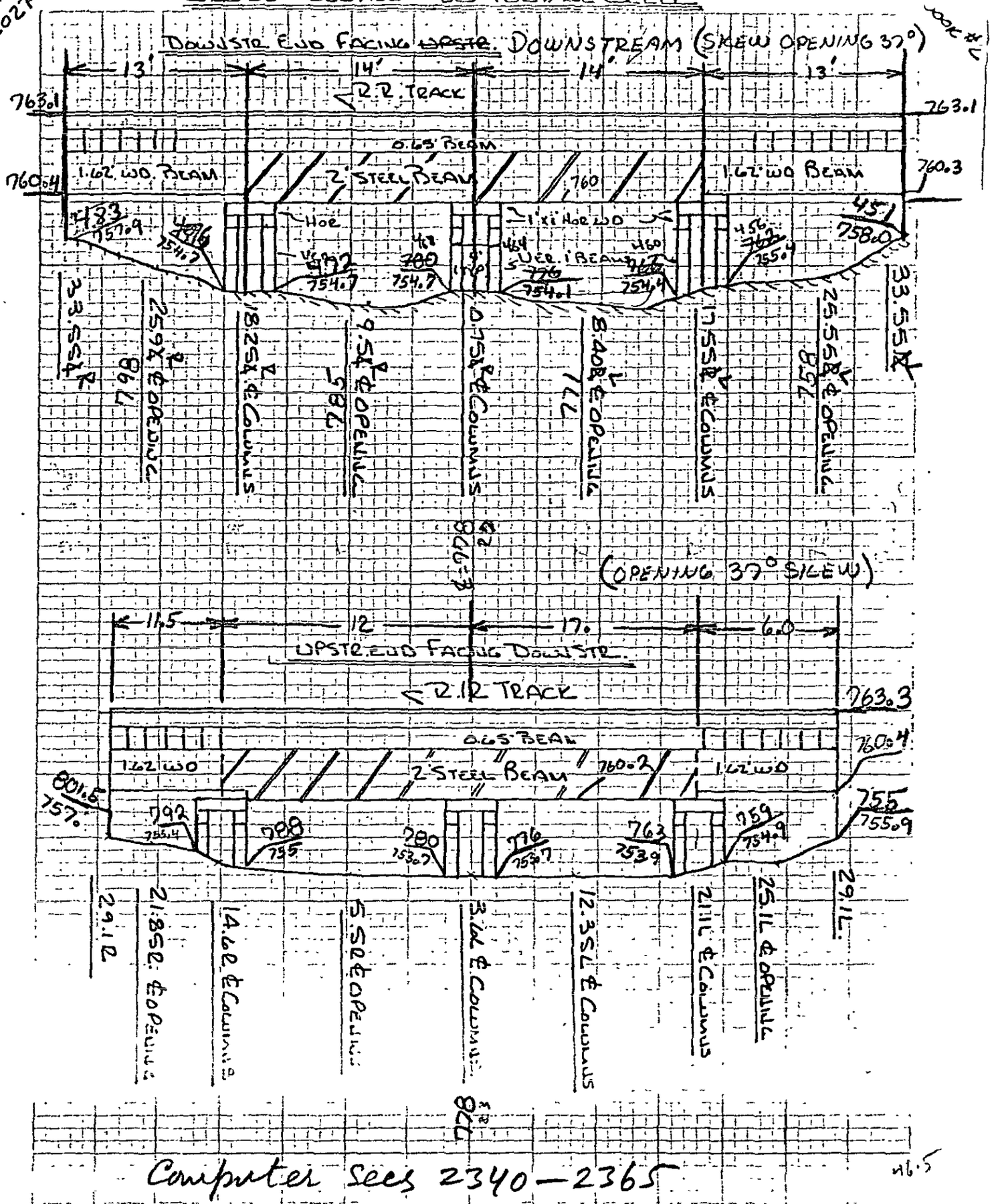
COMPUTER SECS 2340 – 2417

HUD 2027-07

Sheet 21/109

HUD 202705

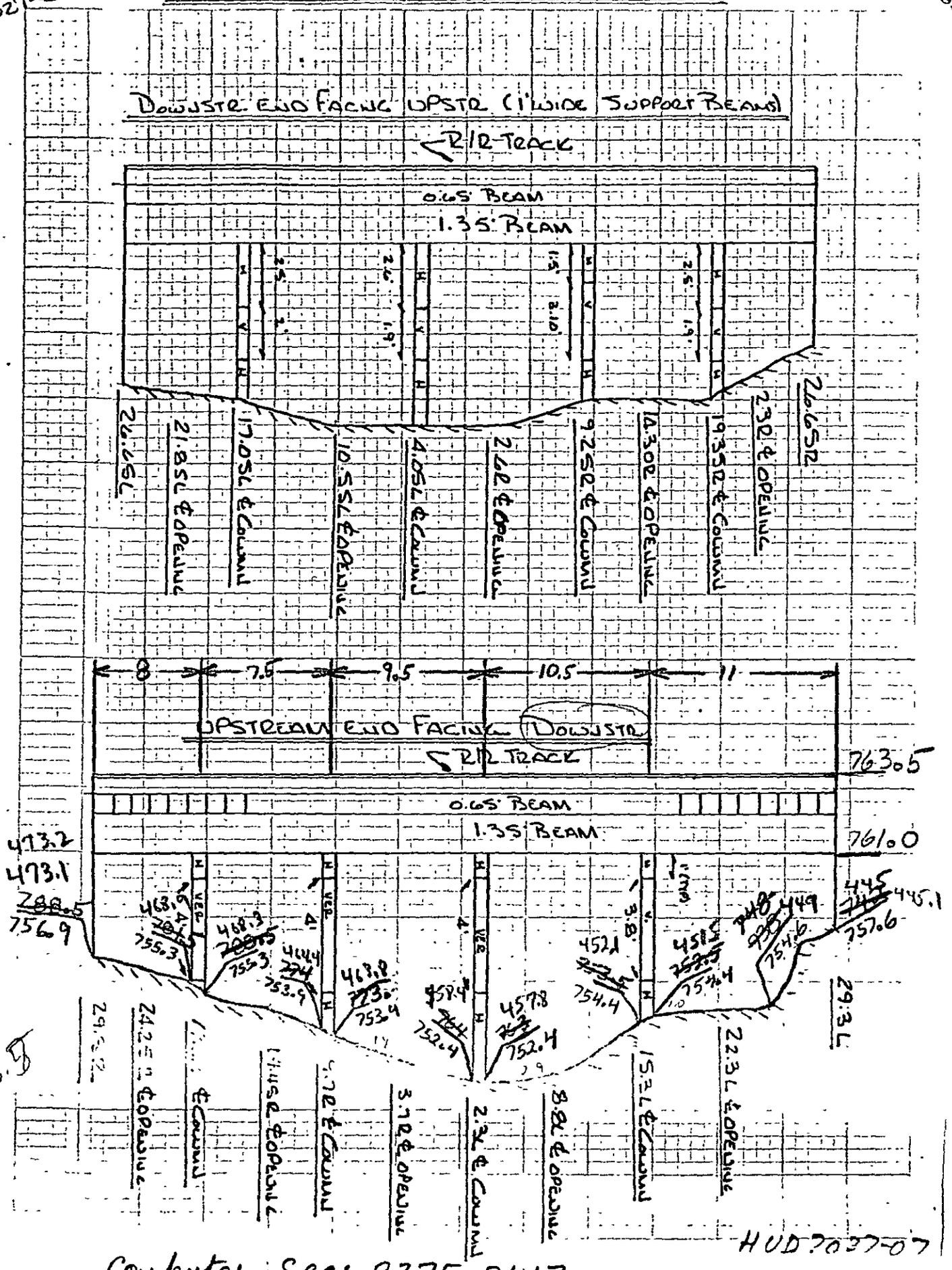
Cross Section #28 Portage Creek



HUD 2027 ES

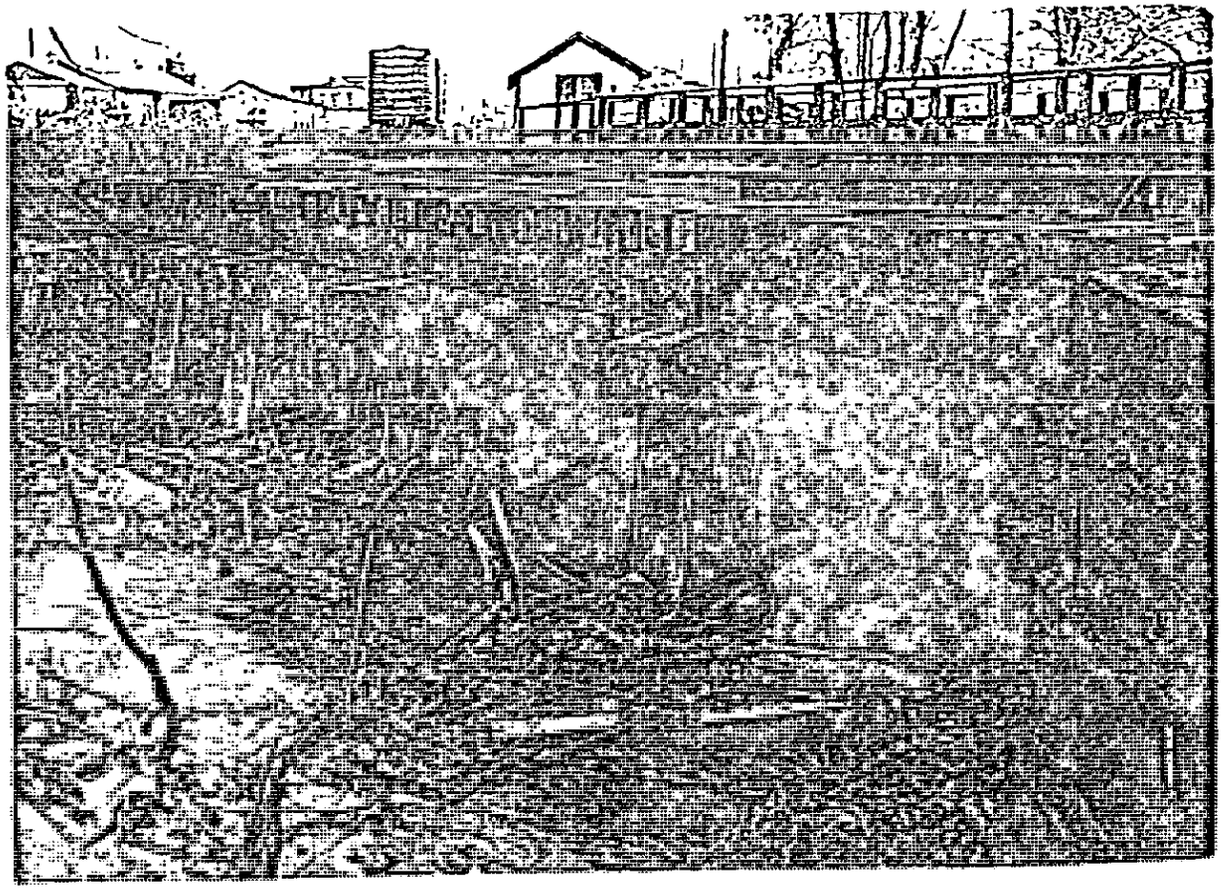
Cross-Section #29 Portage Creek

Book #



Computer Secs 2375-2417

Sheet 23/109



[illegible] Sec 29 Portage Creek

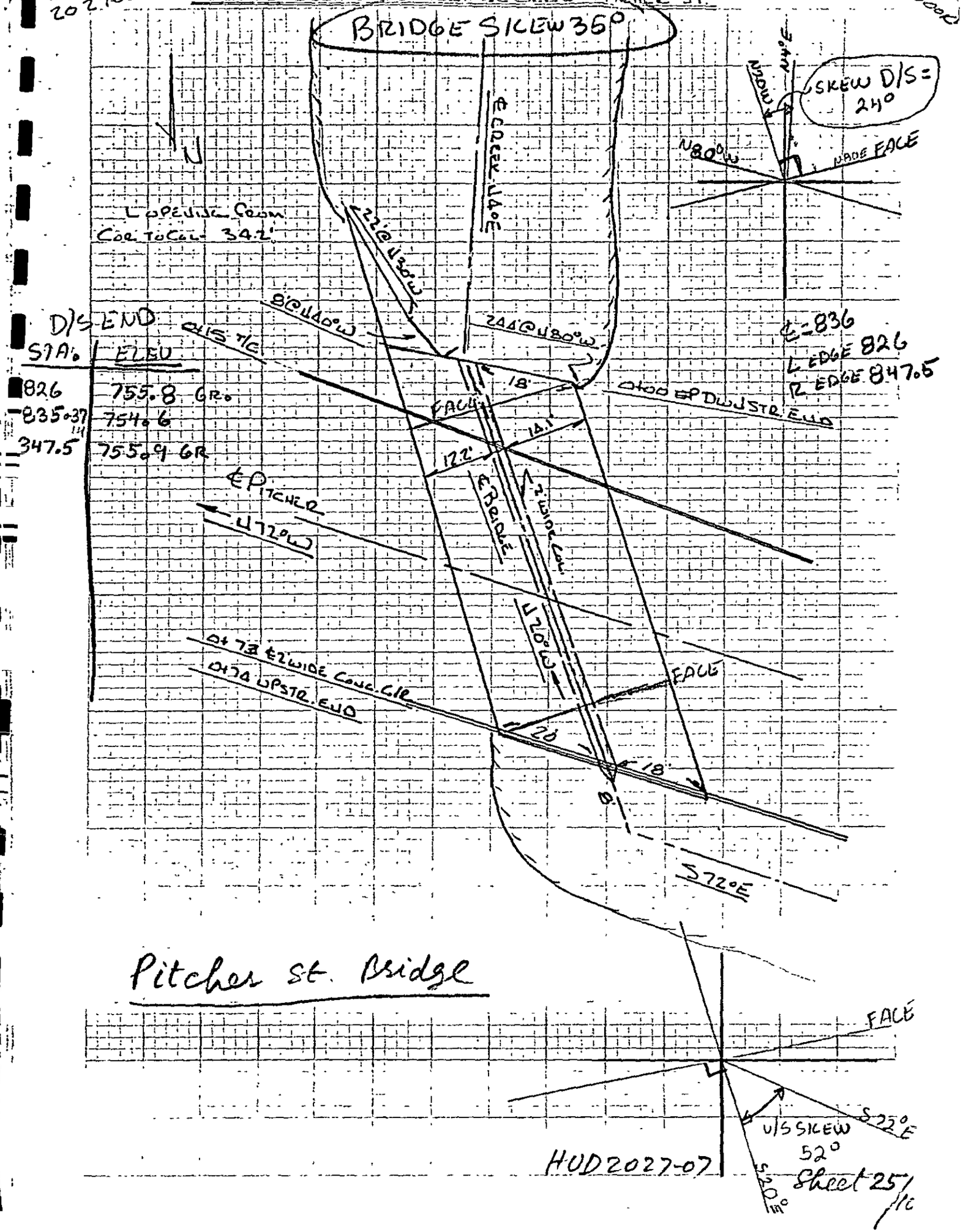
Computer Secs 2375 - 2417

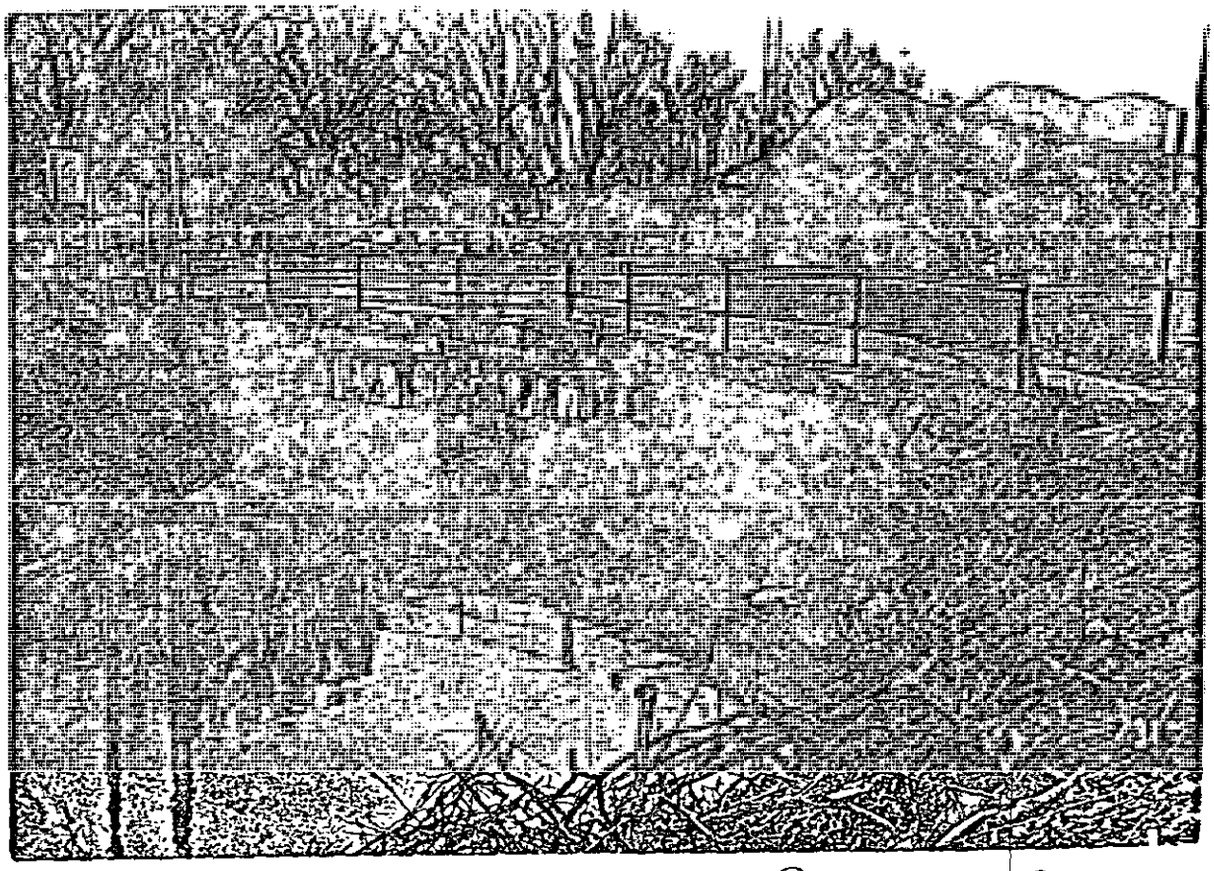
HUD 2027-07

Sheet 24/109

HUD 202705

Cross-Section #31-Portage Creek-Pitcher St.





Pitcher St. Bridge

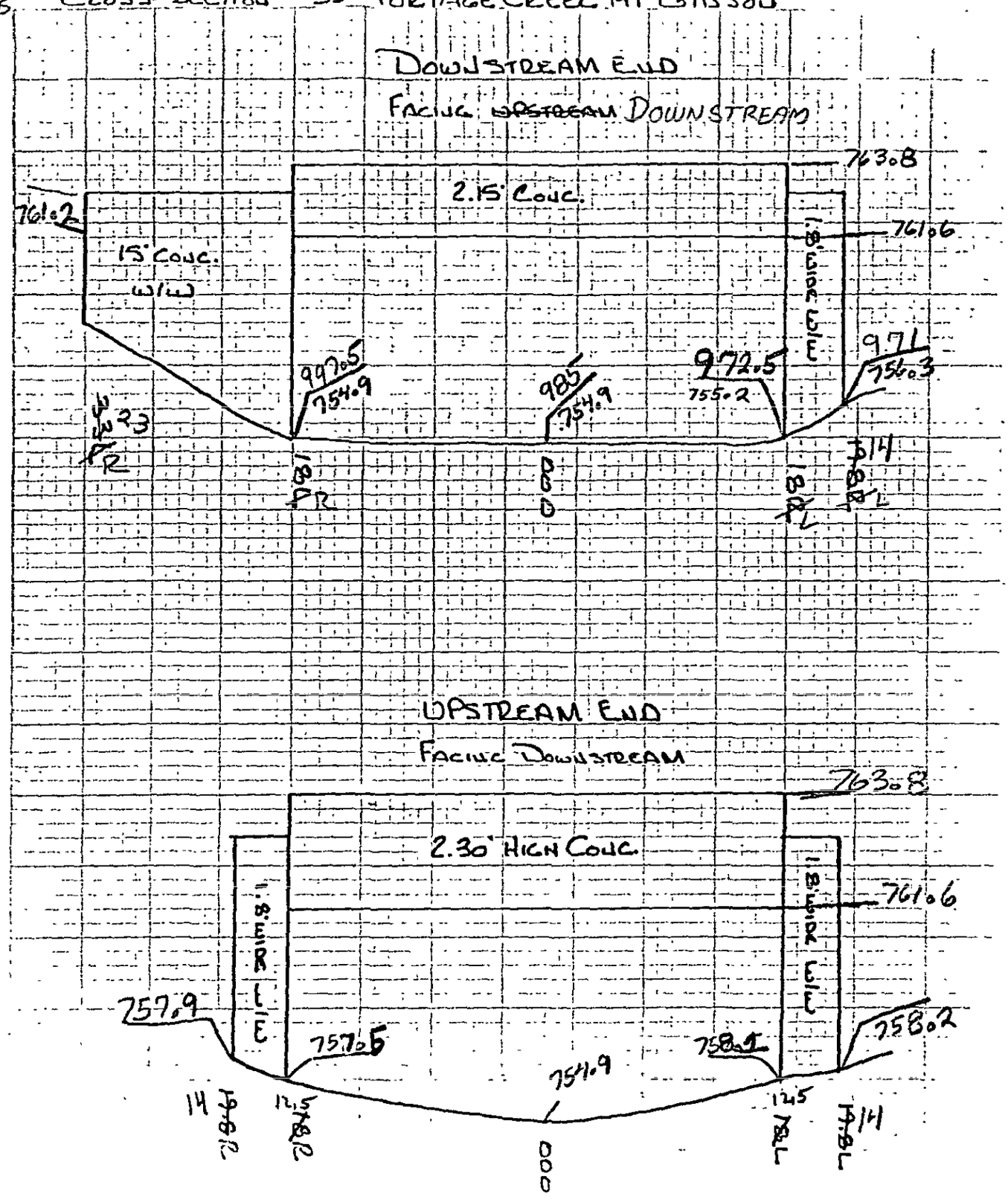


Pitcher St. Bridge

HUD-3027-07
Sheet 26/109

HUD 2027-07

Cross-Section #33 Portage Creek At Gibson

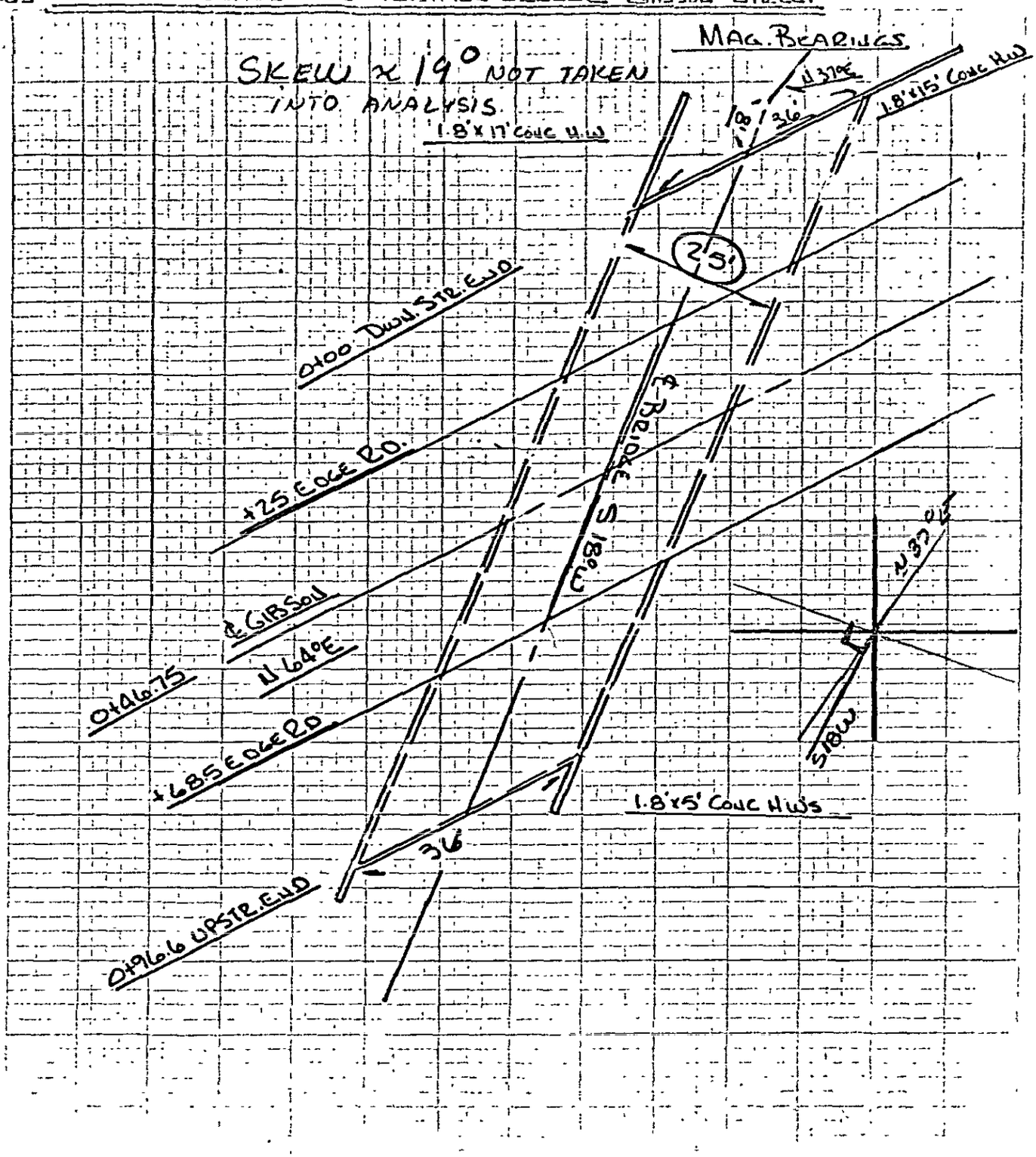


Gibson St. Bridge

HUD 2027-07
Sheet 27/109

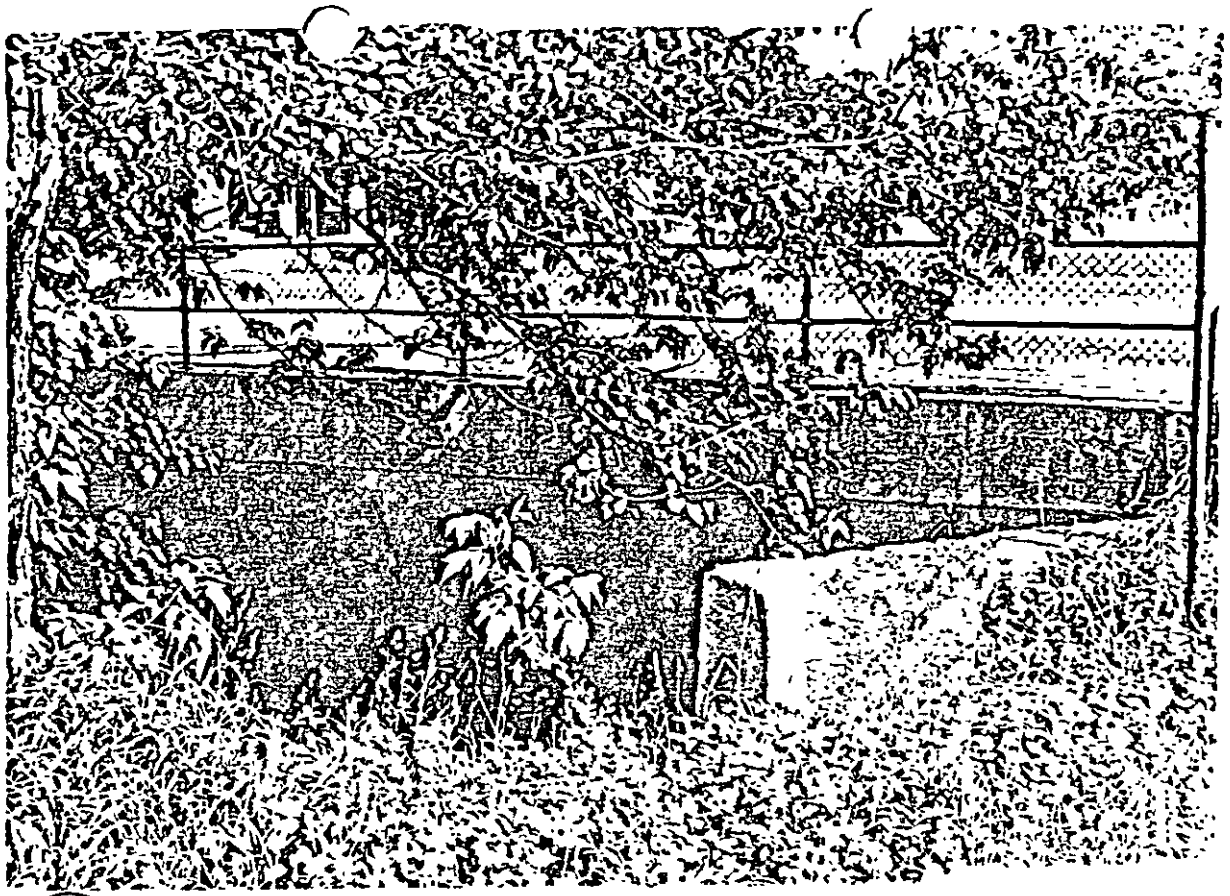
HUD 2027-05

CROSS-SECTION #33 PORTAGE CREEK @ GIBSON STREET



Gibson St. Bridge

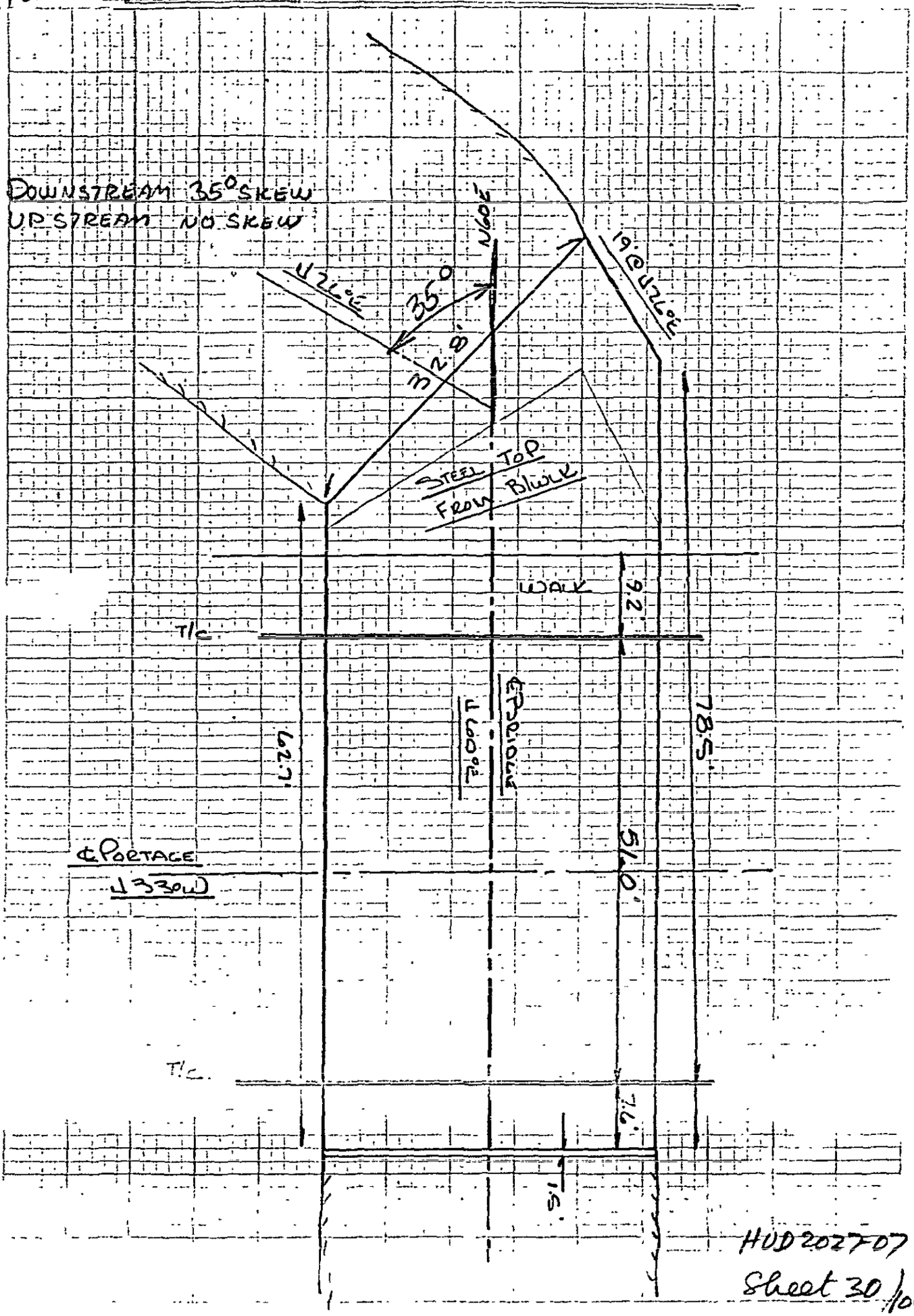
HUD 2027-07
Sheet 28/109



Portage Creek At Gibson St.
Section #33

HUD 202-705

CROSS-SECTION #34 PORTAGE CREEK/PORTAGE ROAD

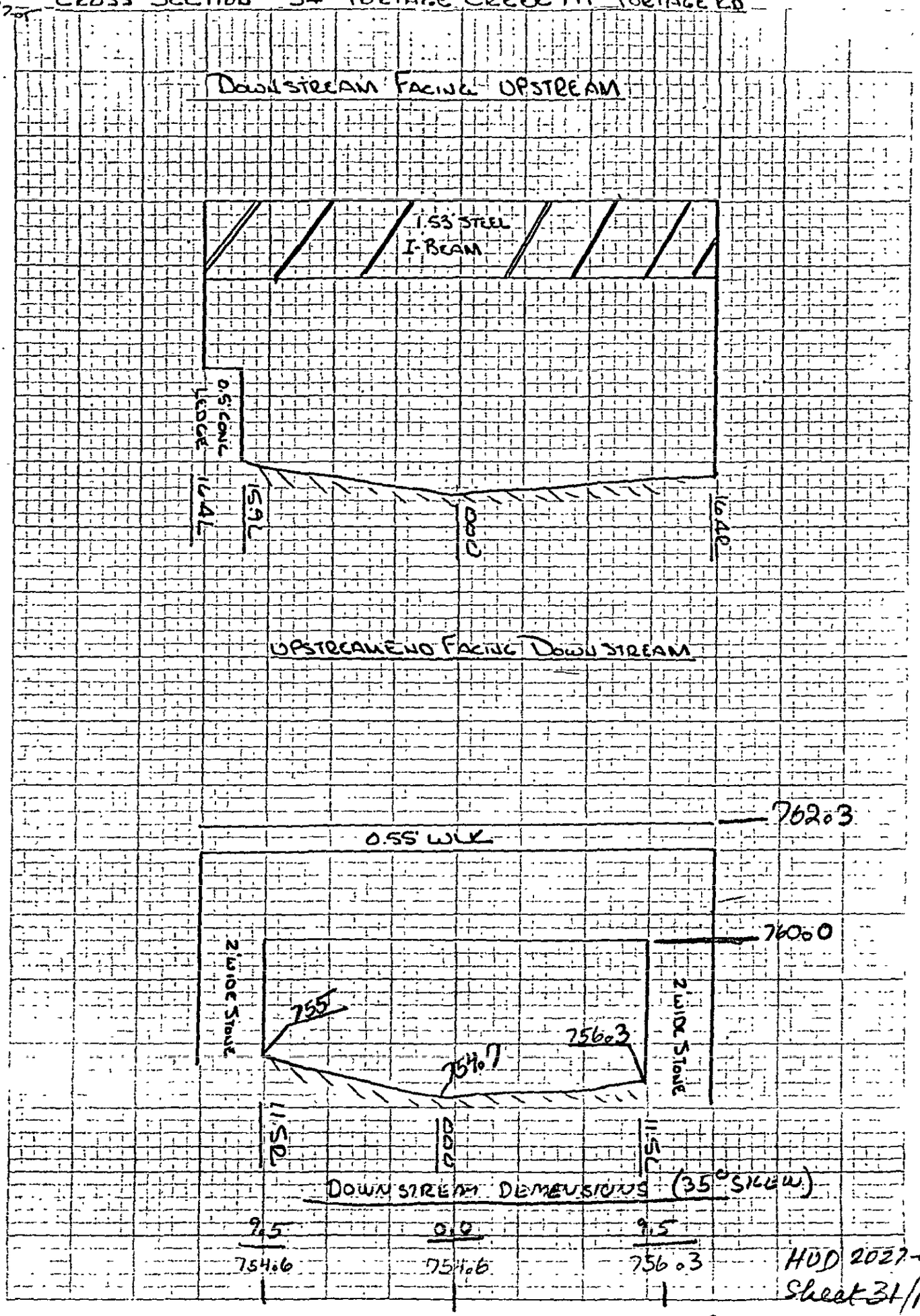


HUD 202-707

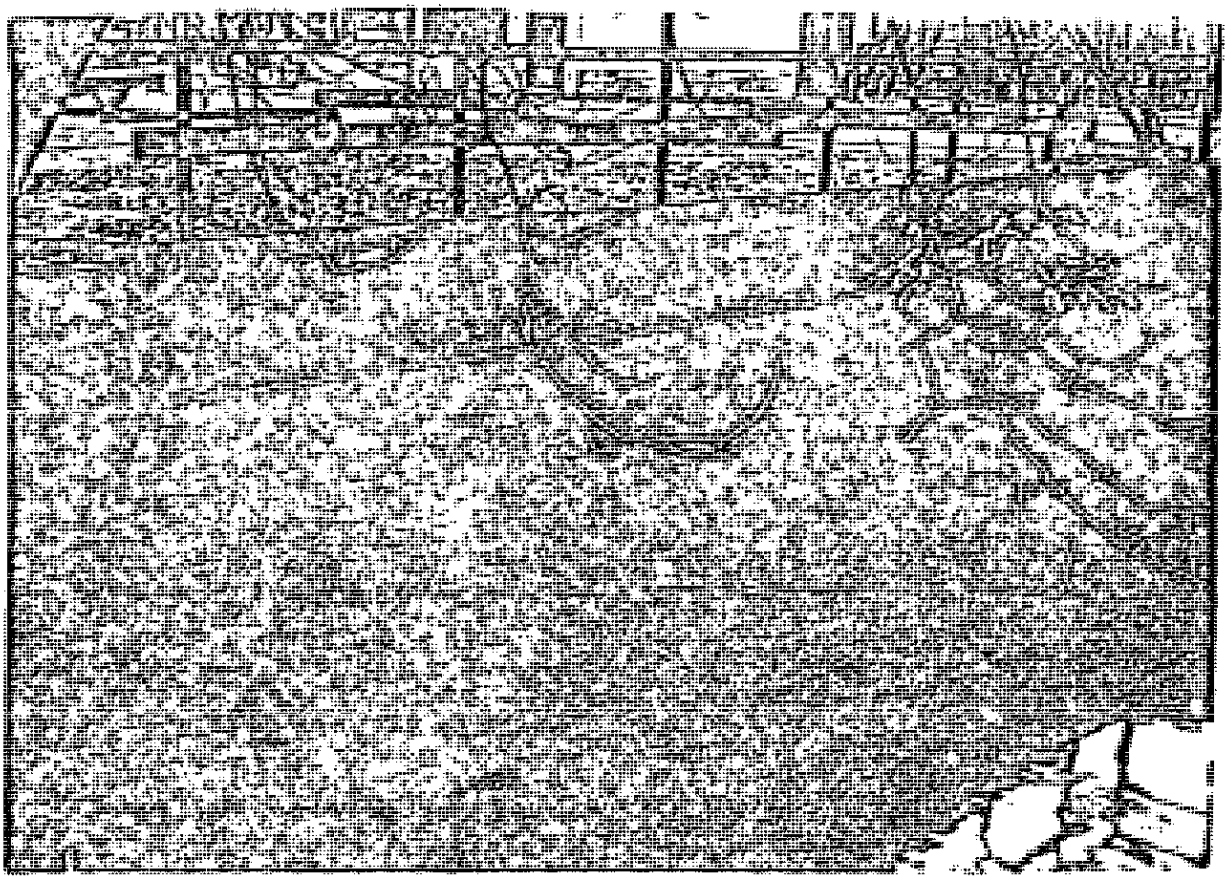
Sheet 30 of

HUD 2027-07

Cross Section #34 Portage Creek Hi Portage Rd



HUD 2027-07
Sheet 34/10,



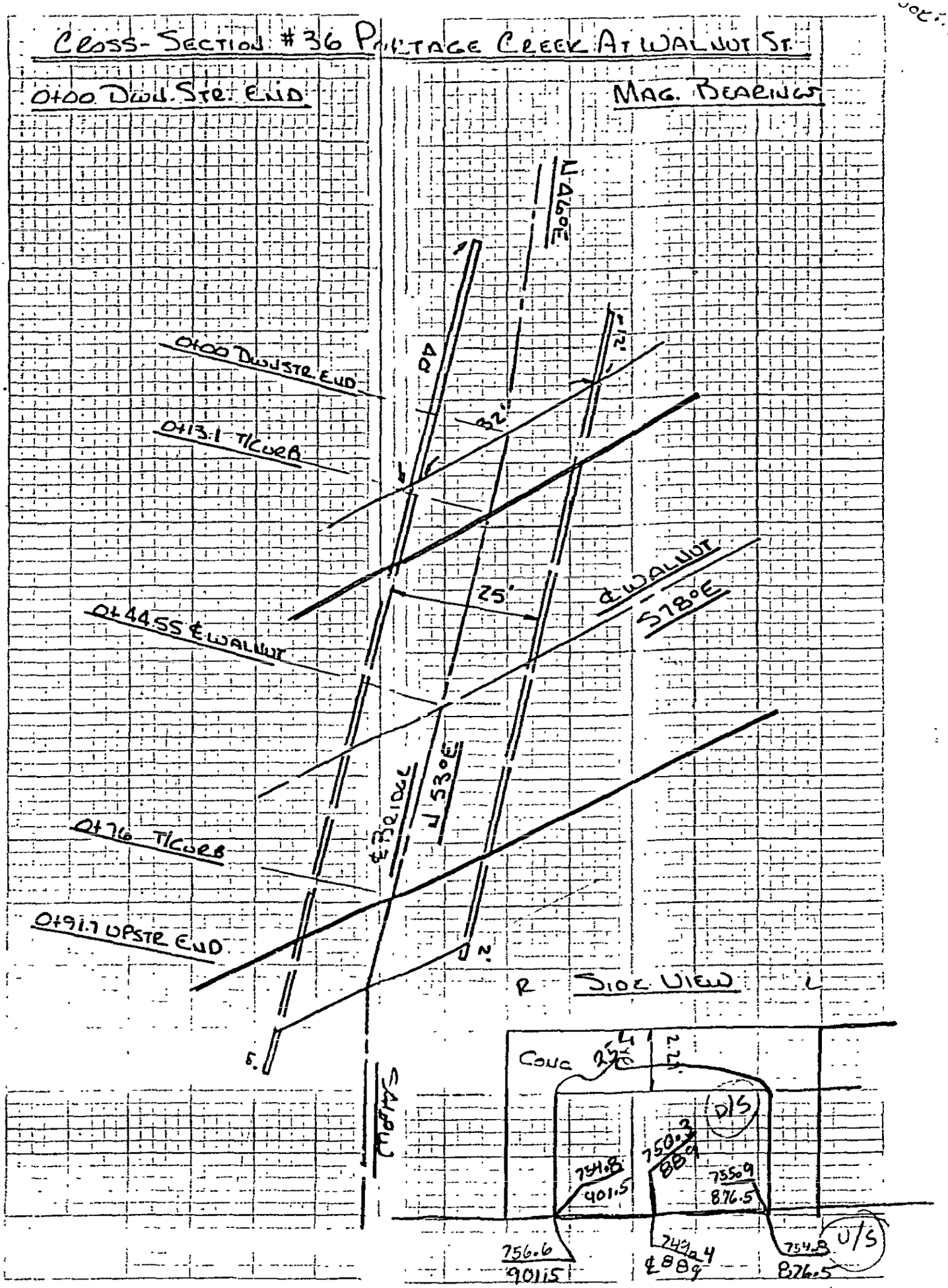
Downstr Sec 34 Portage Creek At Portage Rd

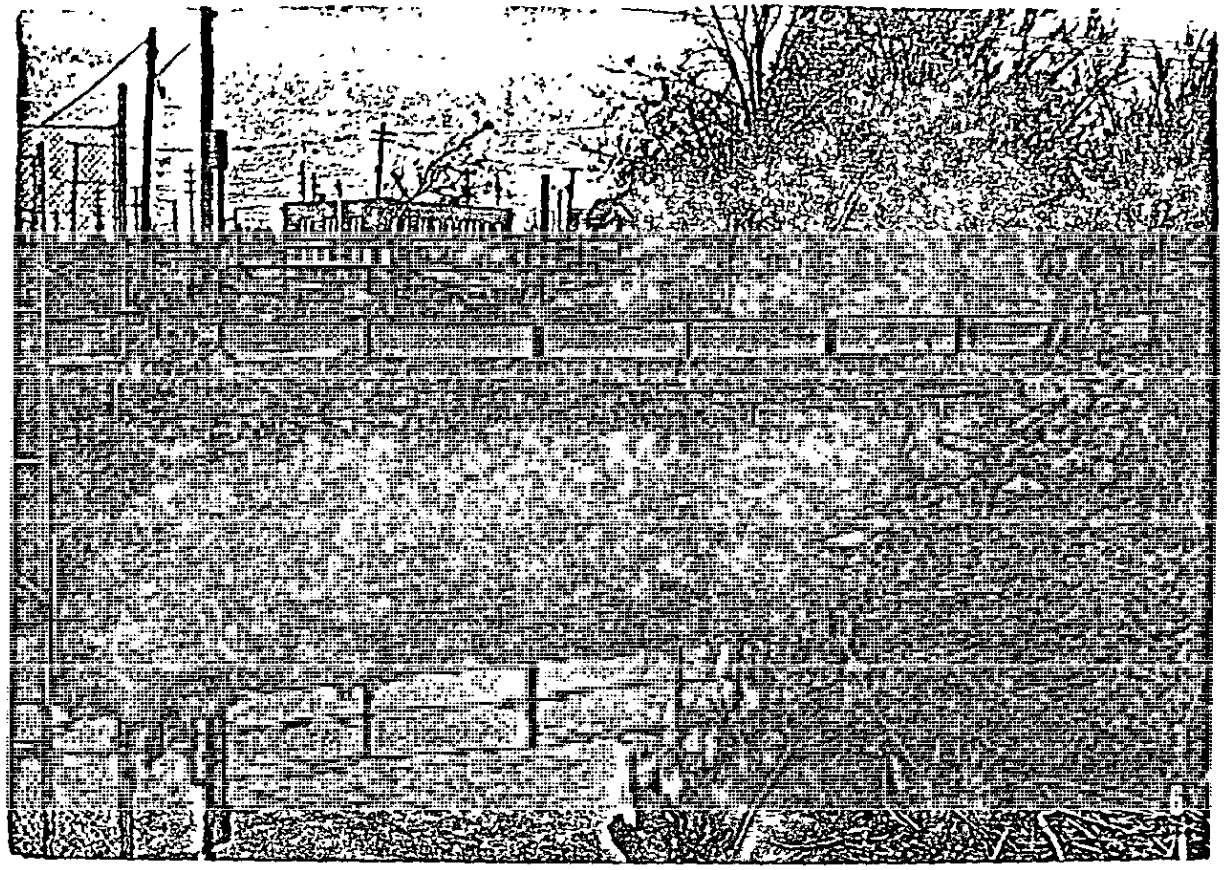
HUD2027-07

Sheet 32/100

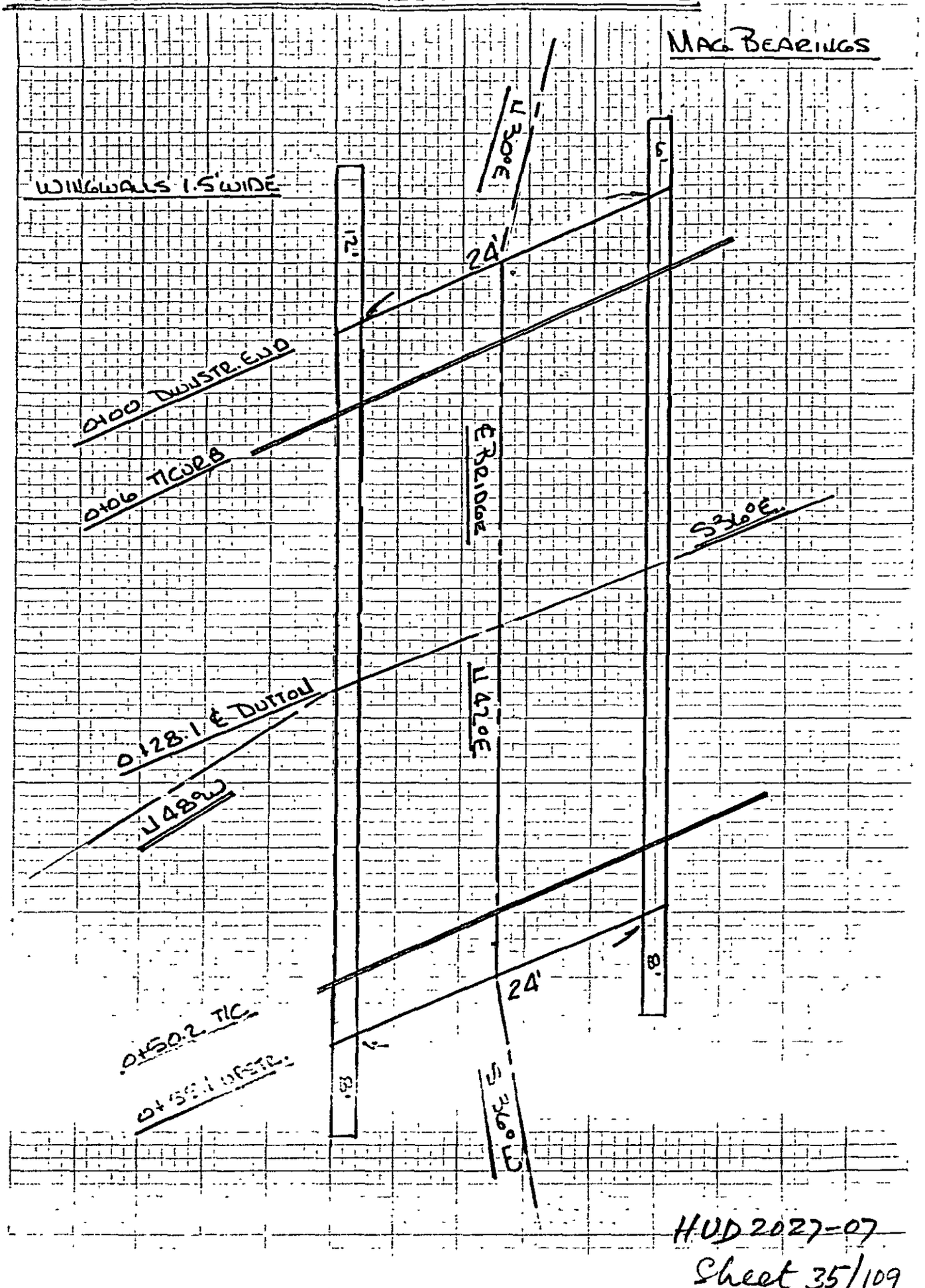
HUD 2001-05

Cross-Section #36 Pantage Creek At Walnut St.





UPSTR. SEC 36 PORTAGE CREEK AT WALNUT

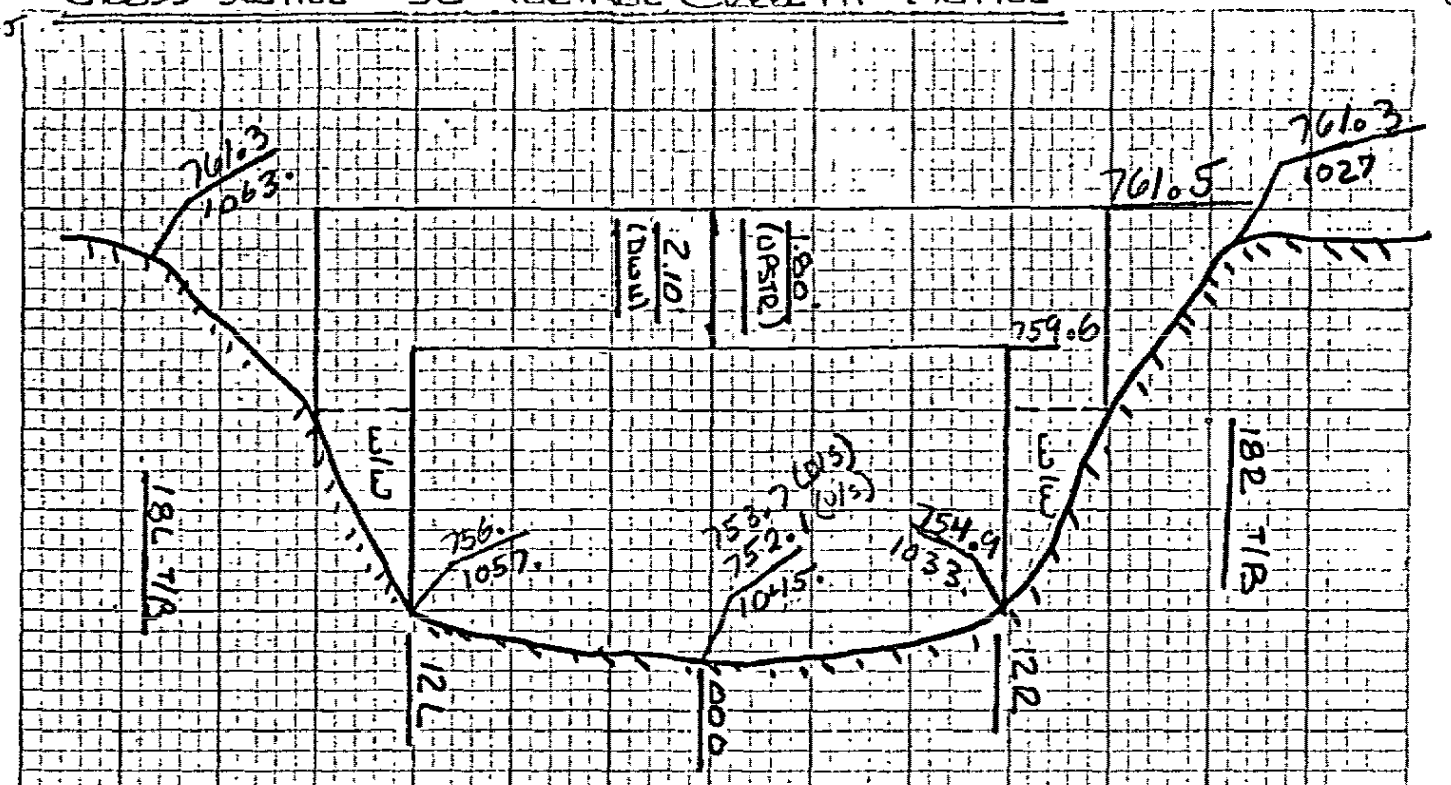


HUD 2027-07

Sheet 35/109

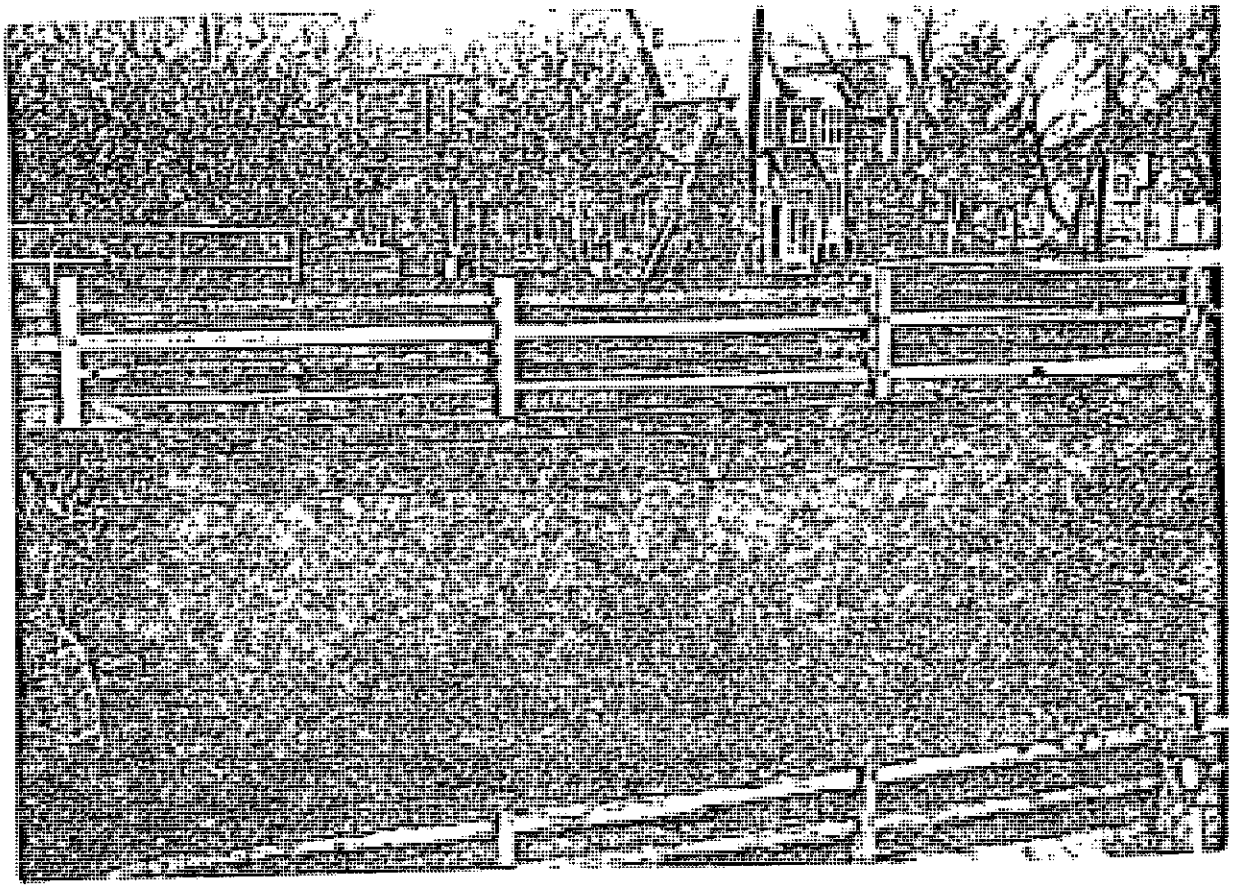
HUD 2027-05

Cross-Section #38 Portage Creek At Dutton



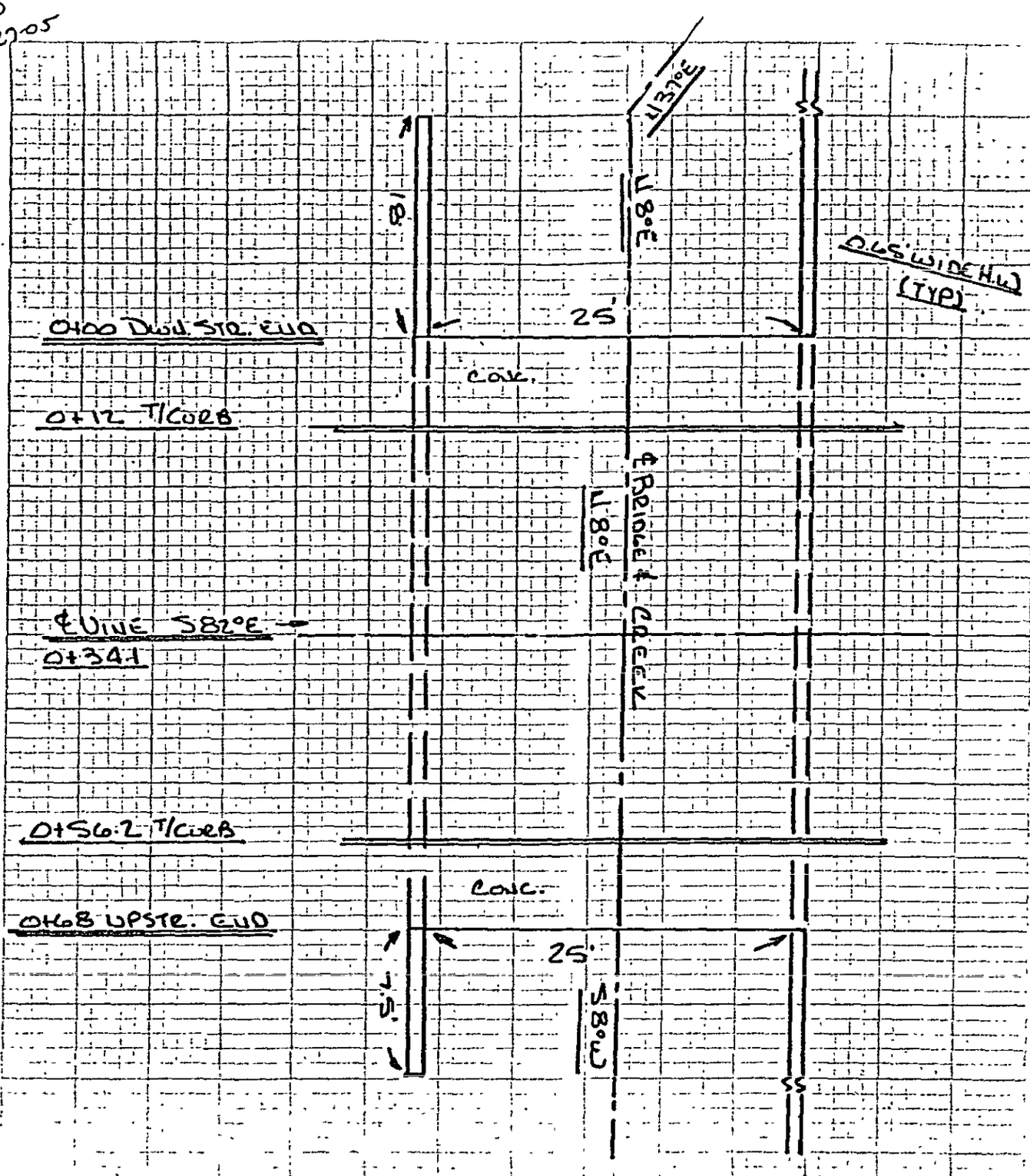
DOWNSTR. END FACING UPSTREAM

HUD 2027-07
Sheet 36/109



DF Downstr Sec 33 Portage Creek At Dotton

HUD 2027-05



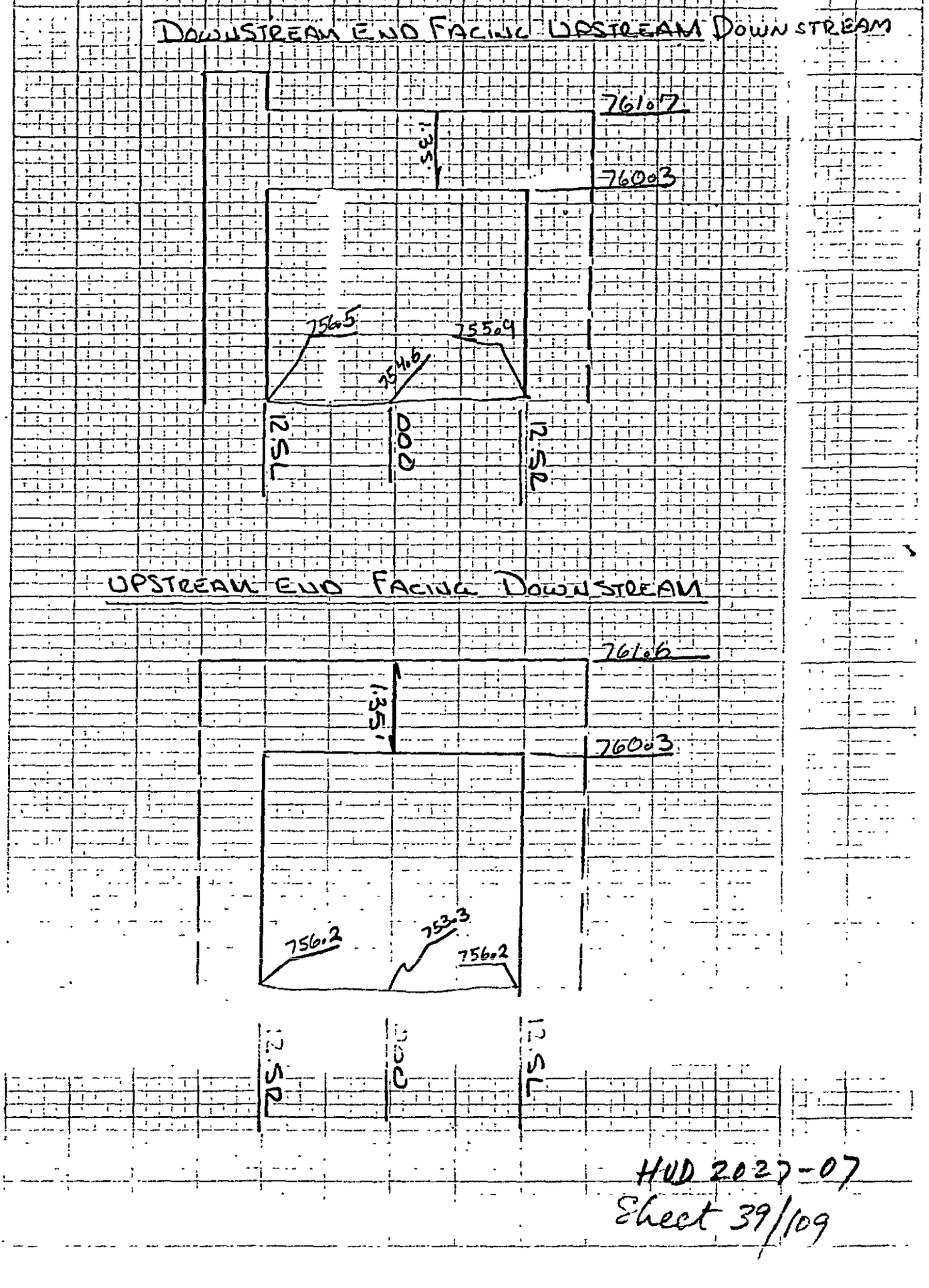
CROSS-SECTION #40 PORTAGE CREEK AT VINE ST.

MAG. BEARINGS

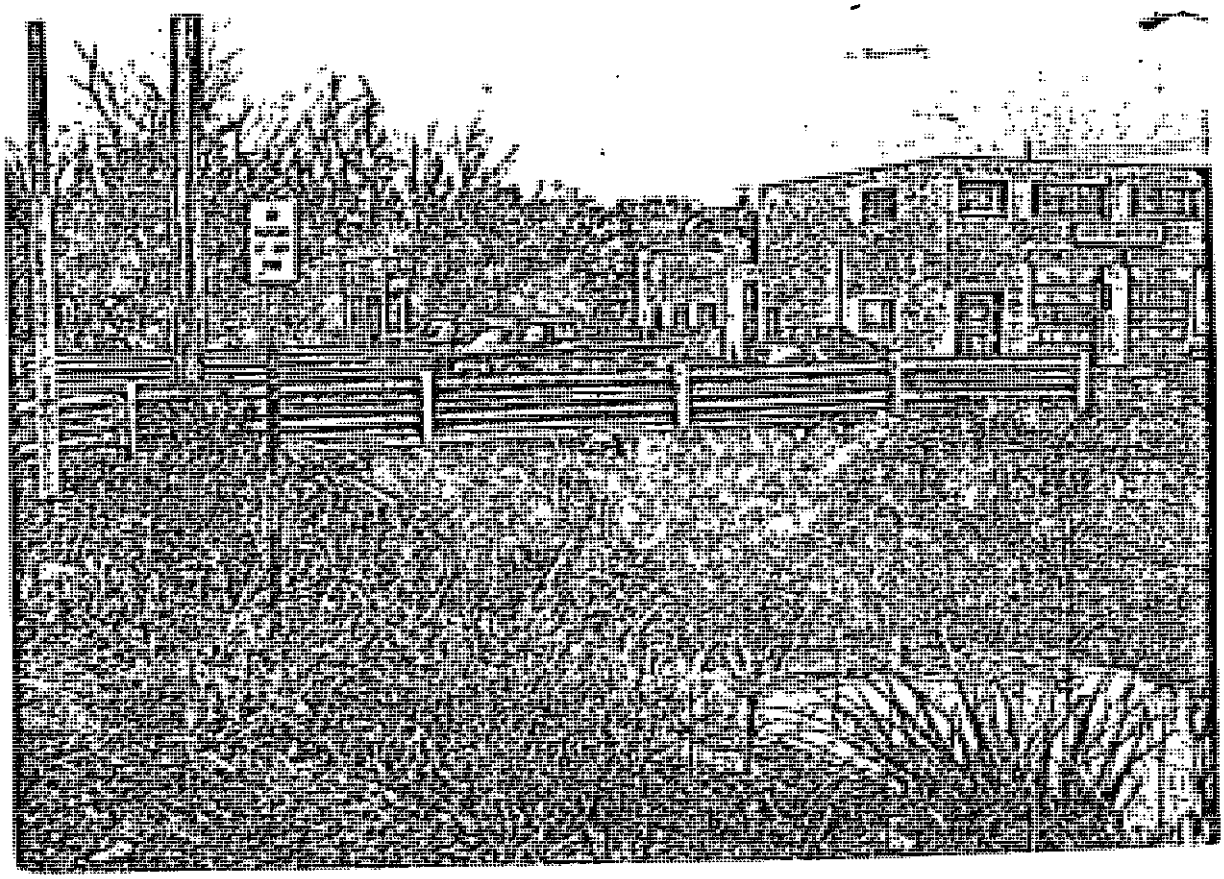
HUD 2027-07
Sheet 38/109

HUD 202-05

Cross-Section #40 Portage Creek at Vine St.



HUD 2027-07
Sheet 39/109

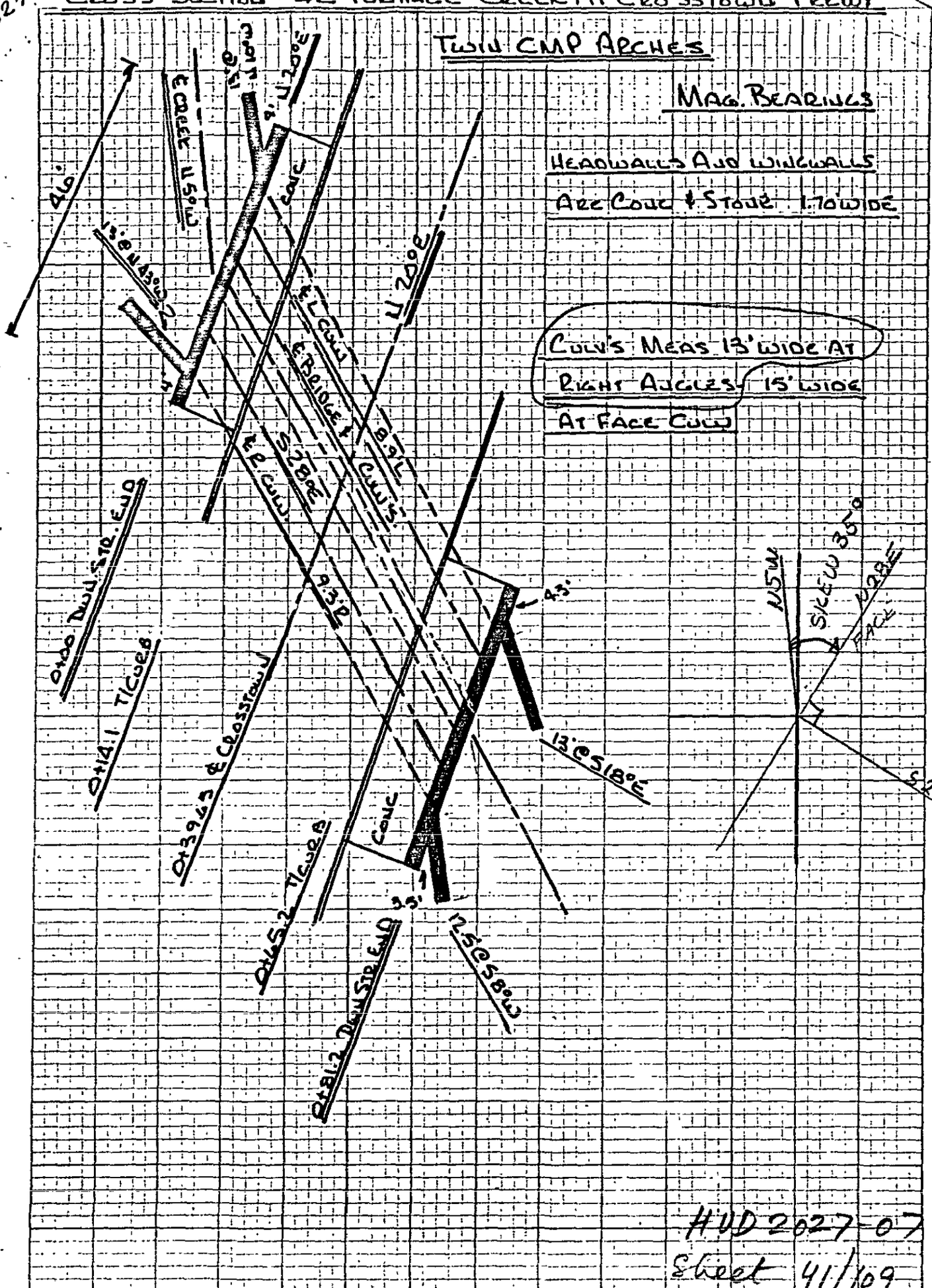


UPSTR. Sec 40 PORTAGE CREEK AT VINE ST

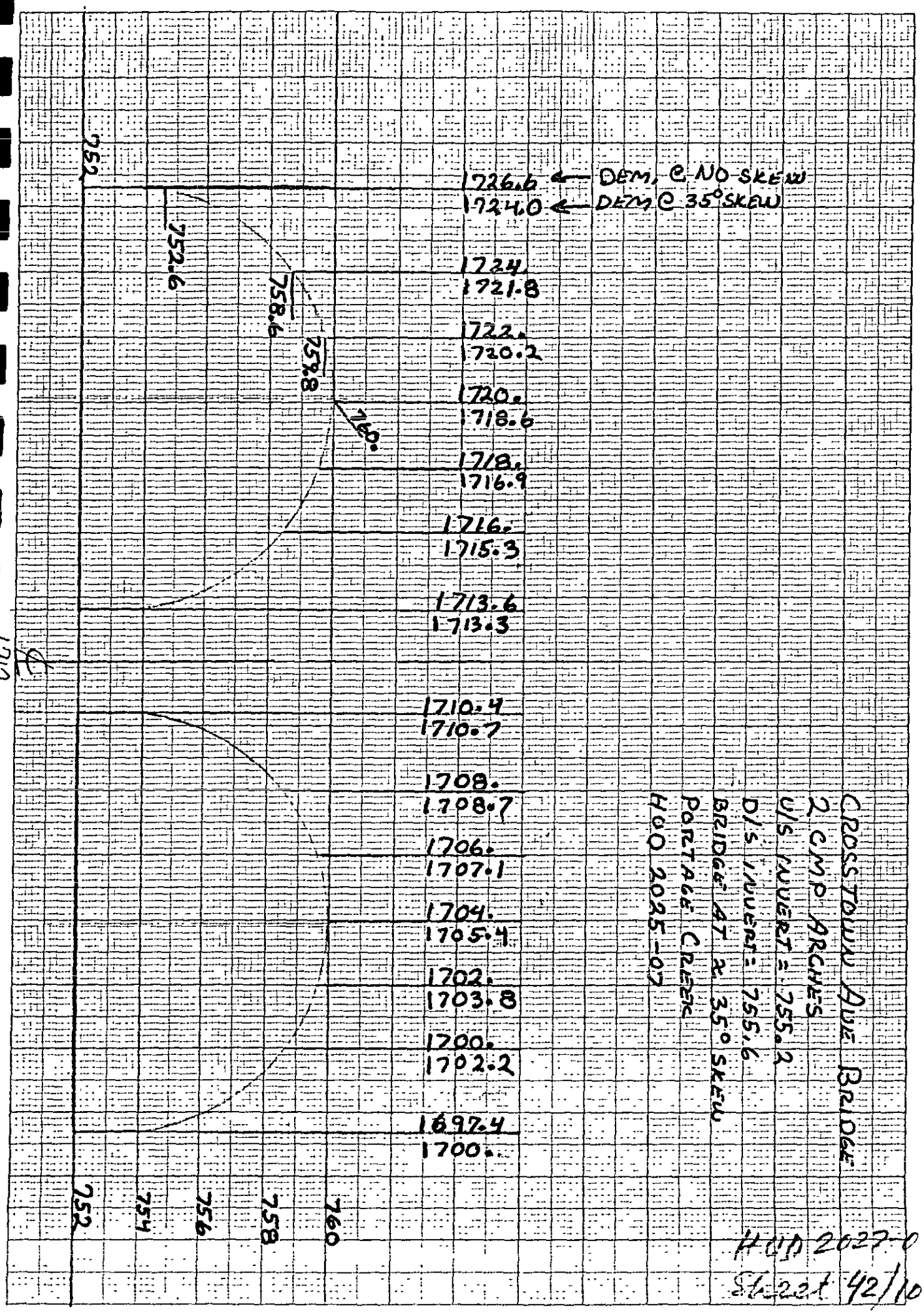
HUD 2027-07
Sheet 40/109

HUD 2027-0

CROSS-SECTION #42 PORTAGE CREEK AT CROSSTOWN PKWY



HUD 2027-07
Sheet 41/109



CROSSTOWN AVE BRIDGE
2 CMP ARCHES
U/S INVERT = 755.2
D/S INVERT = 755.6
BRIDGE AT ≈ 35° SKEW
PORTAGE CREEK
HUD 2025-07

HUD 2027-07
Sheet 42/109

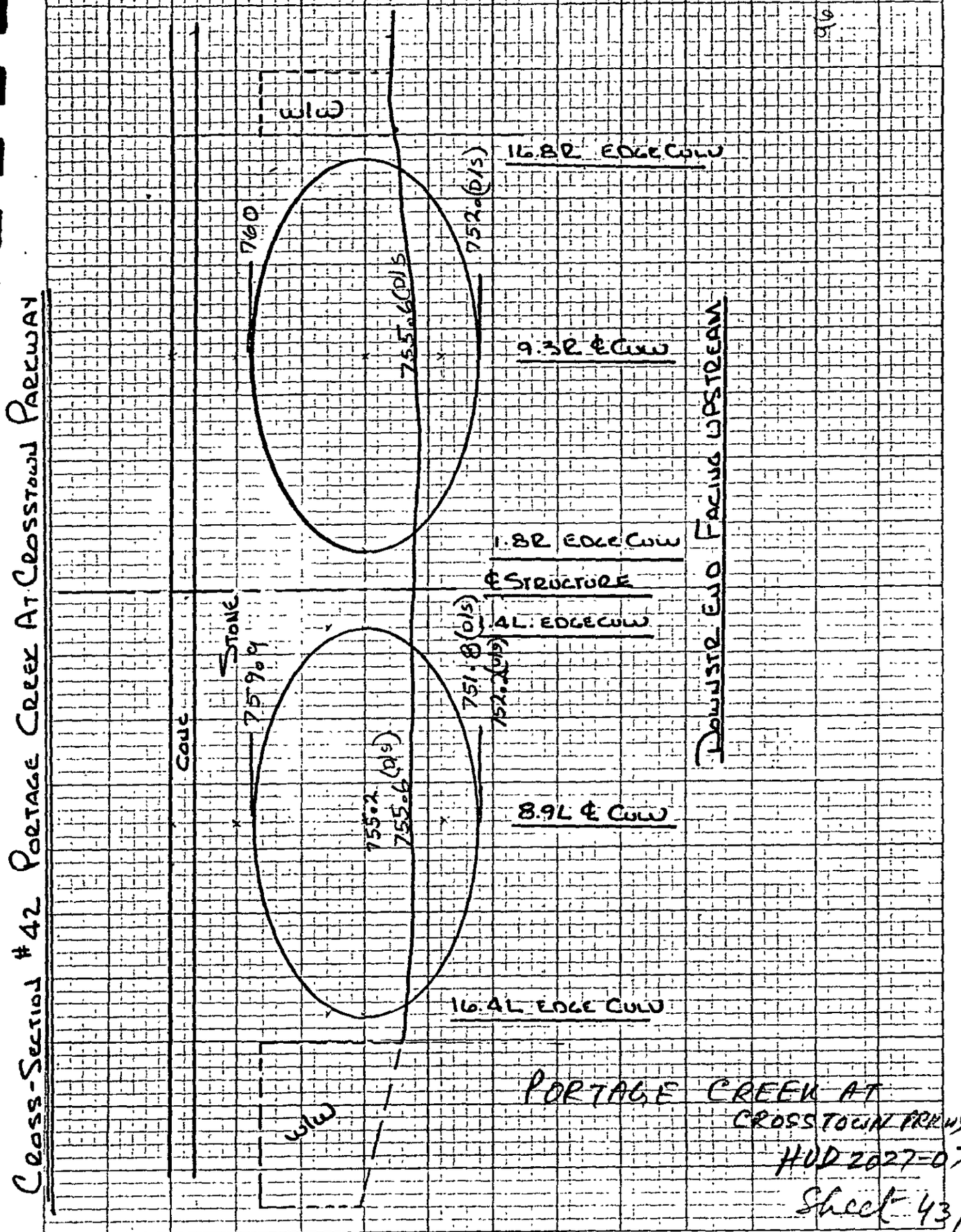
K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1320

HUD 2027-05

BOOK #3

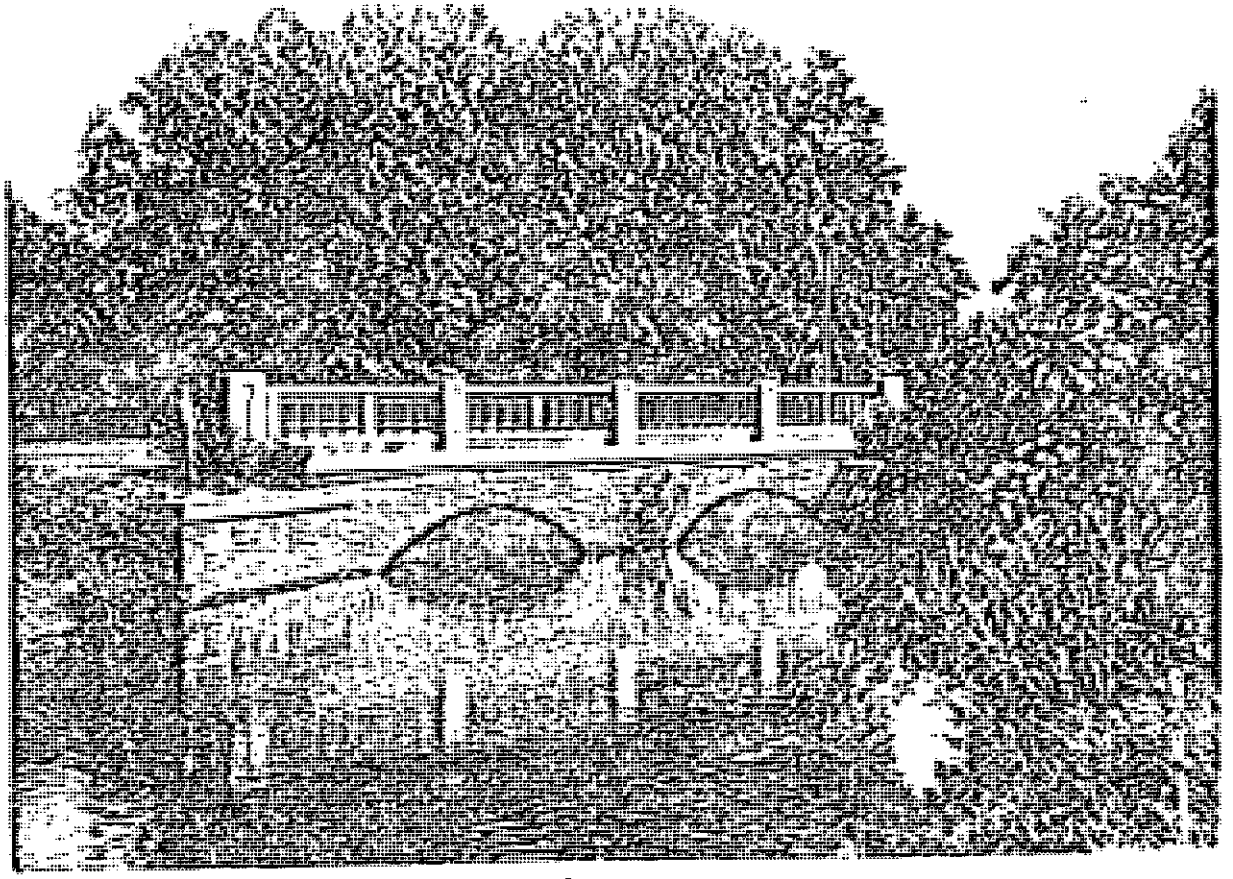
Sheet 77



PORTAGE CREEK AT CROSSTOWN PRKWY

HUD 2027-07

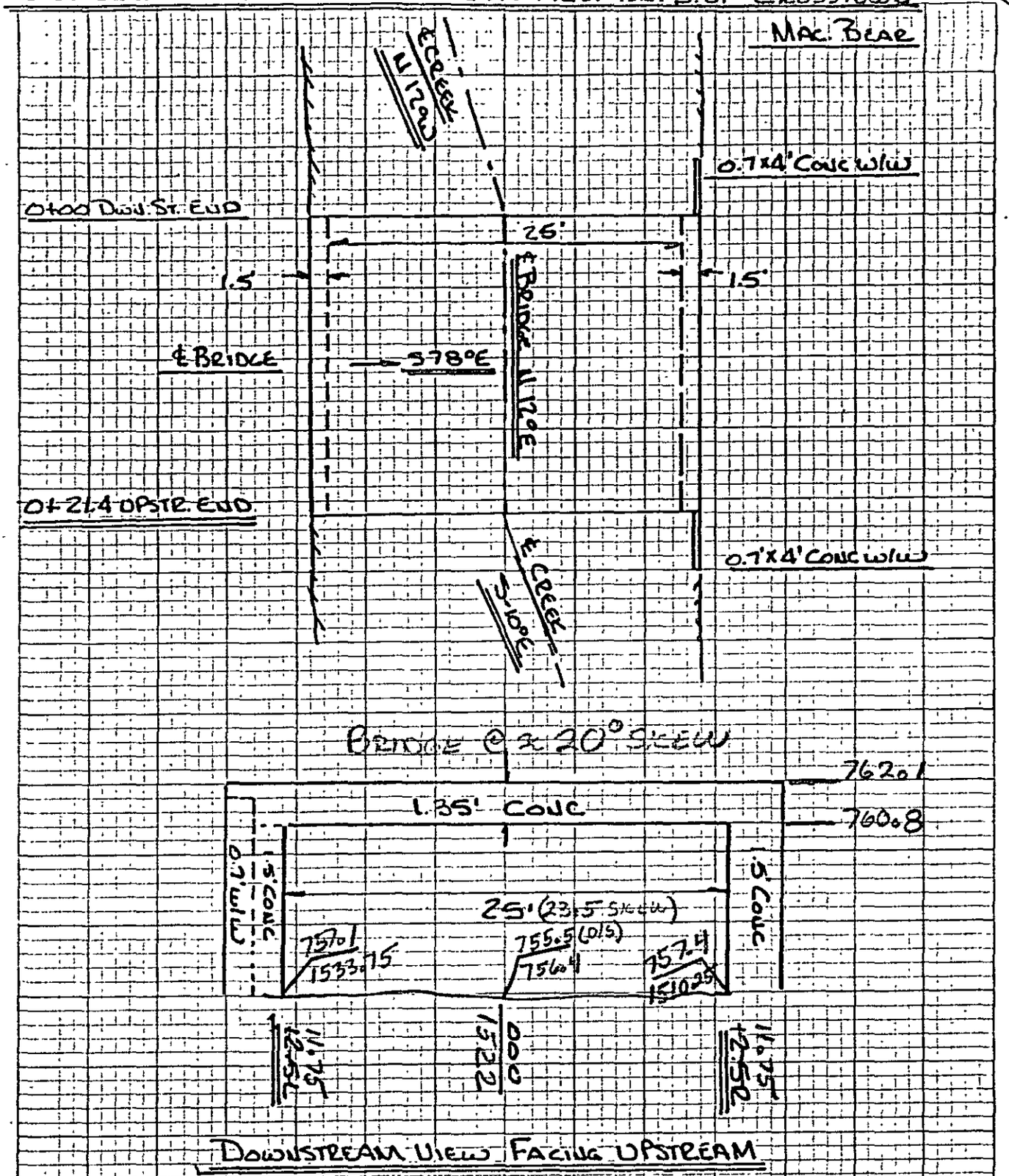
Sheet 43/109



PORTAGE CREEK AT CROSSTOWN WAY
DOWNSTR SEC #42

HUD 2027-07
Sheet 44/109

HUD 2705 Cross-Section #44 Portage Creek At First Br. S. of Crosstown



FOOTBRIDGE (Computer Secs 5949-5972)

HUD 2027-07
Sheet 45/109



PORTAGE CREEK AT 1ST FOOTBRIDGE S. OF CROSSTOWN DOWNSTR SEC 44

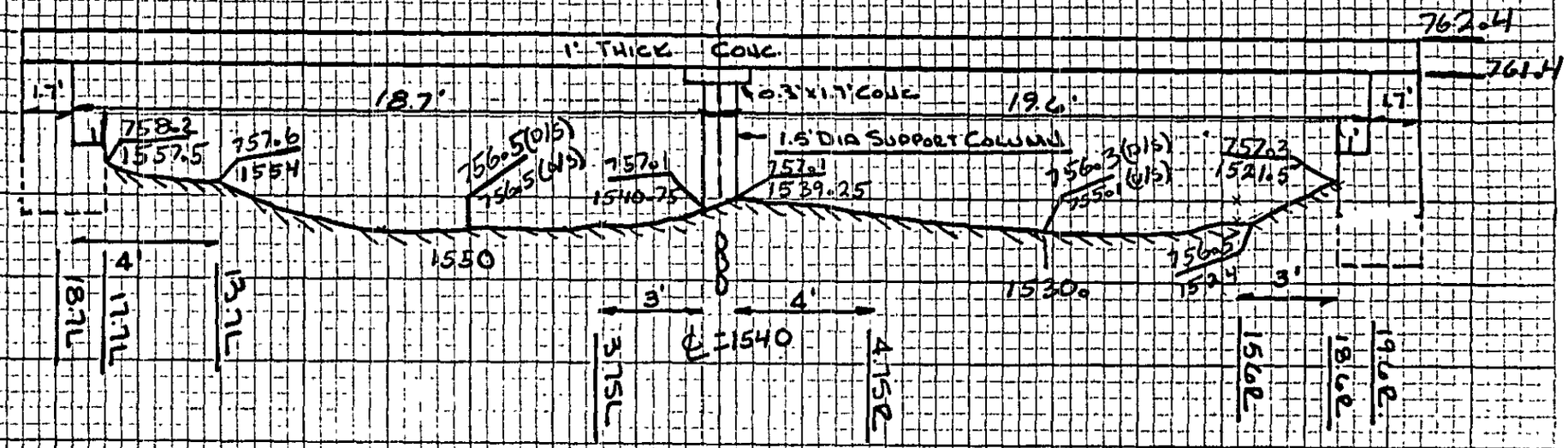
(COMPUTER SECS. 5949-5972)

HUD 2027-07
Sheet 46/109

HUD 2027-05

CROSS-SECTION #45 PORTAGE CREEK AT 2ND BRIDGE S. OF CROSSTOWN

L&R OFFSET FROM ℄ SUPPORT COLUMN (000)



DOWNSTREAM END FACING UPSTREAM (TYP)

2nd Footbridge S. of Crosstown
(Computer Secs. 6407-6423)

HUD 2027-07
Sheet 47/109

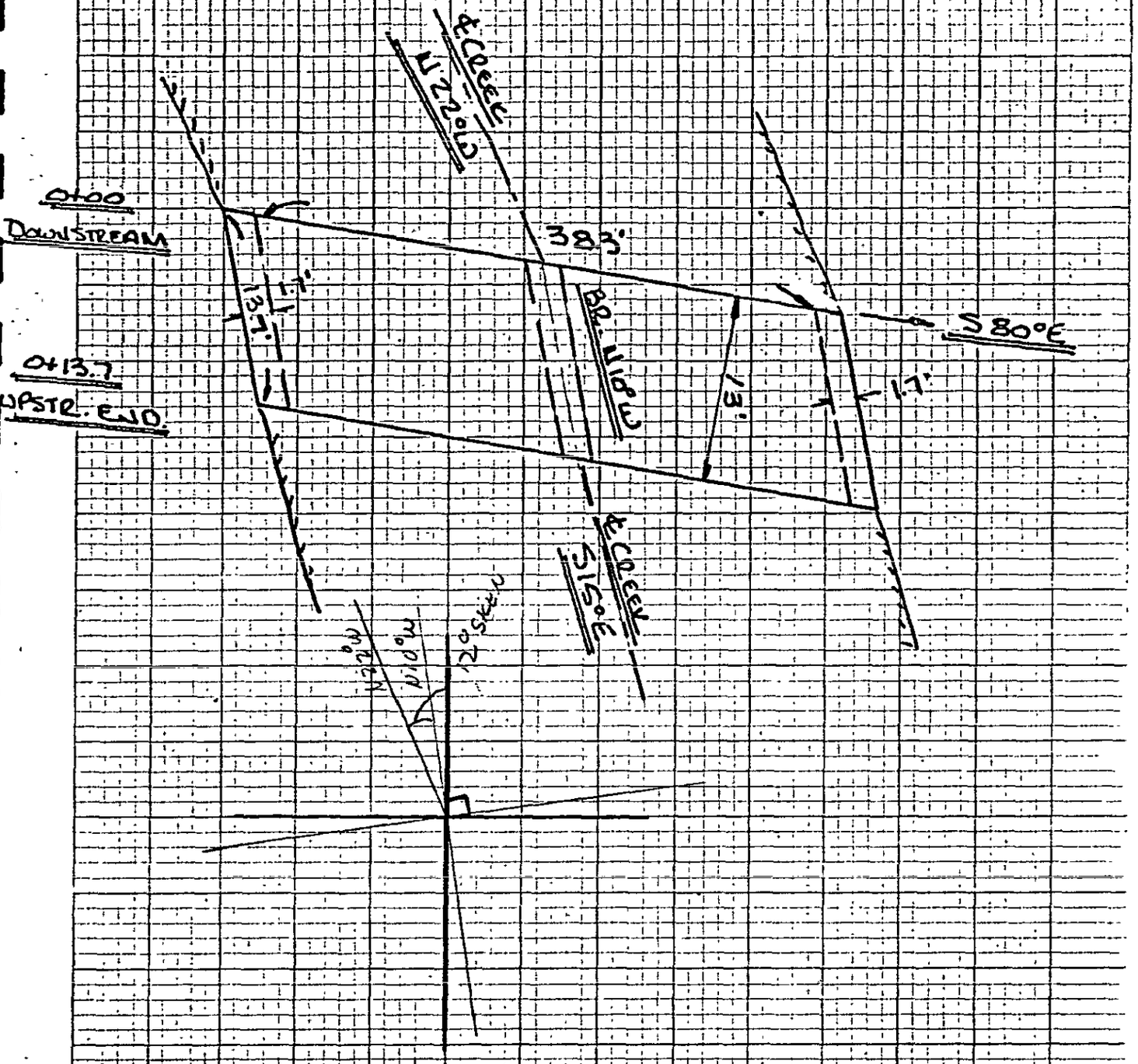
000 #3

HUD 027-05

Cross Section #45 Portage Creek At 2nd Bridge

BOOK

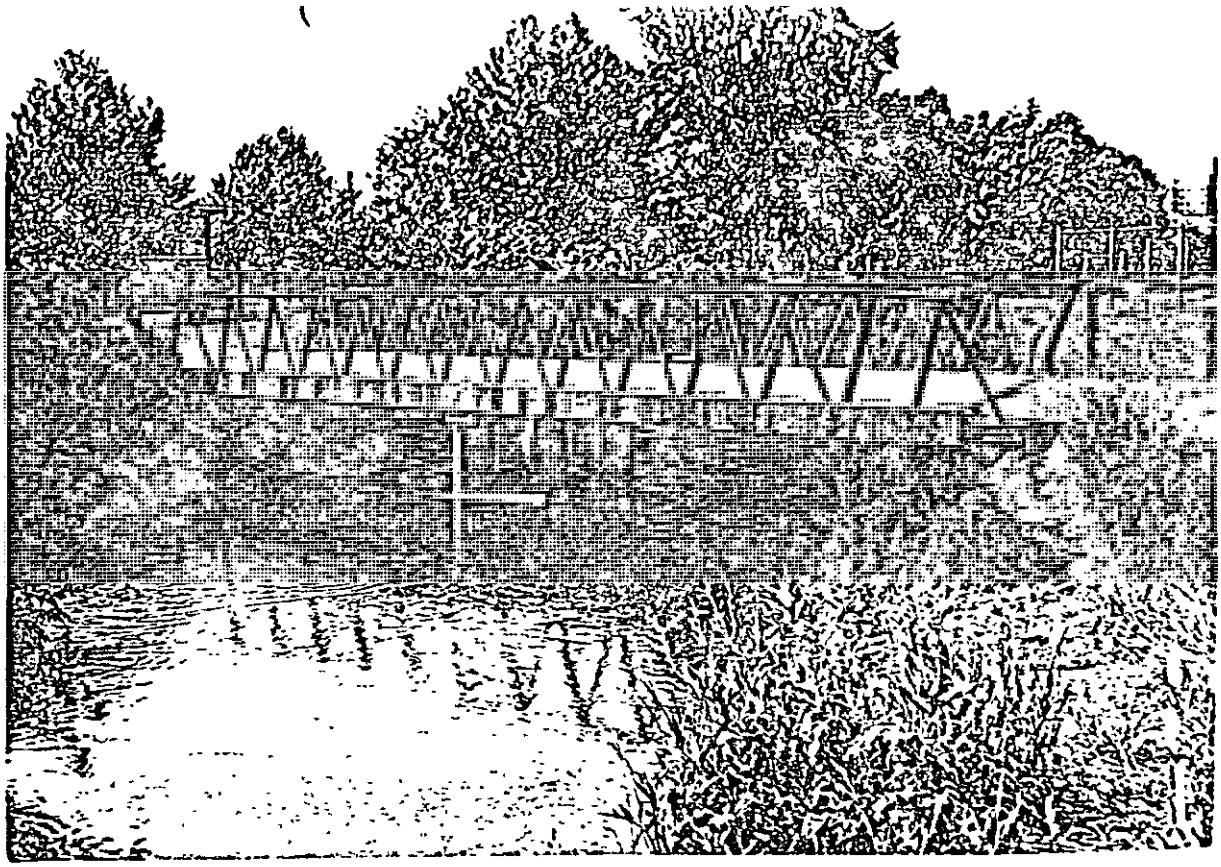
South of Crosstown — NO SKEW — Mag Bear



(Computer Sections 6407-6423)

HUD 2027-07

Sheet 48/109



PORTAGE CREEK AT 2.0 FOOTBRIDGE S.
OF CROSSTOWN UPSTR Sec 45

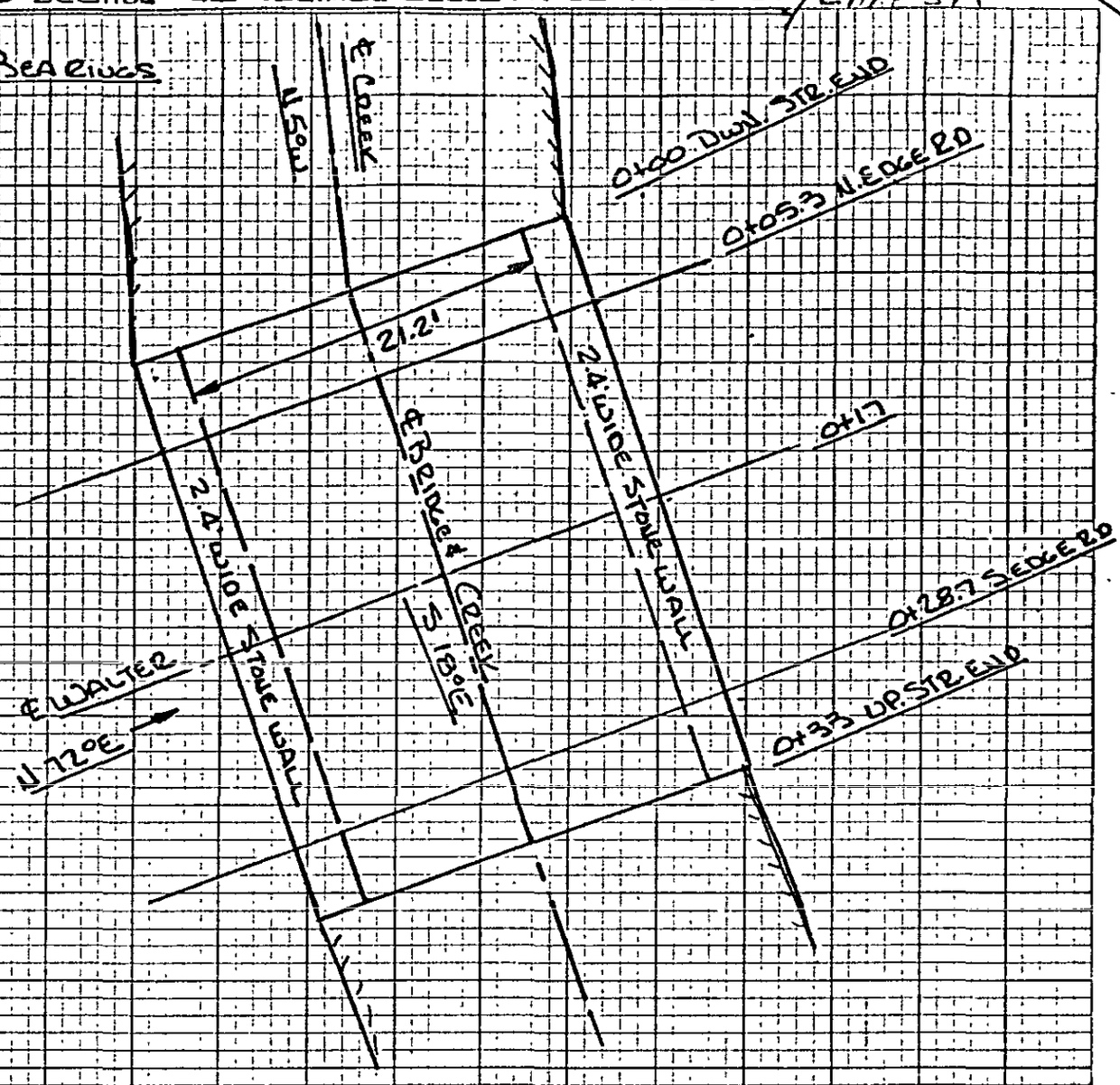
(Computer Secs. 6407 - 6423)

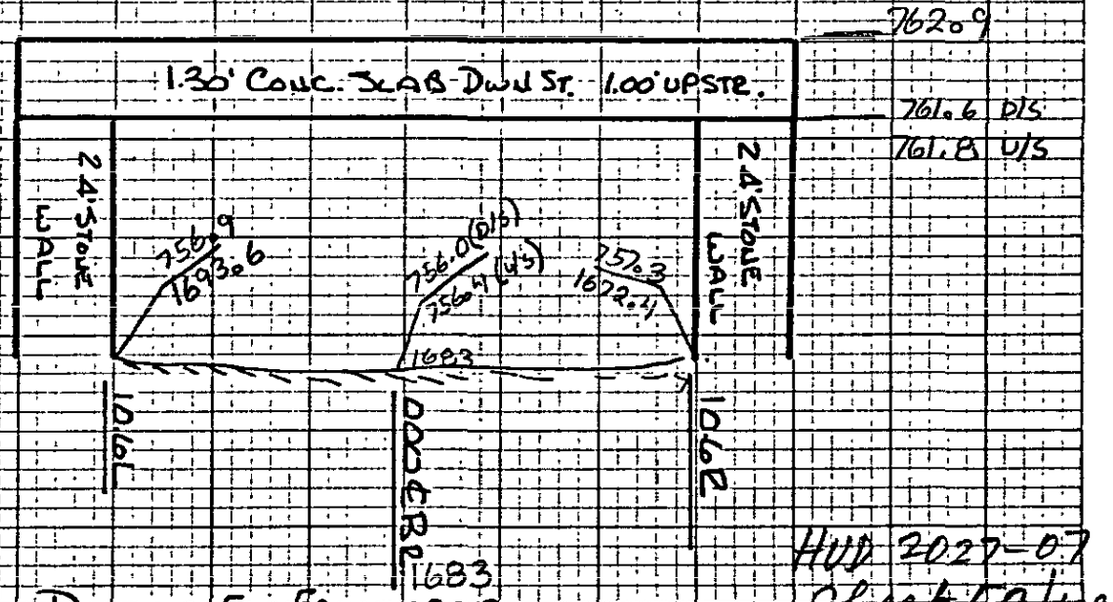
HUD 2027-07

Sheet 49/109

HUD 2027-07 CROSS SECTION #46 PORTAGE CREEK AT WALTER ST./LAKE ST. BOOK

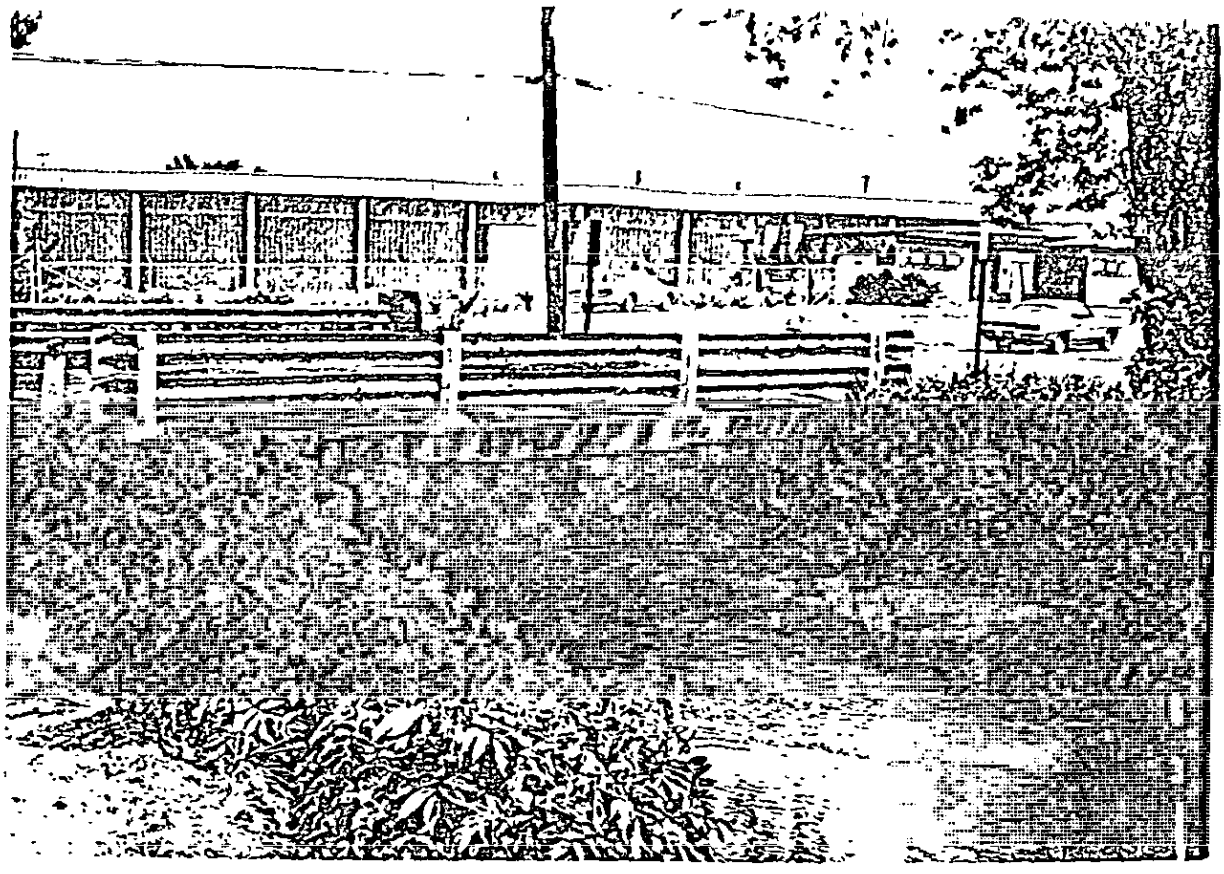
MAG. BEARINGS





DOWNSTR. END FACING UPSTR.

HUD 2027-07
Sheet 50/109



PORTAGE CREEK AT WALTER ST/LAKE ST.
DOWNSTR SEC 46

MEMORANDUM OF CALL

Previous editions usable

TO:

☐ YOU WERE CALLED BY— ☐ YOU WERE VISITED BY—

OF (Organization)

☐ PLEASE PHONE ▶ ☐ FTS ☐ AUTOVON

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☐ WISHES AN APPOINTMENT

MESSAGE

RECEIVED BY	DATE	TIME

63-110 NSN 7540-00-634-4018 **STANDARD FORM 63 (Rev. 8-81)**
Prescribed by GSA
GPO : 1987 O - 170-635 **FPMR (41 CFR) 101—11.6**

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET
25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

REFERENCE

Stockbridge Avenue Bridge

Purpose: Bridge is set up as a Normal Bridge Routine. This Calculation ensures the accuracy of the model by checking pressure flow and weir flow situation in comparison w/ Low Flow.

Given:

From Normal Bridge Routine - U/s Energy Grade = 765.1', D/s Water Surface = 764.9', Head on Weir = .6', Channel Q = 320 cfs, Bridge Area = 118 ft² - .6(19) = 107 ft², Length of weir over channel = 19 Ft.

Thus, at Energy Grade U/s of 765.1:

$$Q_{weir} = C L H^{3/2} = 3.0\ (19)\ (.6)^{3/2} = 27 cfs$$

$$Q_{STRUCTURE} = Total\ Q - Q_{weir} = 320 - 27 = 293 cfs$$

$$Q_{STRUCTURE} = 293 = A\sqrt{\frac{2g\,H}{K}} = 107\sqrt{\frac{(64.4)\ .2}{.5}}$$

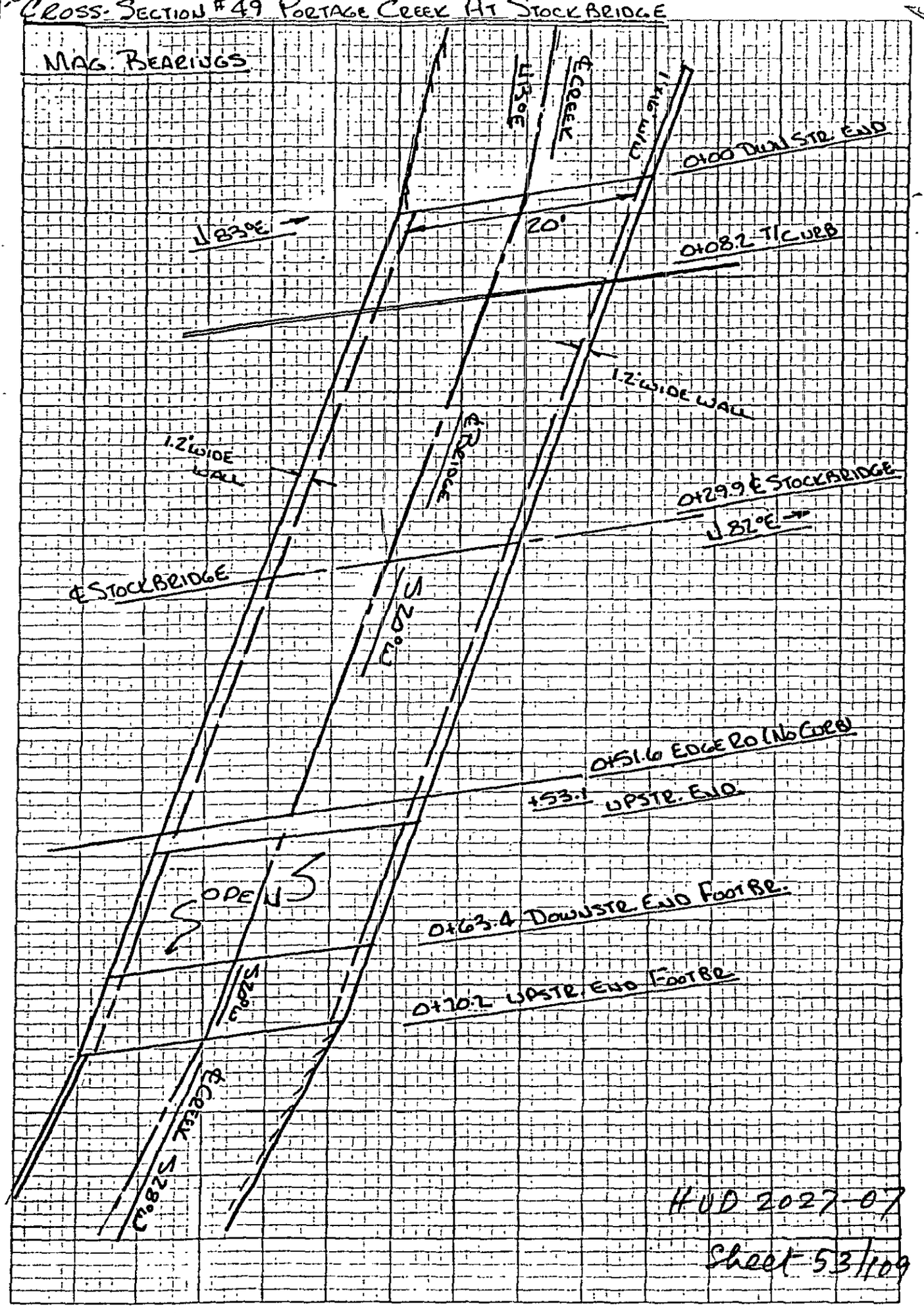
HEC-2 Manual - Pressure Flow

$$Q_{STRUCTURE} = 293 \cong 314 cfs \quad \checkmark$$

Thus, the Normal Bridge Routine is working well for this structure.

HUD 2027-07
Sheet 52/109

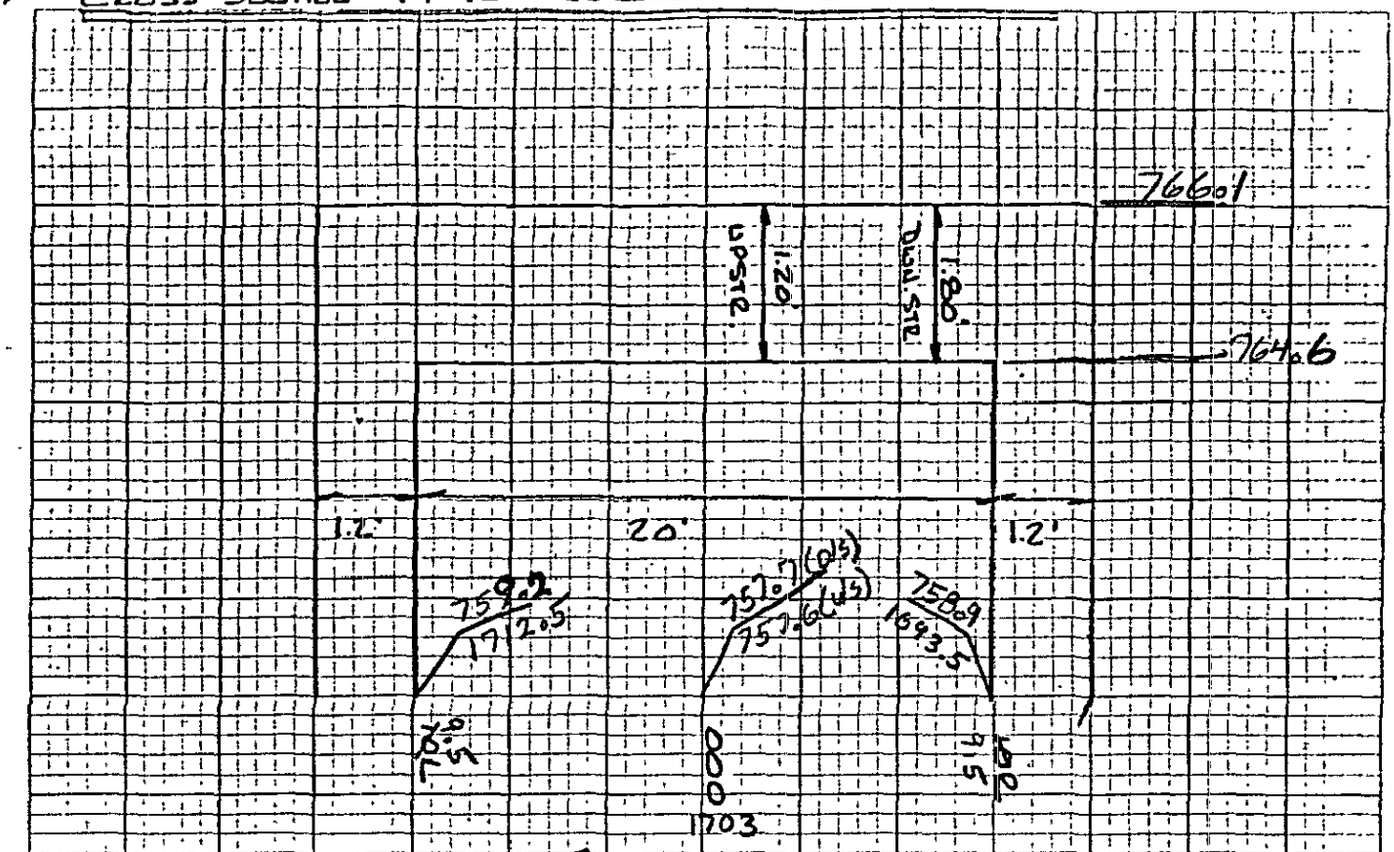
SUBJECT	BY	CHK	SHEET NO.	File Code No (Job No) Owner • Project • Suffix
Stockbridge Ave. Bridge	WJ C		1 OF 1	HUD • 2059 • 01
	DATE 1/26/81	DATE		



CROSS-SECTION #49 PORTAGE CREEK AT STOCKBRIDGE
MAG. BEARINGS
0+00 DWN STR. END
0+08.2 T/CURB
20'
83°E
1.2' WIDE WALL
1.2' WIDE WALL
0+29.9 ℄ STOCKBRIDGE
82°E
℄ STOCKBRIDGE
0+51.6 EDGE RD (NO CURB)
+53.1 UPSTR. END
OPEN
0+63.4 DOWNSTR. END FOOTBR.
0+70.2 UPSTR. END FOOTBR.
℄ CREEK
HUD 2027-07
Sheet 53/109

HUD 2027-07

Cross-Section #49 Portage Creek at Stockbridge



Downstream End Facing Upstream

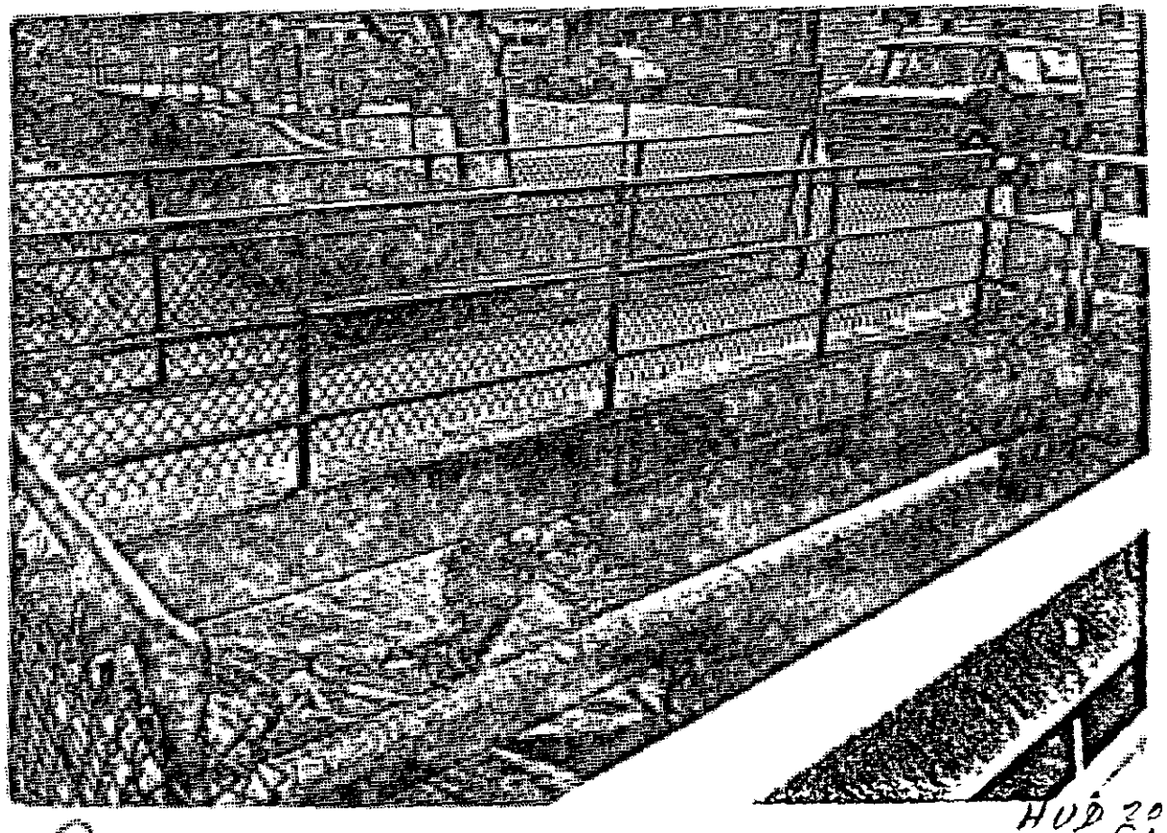
L&R Offset From ℄ Structure Facing Upstream

HUD 2027-07

Sheet 54/109



PORTAGE CREEK AT STOCKBRIDGE



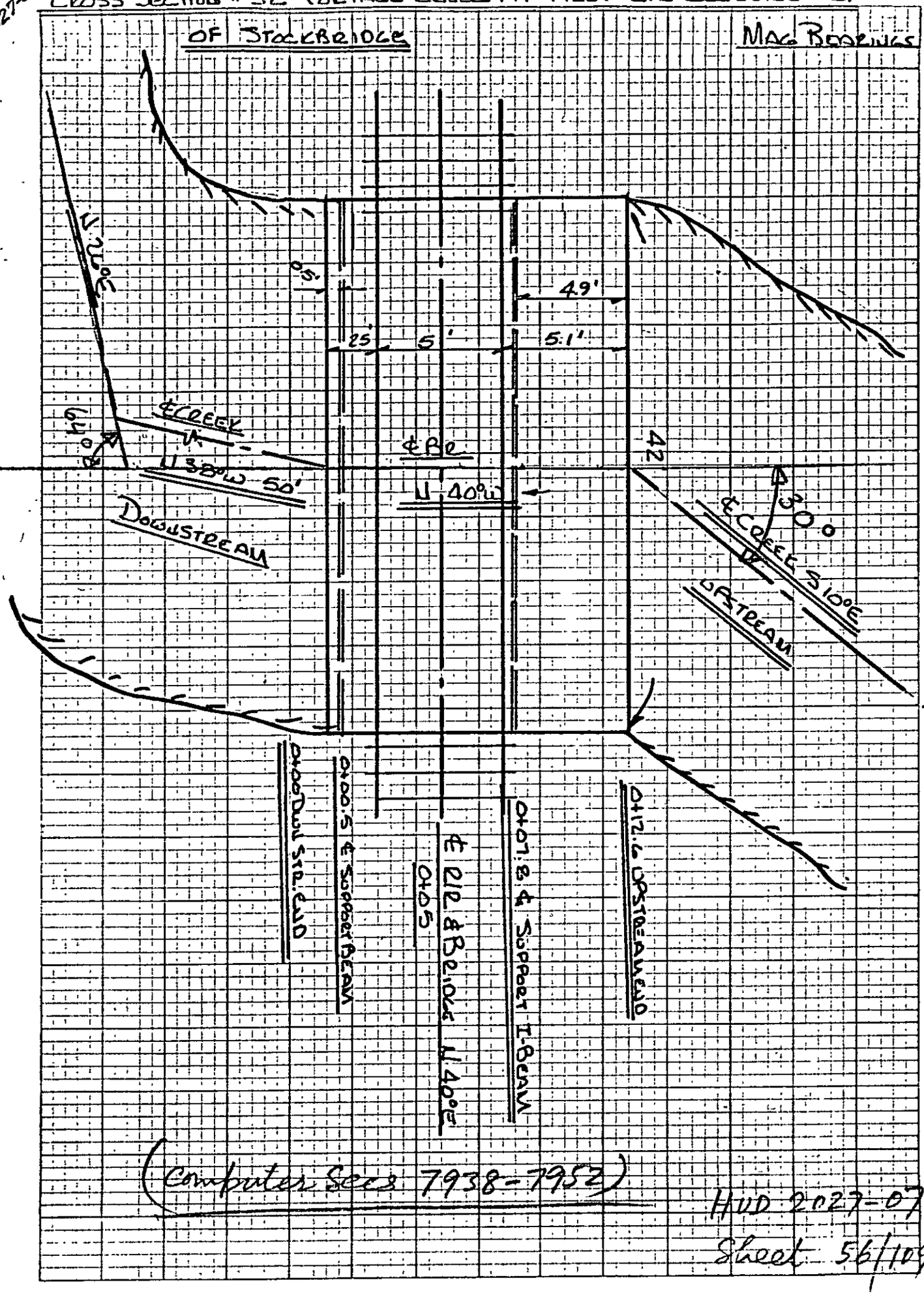
HUD 2027-07
Exhibit 55/109

PORTAGE CREEK AT FOOTBRIDGE S/S STOCKBRIDGE

HUL 2027-

Cross Section #52 Portage Creek at West RR Crossing S. of Stockbridge

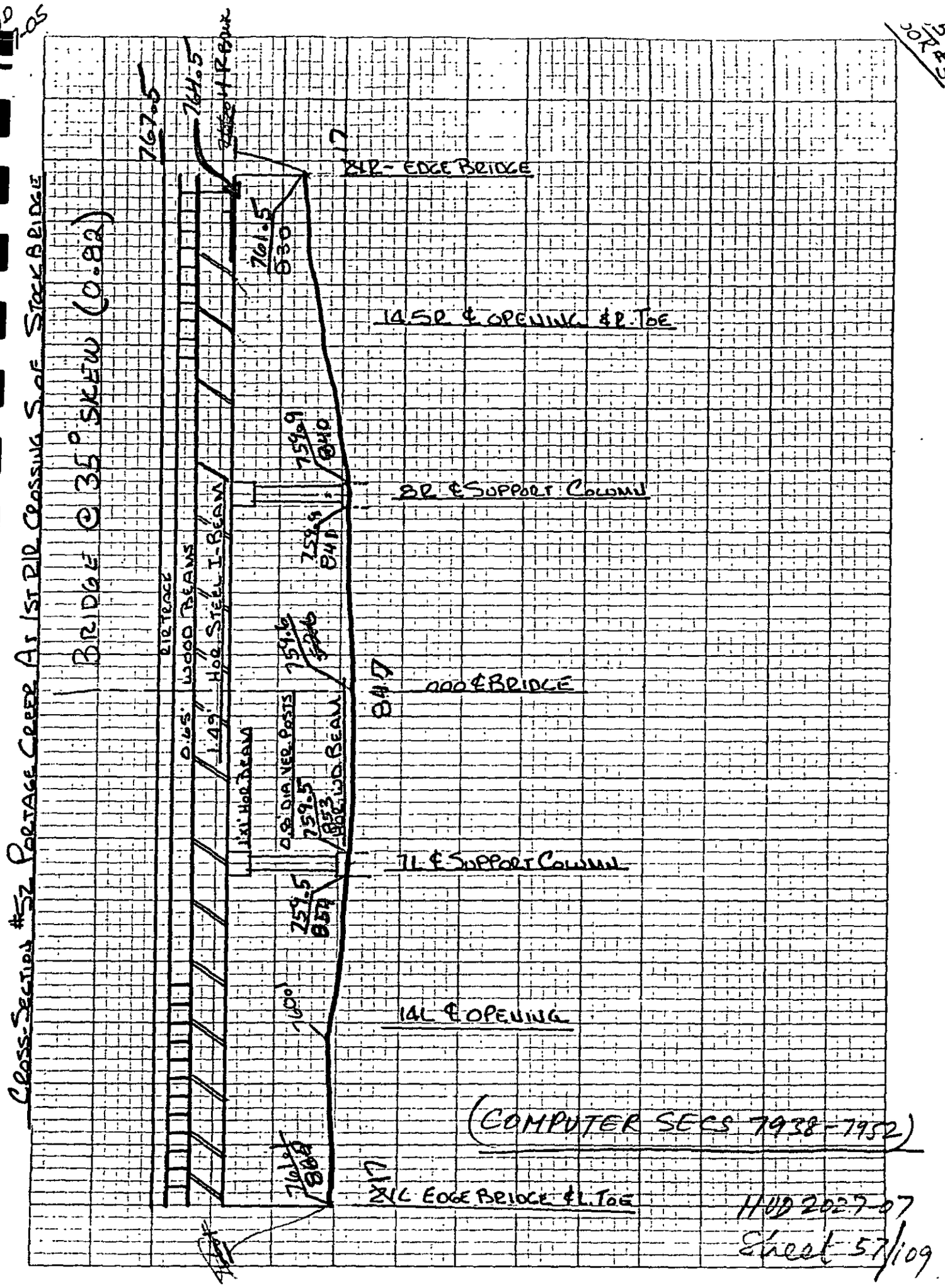
Mag Bearings



(Computer Secs 7938-7952)

HUD 2027-07

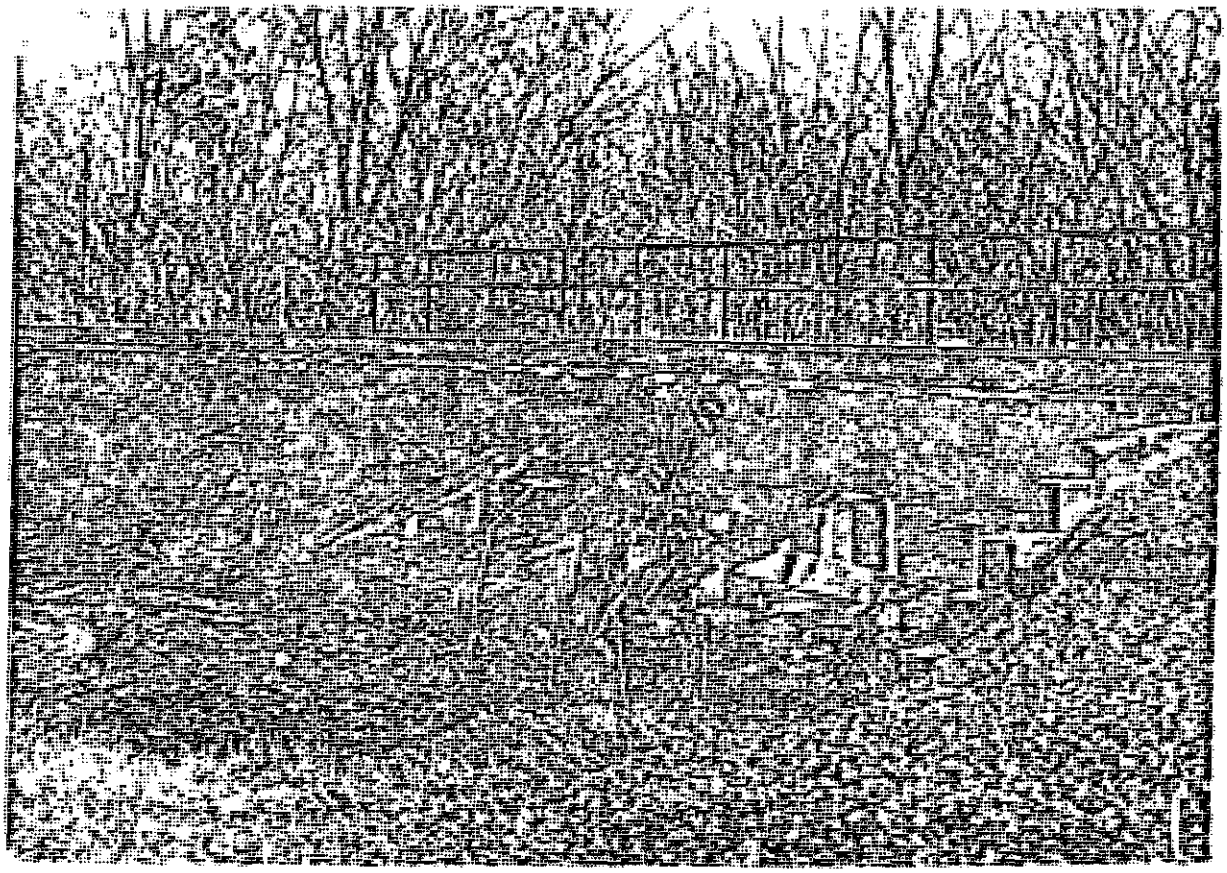
Sheet 56/109



(COMPUTER SECS 7938-7952)

HUD 2027-07

Sheet 57/109



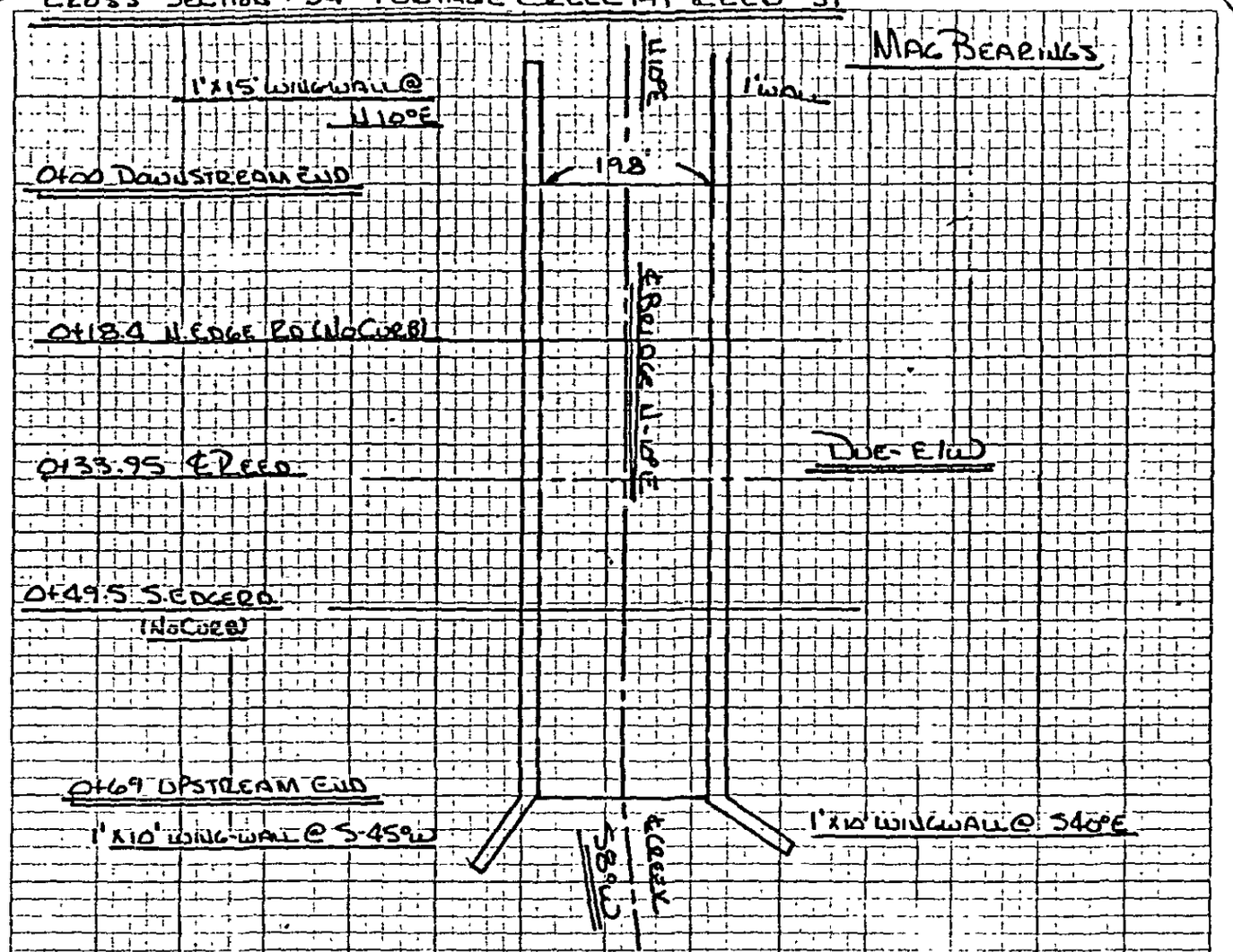
DAUUSTE SEC 52 PORTAGE CREEK

RAILROAD SOUTH OF STOCKBRIDGE

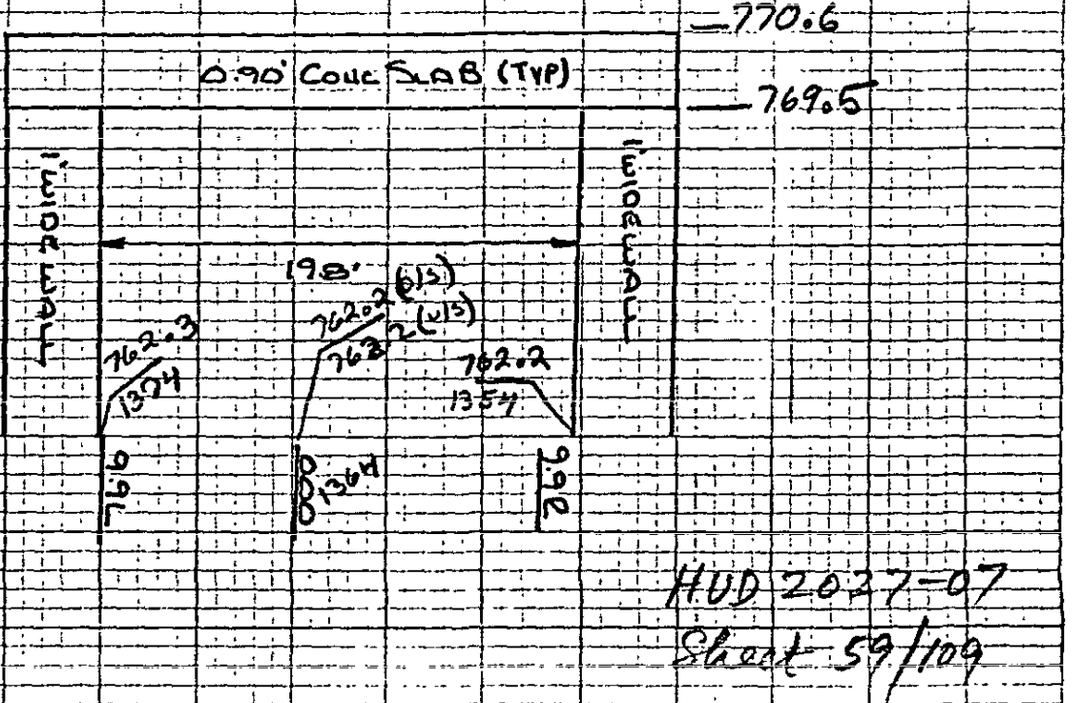
(Computer Secs. 7938-7952)

HUD 027-05

Cross-Section #54 Portage Creek at Reed St

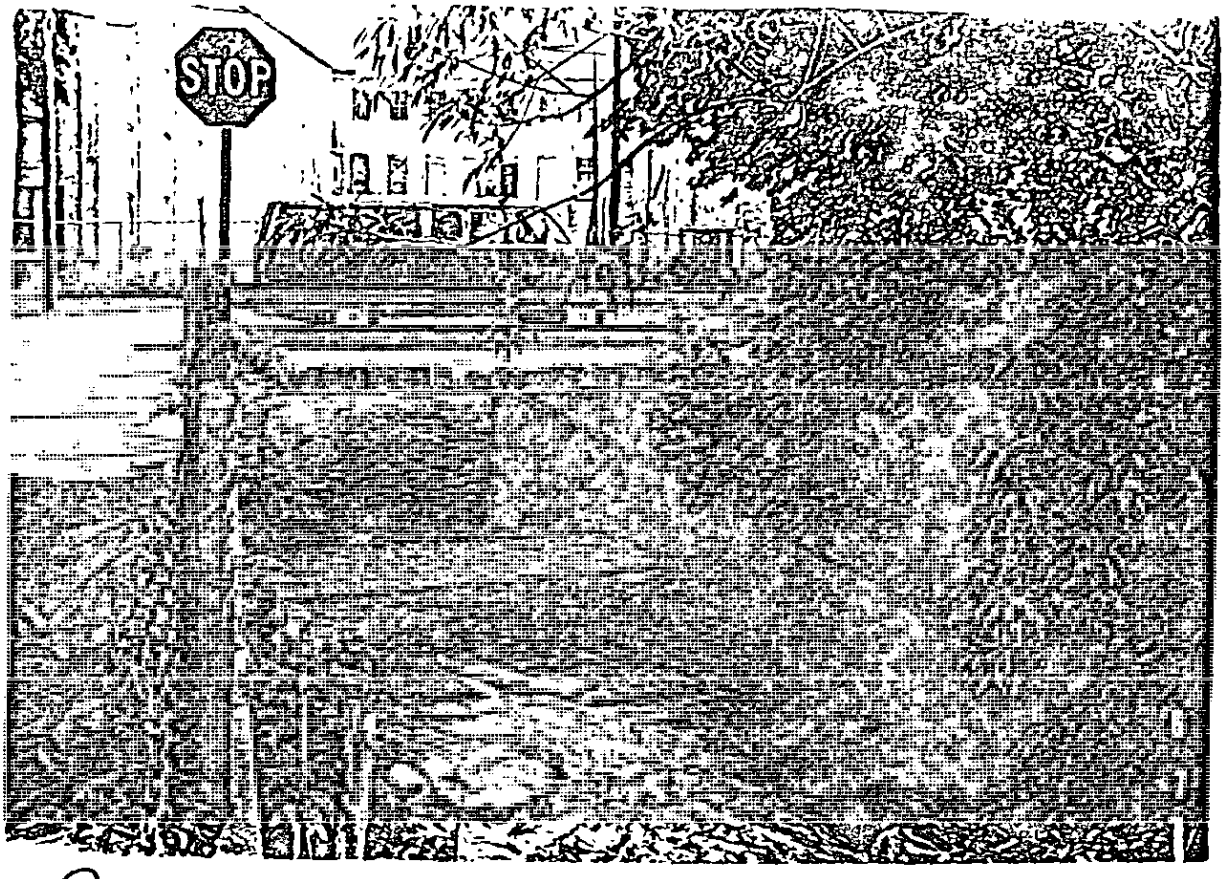


Downstream End Facing Upstream



HUD 2027-07

Sheet 59/109



PORTAGE CREEK AT REED
DOWNSTR. SEC 54

FORM 25 0

(313) 291 5400

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

Bridge Location: Sta 9215 – 9298 Structure is U/S of Reed Ave. Section #56

Bridge Losses – SB Card

REFERENCE

1. XK (Pier Shape Coefficient) 0 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk , Σk = $k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$k_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = Avg = $\frac{84+69}{2}$ = 76.5 = 76.5 $W_{p_{Avg}}$ = $\frac{44+50}{2}$ = 47 ft

R = A/wp = 1.628 $R^{4/3}$ = 1.915 L = 82'

n (composite) = .023

$k_f = 29.1 \times (.023)^2 \times 88 / 1.915 = .71$

k_e = .5 Square Edges – Headwall Parallel to Structure — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 49

k_p = 0 if bridge has no intermediate piers

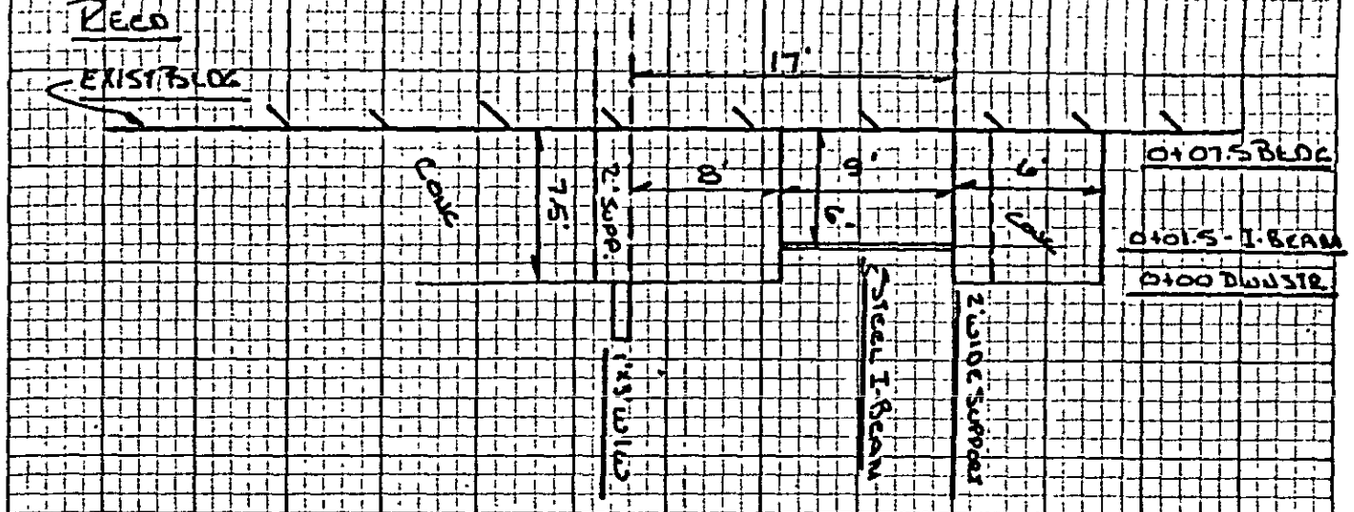
~~k_p = 0.05 if bridge has intermediate piers~~ — HEC-2 manual

2. XKOR = 1 + .71 + .50 + 0 = 2.21
3. COFQ Coefficient of discharge = 30 — HEC-2 manual
4. RDLEN = Length of weir = 0 (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 17'
6. [illegible] of obstruction = 0 — field data
7. [illegible] = bridge opening inc. piers = 69 ft² (minimum)
8. SS = side slope = 0 (horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 762.8 (0 if equal to minimum elevation in previous x-sect.) — HUD 2027-07
10. ELCHD = Elevation of channel invert D/S side = 762.4 (0 if equal to minimum elevation in previous x-sect.) — Sheet 61/109

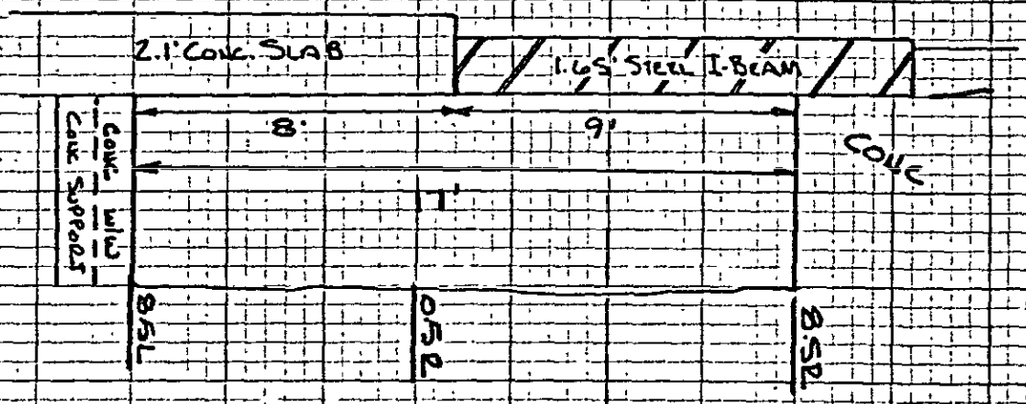
SUBJECT	BY	CHK.	SHEET NO	File Code No. (Job No.) Owner • Project • Suffix
Sta 9215 – 9298	W J W. DATE 1/26/81	DATE	___ OF ___	HUD • 2027 • 07

HUD 2027-05

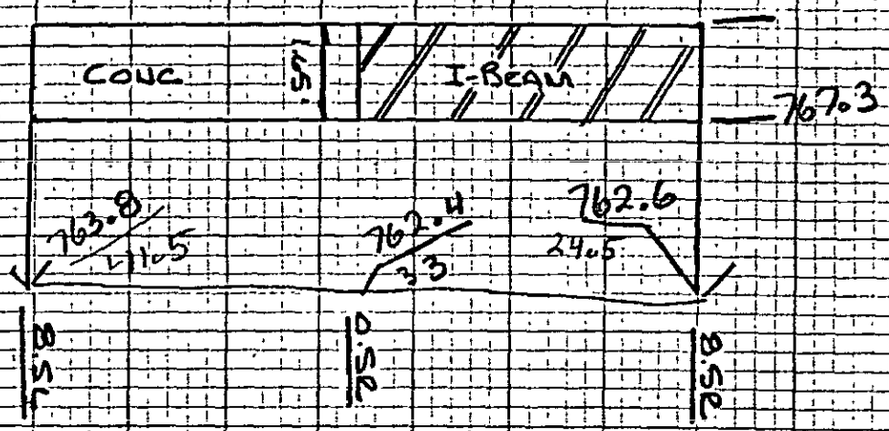
CROSS-SECTION #56 PORTAGE CREEK @ DOWN STR. END BLDG S. OF



DOWNSTR. END. STA 0+00 AND 0+01.5 FACING UPSTREAM



0+07.5 AT FACE OF BLDG FACING UPSTREAM



Sta. 9215 - 9297

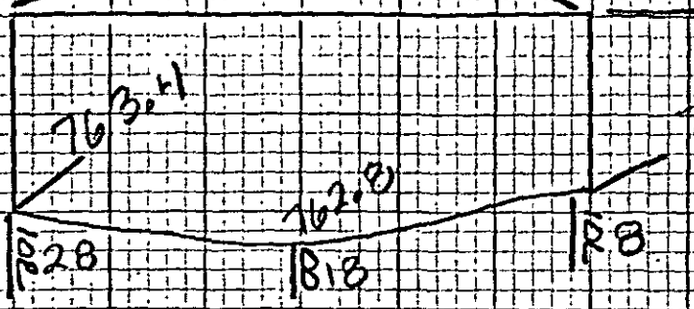
HUD 2027-07

Sheet 62/109

HUD 2027-05

Cross-Sec #56 Upstream End Bldg

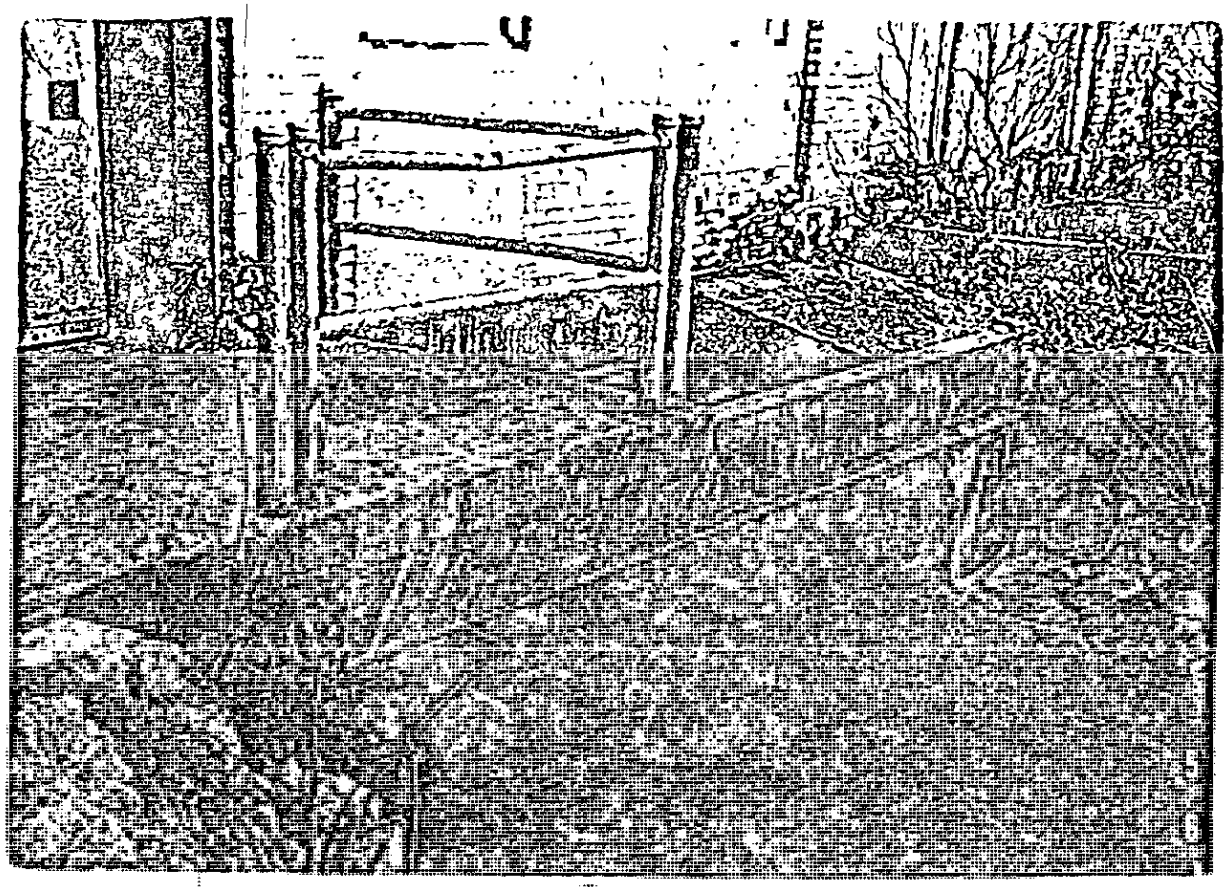
XK#3



FACING DOWNSTREAM: L&R OFFSET FROM ℄ OPENING FACING UPSTR

Sta	±	HI	—	Elev	
~~10L~~		770.94			Ref FB 1003 Pg 64
10L			3.52	767.42	Inside Top
10L			6.85	764.09	Creek Bott.
000			3.55	767.39	Inside Top
000			8.15	762.79	Creek Bott.
10R			3.55	767.39	Inside Top
10R			7.59	763.35	Creek Bott.

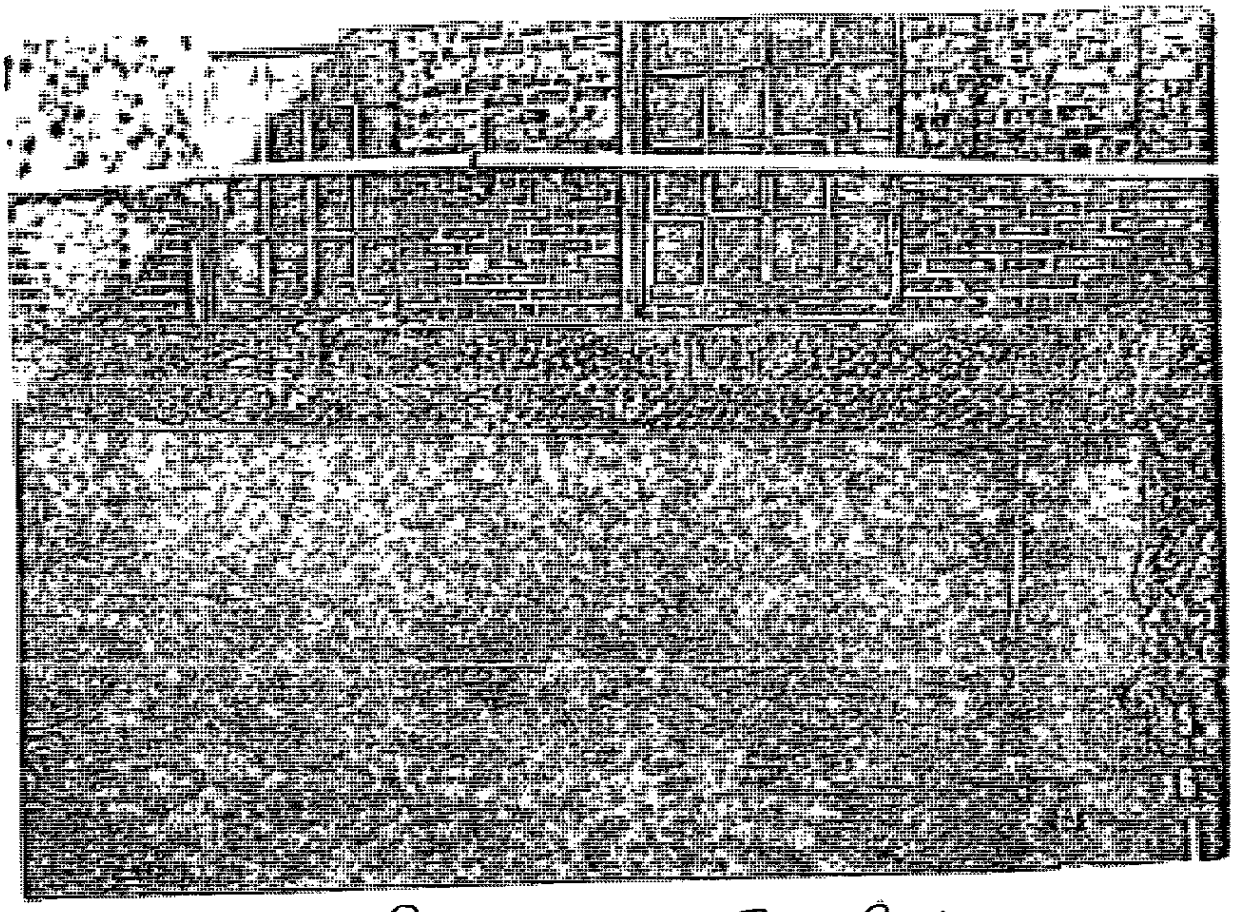
Sta. 9215 – 9297



DOWNSTR. SEC 56 PORTAGE CREEK S. OF REED

Sta. 9215 – 9297

HUD 2027-07
Sheet 64 /109



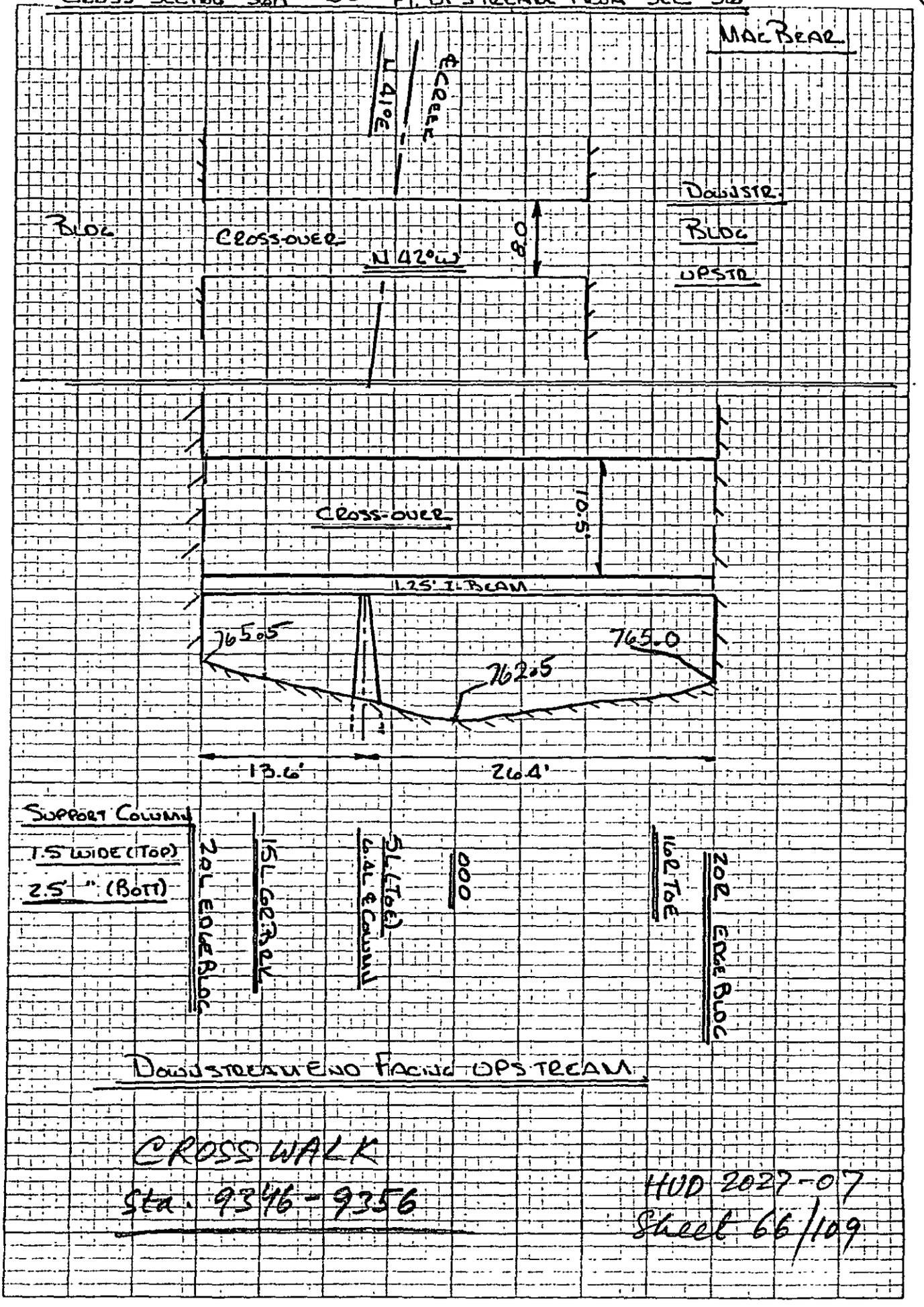
UPSTR. SEC 36 PORTAGE CREEK S OF REED

Sta. 9215 – 9297

HUD 2027-07
Sheet 65/109

HUD 2027-05

Cross-Section #56A 50 Ft. Upstream From Sec. 56

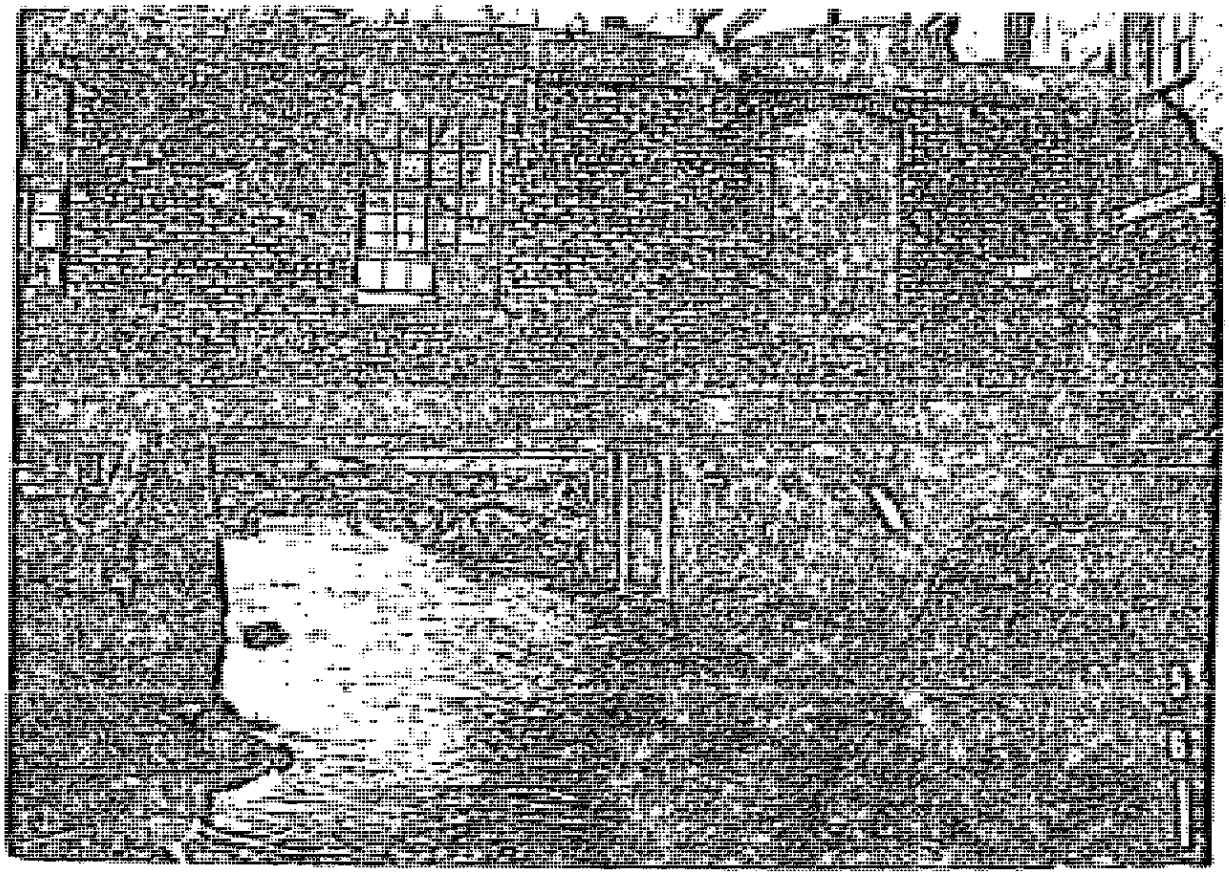


CROSS WALK

Sta. 9346 - 9356

HUD 2027-07

Sheet 66/109



Cross-Section 56A Downstr.

CROSSWALK

Sta 9346-9356

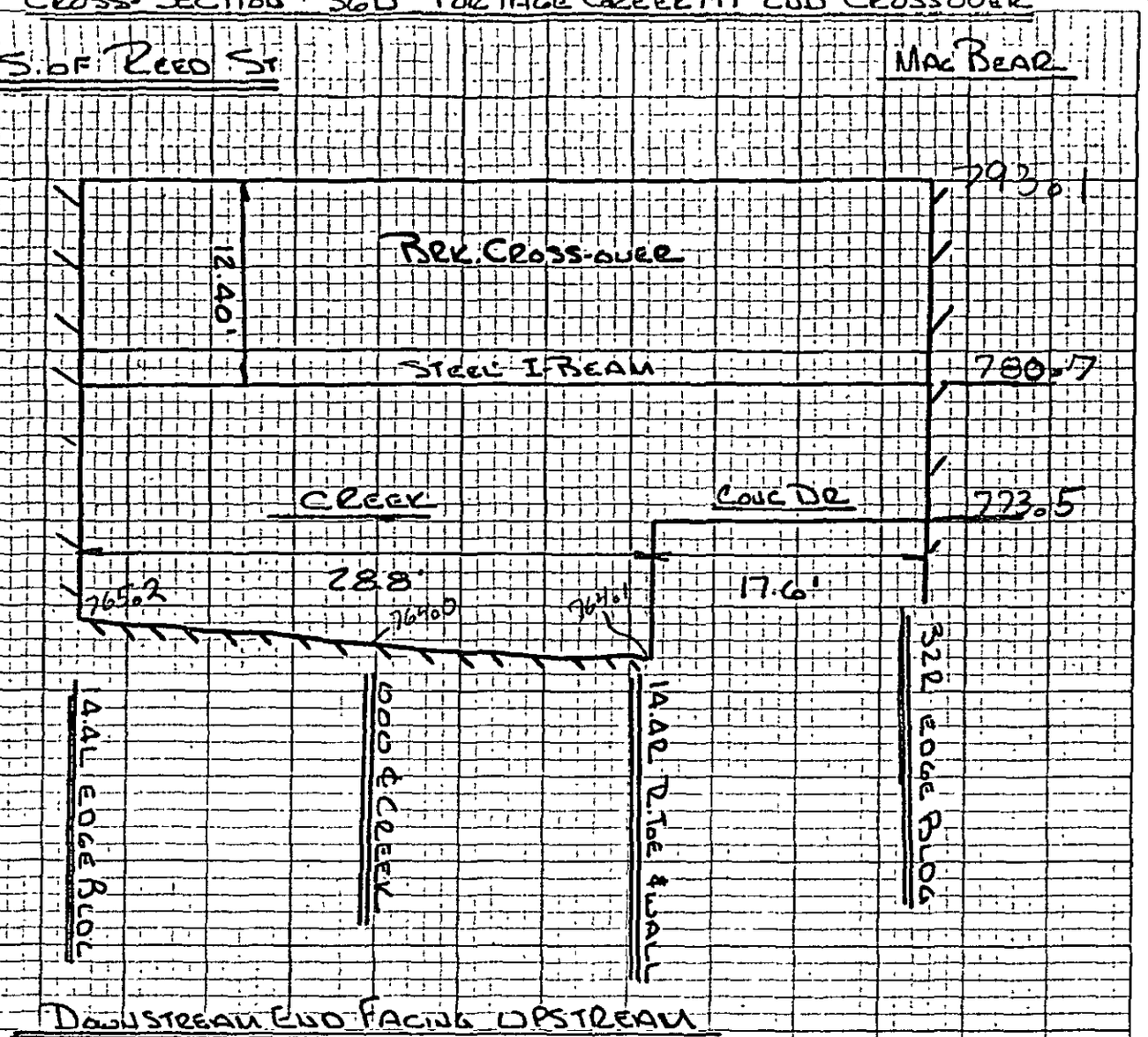
HUD 2027-07

Sheet 67/109

HUD 2027-07

Cross-Section #56B Portage Creek At 2nd Crossover

16 Doc #3



Downstream End Facing Upstream

Same Bearings As Cross Section #56A

Width Cross over 11'

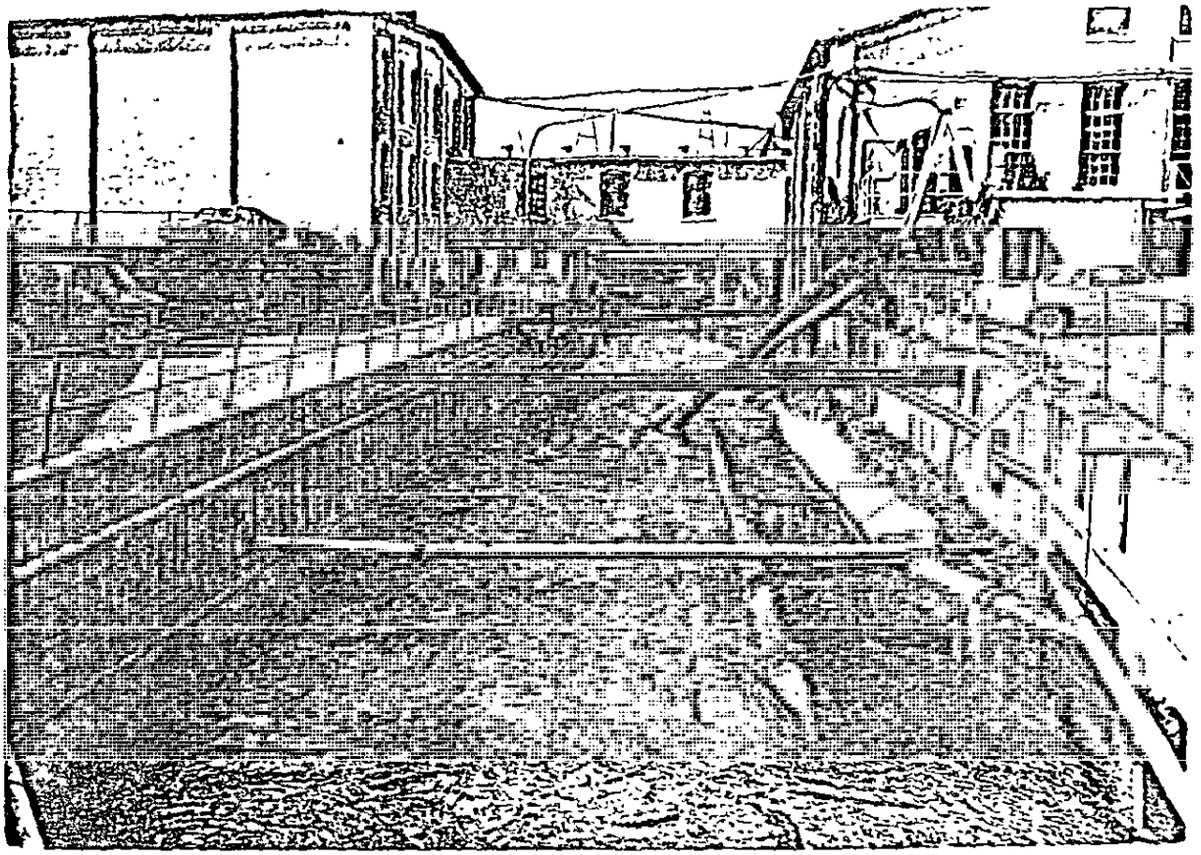
0+00 Downstream End

0+11 Upstream "

Upstream End 212 ft. from Upstream of 57

Sta. 9664 – 9677

HUD 2027-07
Sheet 68/109



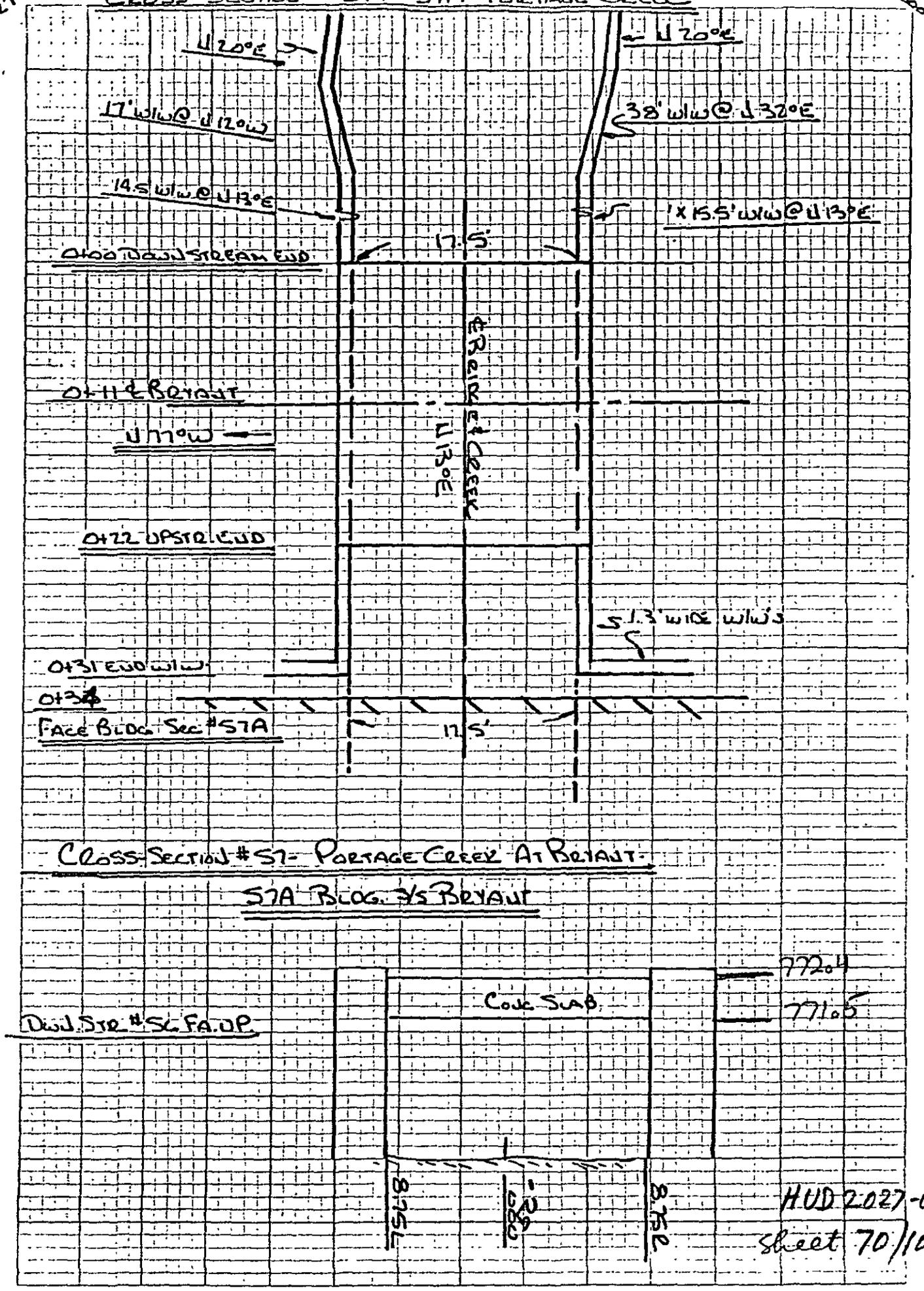
PORTAGE CREEK BET. LEED & BRYANT
UPSTREAM 56B

Sta. 9664-9677

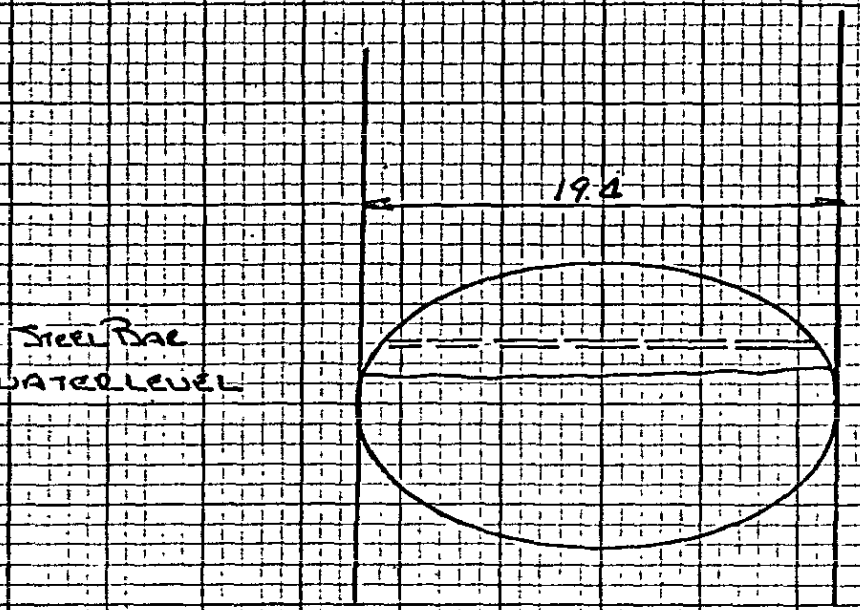
HUD 2027-07
Sheet 69/109

HUD 2027-05

Cross-Section #S7 & #S7A Portage Creek



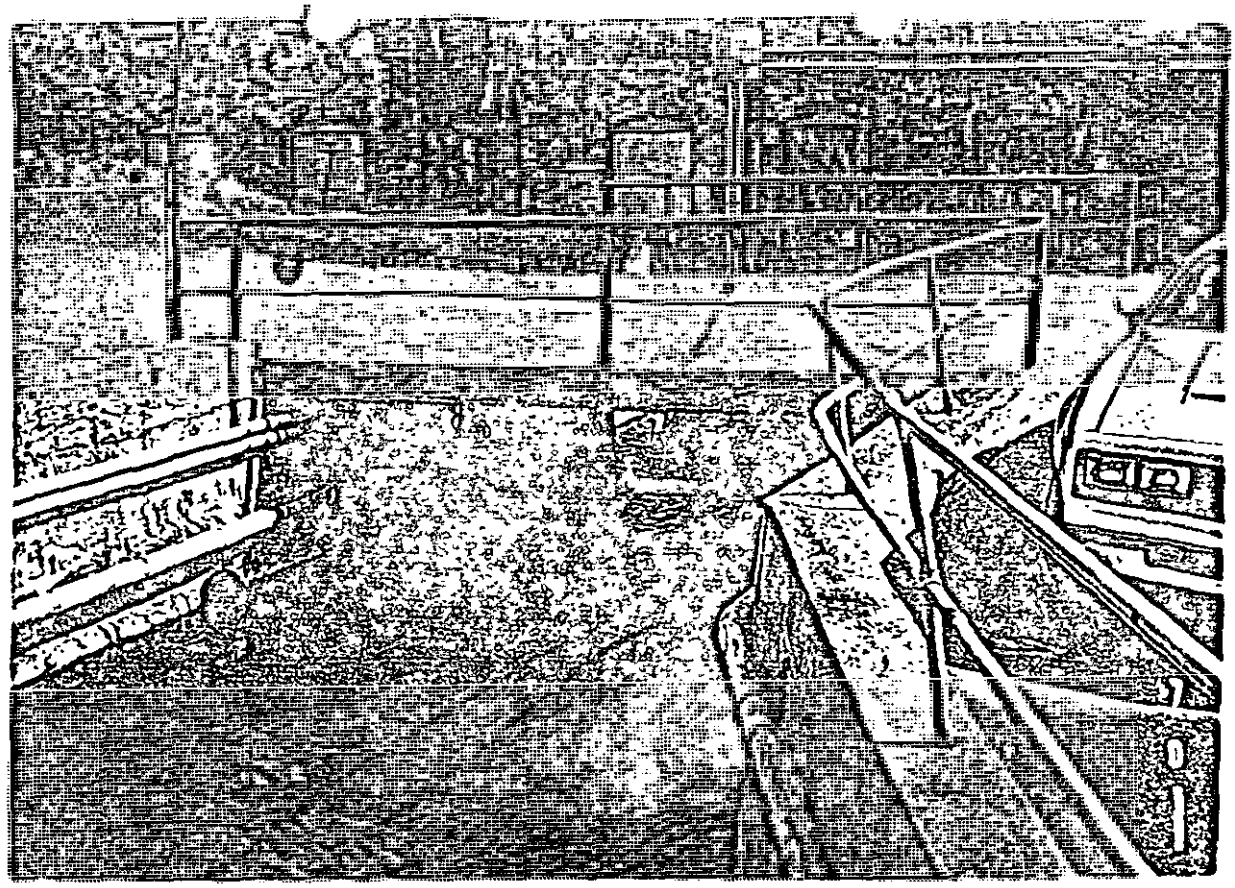
HUD 2027-07
Sheet 70/109



MOST OF OPENING UNDER WATER CAN NOT BE SURE

ABOUT STRUTURE CONFIGURATION

UPSTREAM END CROSS-SEC. # 57A



PORTAGE CREEK AT BRYANT
UP DOWNST END SEC 57

FORM 25 0

(313) 291-5400

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

Bridge Location: Section 9924 to 10076

Bridge Losses - SB Card

REFERENCE

1. XK (Pier Shape Coefficient) 0 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk, $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$k_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = 90 Wp = 47.6

$R = A/wp$ = 1.9/47.6 $R^{4/3}$ = 2.338 L = 152

n (composite) =

$K_f = 29.1 \times (.021)^2 \times 152 / 2.338 = .834$

K_e = .2 — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 45

XKOR = 1.0 + .834 + .2 = 2.034

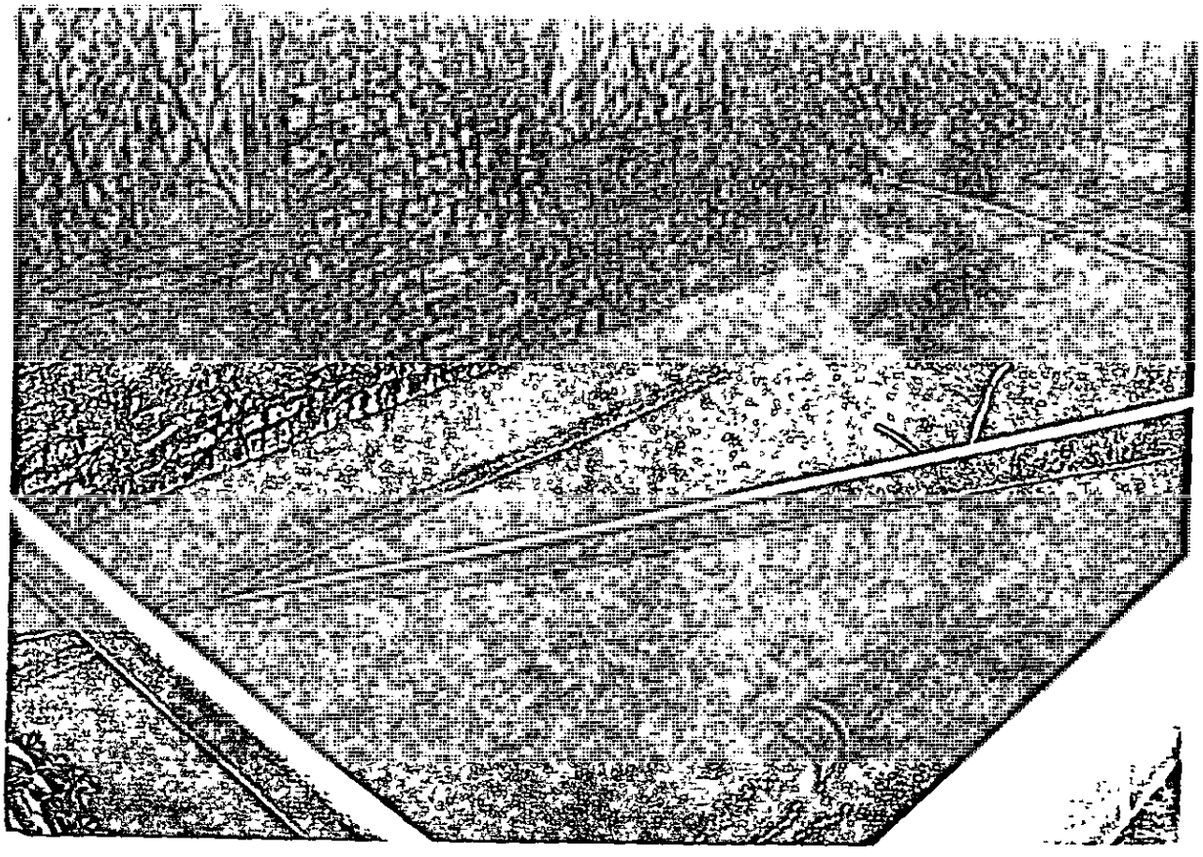
k_p = 0 if bridge has no intermediate piers

K_p = 0.05 if bridge has intermediate piers — HEC-2 manual

2. XKOR = 1 + .834 + .2 + = 2.034
3. COFQ Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0 (0 if read off BT cards)
5. BWC - bottom width of bridge opening (inc. piers) = 19
6. [illegible] width of obstruction = 0 — field data
7. [illegible] - bridge opening inc. piers = 90
8. SS = side slope = 0
(horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 764.7
(0 if equal to minimum elevation in previous x-sect.)
10. ELCHD = Elevation of channel invert D/S side = 764.2
(0 if equal to minimum elevation in previous x-sect.)

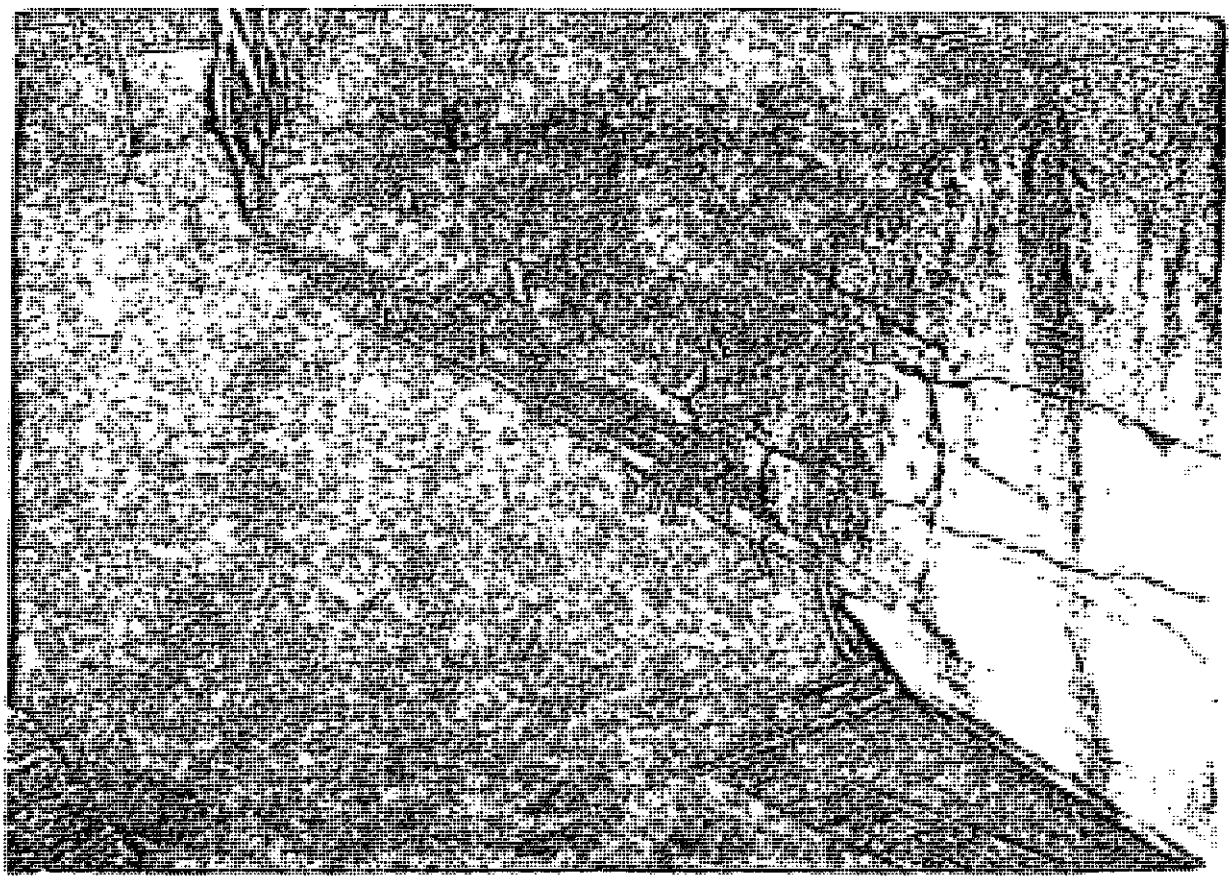
Sheet 73/109

SUBJECT	BY	CHK.	SHEET NO	File Code No. (Job No.) Owner Project Suffix
[illegible]	DATE [illegible]	DATE	___ OF ___	[illegible]



PORTAGE CREEK S/SIDE BRYANT
CROSS-SEC S7A- DOWNSTR.

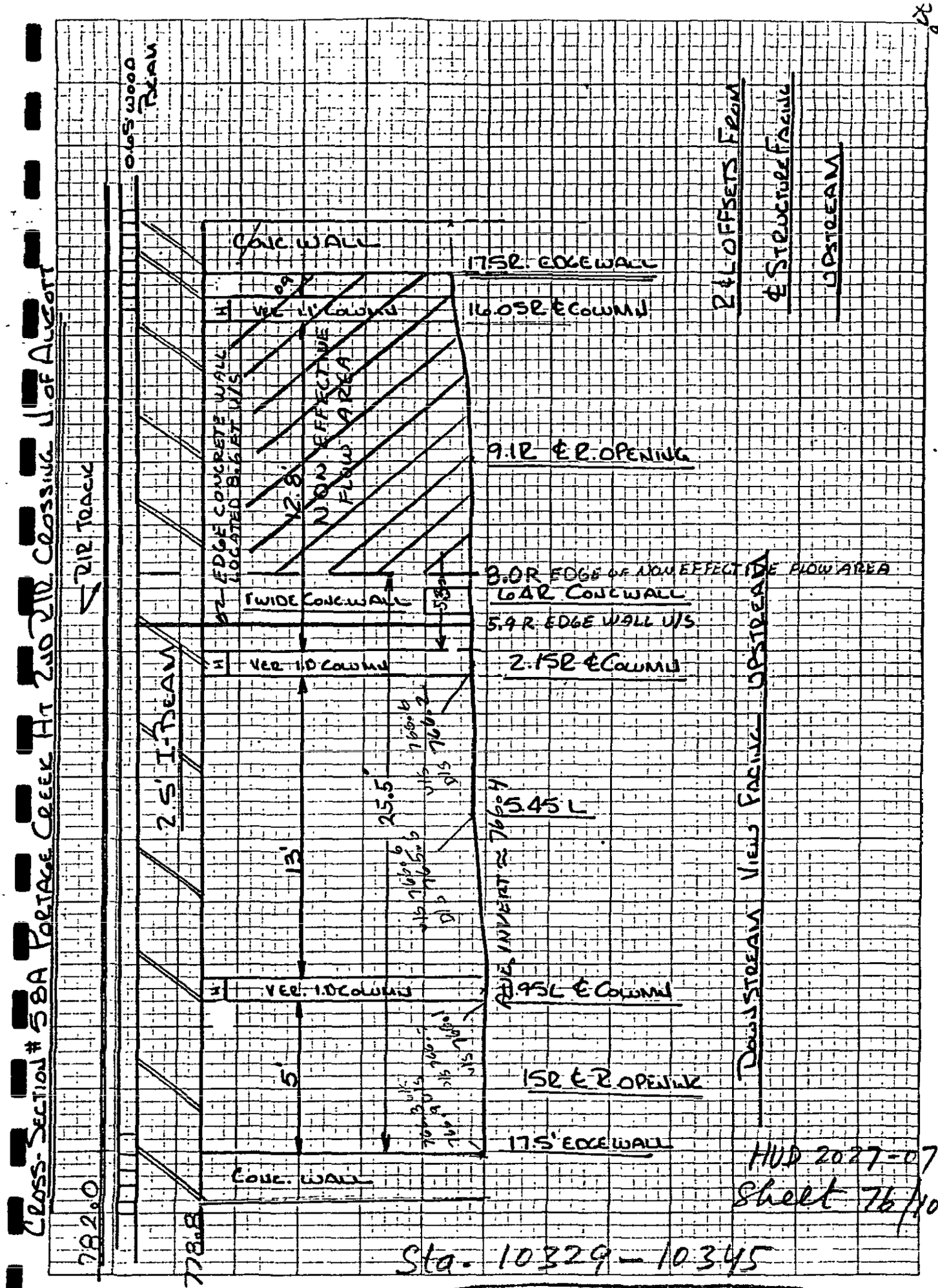
HUD 2027-07
Sheet 74/109

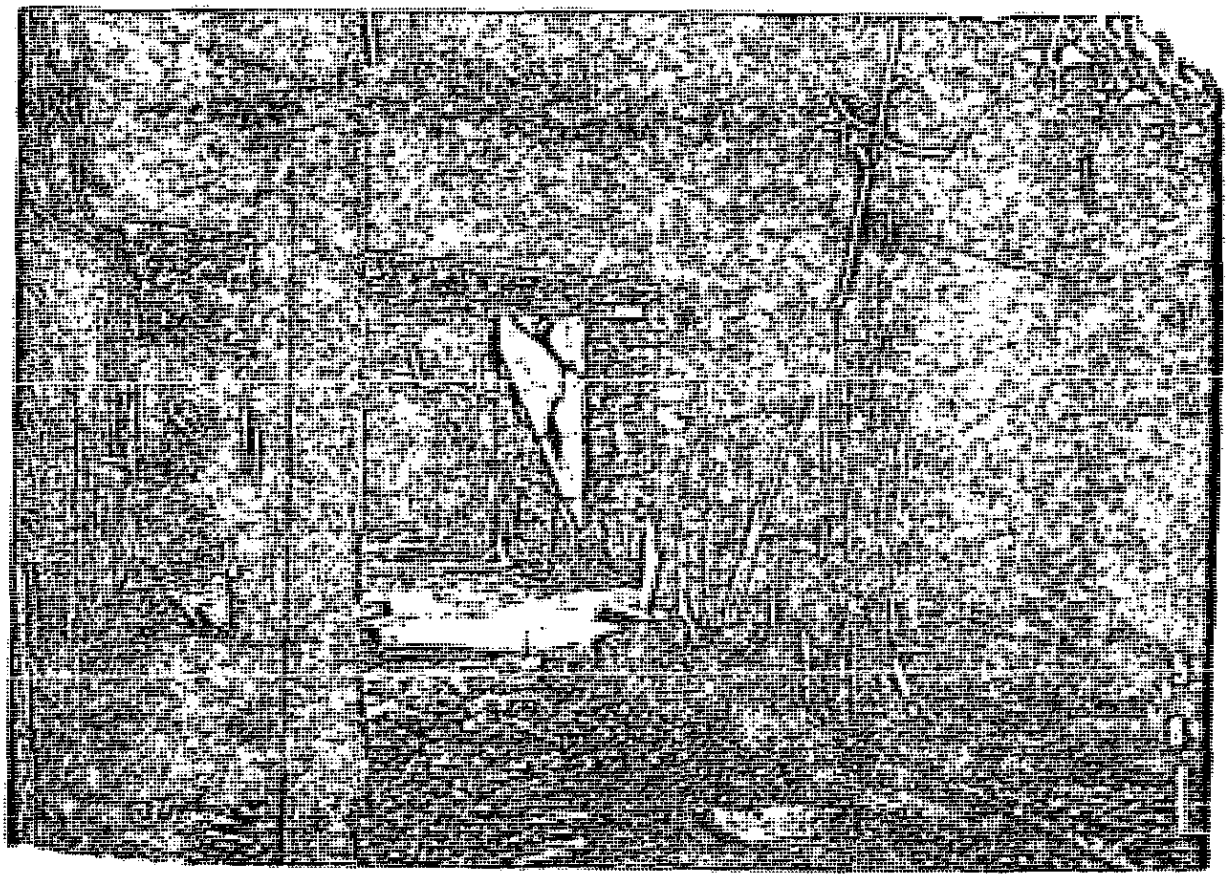


UPSTR. VIEW Sec 57A

HUD 2027-07

sheet 75/109


Cross-Section #58A Portage Creek Ht 2.0 RR Crossing U. of Alcott
0.65'wood Ram
V Rip Track
Conc Wall
17.5R. Edgewall
16.0SR ECOLUMN
24 Offsets From
Structure Facing
Upstream
9.1R ER. Opening
2 Row Effective Flow Area
12.8' Edge of Concrete Wall Located Behind U/S
3.0R Edge of Row Effective Flow Area
Twide Concwall
Lar Concwall
5.9R Edge Wall U/S
2.1SR ECOLUMN
2.5' I-Beam
Ver. 1.0 Column
13'
25.5
5'
Adj. Invert ≈ 766.4
5.45L
1.95L E Column
1SR E R Opening
17.5' Edgewall
Conc. Wall
Downstream View Facing Upstream
78.8
78.0
HUD 2027-07
Sheet 76/109
Sta. 10329 – 10345

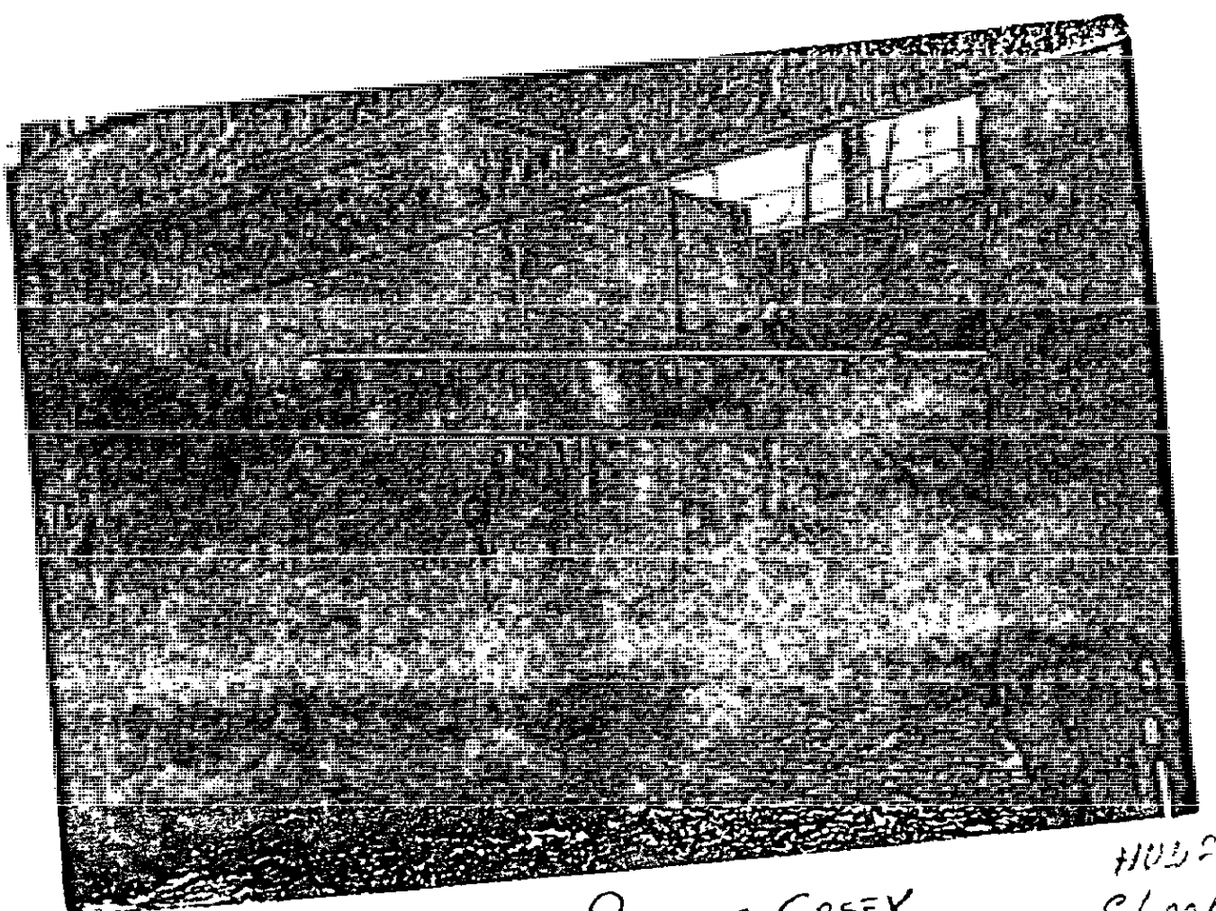


Downstr. Sec 58A Portage Creek.

HUD 2027-07
Sheet 77/109



R. OPENING Sec 58A PORTAGE
STA. 10329 – 10345



DOWNSTR. Sec 58B PORTAGE CREEK
STA. 10359 – 10366

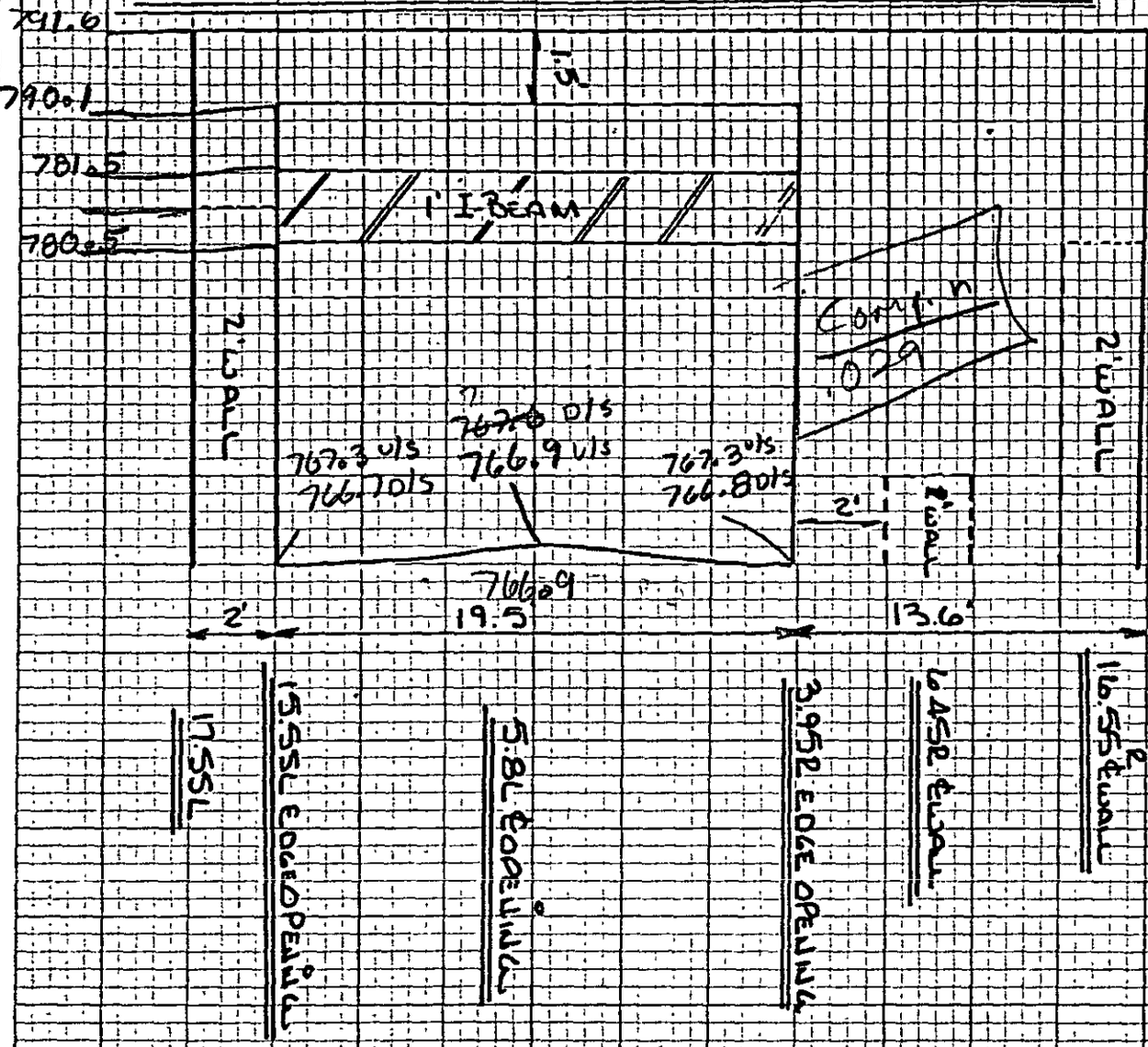
Sheet 78/

Cross-Section #58B Portage Creek At Conc.

Structure Between 21R Bridges N. of Alcott

Book 4

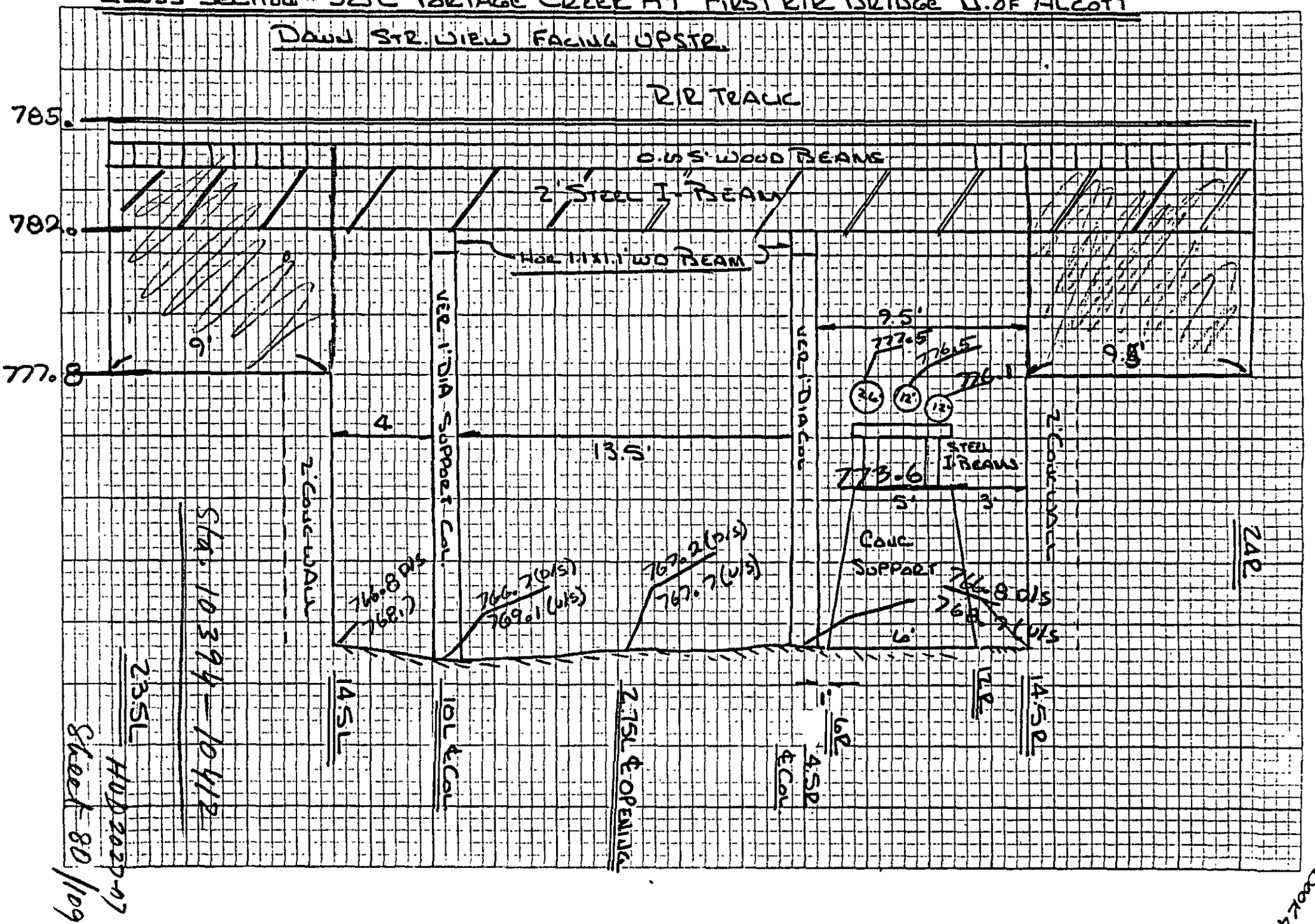
Down Str. Facing Upstr. (Typ-Except No 1' Wall or I-Beam)

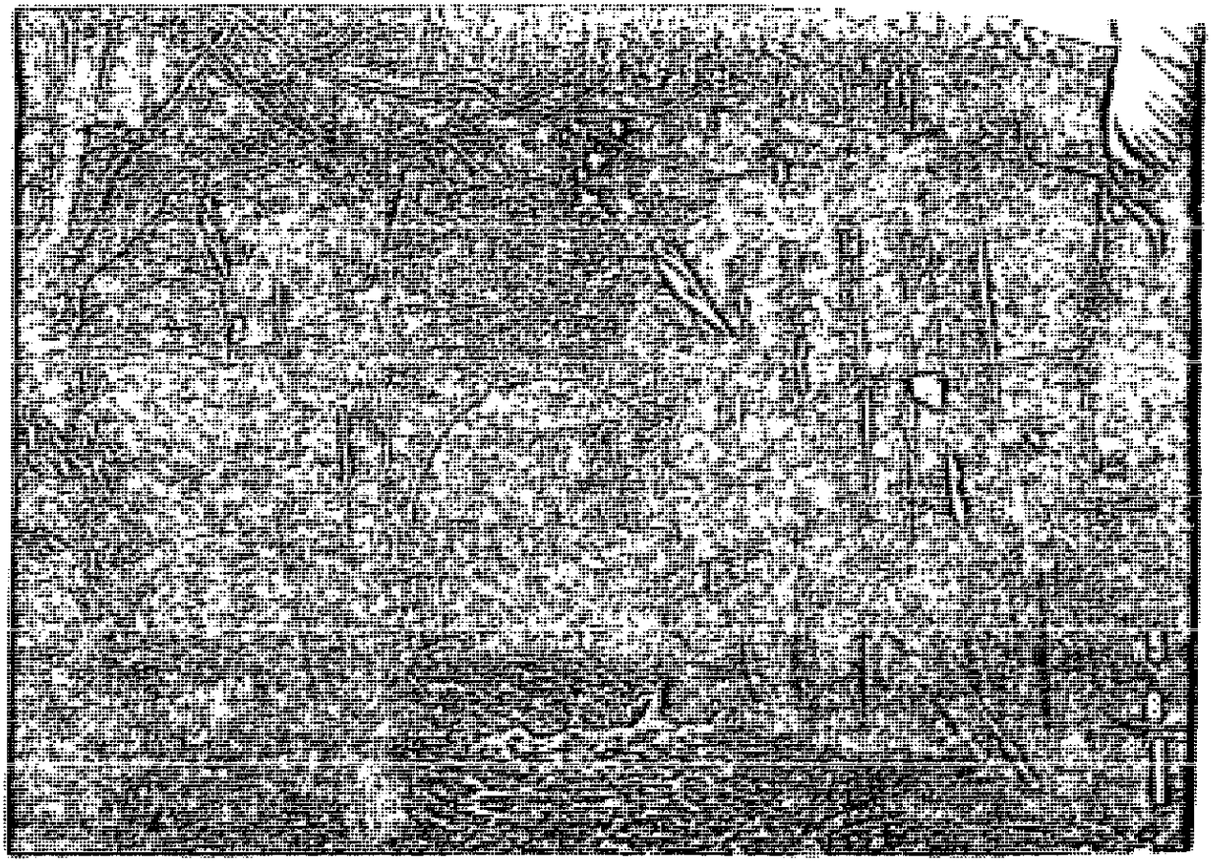


Sta. 10359 – 10366

Sheet 79/109

Cross Section #58C Portage Creek At First R/R Bridge N. of Alcott





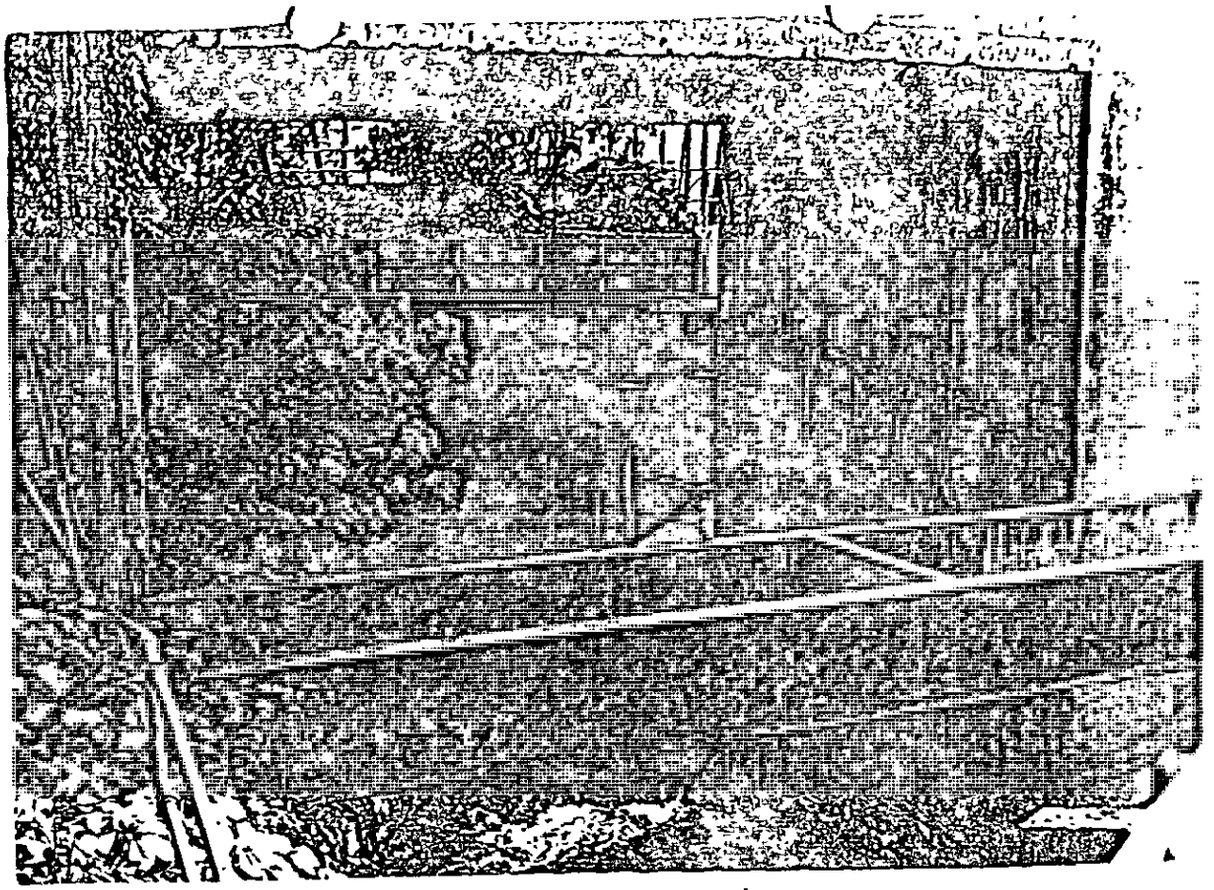
DWN STR. Sec 58C PORTAGE CREEK

Sta. 10394 – 10412

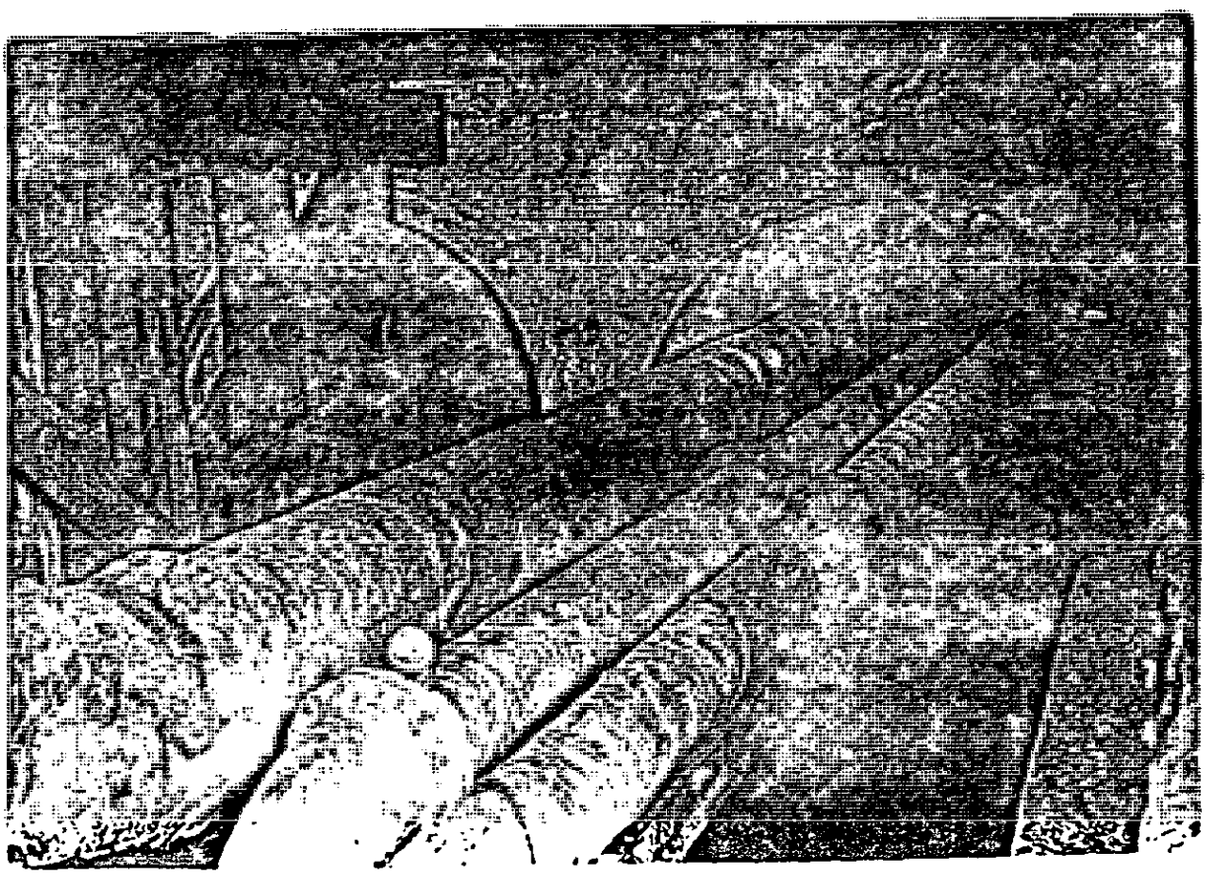
Railroad Bridge

HOD 2027-07

Sheet 81/109

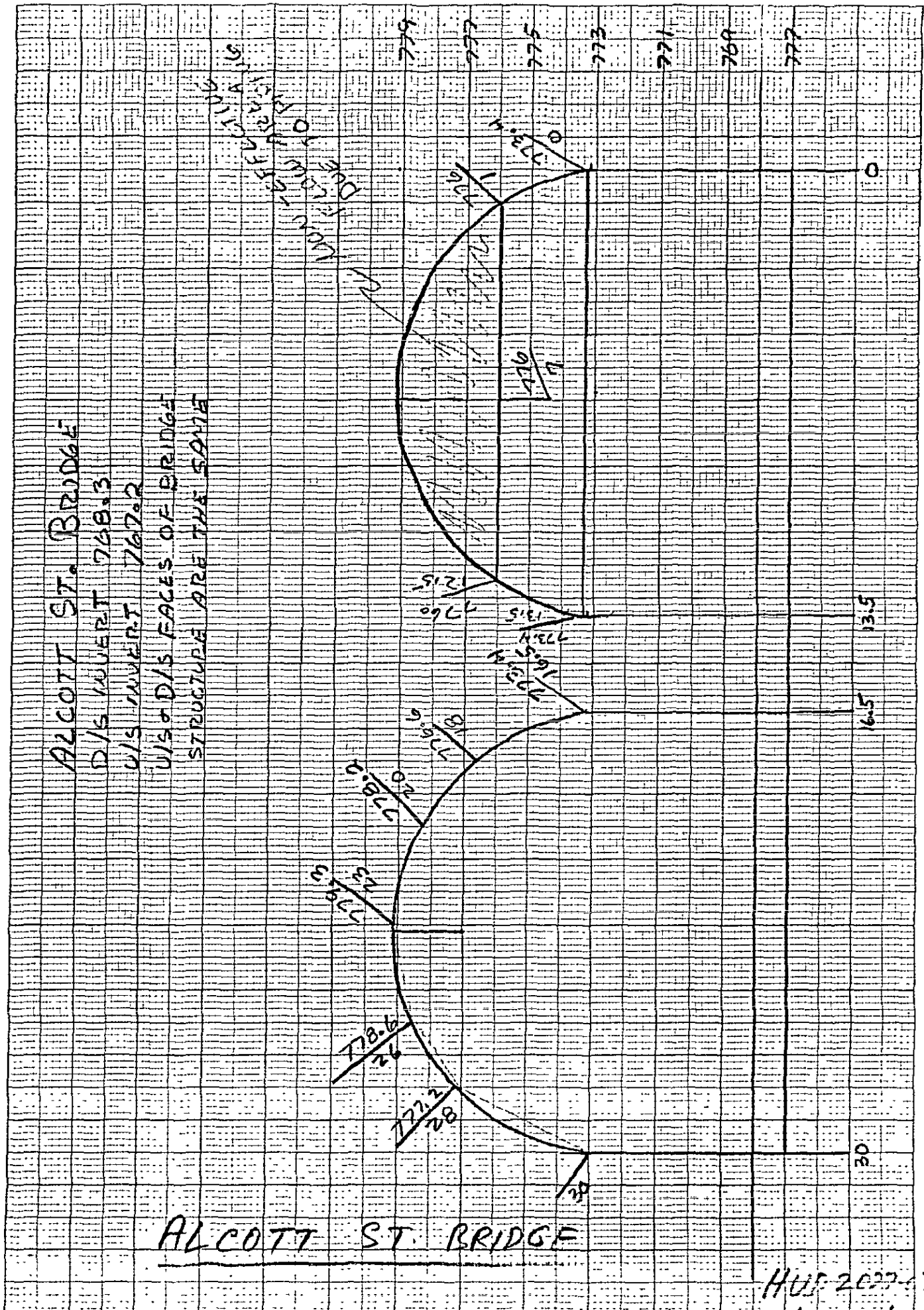


PORTAGE CREEK AT 1ST RR CROSSING N. OF ALCOTT
INCL. CULV STRUCTURE DOWNSTR. 58B - DWNST 58C



HOD2027 (7

PORTAGE CREEK N. SIDE ALCOTT Sta. 10394-10412 Street
ROPENING SEC 58C
82/09

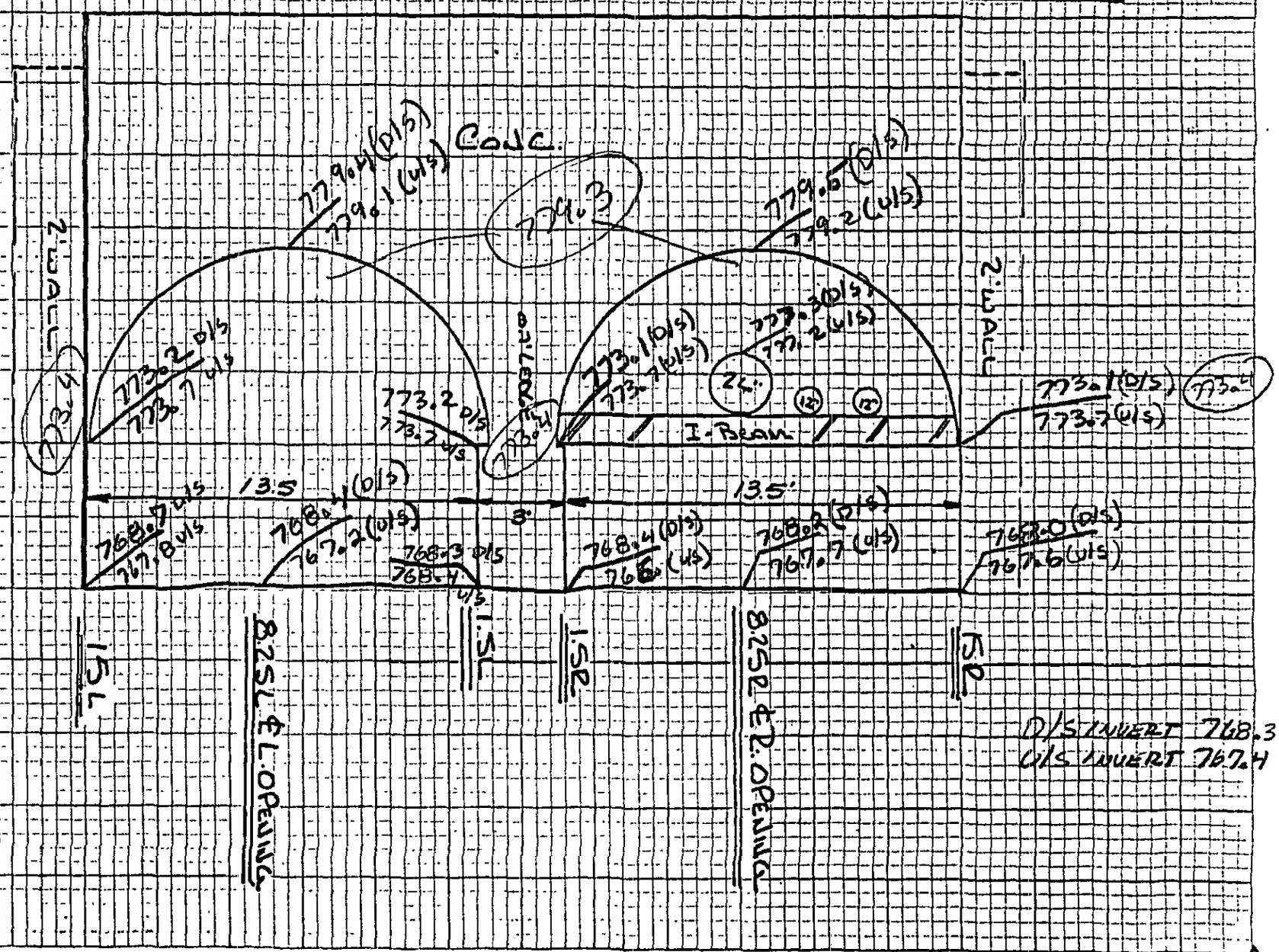


HUD 2022-07
Sheet 83/109

K+E 10 TO THE INCH 46 1320
KEUFFEL & ESSER CO. MADE IN U.S.A.

CROSS-SECTION #59 PORTAGE CREEK AT ALCOTT

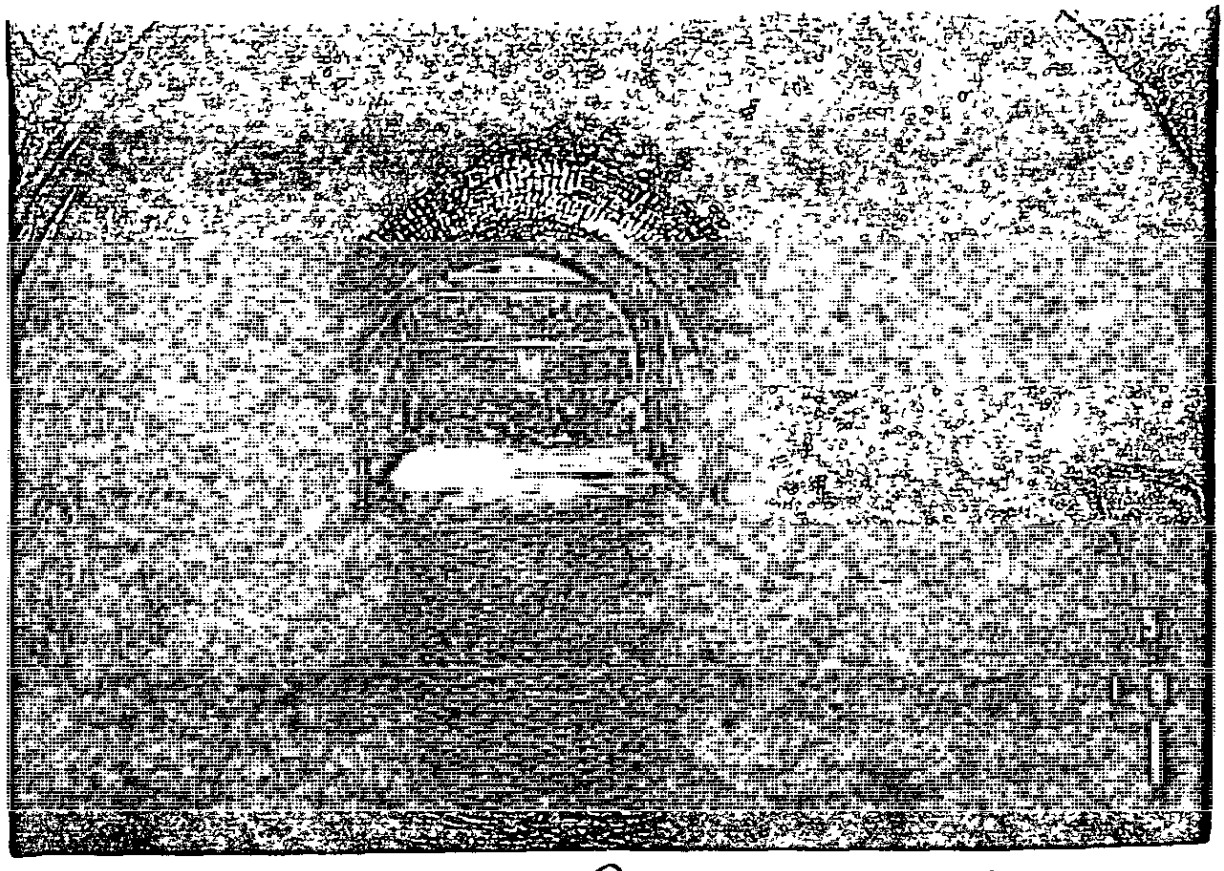
DOWNSTREAM END AT FACING UPSTREAM



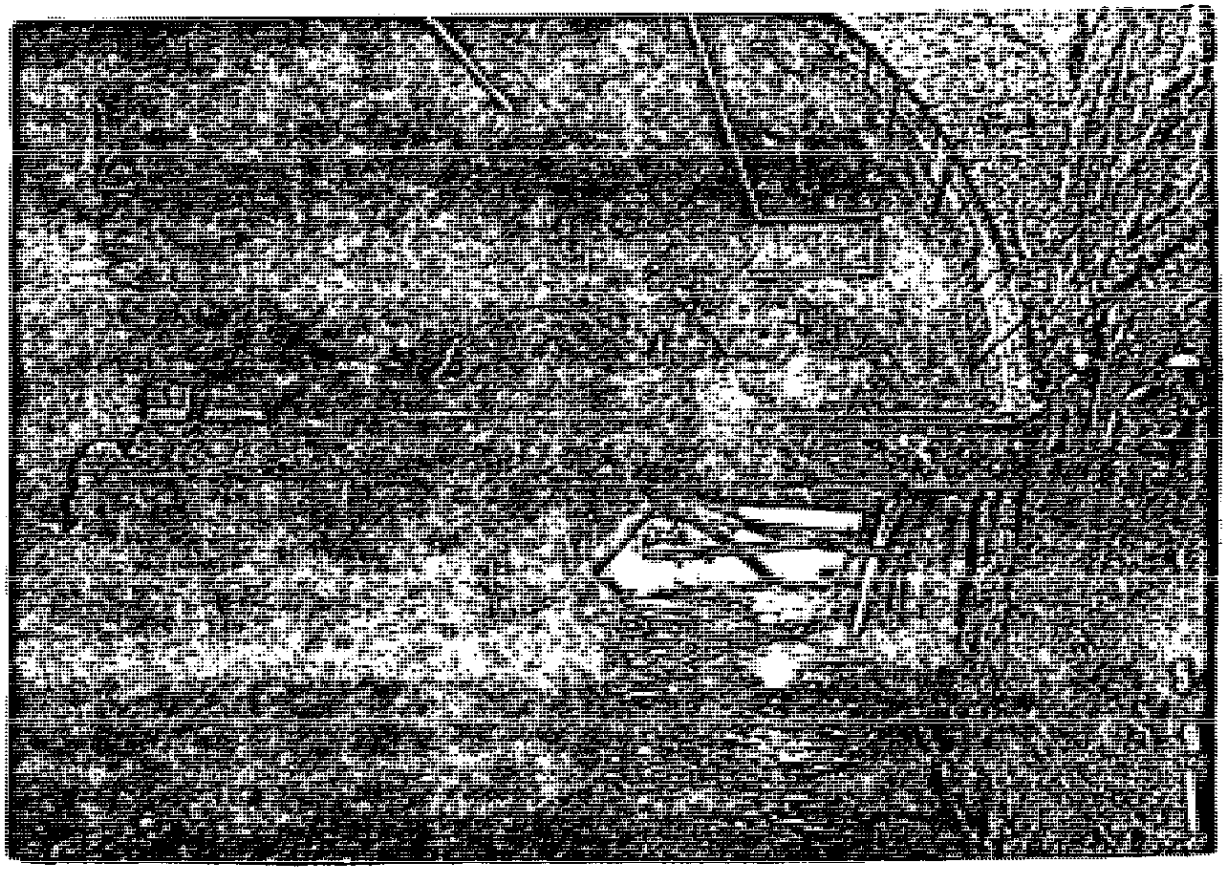
HUD 2027-07

Sheet 84/109

Book 4

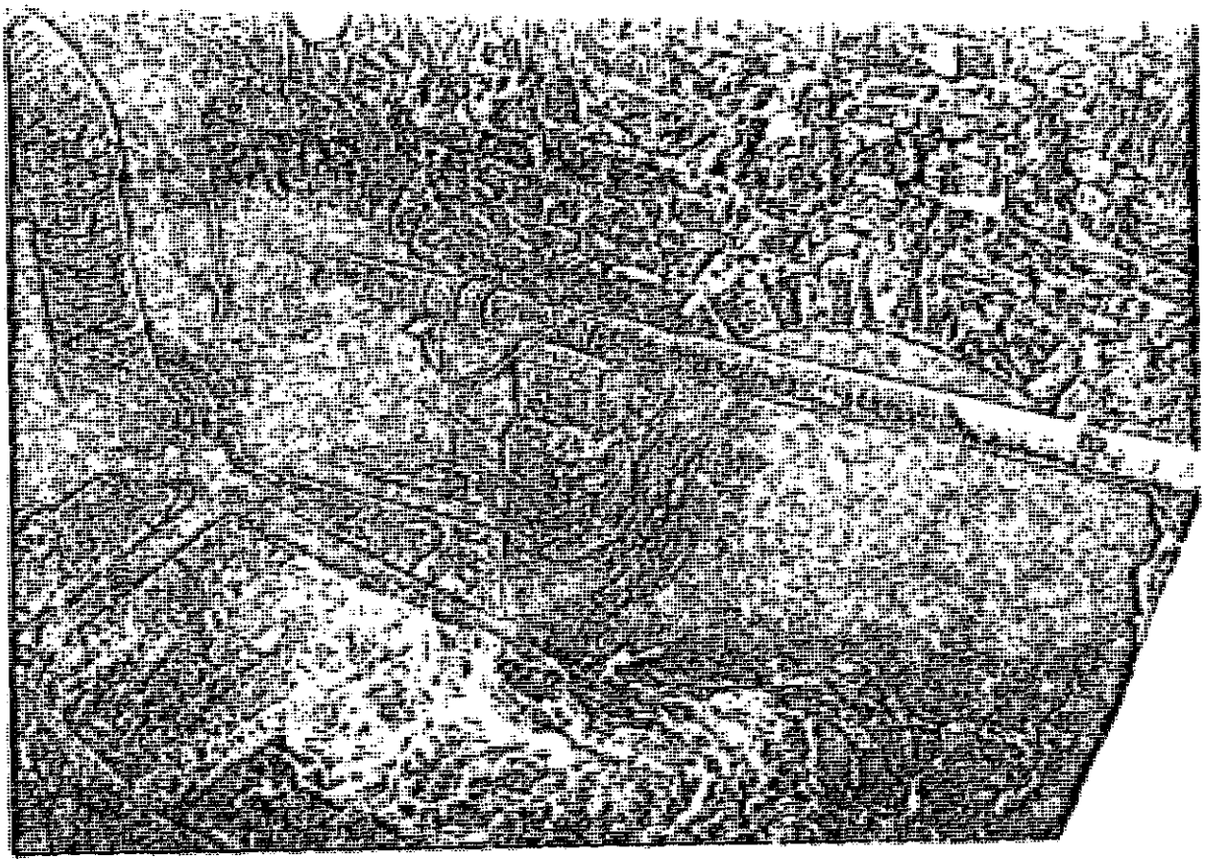


L. OPENING Sec 59 PORTAGE CREEK & ALCOTT
DWNSTR



R. OPENING – ~~Dt~~ DWNSTR Sec 59
ALCOTT ST.

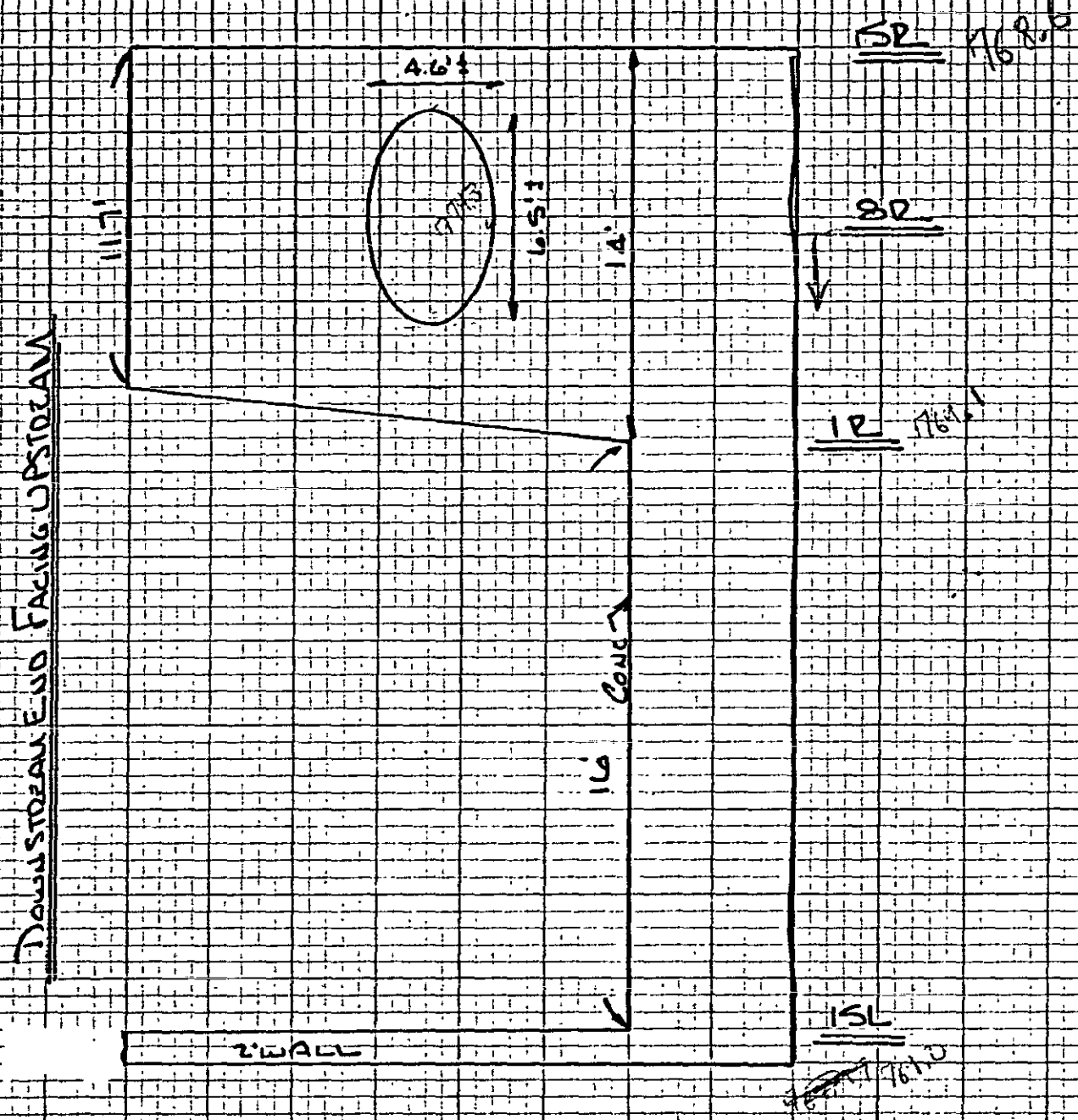
HUD 2027-07
Sheet 85/109



PORTAGE CREEK S/SIDE ALCOTT
UPSTR Sec 59

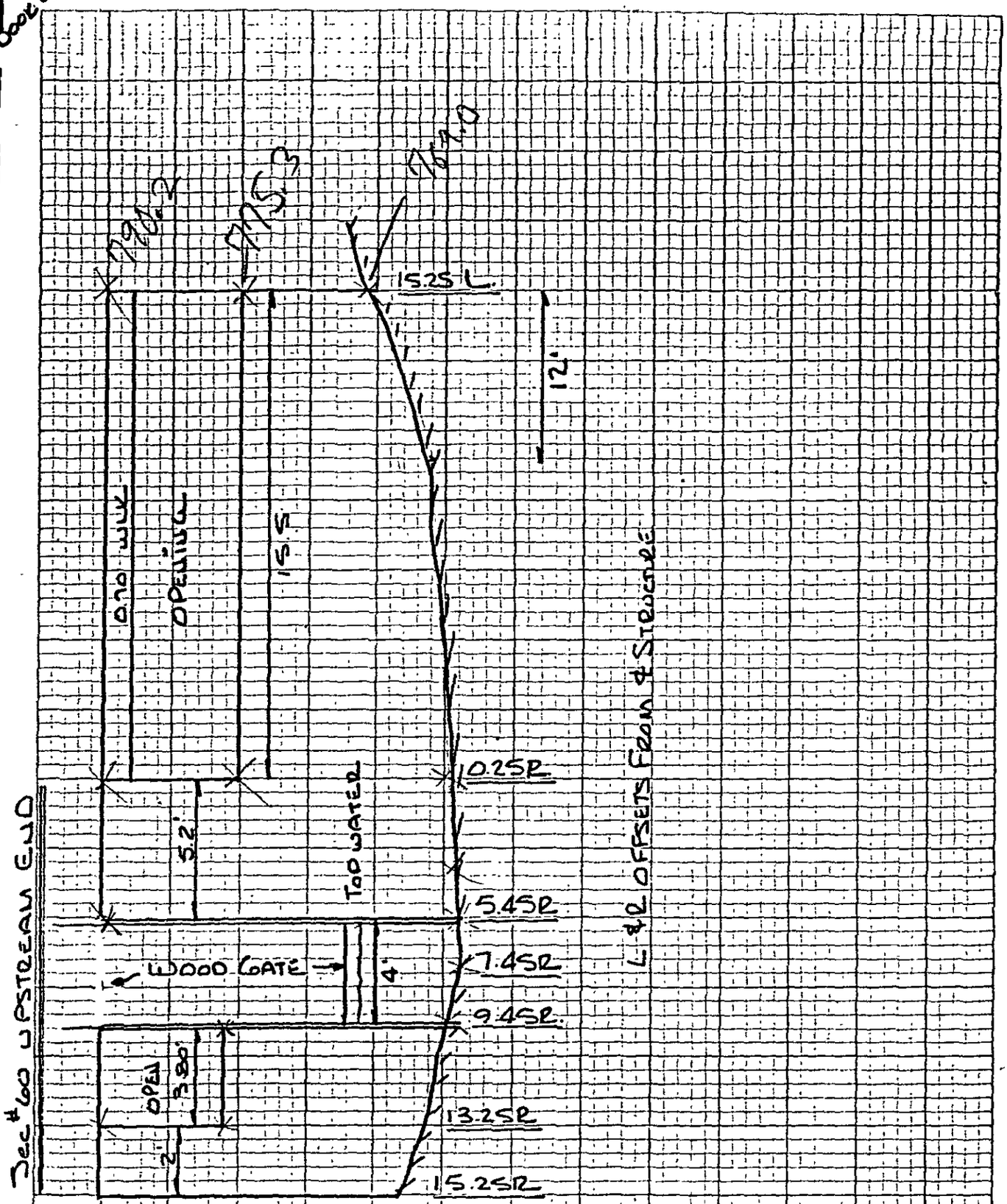
HUD 2027-07
Sheet 86/109

Cross. Section #60 Portage Creek At Dam S/S Alcott
L&R Offsets From ℄ Dam Facing Upstream



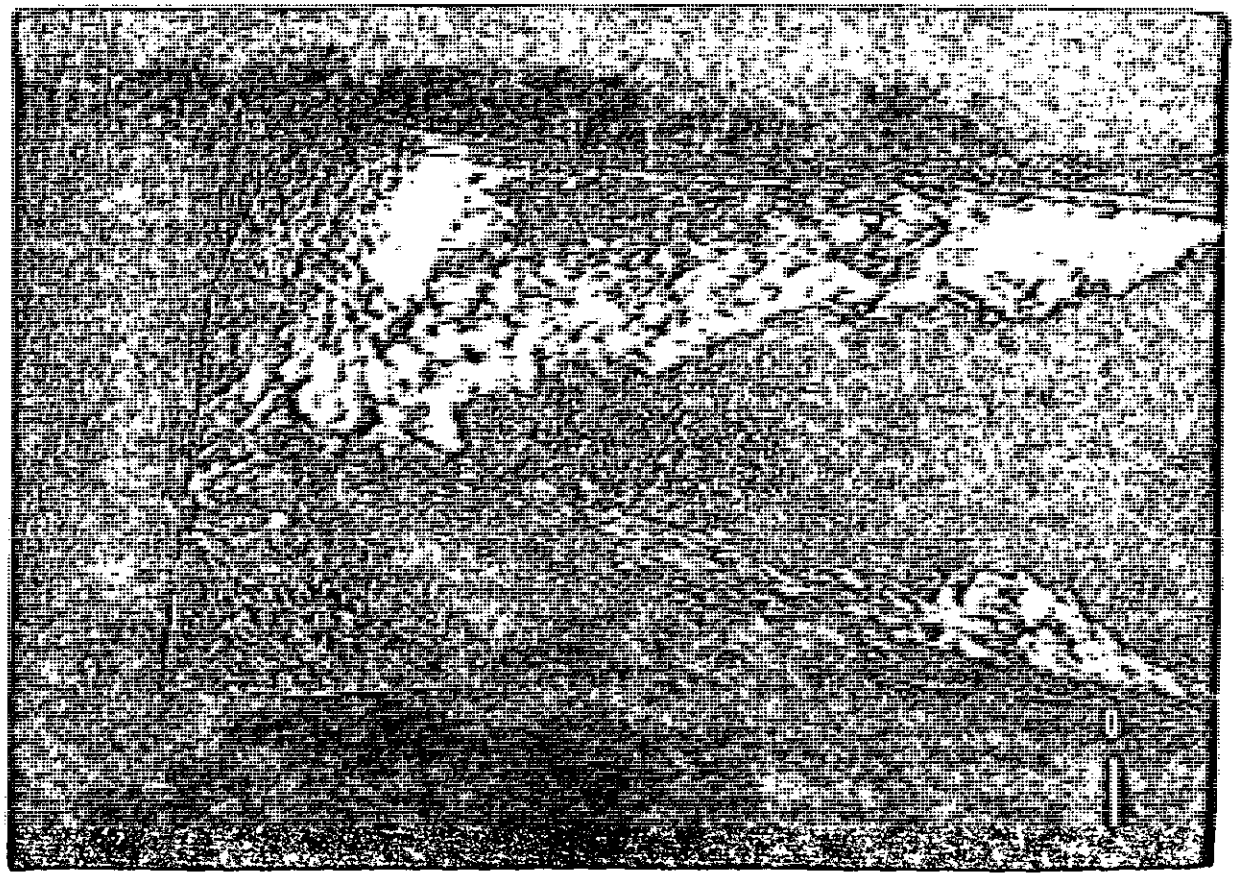
BRYANT POND DAM

HUD 2027-07
Sheet 87/109

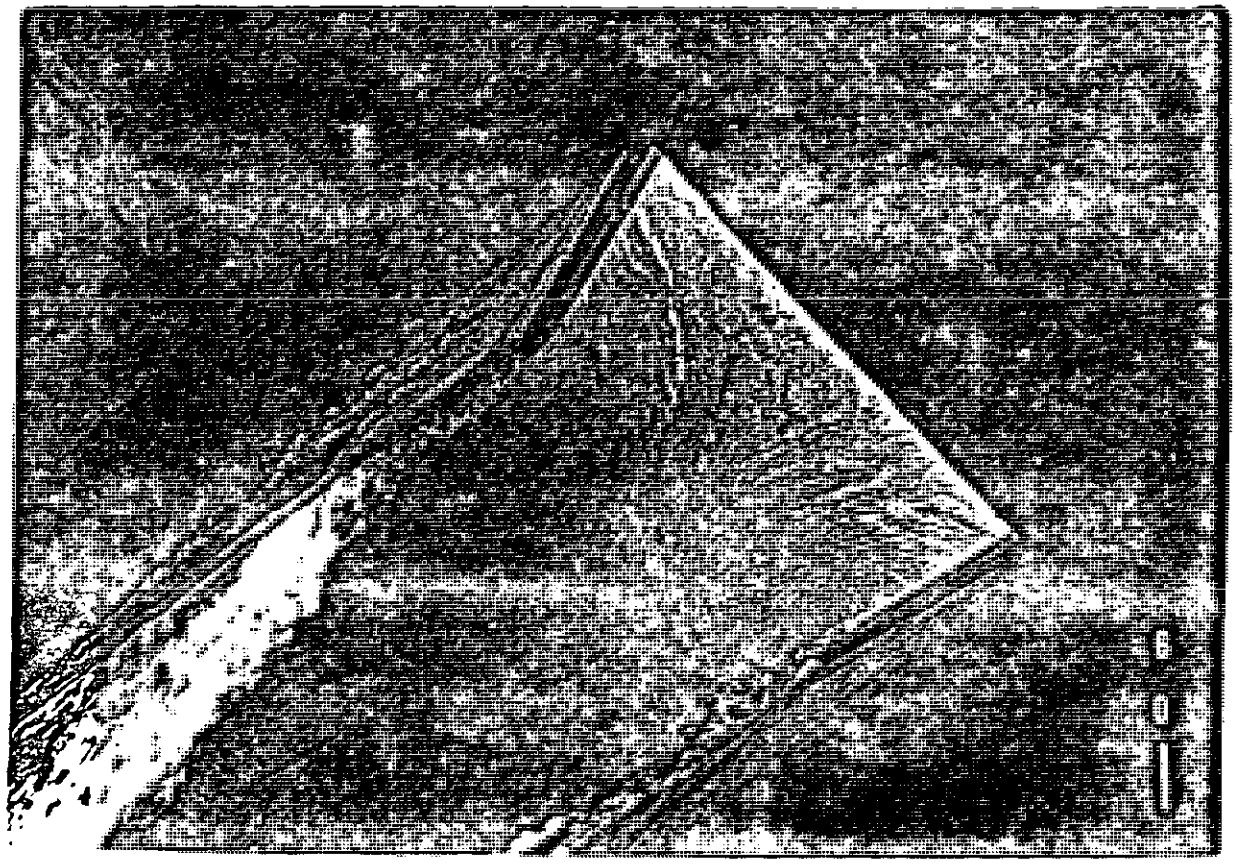


BRYANT POND DAM

HUD 2027-07
Sheet 88/109

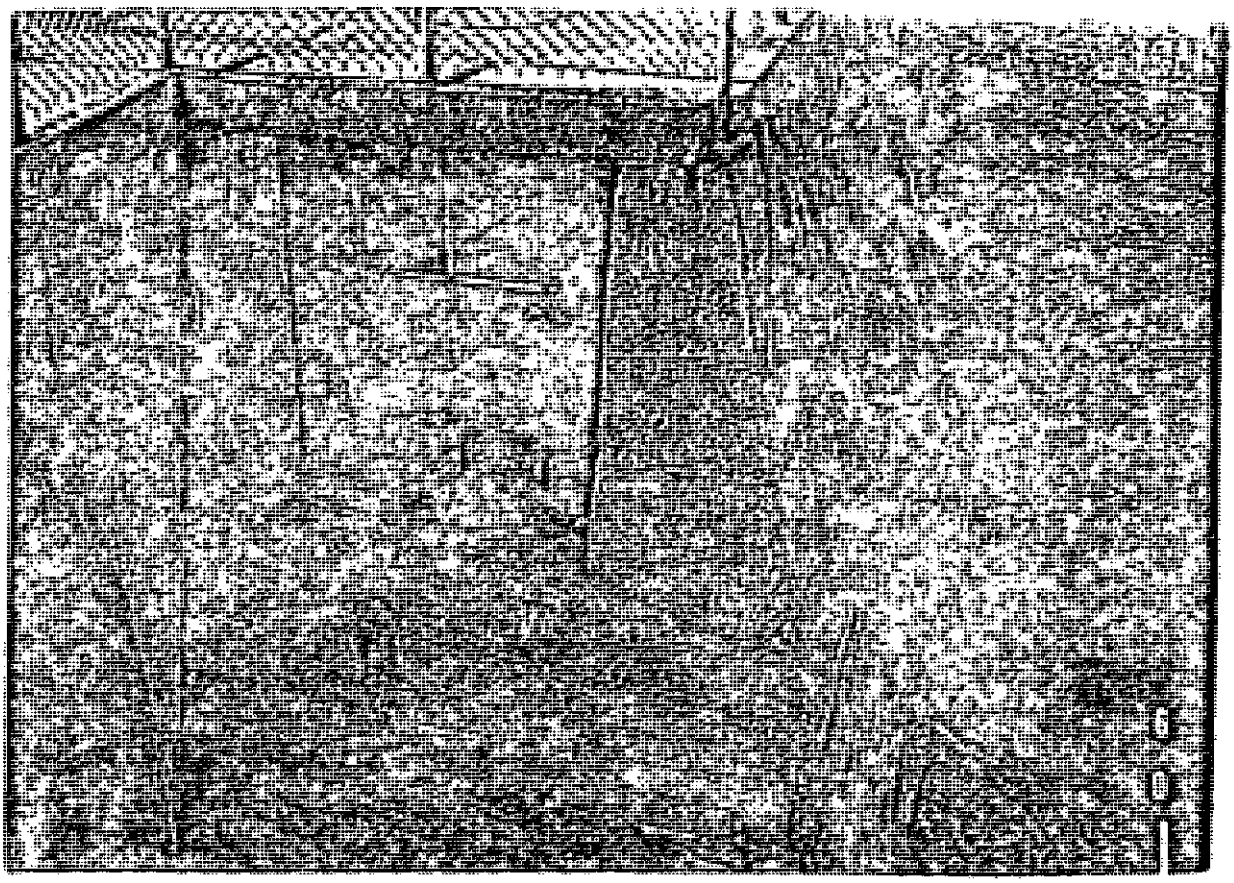


INSIDE VIEW CHAMBER Sec 60
BRYANT POND DAM



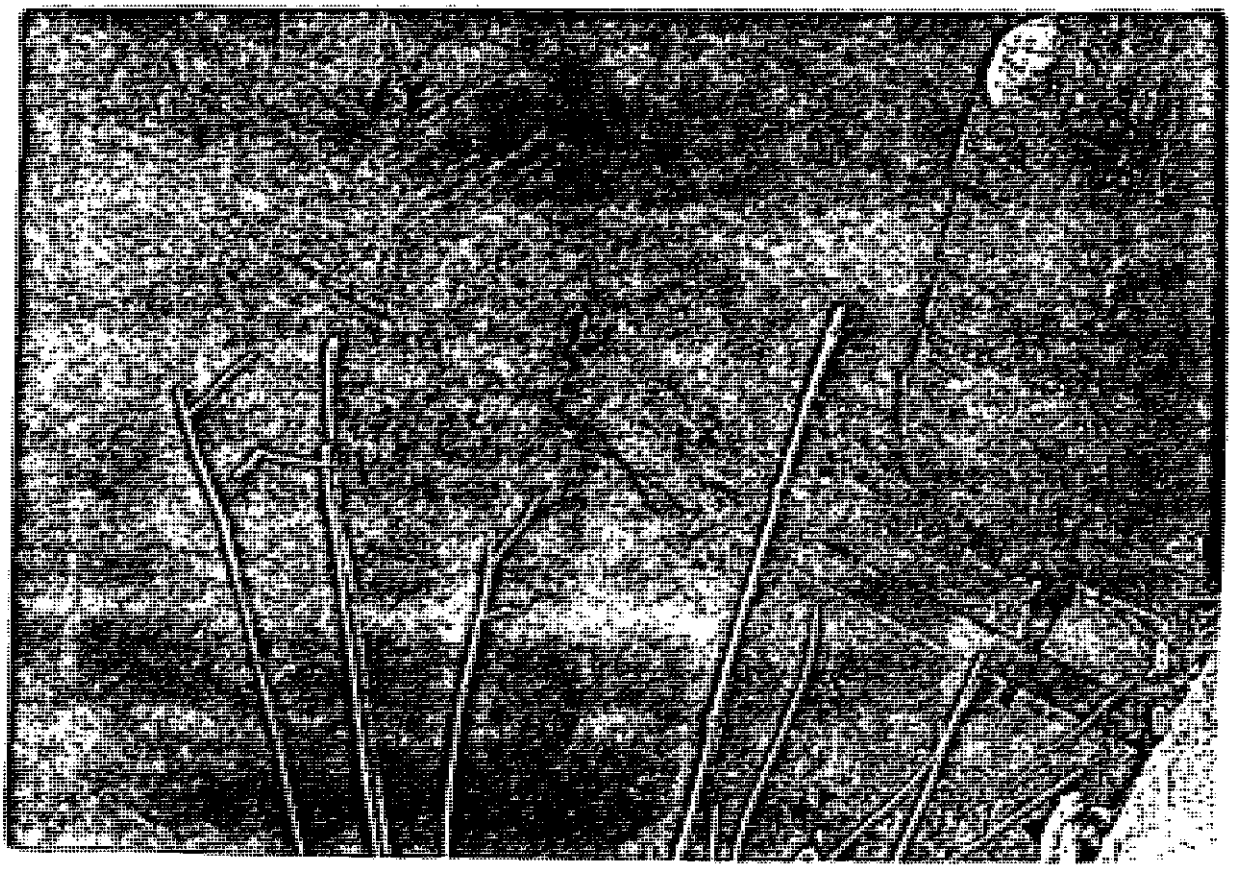
INSIDE VIEW CHAMBER Sec 60
BRYANT POND DAM

HUD 2022-07
Sheet 8 of 10



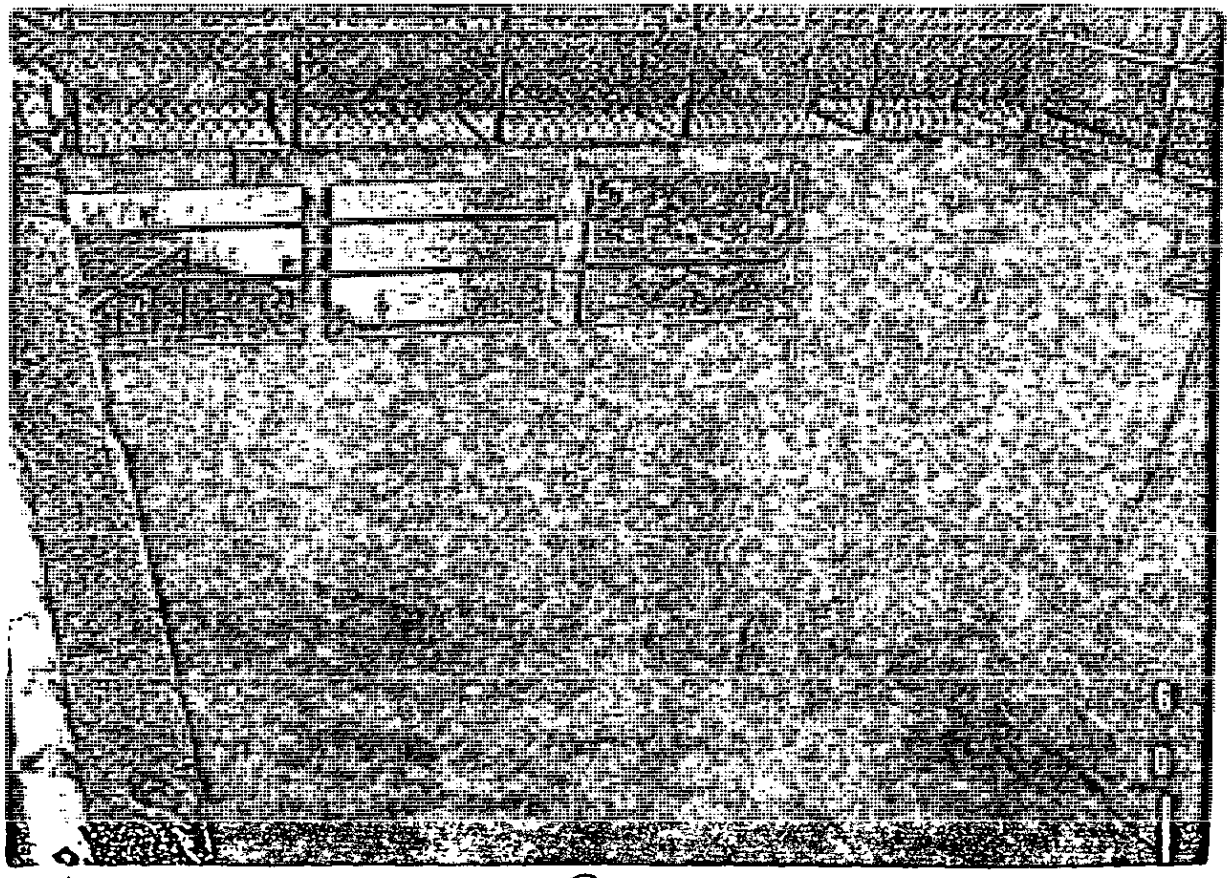
DOWNSTR. SEA 60 PORTAGE CREEK

BRYANT POND DAM

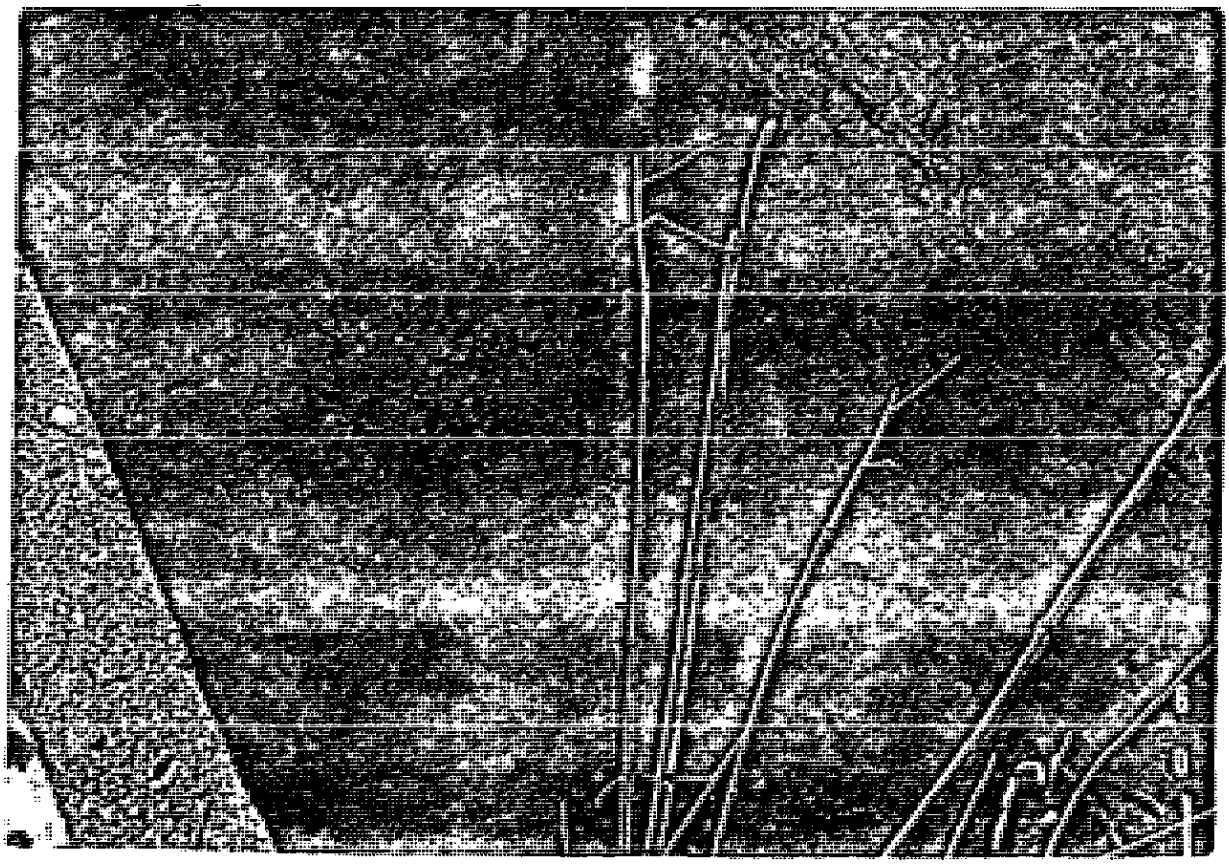


DOWNSTR. SEA 60 PORTAGE CREEK
BRYANT POND DAM

HUD 20.7-27
Sheet 90/107

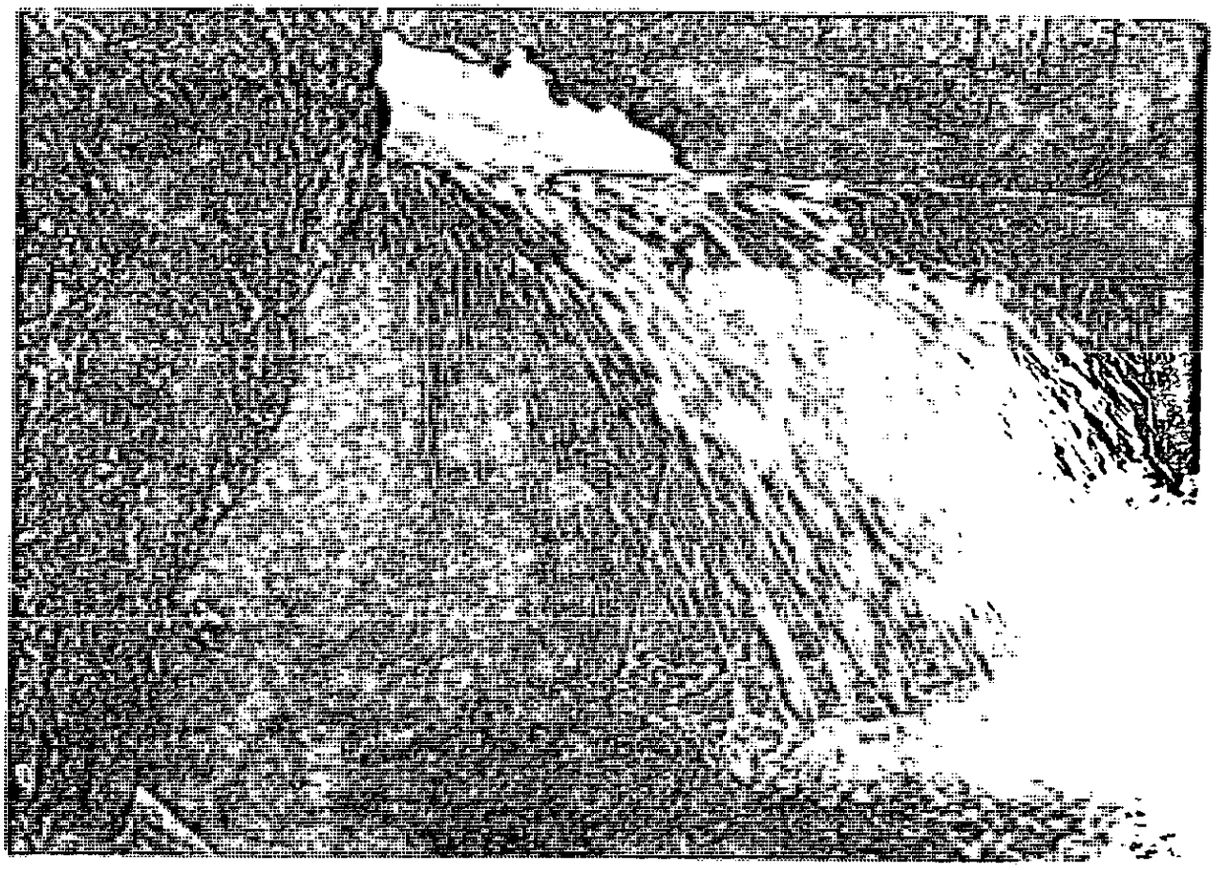


DOWNSTR SEC 60 PORTAGE CREEK
BRYANT POND DAM



DOWNSTR SEC 60 PORTAGE CREEK
BRYANT POND DAM

HUD2022-07
Sheet 21



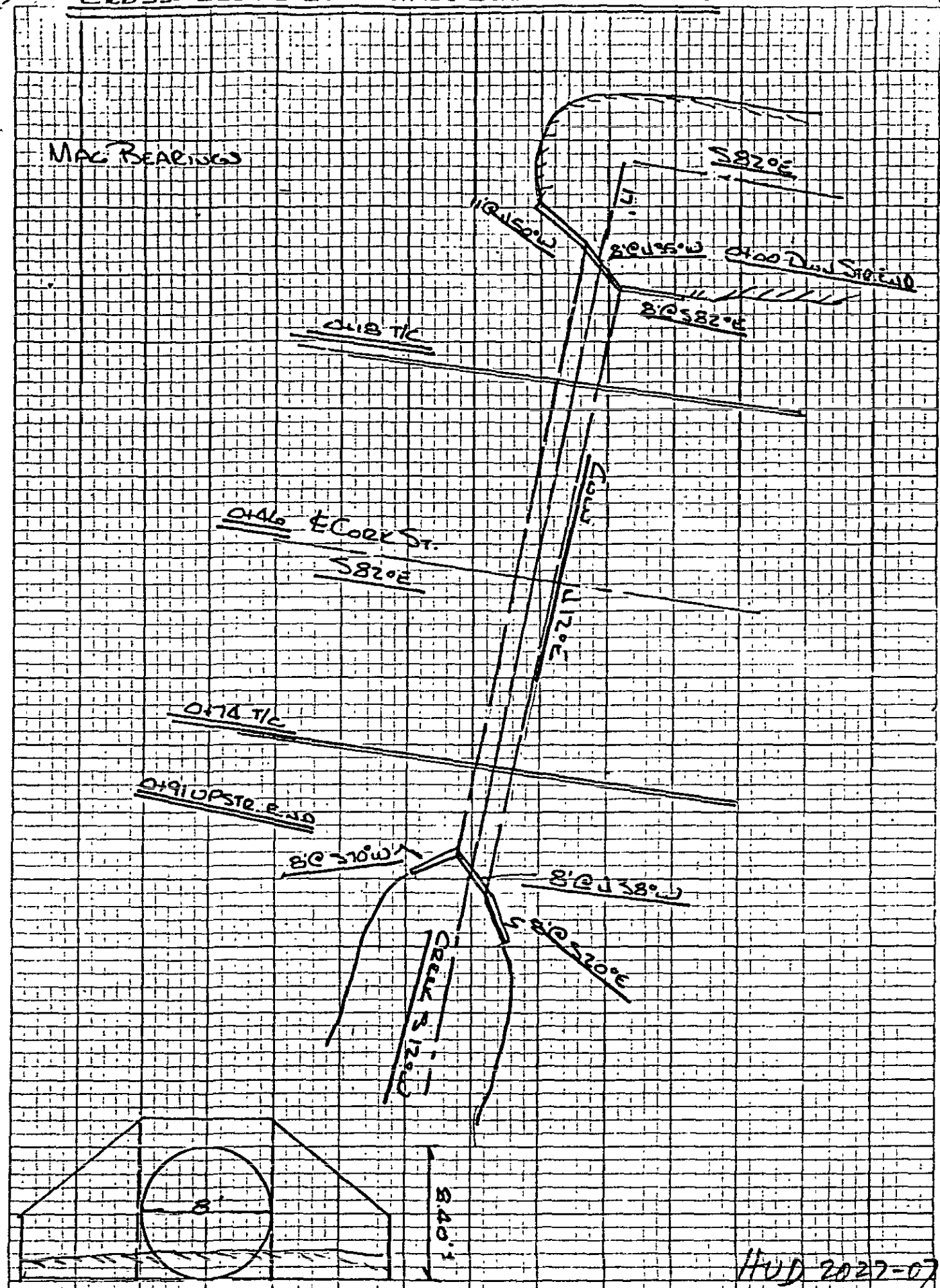
DWNSTR SEC 60 PORTAGE CREEK

BRYANT POND DAM

HUD 2022-05

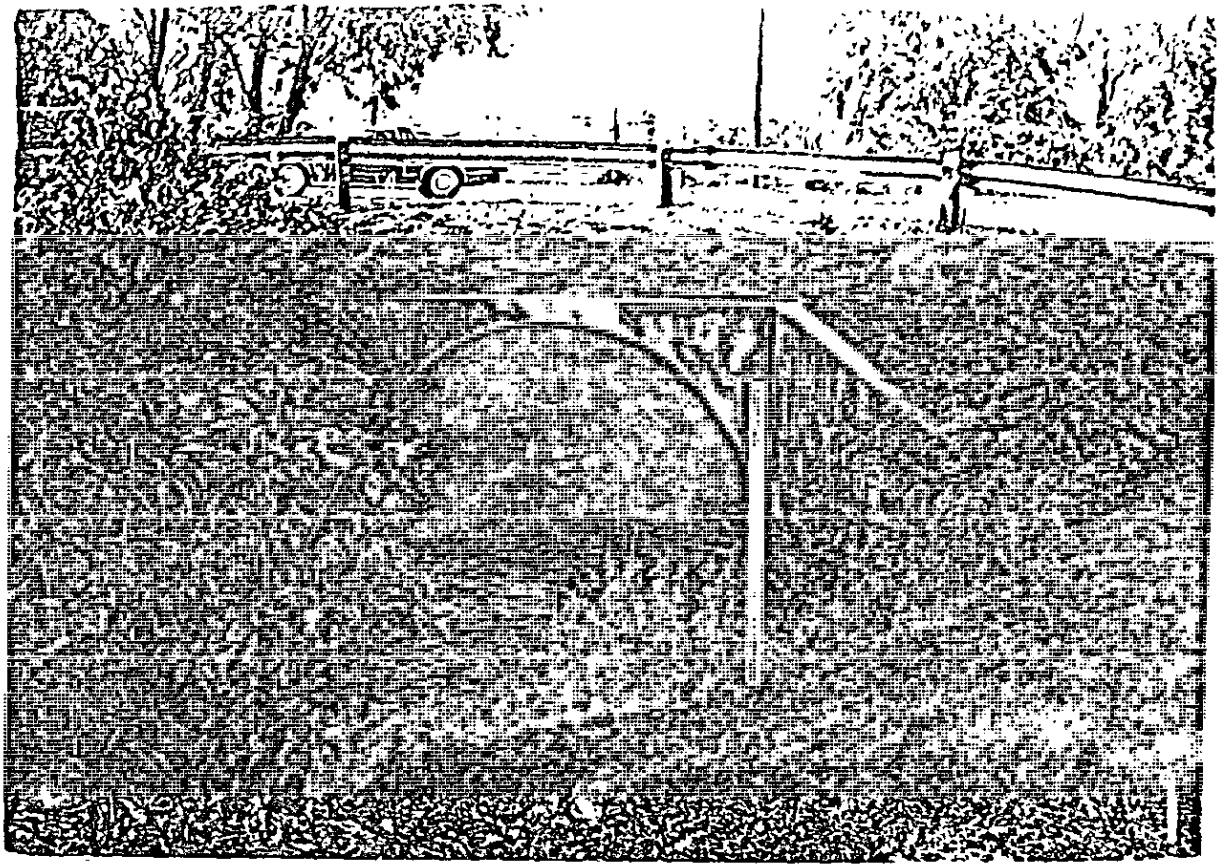
Cross-Section #63 Portage Creek @ Cork St

Book 4



HUD 2022-07

Sheet 93 of 93



PORTAGE CREEK AT. CORK UPSTR. SEC 63

FORM 25 0

(313) 291 5400

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GOODARD ROAD
TAYLOR, MICHIGAN 48180

Bridge Location: 1st R/R Bridge South of Cork St.

Bridge Losses - SB Card Section # 65

REFERENCE

1. XK (Pier Shape Coefficient) ○═○ .95 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk , Σk = $k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$k_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = 284 = 284 ft² Wp = 235

R = A/wp = 1.209 $R^{4/3}$ = 1.288 L = 14

n (composite) = .022

$k_f = 29.1 \times (.022)^2 \times 14 / 1.288 = .153$

k_e = .2 — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 45

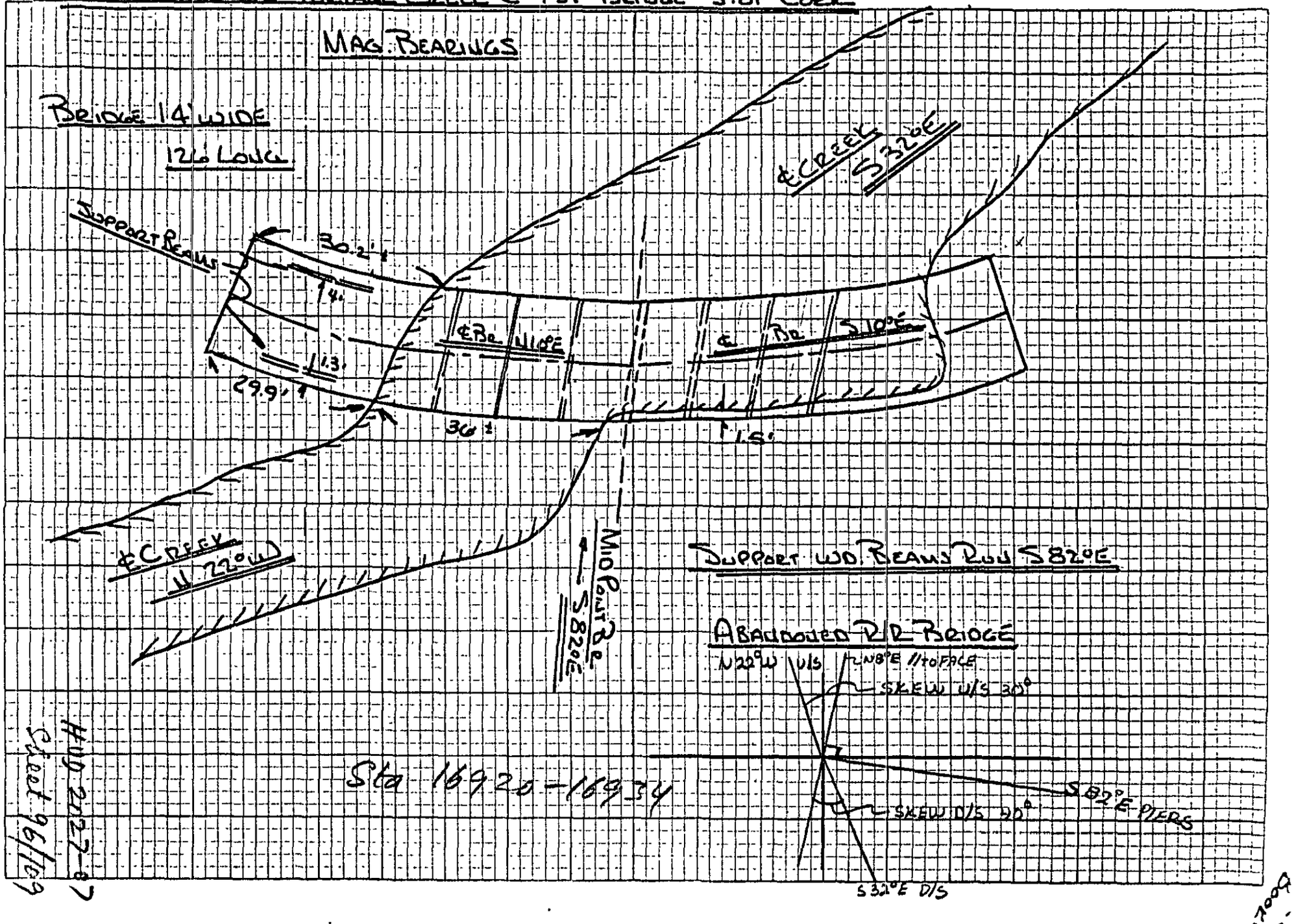
k_p = 0 if bridge has no intermediate piers

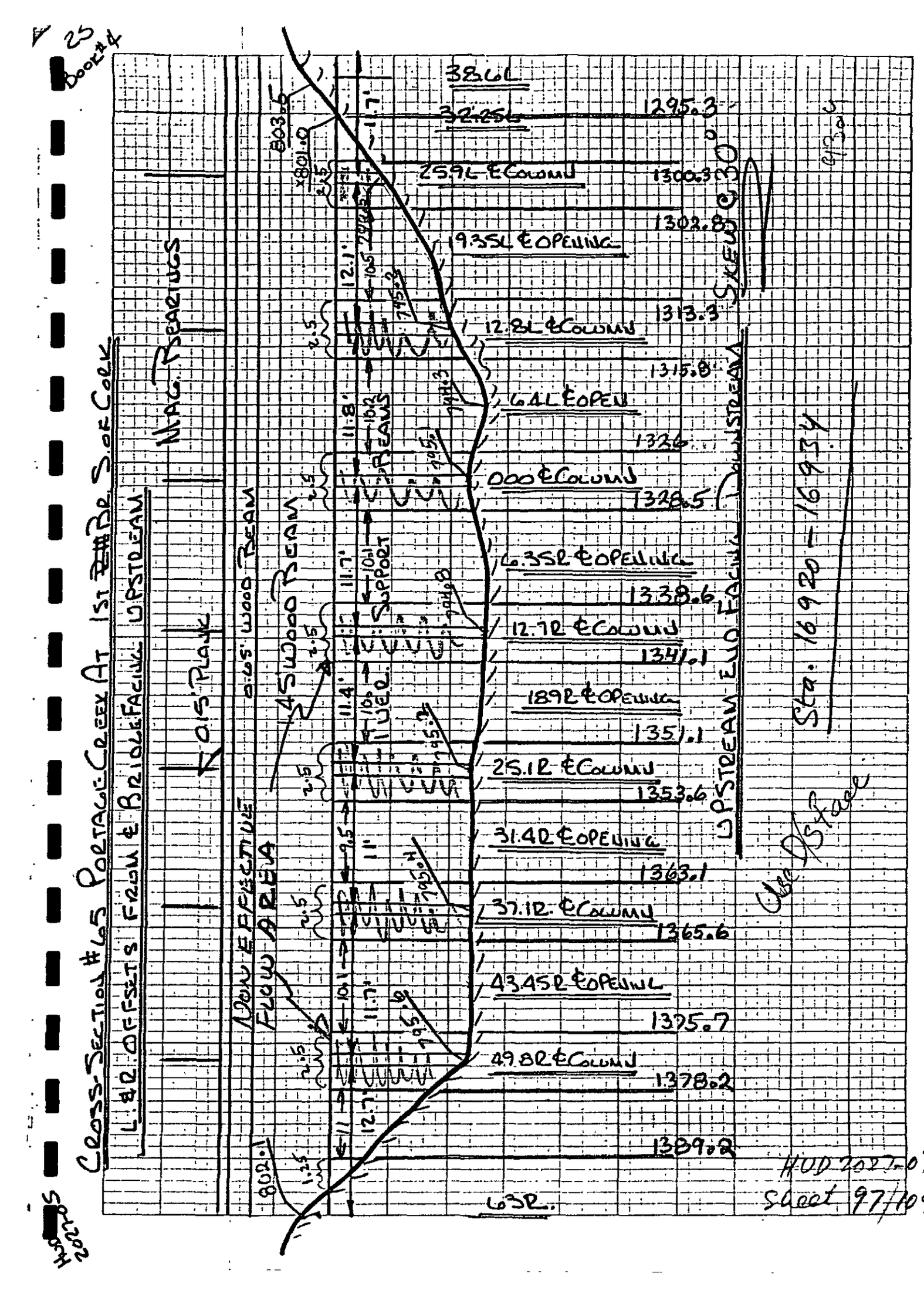
k_p = 0.05 if bridge has intermediate piers — HEC-2 manual

2. XKOR = 1 + .15 + .2 + .05 = 1.4 ≈ Use 1.5 min — per HEC-2 manual
3. COFQ Coefficient of discharge = 3.0
4. RDLEN = Length of weir = 0 (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 46.5
6. [illegible] width of obstruction = 17.5 ft — field data
7. [illegible] bridge opening ~~inc.~~ piers = 284 ft²
8. SS = side slope = 2. H/V (horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 794.3 (0 if equal to minimum elevation in previous x-sect.) — HUD2027-07
10. ELCHD = Elevation of channel invert D/S side = 793.7 (0 if equal to minimum elevation in previous x-sect.) — Sheet 95/109

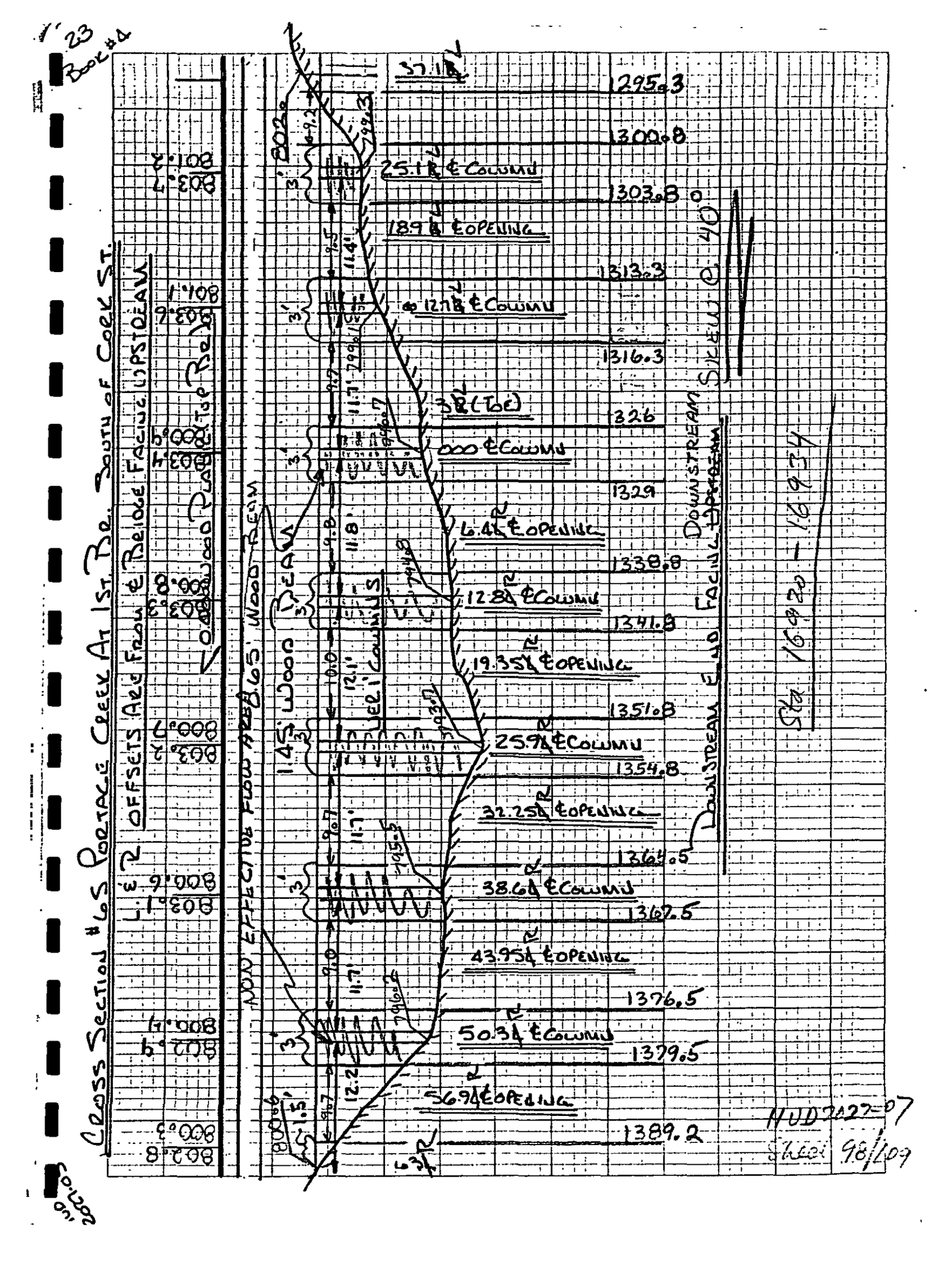
SUBJECT	BY	CHK.	SHEET NO	File Code No. (Job No.) Owner	Project	Suffix
Sta 16920 - 16934	W.J.W DATE 2/6/81	DATE	___ OF ___	1140	2027	07

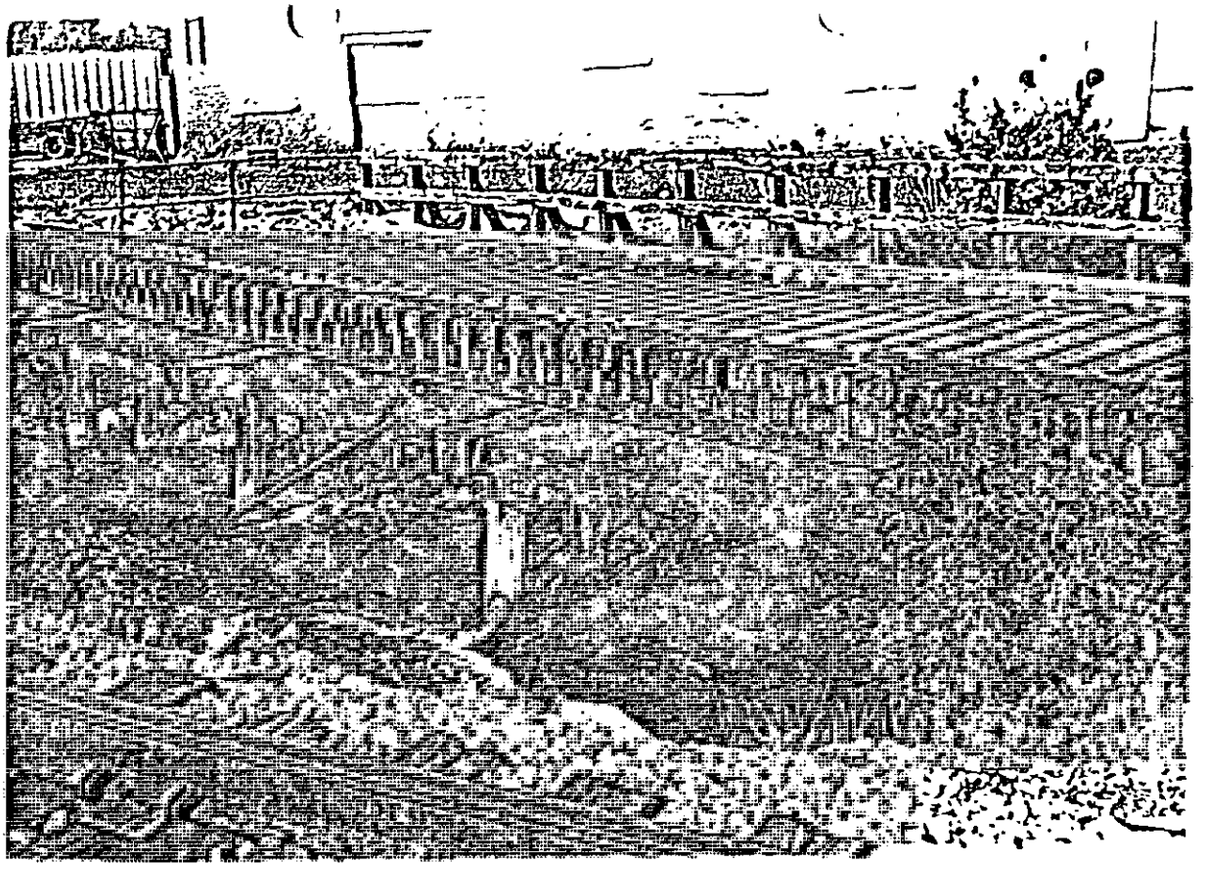
Cross-Section #105 Portage Creek @ 1st Bridge S. of Cork





25
Book #4
CROSS-SECTION #65 PORTAGE CREEK AT 1ST BR. S. OF CORK
L. & R. OFFSETS FROM ℄ BRIDGE FACING UPSTREAM
MAG. BEARINGS
0.15' PLANK
0.65' WOOD BEAM
45' WOOD BEAM
NON EFFECTIVE FLOW AREA
38.6L
32.25L
1295.3
25.9L ℄ COLUMN
1300.3
1302.8
19.35L ℄ OPENING
1313.3
12.8L ℄ COLUMN
1315.8
6.4L ℄ OPEN
1326
000 ℄ COLUMN
1328.5
6.35R ℄ OPENING
1338.6
12.7R ℄ COLUMN
1341.1
18.9R ℄ OPENING
1351.1
25.1R ℄ COLUMN
1353.6
31.4R ℄ OPENING
1363.1
37.1R ℄ COLUMN
1365.6
43.45R ℄ OPENING
1375.7
49.8R ℄ COLUMN
1378.2
1389.2
63R.
803.5
801.0
802.1
SUPPORT BEAMS
1 WEB
SKEW @ 30°
UPSTREAM END FACING DOWNSTREAM
Sta. 16920 - 16934
Use D/S face
HUD 2027-07
Sheet 97/109


23
Book #4
Cross Section #65 Portage Creek At 1st Br. South of Cork St.
L & R Offsets Are From ℄ Bridge Facing Upstream
Non Effective Flow Area 8.65' Wood Beam
1.45' Wood Beam
Downstream End Facing Upstream
Downstream
Skew @ 40°
Sta 16920 - 16934
37.1
1295.3
1300.8
25.1 ℄ Column
1303.8
18.9 ℄ Opening
1313.3
12.7 ℄ Column
1316.3
3 (Toe)
1326
000 ℄ Column
1329
6.4 ℄ Opening
1338.8
12.8 ℄ Column
1341.8
19.35 ℄ Opening
1351.8
25.9 ℄ Column
1354.8
32.25 ℄ Opening
1364.5
38.6 ℄ Column
1367.5
43.95 ℄ Opening
1376.5
50.3 ℄ Column
1379.5
56.9 ℄ Opening
1389.2
HUD 2027-07
Sheet 98/109



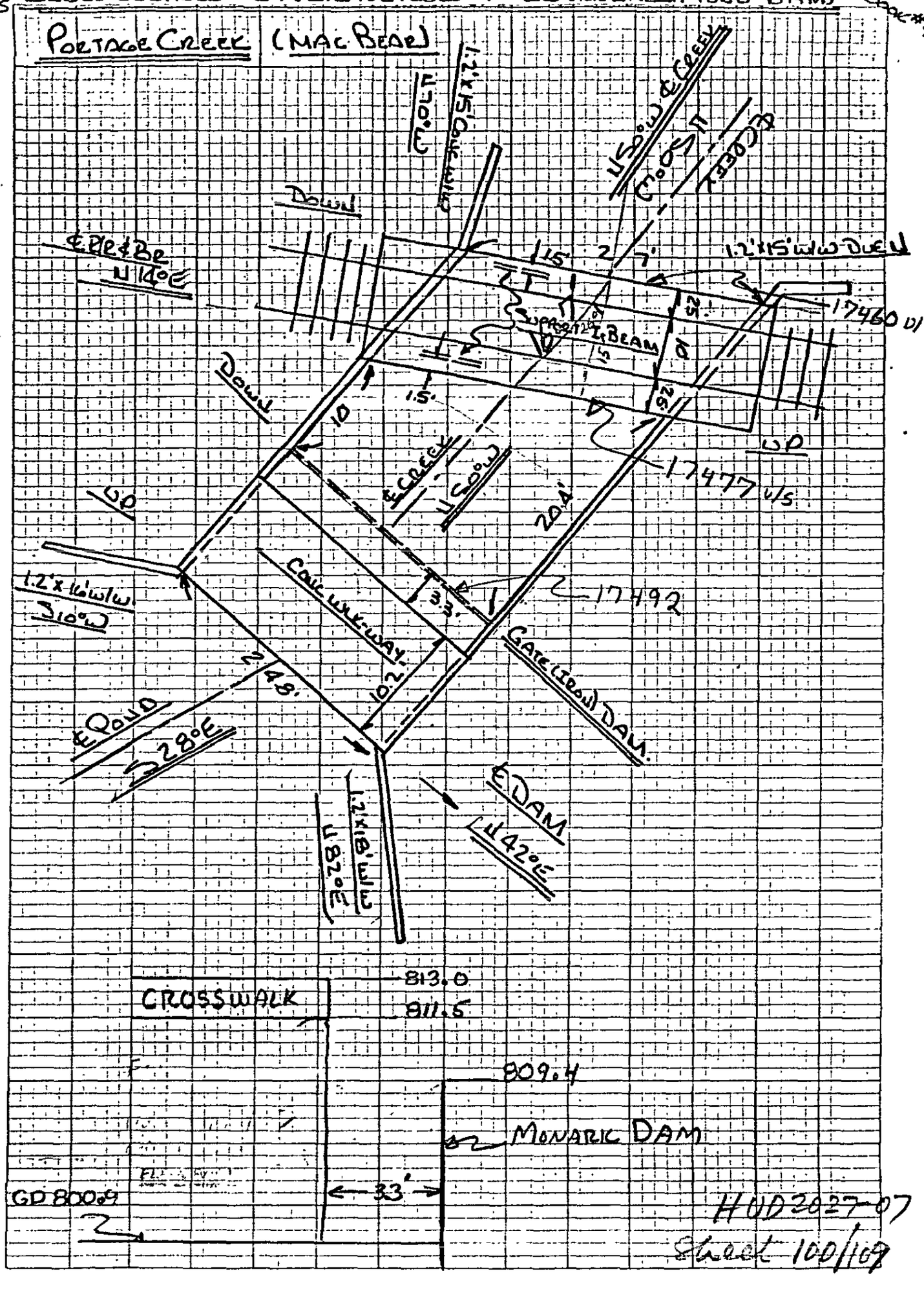
PORTAGE CREEK AT 1ST. RR CROSSING
S. OF CORK DWLST SEC 65

Sta. 16920 - 16934

HUD 02705

CROSS SECTIONS #67 (ELK BRIDGE) & #68 (MONARCH POND DAM)

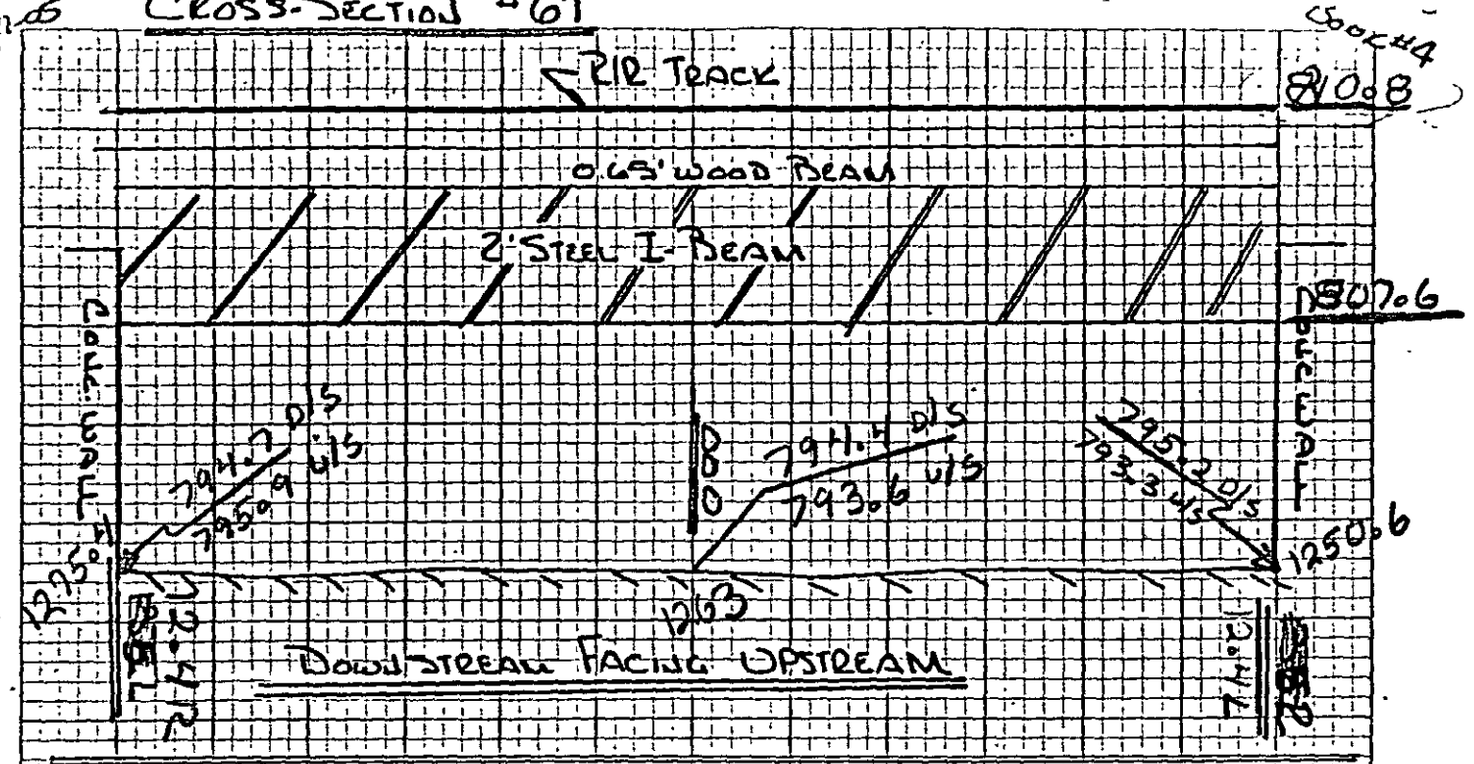
Book #4



HUD 2-05

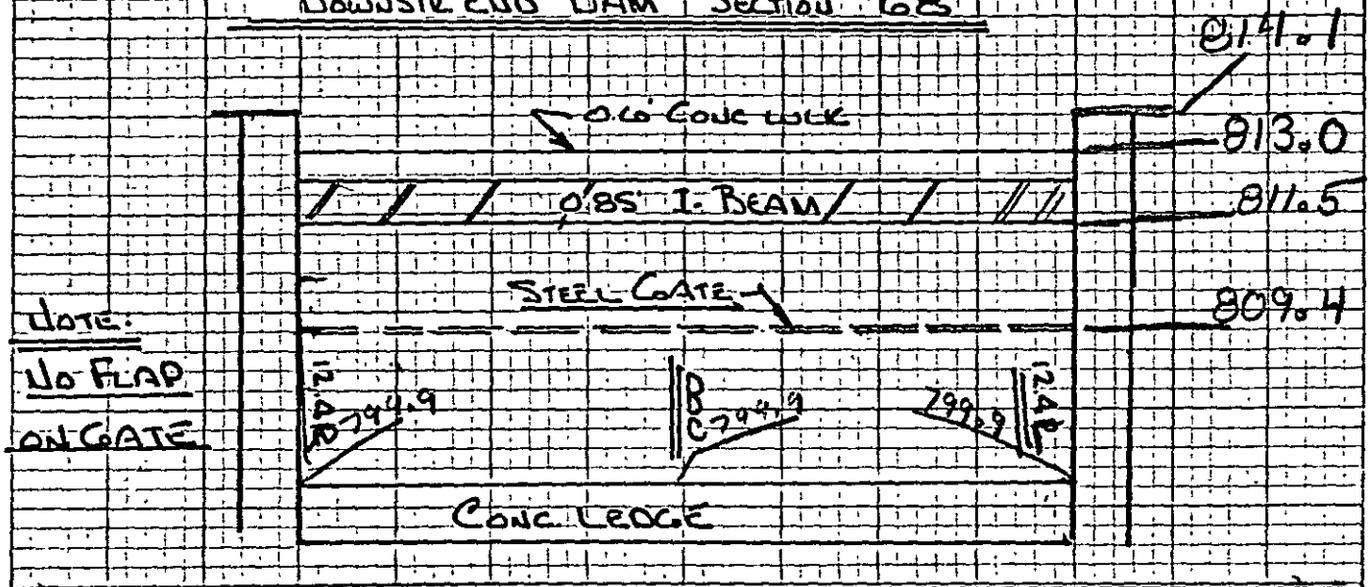
CROSS-SECTION #67

Book #4



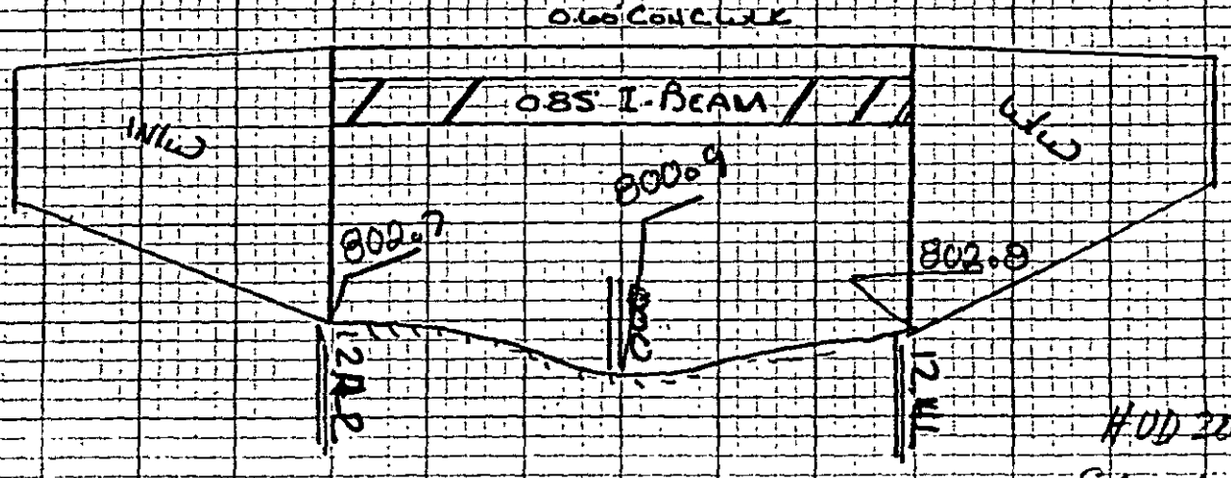
DOWNSTREAM FACING UPSTREAM

DOWNSTREAM END DAM SECTION #68

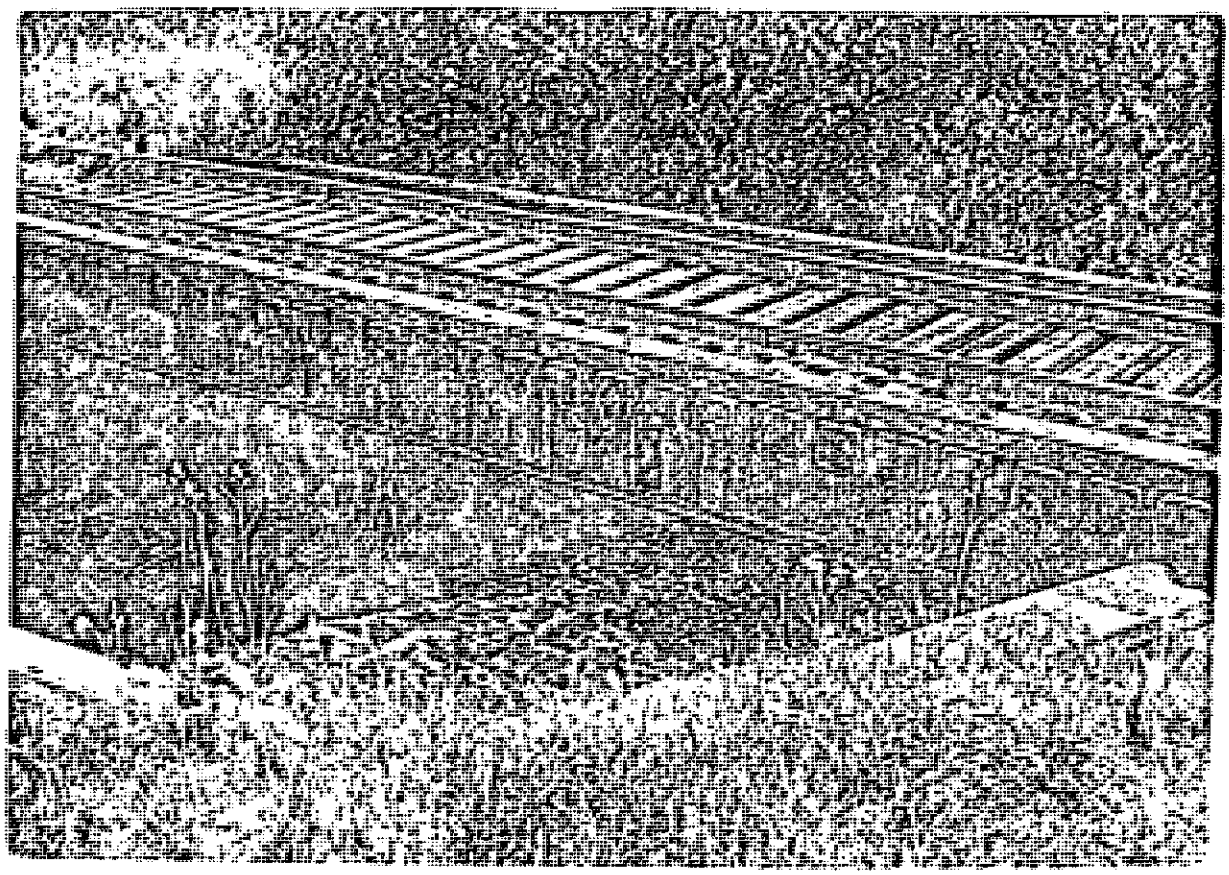


NOTE:
NO FLAP
ON GATE

UPSTREAM VIEW DAM SEC #68



HUD 2027-07
Sheet 101/109



PORTAGE CREEK AT 2ND RR CROSSING S. OF CORK UPSTR. SEC 67

HUD 2027-07

Sheet 102

Wade Trim & Associates Inc.
Civil Engineers • Land Surveyors
25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

WORK SHEET

Bridge Location: CROSSWALK U/S MONARIC DAM

Bridge Losses - SB Card

REFERENCE

1. XK (Pier Shape Coefficient) 0.0 — HEC-2 Manual

XKOR (Loss Coefficient) = 1.0 + Σk , Σk = $k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge:

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = = 240 WP = 46

R = A/WP 240/67 $R^{4/3}$ = 5.481 L = 10.2

n (composite) =

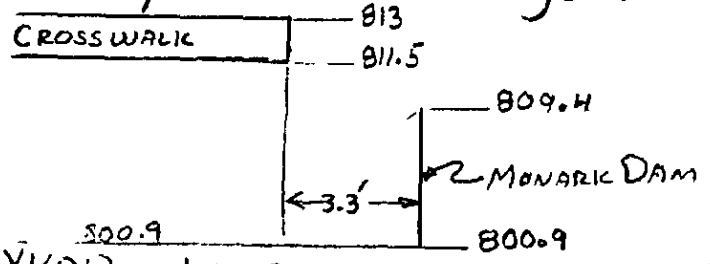
$K_f = 29.1 \times (0.02)^2 \times 10.2 / 5.481 = .02$

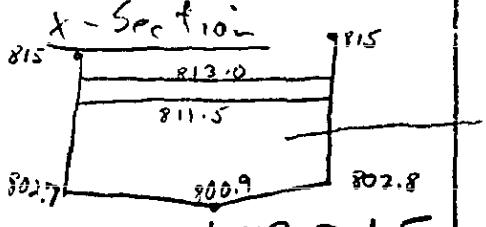
K_e =

Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 49

$K_p = 0$ if bridge has no intermediate piers

$K_p = 0.05$ if bridge has intermediate piers — HEC-2 manual





2. XKOR = 1 + 0.02 + 0.0 + 0.40 = 1.42 ⇒ 1.5

3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual

4. RDLEN = Length of weir = 0. (0 if read off BT cards)

5. BWC = bottom width of bridge opening (inc. piers) = 24.8

6. BWP = total width of obstruction = 0.0 — field data

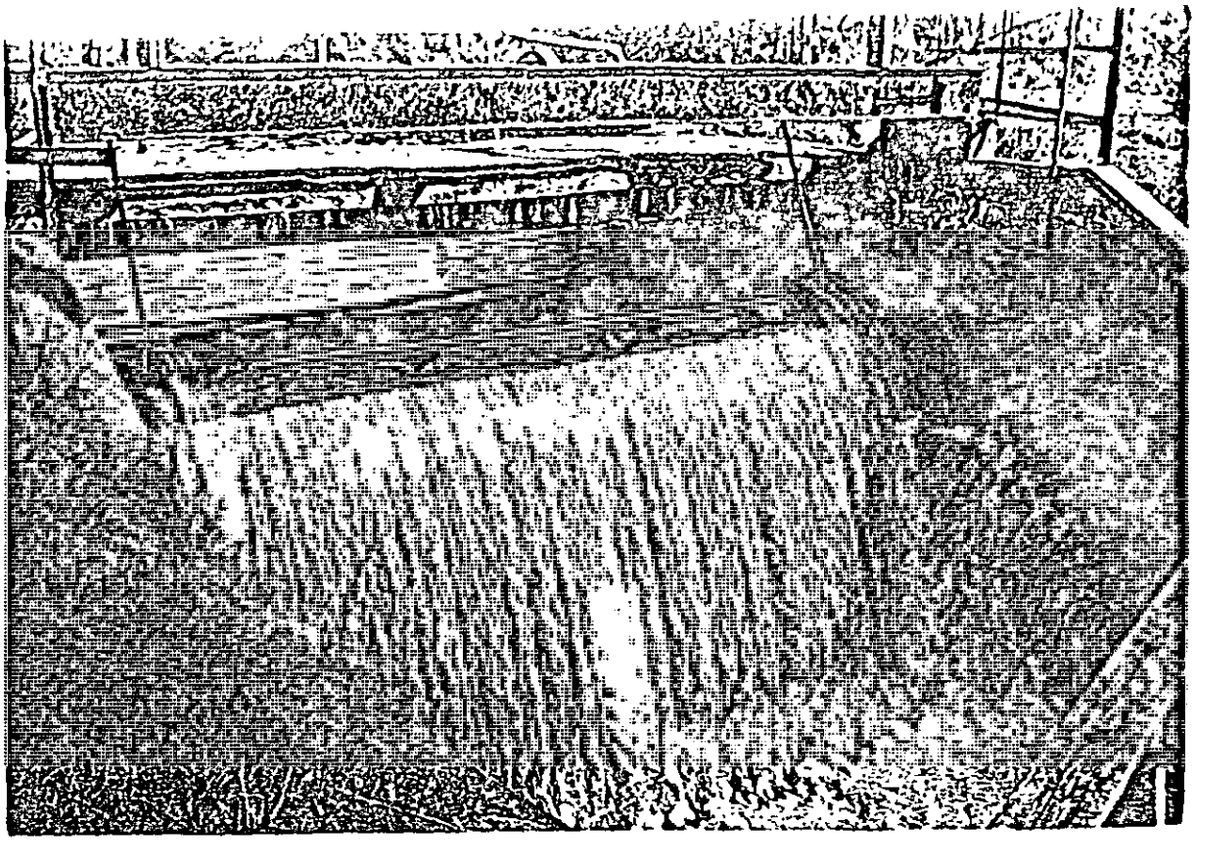
7. BAREA = bridge opening inc. piers = 240.

8. SS = side slope = 0.
(horizontal per 1 vertical unit)

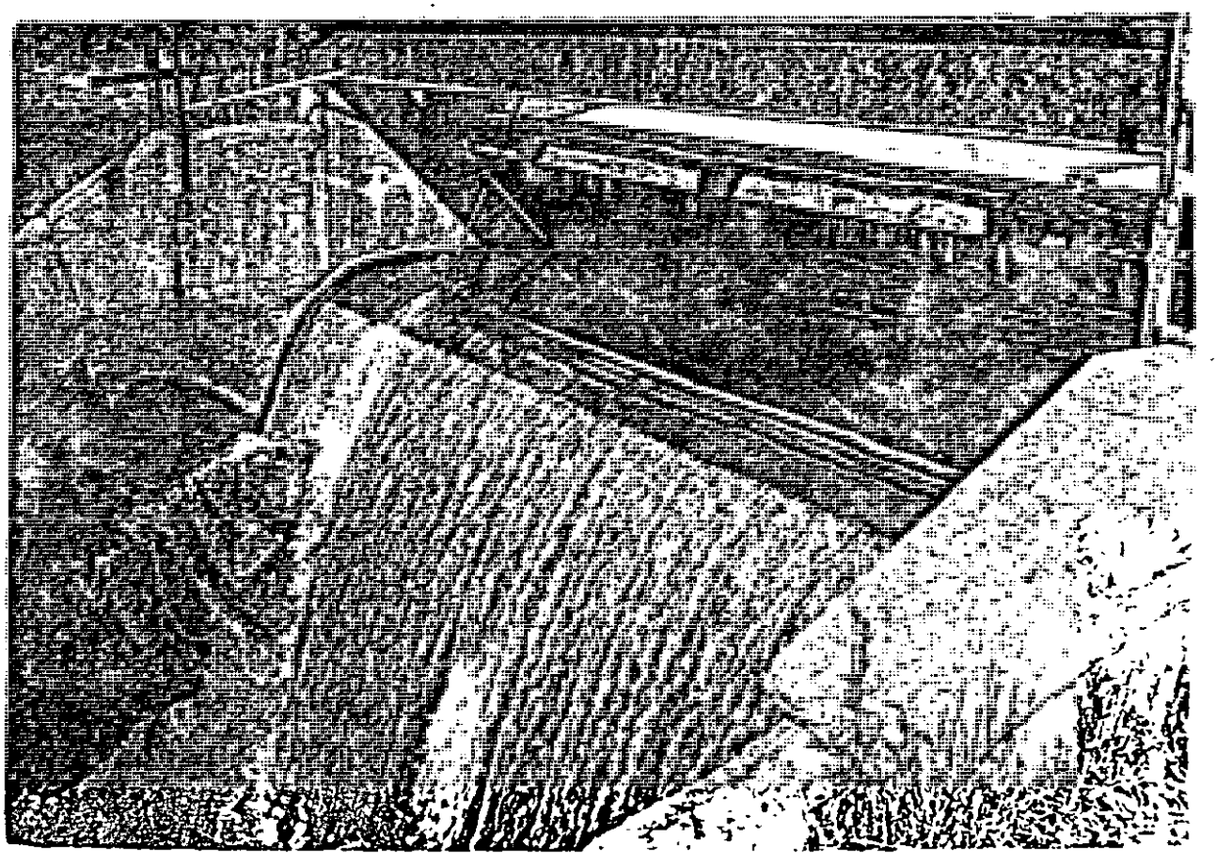
9. ELCHU = Elevation of channel invert U/S side = 800.9
(0 if equal to minimum elevation in previous x-sect.)

10. ELCHD = Elevation of channel invert D/S side = 800.9 — Sheet 16 3/10a
(0 if equal to minimum elevation in previous x-sect.)

SUBJECT	BY	CHK	SHEET NO	File Code No (Job No / Owner / Project / Suffix)
PORTAGE CREEK	DRB		___ OF ___	HUD • 2027 • 07
	DATE 2/80	DATE		



MONARCH MILL POND DAM SEC#68



MONARCH MILL POND DAM SEC#68

HUD 202-67
Sheet 15/109

Bridge Location :

Bridge Losses - SB Card

REFERENCE

1. XK (Pier Shape Coefficient): 1.05 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk, $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient

k_e = entrance loss coefficient

k_p = loss from intermediate piers

Description of Bridge :

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = 214. = 214 $WP = 160$

$R = A/wp$ 214/160 $R^{4/3} = 1.47$ $L = 10$

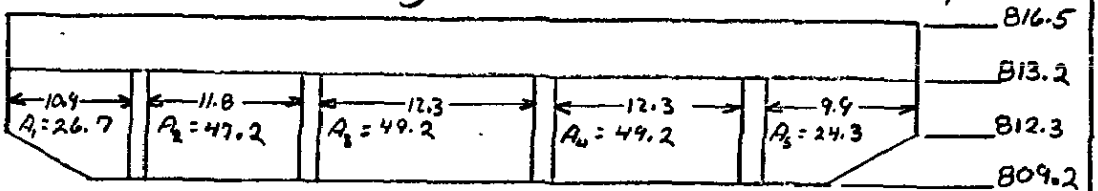
n (composite) =

$K_f = 29.1 \times (0.02)^2 \times 10 \;/\; 1.47 = 0.08$

$K_e = 0.5$ — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 49

$K_p = 0$ if bridge has no intermediate piers

✓ $K_p = 0.05$ if bridge has no intermediate piers — HEC-2 manual



PIER WIDTH 1.1 FT

2. XKOR = 1 + 0.08 + 0.5 + 0.05 = 1.63

3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual

4. RDLEN = Length of weir = 0.0 (0 if read off BT cards)

5. BWC = bottom width of bridge opening (inc. piers) = 61.8

6. BWP = total width of obstruction = 4.4 — field data

7. BAREA = bridge opening inc. piers = 200.

8. SS = side slope = 0.0
(horizontal per 1 vertical unit)

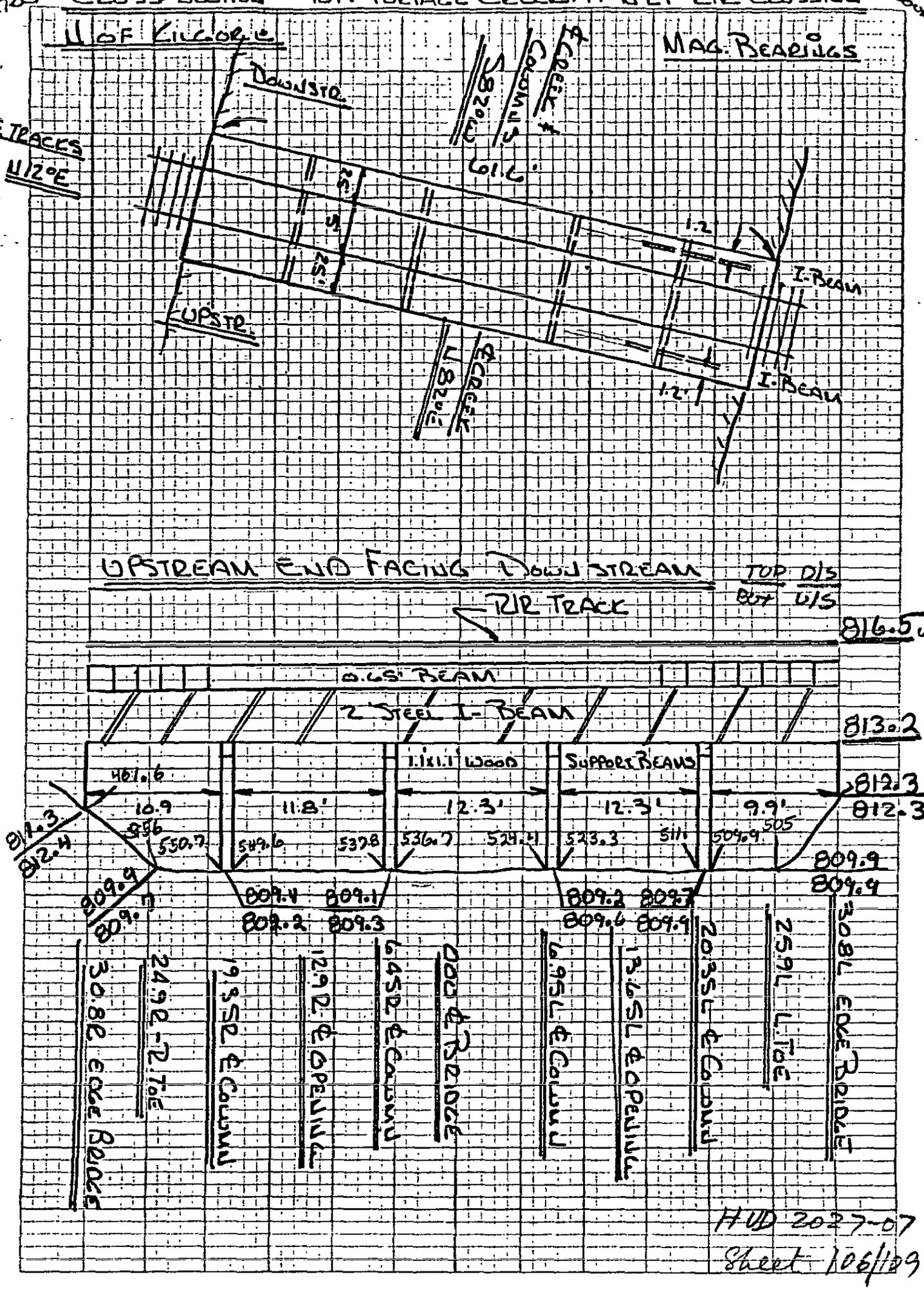
9. ELCHU = Elevation of channel invert U/S side = 809.7
(0 if equal to minimum elevation in previous x-sect.)

10. ELCHD = Elevation of channel invert D/S side = 809.7 — Sheet 105 1/09
(0 if equal to minimum elevation in previous x-sect.)

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner Project Suffix
Sta 202.5 - 202.65 Portage C.	Dan		___ OF ___	HUD • 20[illegible] • [illegible]
	DATE 2/10	DATE		

HUD 2027-05

Cross Section #70A Portage Creek at N'LY RR Crossing



HUD 2027-07

Sheet 106/109

Bridge Location : 1ST R.R. BRIDGE NORTH KILGOUR RD

Bridge Losses - SB Card

1. XK (Pier Shape Coefficient): 1.05 — HEC-2 Manual

XKOR (Loss Coefficient) = 1.0 + Σk, $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge :

$K_f = 29.1 n^2 L / R^{4/3}$ for English units

Area = = 277 WP = 170

R = A/wp 277/170 $R^{4/3}$ = 1.91 L = 10

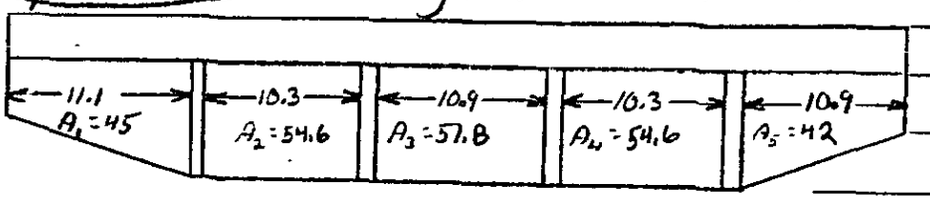
n (composite) =

$K_f = 29.1 \times (0.02)^2 \times 10 / 1.91 = 0.06$

$K_e = 0.5$ — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 43

$K_p = 0$ if bridge has no intermediate piers

$K_p = 0.05$ if bridge has no intermediate piers — HEC-2 manual



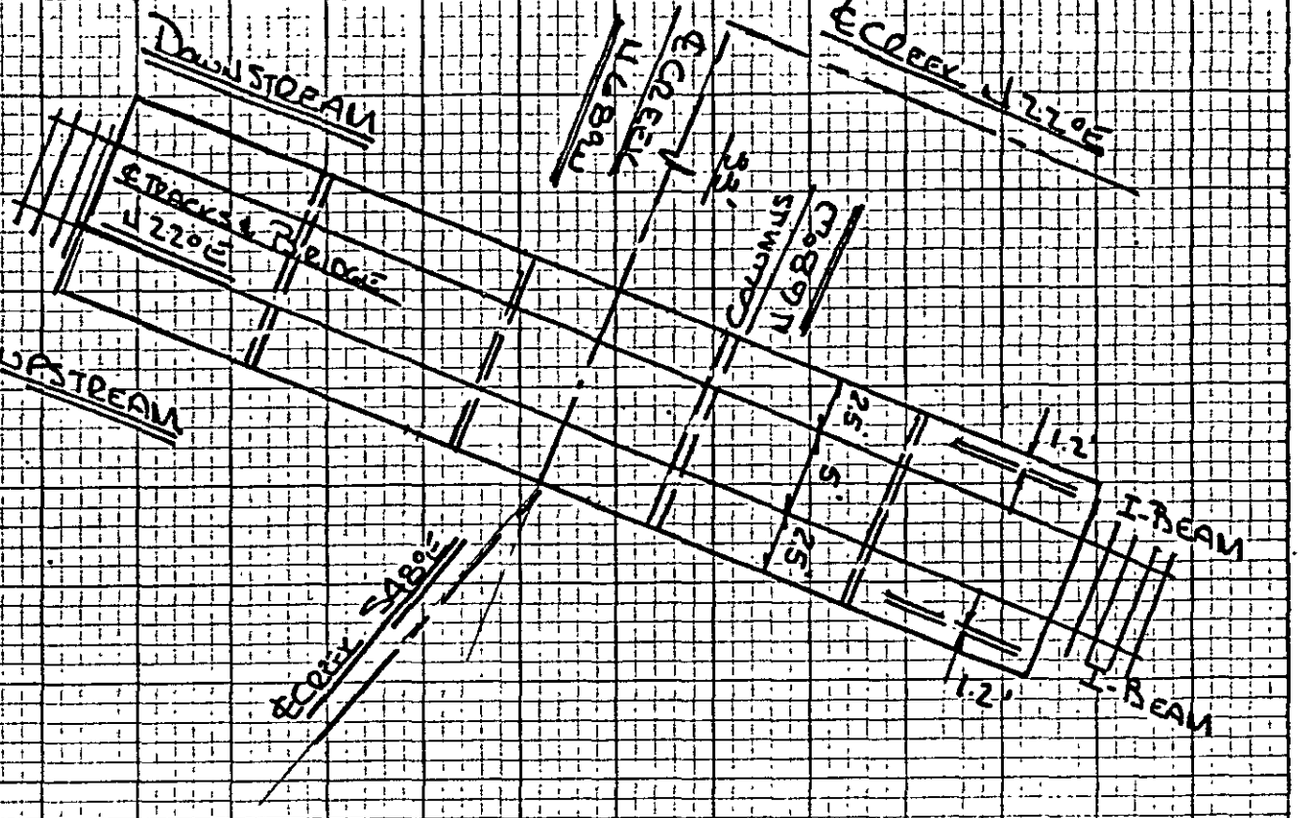
2. XKOR = 1 + 0.06 + 0.5 + 0.05 = 1.61
3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0. (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 57.9
6. BWP = total width of obstruction = 4.4 — field data
7. BAREA = bridge opening inc. piers = 257.
8. SS = side slope = 0.0 (horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 810.0 (0 if equal to minimum elevation in previous x-sect.)
10. ELCHD = Elevation of channel invert D/S side = 810.0 (0 if equal to minimum elevation in previous x-sect.) — Sheet 107/1

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner Project Suffix
PORTAGE CREEK 21470	DRB			HUD • 2027 • 07
	DATE 2/80	DATE	OF	

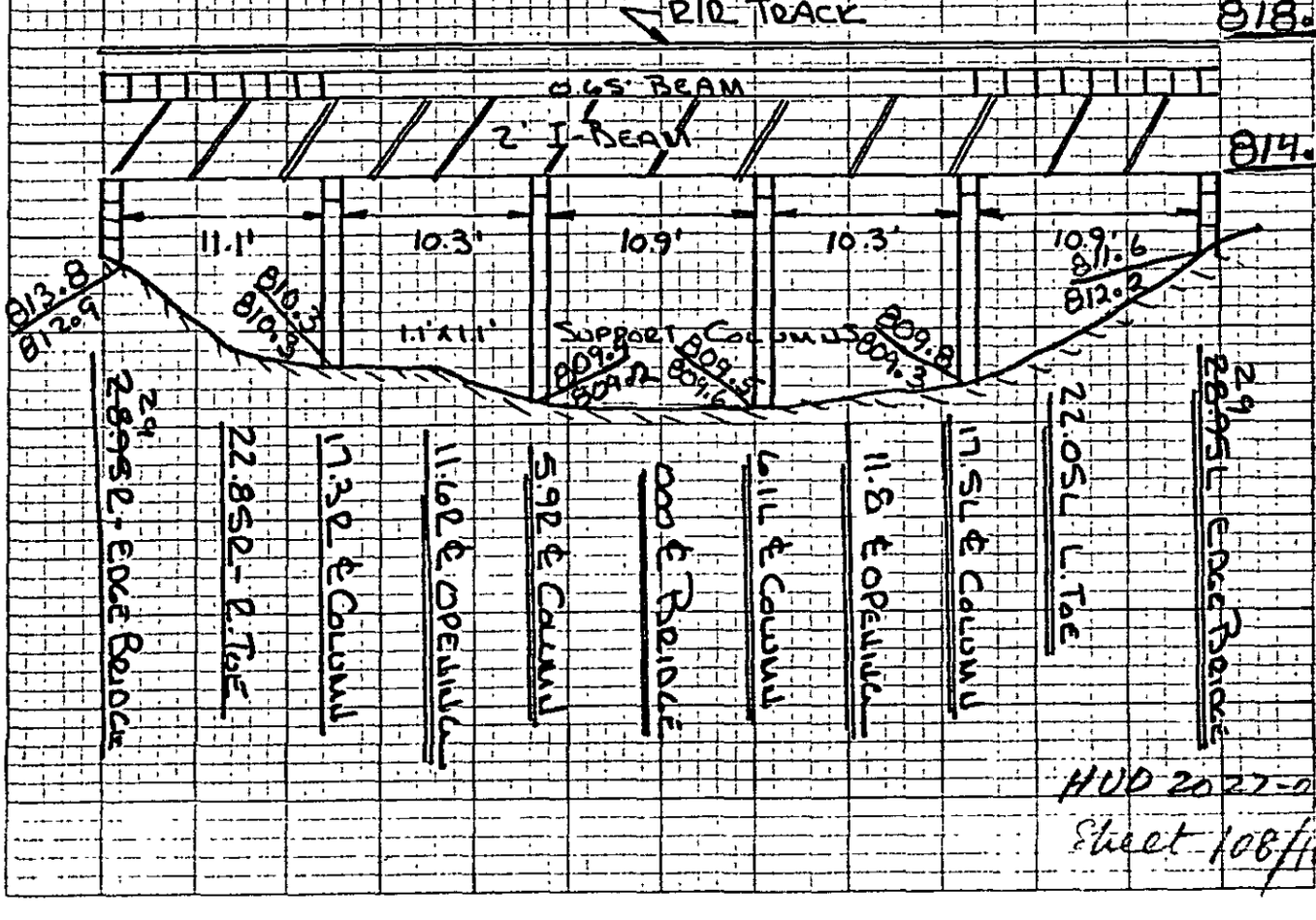
Cross-Section #70B Portage Creek At S'ly R/R Crossing

U. of Kilgore Rd

Mag. Bearings

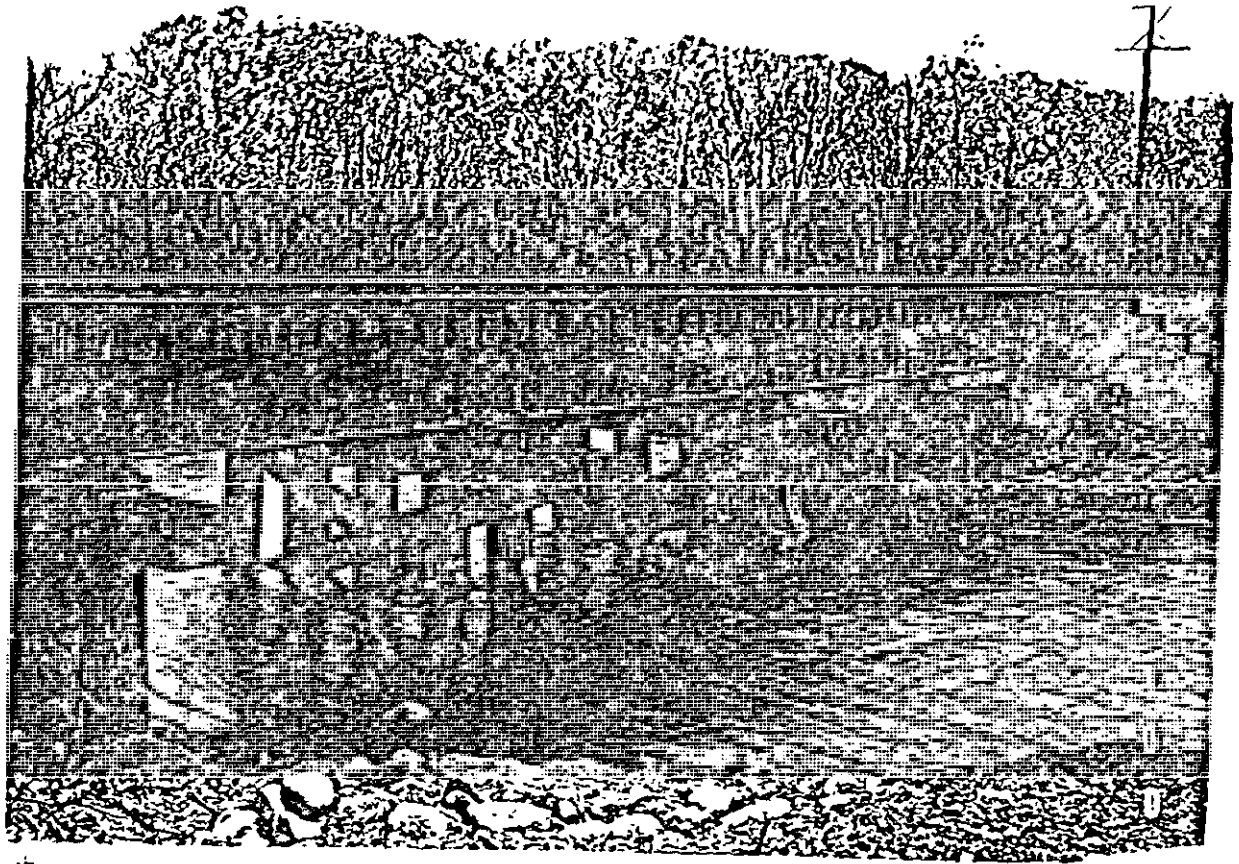


Upstream End Facing Downstream



HUD 2027-07

Sheet 108/109



#100

PORTAGE CREEK @ 2ND. RAILROAD CROSSING N. OF KILGORE
SECTION #70B (SAME FOR 70A)

Sta. —:21460 - 21470

HOD 2027-07

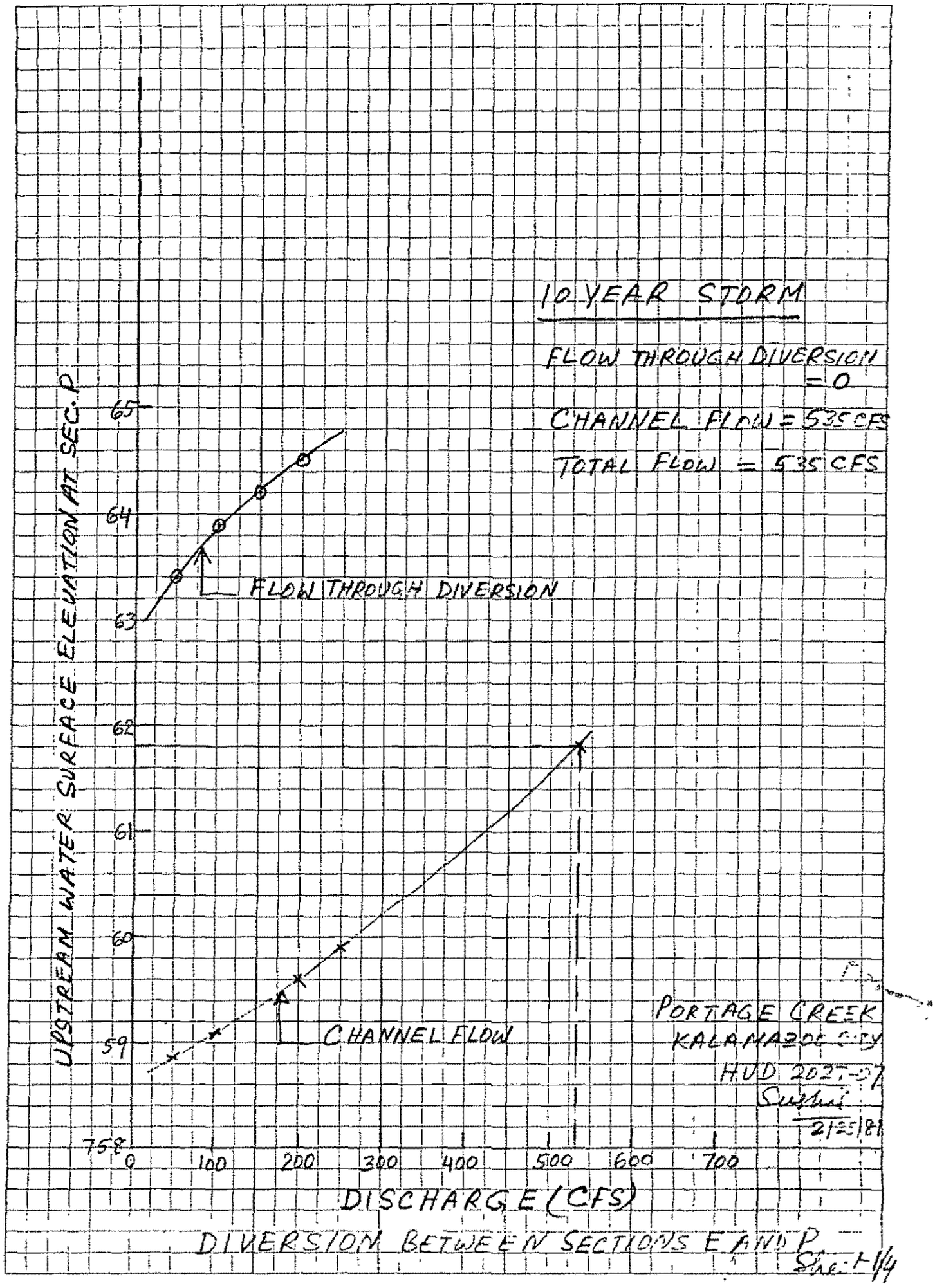
Sheet 109/109

PORTAGE CREEK

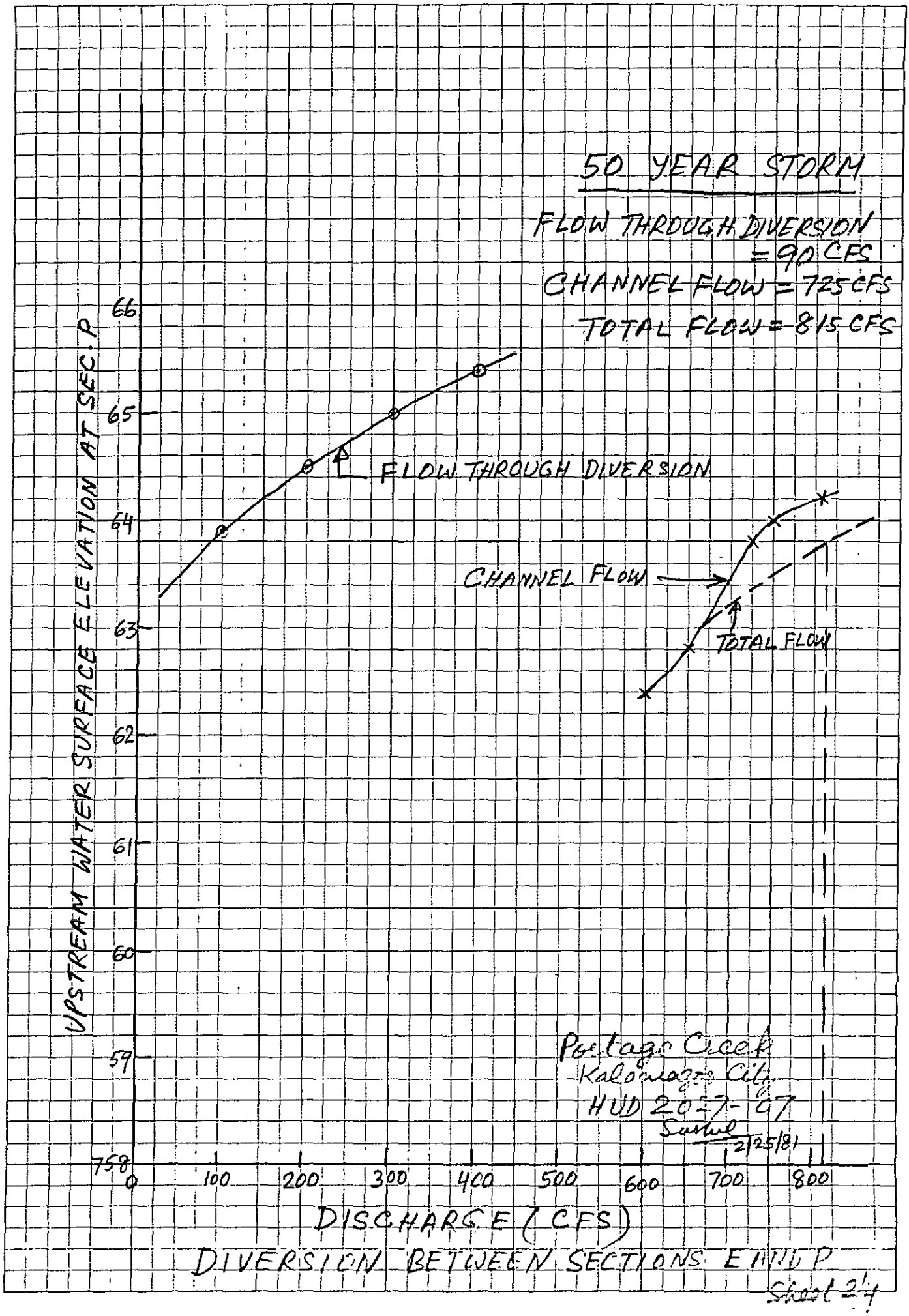
CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 5

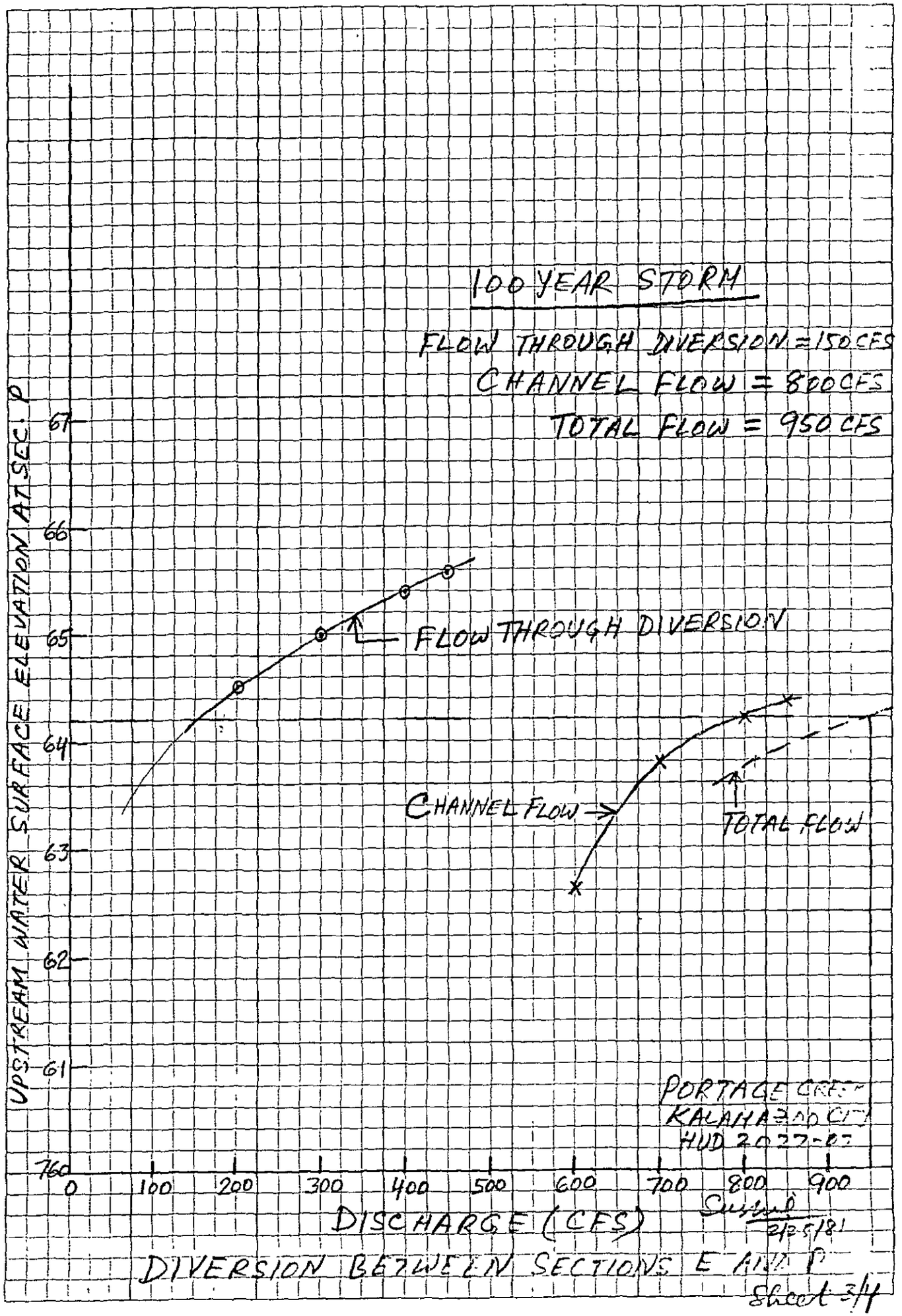
Diversion Rating Curves

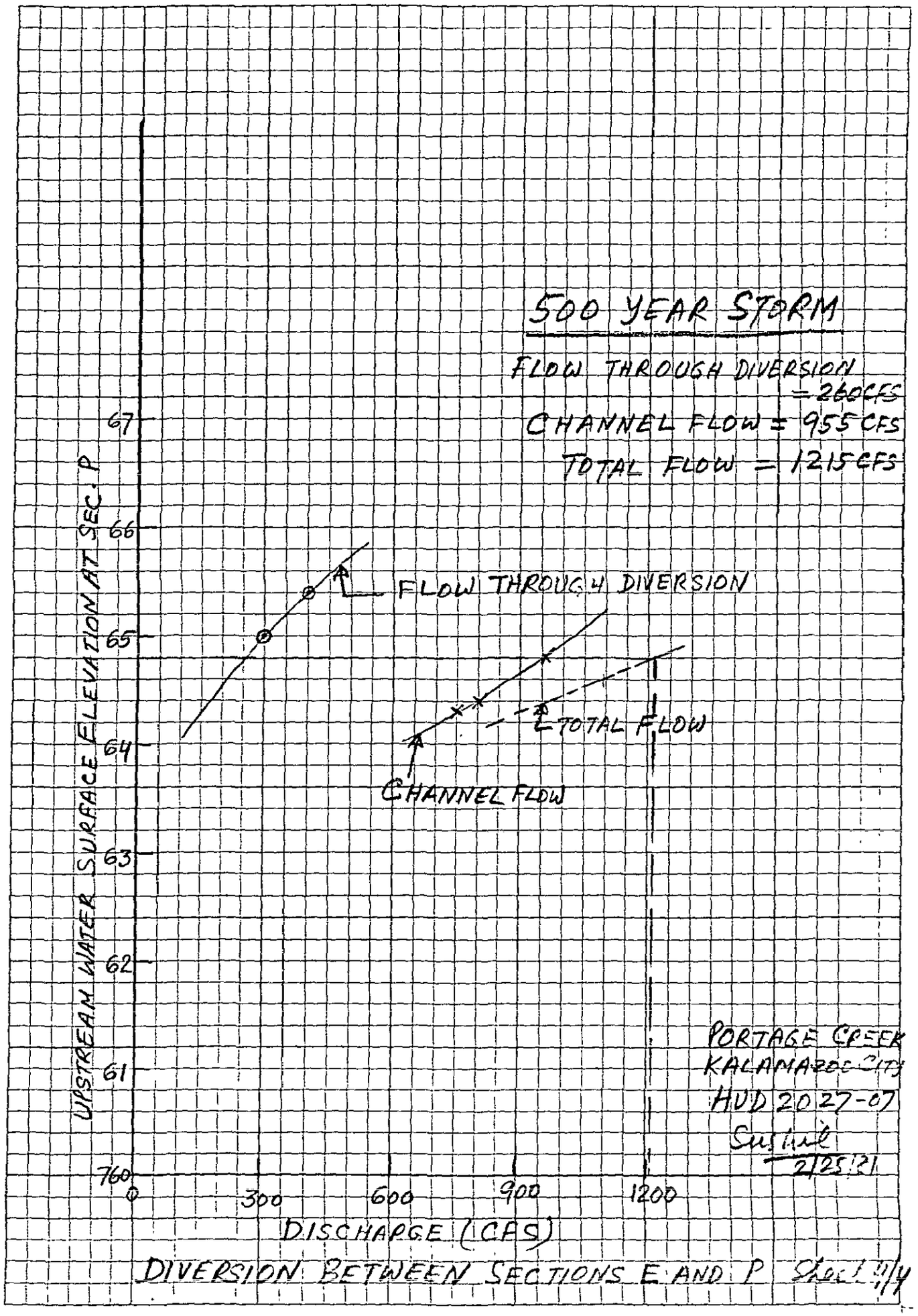


46 0460
K-E 5 X 5 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO MADE IN U.S.A.



46 0460
K+E KEUFFEL & ESSER CO MADE IN U.S.A.


100 YEAR STORM
FLOW THROUGH DIVERSION = 150 CFS
CHANNEL FLOW = 800 CFS
TOTAL FLOW = 950 CFS
UPSTREAM WATER SURFACE ELEVATION AT SEC. P
67
66
65
64
63
62
61
760
FLOW THROUGH DIVERSION
CHANNEL FLOW
TOTAL FLOW
0
100
200
300
400
500
600
700
800
900
DISCHARGE (CFS)
PORTAGE CREEK
KALAMAZOO CITY
HUD 2027-03
DIVERSION BETWEEN SECTIONS E AND P
Sheet 3/4



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K+E 6 X 6 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO MADE IN U.S.A.

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 6

Cork Street Bridge

Computations for 500-Year Flood

REFERENCE

Cork St. Bridge

500 Yr. Elevation Calculations

$Q = 760$ cfs
Tailwater = 797.5' (x.s. 16409)
Structure = 8' ∅ Corr. Metal Pipe
Length = 90'
Low Chord = 798.4 D/s EG = 798.1
Top Road = 801.9
Effective Weir Length = 100'
Area = 52 ft²

$$Q = A\sqrt{\frac{2gH}{K}} + C L H_2^{3/2}$$

Try Elev. 803.0

$$Q = 52\sqrt{\frac{64.4(4.9)}{2.13}} + 3.0(100)(1.1)^{3/2} = 979 > 760$$ Too High

Try Elev. 802.5

$$Q = 52\sqrt{\frac{64.4(4.4)}{2.13}} + 3.0(100)(.6)^{3/2} = 740 \approx 760$$

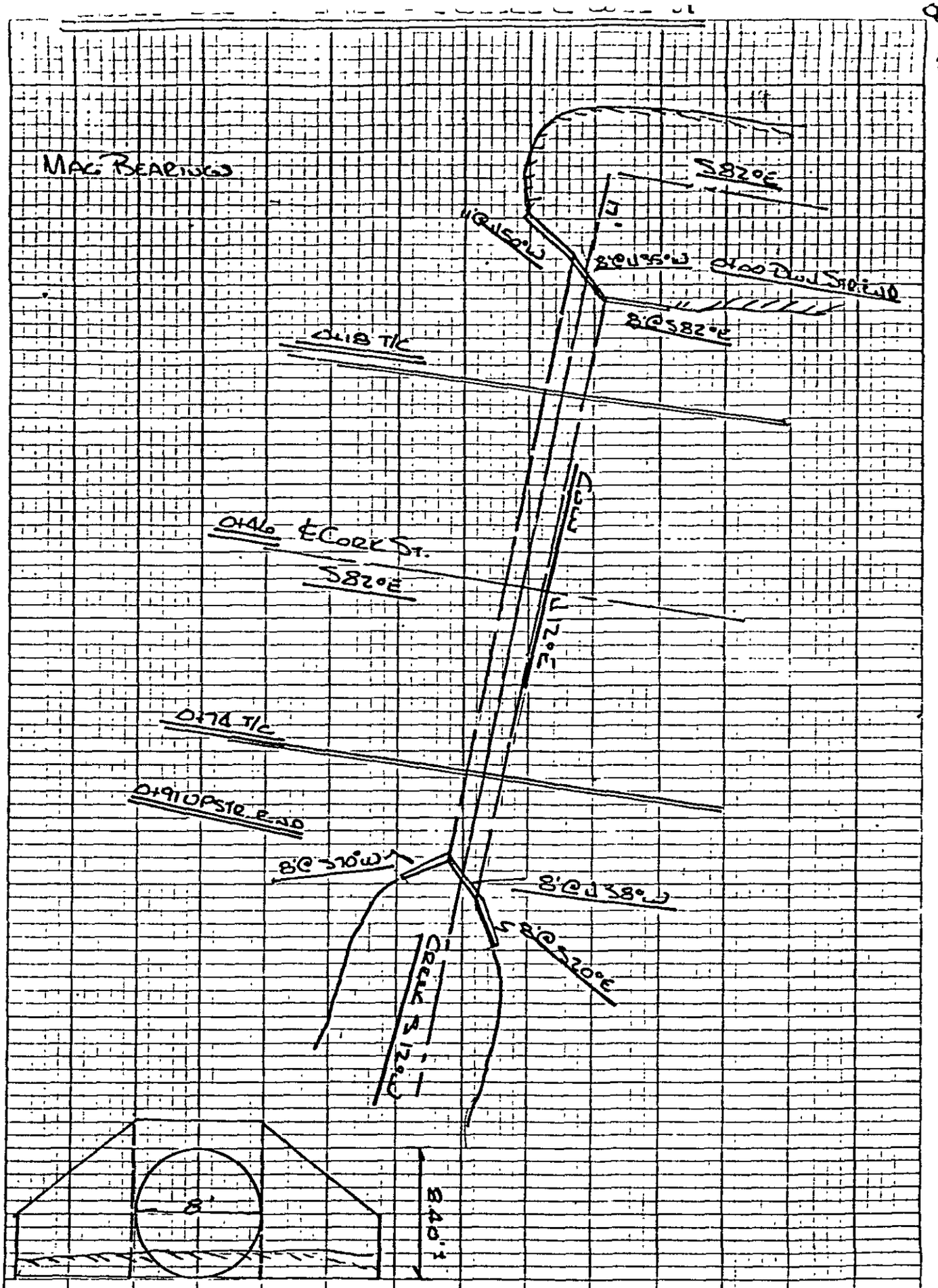
Try Elev. 802.6

$$Q = 52\sqrt{\frac{64.4(4.5)}{2.13}} + 3.0(100)(.7)^{3/2} = 782 \approx 760$$

Use Elev. 802.55 for 500 yr. Storm at Section 16501. Place ET Encr. @ 2036 & 2163

Use X5 Card @ Section 16501

SUBJECT	BY	CHK.	SHEET NO	File Code No (Job No / Owner / Project) Suffix
Portage Creek, Kalamazoo Cork Street Bridge	Weaver		1 OF 4	HUD 2027 • 01
	DATE 2/81	DATE		



Portage Creek, Kalamazoo HUD 2027-07 Sheet 3/4
CORK ST BRIDGE

2022-03

L&R OFFSETS FROM ℄ CULV FACING UPSTREAM

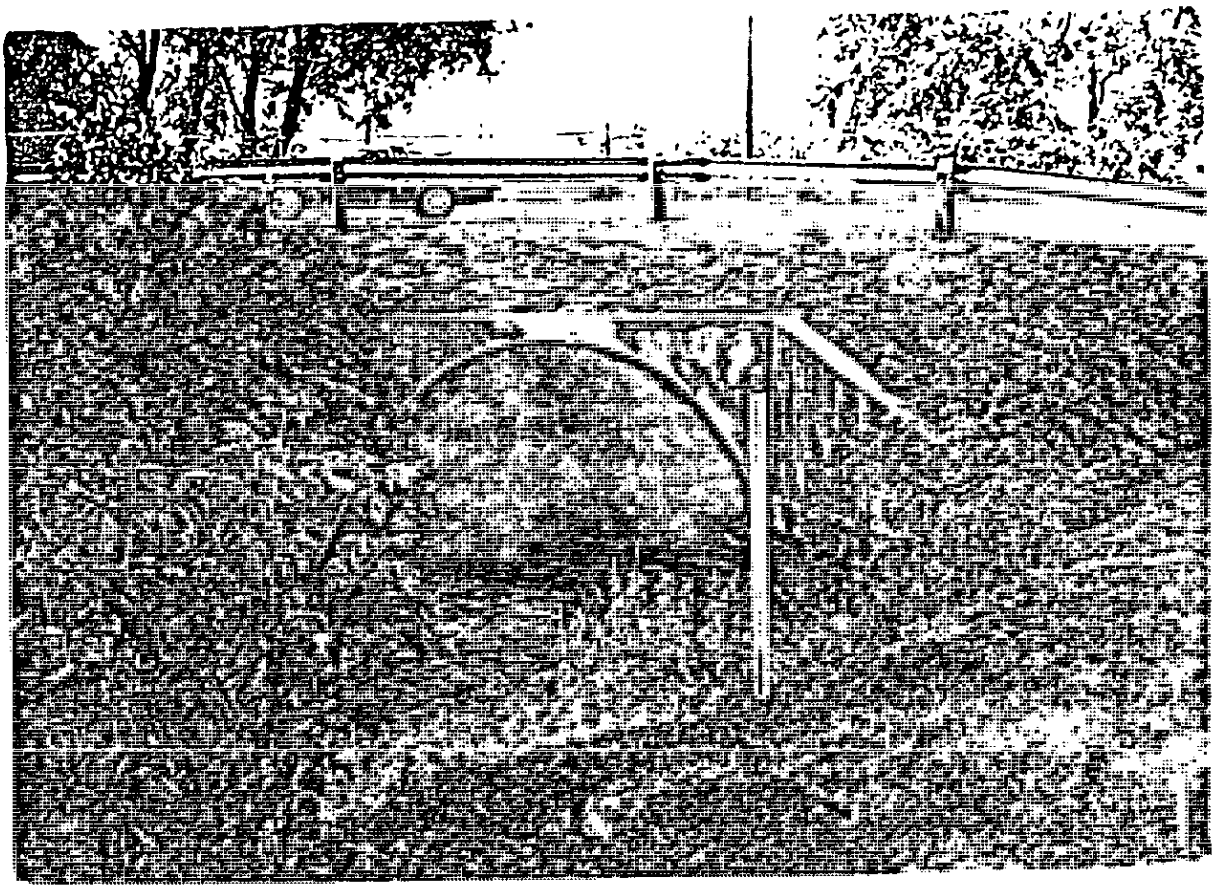
0+00 DOWNSTREAM END — U.S.G.S DATUM

STA	+	HI	—	Elev.	
		807.56			REF FB 1003 P 68
DOWNSTREAM END					
L. WINGWALL					
			8.09	799.47	TOP WINGWALL
			9.59	797.97	EX. GRND
R. WINGWALL			9.66	797.90	TOP WINGWALL
			10.16	797.40	EX. GRND
0+00	DOWNSTREND				
			8.08	799.48	OUTSIDE TOP HEADWALL
			9.23	798.33	INSIDE TOP CULV
			17.30	790.26	CREEK BOTTOM
			17.63	789.93	INV. CULV.
0+18			6.06	801.50	T/C @ ℄ CULV
0+46			5.68	801.88	℄ CORK @ ℄ "
0+74			5.70	801.86	T/C @ ℄ "
0+91.2	UPSTREAM END.				
			8.08	799.48	OUTSIDE TOP HEADWALL
			8.90	798.66	INSIDE TOP CULV
			16.84	790.72	EX. CREEK BOTTOM
			17.30	790.26	INV. CULV
L. WINGWALL			11.69	795.87	TOP WING WALL
			14.79	792.77	EX. GRND.
R. WINGWALL			8.08	799.48	TOP WINGWALL
			8.57	798.99	EX. GRND

√G.K

Portage Creek, Kalamazoo HUD 2022-07

CORK ST. BRIDGE Sheet 3/4



PORTAGE CREEK AT. CORK UPSTR. SEC 63

HUD 2027-07 Sheet 4/4

PORTAGE CREEK

CITY OF KALAMAZOO, MICHIGAN

EXHIBIT 7

Bryant Mill Pond and Monarch Paper Mill

Dams Analyses

REFERENCE

BRYANT MILLPOND DAM RATING CURVE

Procedure:

(A.) Develop Rating Curve for Elliptical Outlet Pipe (5'x7'). Tailwater conditions are given from HEC-2 Runs d/s of Dam. (Elev. = 772.8

(B.) Develop Rating Curve for Wooden Penstock which controls flow which passes through the 5'x7' Ellip. Outlet Pipe.

(C.) Develop Rating Curve for Concrete Spillway which handles flow which is above the capacity of the Penstock.

Given:

Q_{100} = 480 cfs, Q_{10} = 240 cfs, Q_{50} = 405 cfs, Q_{500} = 760 cfs
Tailwater Elevation d/s of Dam = 772.8'
Dimensions as presented on sheets 2, 3 + 4 of this Appendix.

(A.) Elliptical Outlet Pipe

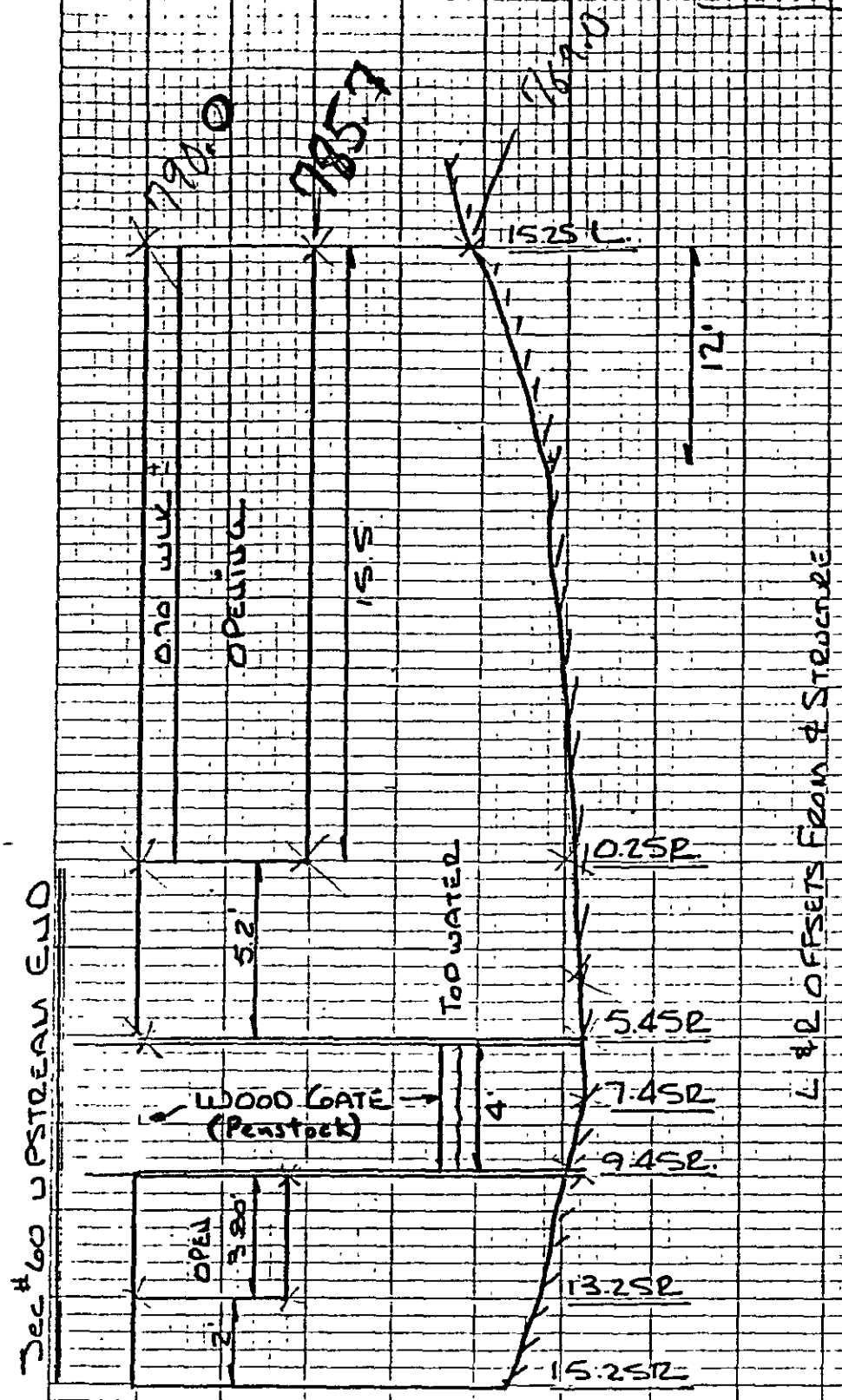
Invert Elev = 774.3
Length = 4.0'
Dimensions = 6.5' X 4.6'
Area = 24.7 ft²
Wetted Perimeter = 18.2'

"Calculate Inlet + Outlet Control based upon Bureau of Public Roads, Inlet and Outlet Control Chart Nos. 3 + 10", January, 1963. Worst Condition between Inlet + Outlet Control Prevails!

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner · Project · Suffix
Portage Creek, Kalamazoo Bryant Mill Pond Dam	DATE 2/1/81	DATE	1 OF 11	1145 · 2021 · 07

Book 4

Upstream End of Dam



Bryant Mill Pond Dam

W.J.W. 2/1/81

HUD 2024-07

Hw 2021

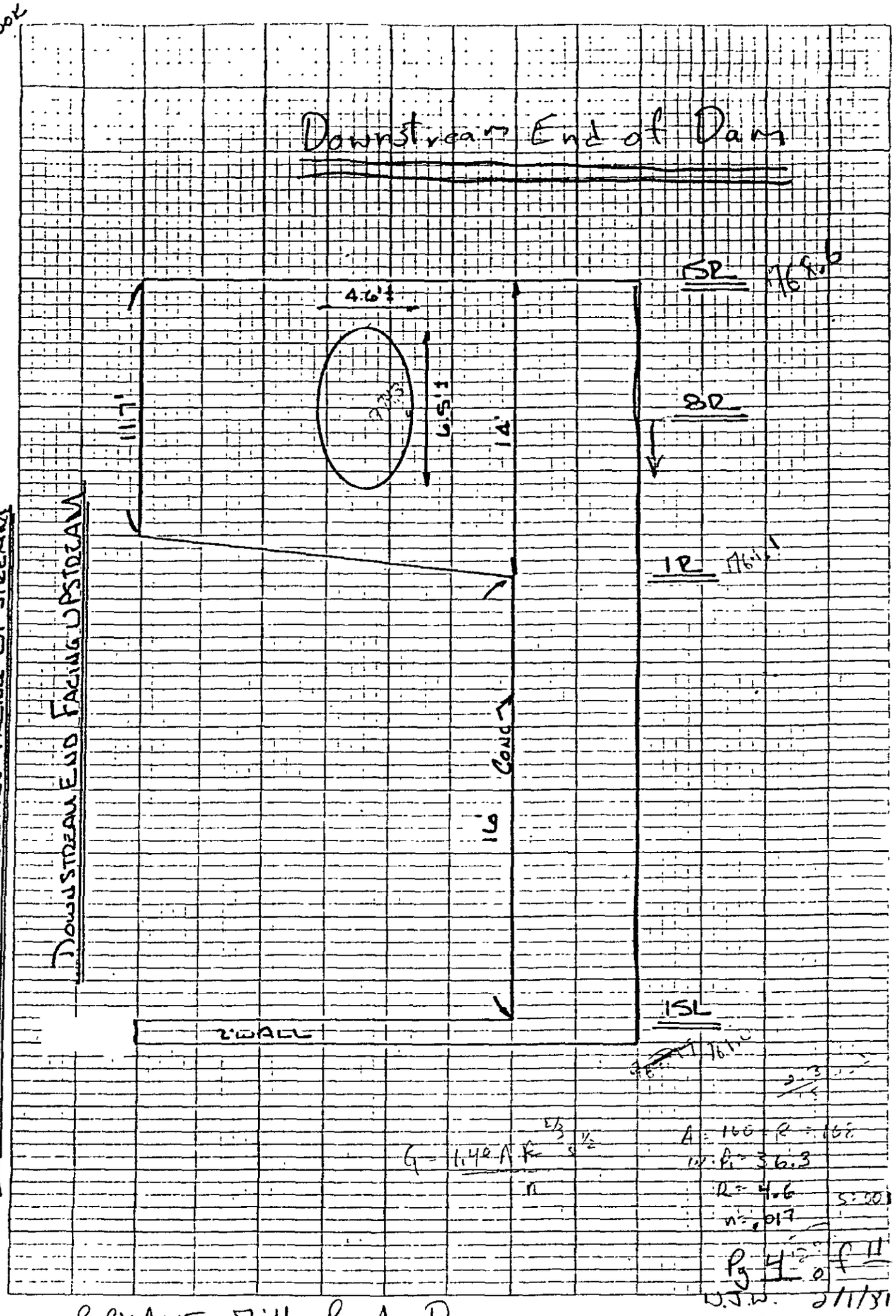
ALCOTT. L&R OFFSETS FROM ℄ DAM FACING UPSTREAM

USGS DATUM

STA	+	HI	—	ELEV.	Survey Notes
		795.09			FB 1003 Pg 65
DOWNSTREAM END.					
15L			4.85	790.24	TOP CONC WALL
15L			19.82	775.27	TOP CONC. OPENING
15L			26.12	768.97	CREEK BOTTOM
1R			19.72	775.37	TOP CONC OPENING
1R			26.02	769.07	CREEK BOTTOM
3.3R			5.09	790.00	OUTSIDE TOP STRUCTURE
8R			16.20	778.89	INSIDE TOP OVAL OPENING ±
8R			20.80	774.29	BOTT OF " " ±
15R			5.10	789.99	OUTSIDE TOP STRUCTURE
15R			26.50	768.59	CREEK BOTTOM
UPSTREAM END					
15.25 L			5.15	789.94	TOP OF WLK
15.25L			5.85	789.24	BOTTOM " INSIDE TOP OPENING
15.25L			9.38	785.71	BOTTOM OF "
15.25L			14.40	780.69	EX. GRND
3.25L			16.29	778.80	TOE OF CREEK.
0.25R			5.10	789.99	TOP OF WLK
0.25R			5.80	789.29	BOTTOM OF WLK
0.25R			9.40	785.69	BOTTOM OF OPENING
5.45R			5.10	789.99	TOP OF STRUCTURE AT L. EDGE WOOD G
7.45R			15.09	780.00	BOTTOM WOOD GATE
7.45R			15.60	779.49	TOP OF WATER.
7.45R			19.13	775.96	CREEK BOTTOM
9.45R			5.28	789.81	TOP STRUCTURE AT R EDGE GATE
9.45R			9.58	785.51	BOTTOM OPENING
13.25R			5.14	789.95	TOP STRUCTURE @ R. Edge.
13.25R			9.44	785.65	BOTTOM OF OPENING
15.25R			16.80	788.29	CREEK BOTTOM

WJW 2/1/81

BRYANT MILL Pond Dam — V.G.K. — HUD 2551-C



Pg 4 of 11

D.J.W. 2/11/31

BRYANT Mill Pond Dam

HUD 202 OT

REFERENCE
BPR #5

Inlet Control Rating Curve (Chart No. 3):

Elevation (ft)	Hw/D (ft.)	Discharge (cfs)	Comment
774.3	0	0	Pipe Invert
777	.59	65	
779	1.02	150	
781	1.46	225	
783	1.89	280	
785.3	2.39	330	Weir Crest
787	2.76	375	
788	3.58	440	

Looks OK

Outlet Control Rating Curve (Chart No. 10):

BPR #5
Chart 17

$k_e = .5$ Length = 4′ Slope (S_o) = 0

$H_w = H + h_o - LS_o$ ∴ $H = H_w - h_o$ ... $h_o = \frac{d_c + d}{2}$

$d = 4.6'$

d_c = Varies (Use Chart #17)

430 cfs T.W = 772.8 below pipe invert ∴ is outlet control since h_o is low

Elevation (ft)	Tailwater h_o (ft)	Headwater H_w (ft)	Head (ft) $(H_w - h_o)$	Discharge (cfs)
774.3	0	0	0	0
779.0	3.7	4.7	1.0	160
781.0	3.9	6.7	2.8	270
783.0	4.1	8.7	4.6	350
785.3	4.3	11.0	6.7	420
787.0	4.4	12.7	8.3	470
788.0	4.5	13.7	9.2	490

The structure will perform under inlet control for all discharges investigated.

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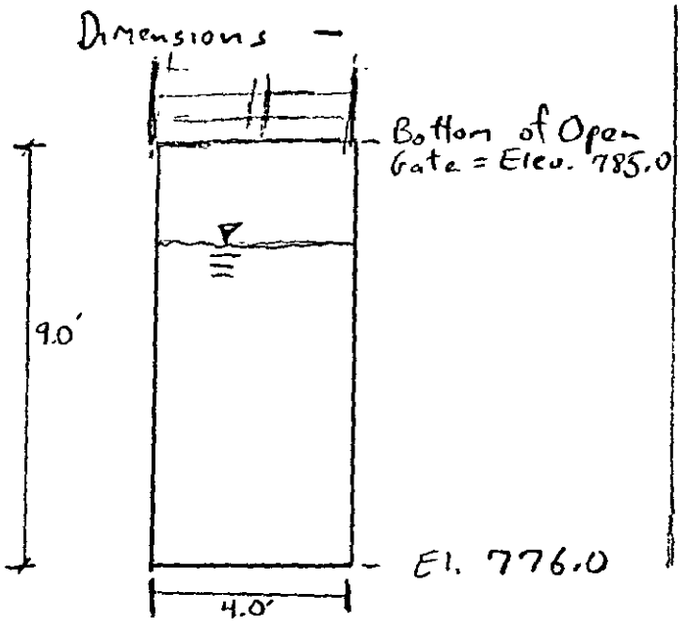
TAYLOR, MICHIGAN 48180

REFERENCE

Thus, the Inlet Control Rating Curve, for the Elliptical Pipe, prevails and will be used as the Tailwater Condition for the Wooden Penstock.

B. Wooden Penstock (Sluice Gate)

Dimensions –



Flow Type Possibilities:

① Orifice Flow –

$$Q = CA\sqrt{2gH}$$

② Low flow –

Bernoullis (Energy Balance) Equation

$$z_1 + d_1 + \frac{V_1^2}{2g} + h_L = z_2 + d_2 + \frac{V_2^2}{2g}$$

Procedure: Perform Calculations for both flow types – worst condition prevails.

"C" Value
Water Resources Eng., Linsley & Franzini, 1972, Figs

① Orifice Flow – $Q = CA\sqrt{2gH}$ ∴ $H = \left(\frac{Q}{CA}\right)^2 \frac{1}{2g}$

$C = .62$, Q varies, Area = A

Discharge (cfs)	Area (ft)²	Head (ft)	*Elevation (ft)	**Tailwater
225	36	1.58	782.6	776 5.0' - 781
280	36	2.44	785.4	7.0
330	36	3.39	788.7	9.3
375	36	4.38	791.4	11.0
440	36	6.03	794.0	12.0

*Elev. = Head + Tailwater Depth + Invert Elevation

**See Following Page

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REFERENCE

Controlling Tailwater Depth at X Sec (1):

$S = \frac{776 - 774.3}{14} = .1214$ ft/ft, $b = 4'$, $n = .015$

$K' = \frac{Q\,n}{b^{8/3}\,S^{1/2}} = \frac{Q}{9365}$, $D_c = \left(\frac{Q}{5.67\,b}\right)^{2/3}$ for Rectangular Section

* King + Crater, Handbook of Hydraulics, chapter 7, McGraw Hill, 1963

Discharge (cfs)	K'	*D/b	Normal Depth (D_N) [D/b × b] ft	Critical Depth (D_c)	Tailwater Depth (T_W)
65	.069	.18	.72	** 2.02	1.0
150	.160	.32	1.28	** 3.52	3.0
225	.240	.43	1.72	4.62	** 5.0
280	.299	.51	2.04	5.34	** 7.0
330	.352	.57	2.28	5.96	** 9.3
375	.400	.63	2.52	6.48	** 11.0
440	.470	.72	2.88	7.22	** 12.0

** Highest Elevation Between D_N, D_c + TW becomes the controlling Tailwater Elevation to be utilized for all Penstock Calculations.

(Since Structure is short – 14', D_N will not be reached if D_c is higher; therefore D_c controls)

SUBJECT	BY	CHK	SHEET NO	File Code No (Job No:) Owner • Project: • Suffix
Bryant Mill Pond Dam	DATE 2/2/81	DATE	7 OF 11	1107 • 202 • 07

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REFERENCE

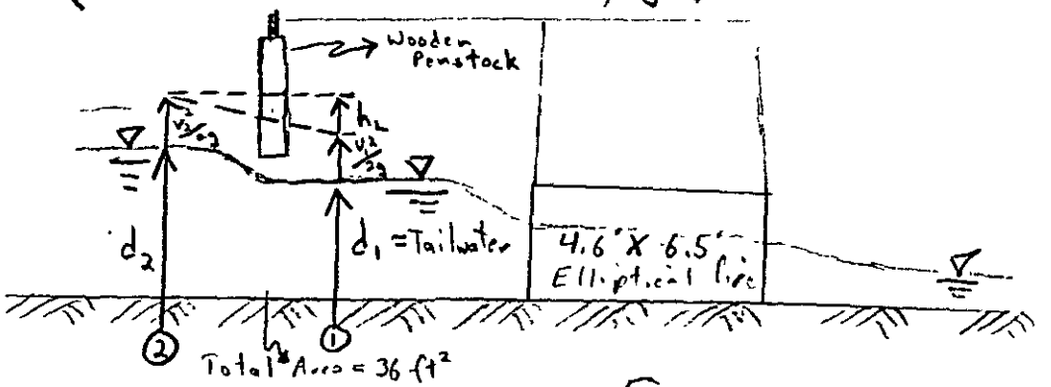
② Low Flow -

Assume Upstream Velocity = 0 '/sec (Approach Velocity)

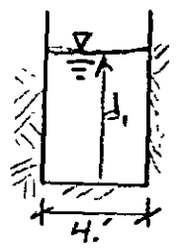
*Tailwater

Elev.	776.0	777	779	781	783	785.3	787	788
Q	0	65	150	225	280	330	375	440

*(From Elliptical Pipe Calculations, Pg 5)



X-Sec. ①



$Z_2 = Z_1$

[Invert Elev = 776.0 @ Penstock]

Bernoullis Equation :

$$Z_1 + d_1 + \frac{V_1^2}{2g} + h_L = Z_2 + d_2 + \frac{V_2^2}{2g}$$

$$Z_1 = Z_2, \quad V_2 = 0, \quad h_L = \left(\frac{V_1^2}{2g} - \frac{V_2^2}{2g}\right) k_e = .5\,\frac{V_1^2}{2g}$$

Entrance is Square Edged Parallel Headwall, ∴ $k_e = .5$, BPR #5, Pg 5-49, 1963.

$$\therefore \quad d_1 + \frac{V_1^2}{2g} + .5\,\frac{V_1^2}{2g} = d_2$$

$$+ \quad d_2 = d_1 + 1.5\,\frac{V_1^2}{2g}$$

Discharge (cfs)	Tailwater d_1	Area (ft²)	V_1 (ft/sec)	d_2 (1/sec) $(d_1 + 1.5\frac{V_1^2}{2g})$	Upstream Elevation
65	2.0	8	8.1	3.5	779.5
150	3.5	14	10.7	6.2	782.2
225	5.0	20.	11.3	8.0	784.0
280	7.0	28.	10.0	9.3	785.3
330	9.3	37.2	8.9	11.2	787.2
375	11.0	44.	8.5	12.7	788.7
440	12.0	48.	9.2	14.0	790.0

Calculations for Tailwater are on Page 7.

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REFERENCE

③ Penstock Calculation Summary

Discharge	Orifice Flow Elevation	Low Flow Elevation
65	—	* 779.5
150	—	* 782.2
225	782.6	* 784.0
280	* 785.4	785.3
330	* 788.7	787.2
375	* 791.4	788.7
440	* 794.0	790.0

→ Orifice Flow is expected at bottom of Sluice gate Elev. 784.0

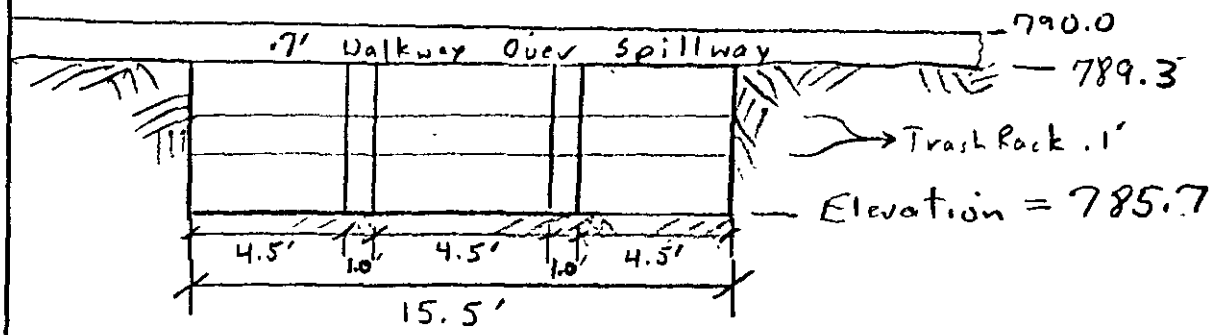
The higher Elevation between Orifice + Low Flow Controls as indicated above with an *!

A Rating Curve will be developed for the Concrete Spillway. The above rating Curve for the Penstock and the Spillway Rating Curve will then be graphically combined to form a "Total Rating Curve" for the Bryant Mill pond Dam.

REFERENCE

(C.) Concrete Weir

Dimensions



Weir Breadth = .5', Broad Crested Weir, L = 13.5'

$$Q = C L H^{3/2}$$

[Reduce C Value by 20% due to Trash Rack above Elev. 786.7]

$$\therefore Q = (.8\ C)(13.5)\ H^{3/2}$$

Elevation (ft)	Head (H, ft)	"C" Value*	Discharge (cfs)
785.7	0	0	0
786.0	.3	2.86	6.
Reduced C from Here on Up			
787.0	1.3	2.66	53.
788.0	2.3	2.66	125.
789.0	3.3	2.66	215.
789.3	3.6	2.66	245.

* King & Brater, Handbook of Hydraulics pg. 5-46, 1963

Spillway becomes an Orifice above Elevation 789.3 !

Dam Crest is Overtopped at 789.0; thus, Use Army Corps Dam Inspection Report to extend Rating Curve to 500 yr flow.

SUBJECT	BY	CHK.	SHEET NO.	File Code No. (Job No.) Owner Project Suffix
Bryant Mill Pond Dam	W.J.W.		10 OF 11	HUD • 204 • 07
	DATE 2/2/81	DATE		

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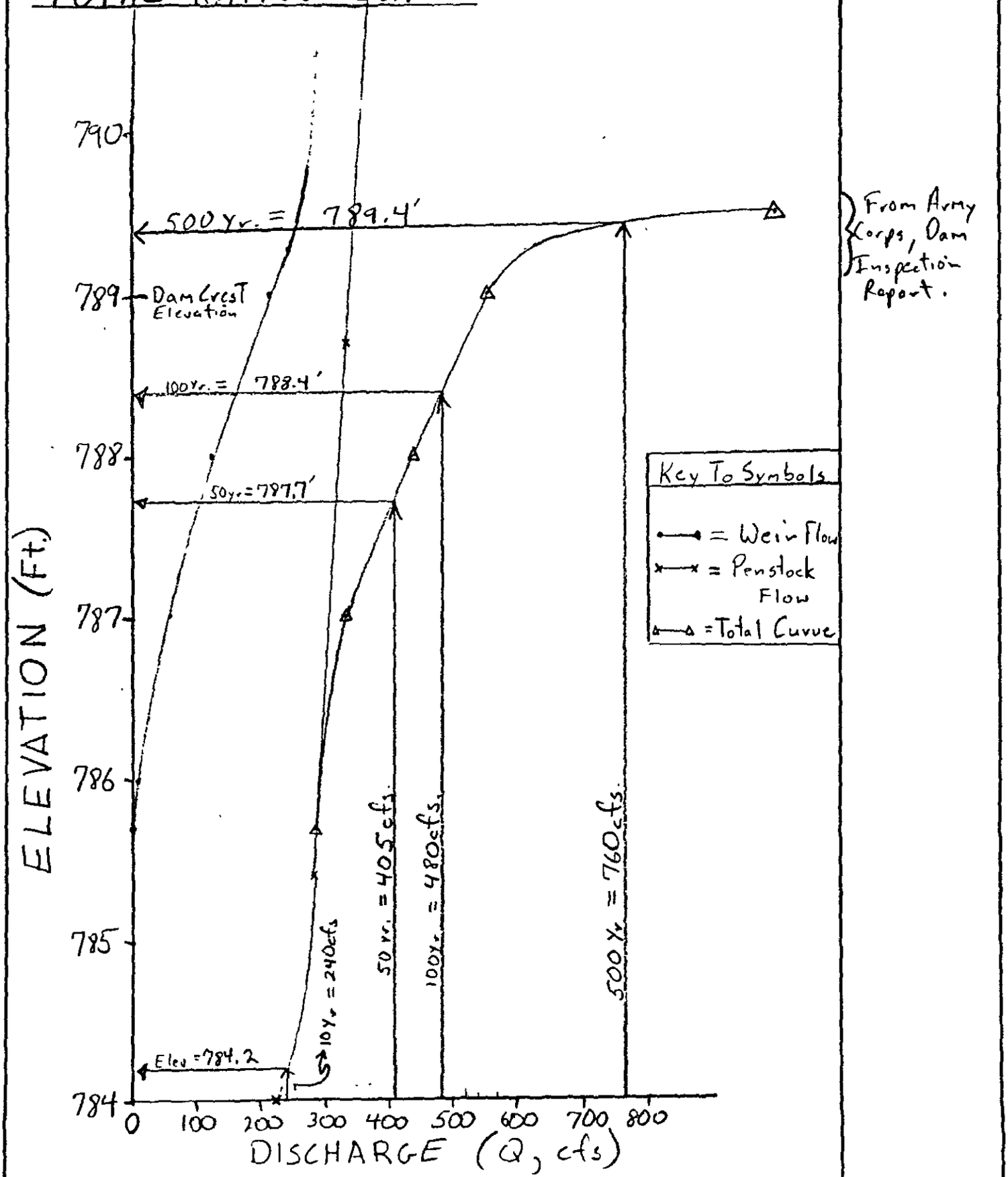
TOTAL RATING CURVE



REFERENCE

From Army Corps, Dam Inspection Report.

SUBJECT	BY	CHK	SHEET NO.	File Code No. (Job No.) Owner Project Suffix
Bryant Mill Pond Dam	WJW		11 OF 11	HUD • 2024 • 07
	DATE 2/2/21	DATE		

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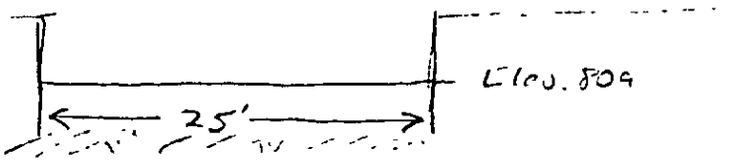
REFERENCE

Monarch Paper Mill Dam

Assume Tainter Gates remain closed : Dam Inspection Report Indicates gates are broken

Normal Pool Elevation = 809.0

Weir Dimensions :



"Sharp Crested Weir"

$$\boxed{**Q = CLH^{3/2}}$$

Rehbock Equation

$$*C = 3.235 + \frac{1}{60H - .56} + .428\frac{H}{P}$$

Kinsh Brater Handbook of Hydraulics Pg 5-12.

$L = 25'$

H = Head (Variable

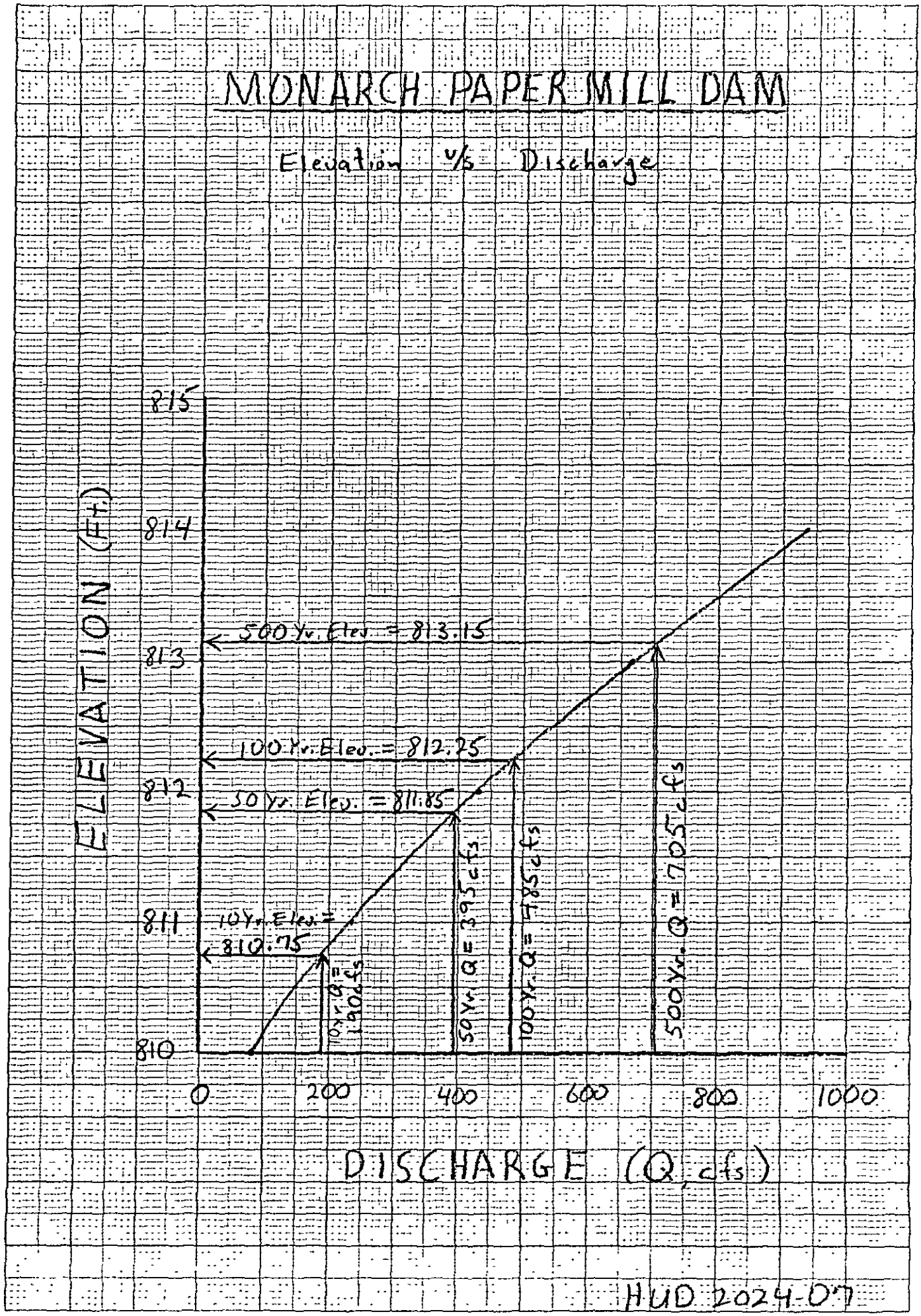
P = Height of Gate = 19'

Elevation	810	811	812	813	814	815	816	817
H	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
*C	3.27	3.29	3.31	3.33	3.35	3.37	3.40	3.42
**Q	82	233	430	666	936	1238	1574	1935

SUBJECT	BY	CHK.	SHEET NO.	File Code No (Job No) Owner Project Suffix
Monarch Dam Rating Curve	DATE 9/24/80	DATE	1 OF 2	HUD • 2027 • 06

MONARCH PAPER MILL DAM

Elevation v/s Discharge



HUD 2024-07

WJW 2/4/81

Pg 2 of 2

46 1320
K+E 10 INCH KEUFFEL & ESSER CO MADE IN U.S.A.



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: REPORT 1989



Boulton/Hoek

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO

May 9, 1989

Great Lakes Hydraulics and Hydrology Branch

Mr. Dennis Hall, Chief
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Hall:

Submitted for your review and approval is a copy of the hydraulic calculations for the City of Kalamazoo, Michigan Flood Insurance Restudy. Enclosed are the HEC-2 multiple profile and encroached runs, a map showing the location of the field surveyed cross sections, bridge drawings, and a brief write up dealing with items that will assist the review process.

Since FEMA has requested the submittal of this report as soon as possible, a response from your office within two weeks would be appreciated. If you have any questions regarding the enclosed data, please contact Ms. Hanna Kobylinski or Mr. Jeffrey Weiser at (313) 226-4761.

Sincerely,

P. M. O'Dell, P.E.
Chief, Engineering Division

Enclosures

CITY OF KALAMAZOO, MICHIGAN
FLOOD INSURANCE RESTUDY
HYDRAULIC COMPUTATION BACKGROUND INFORMATION

The Flood Insurance Restudy for the City of Kalamazoo, Michigan includes a restudy of Portage Creek only, from the corporate limits to its confluence with the Kalamazoo River.

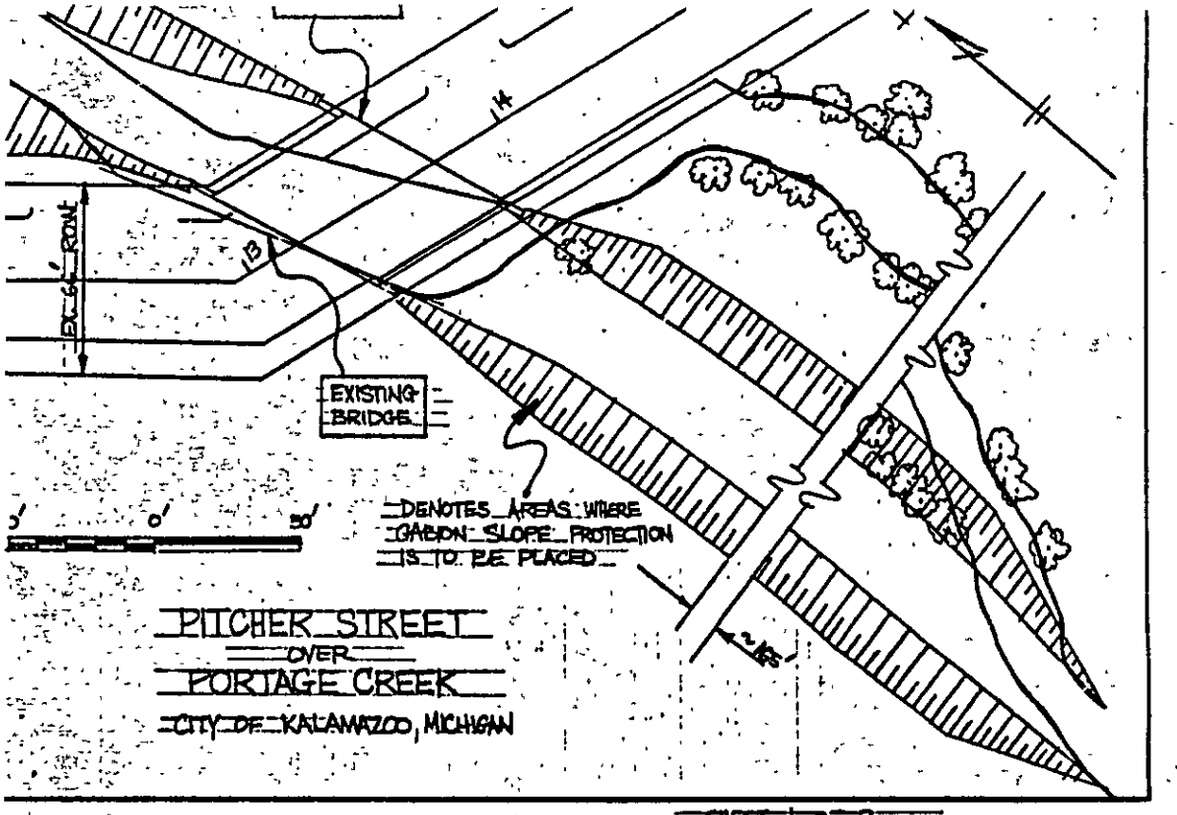
The hydrology for the City of Kalamazoo was approved previously.

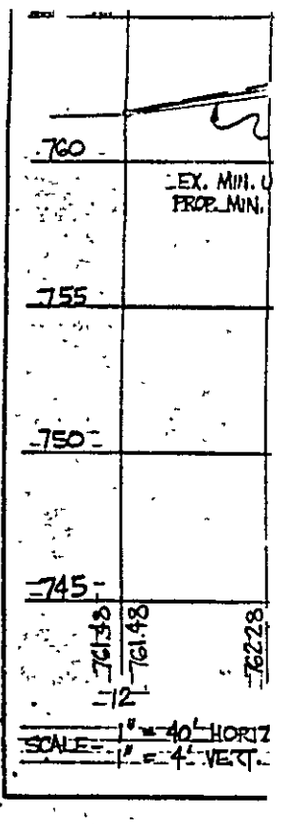
Manning's "n" values for the study area were estimated by field inspection, quadrangle map information, and survey photographs.

The starting water surface elevations at the downstream limit of Portage Creek were determined by the slope-area method.

The segment of the HEC-2 program input data for Portage Creek from its confluence with the Kalamazoo River to downstream of Lovers Lane was provided by the Michigan Department of Natural Resources. However, cross section geometry for five bridges (Portage Street, Walnut Street, Lake Avenue, Stockbridge Avenue, and Reed Avenue) was developed by recent field survey and used as a part of the HEC-2 input. The information on the segment of Portage Creek upstream of Lovers Lane to the corporate limits was taken from a report by the SCS on Portage Creek.

For the encroached run, the computations were begun using the results from 100-year profile run.





SHEET 1 OF 3

APPLICATION for constructing of New Bridges and Culverts or Replacements under Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968:

City of Kalamazoo
Name of Individual or Organization

241 W. South Street
Street Address
Kalamazoo, Michigan
City, State

Robert D. Smith P.E.
Signature of Applicant or Agent

Project Manager
Title of Agent

Pitcher Street
Name of Road

Portage Creek
Watercourse

SECTION 15 T2S R11W

TOWNSHIP

COUNTY Kalamazoo

STRUCTURE DATA:	EXISTING	PROPOSED (replacement)
Type	Concrete Slab	Prestr. Conc. Box Beam
Entrance Design	50° Wingwalls	90° Slopewalls
Span, Rise	28.0', 11.6'	43.0', 10.5'
Length (width)	56.0'	52.8'
Waterway Area (total)	325 SFt.	452 SFt.

Elevations: (Bench Mark Datum U.S.G.S.)

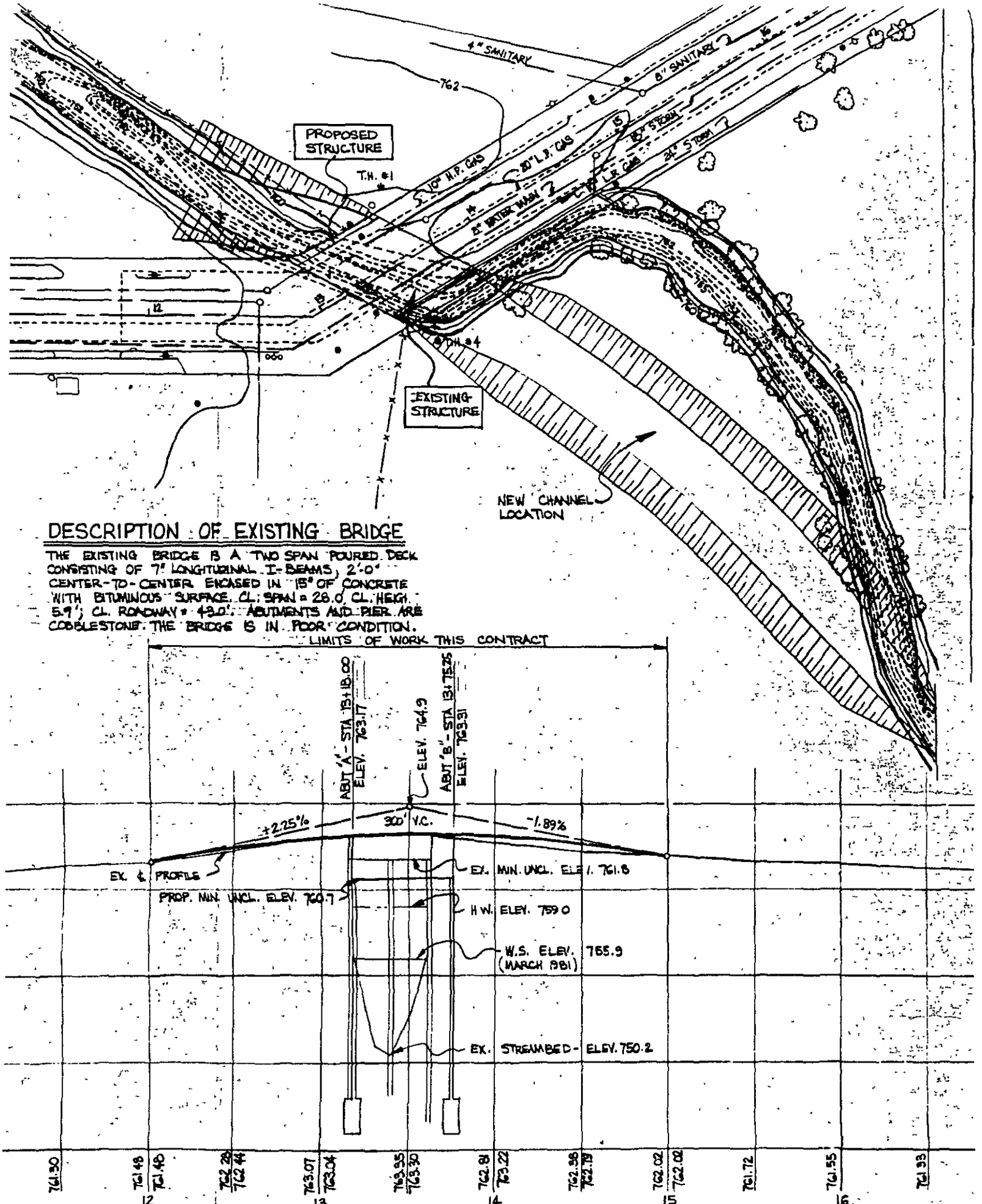
Low Steel (culvert crown)	upstr 761.8 dnstr 761.8	upstr 760.7 dnstr 760.7
Invert	upstr 750.2 dnstr 750.2	upstr 750.2 dnstr 750.2
Highwater (observed)	759.0	date
Waterway Area Below Highwater	246 SFt.	378 SFt.

ROAD GRADES:	EXISTING	PROPOSED
At Structure	763.4	763.2
Low Point of Approach	760.9	760.9

Describe Changes:

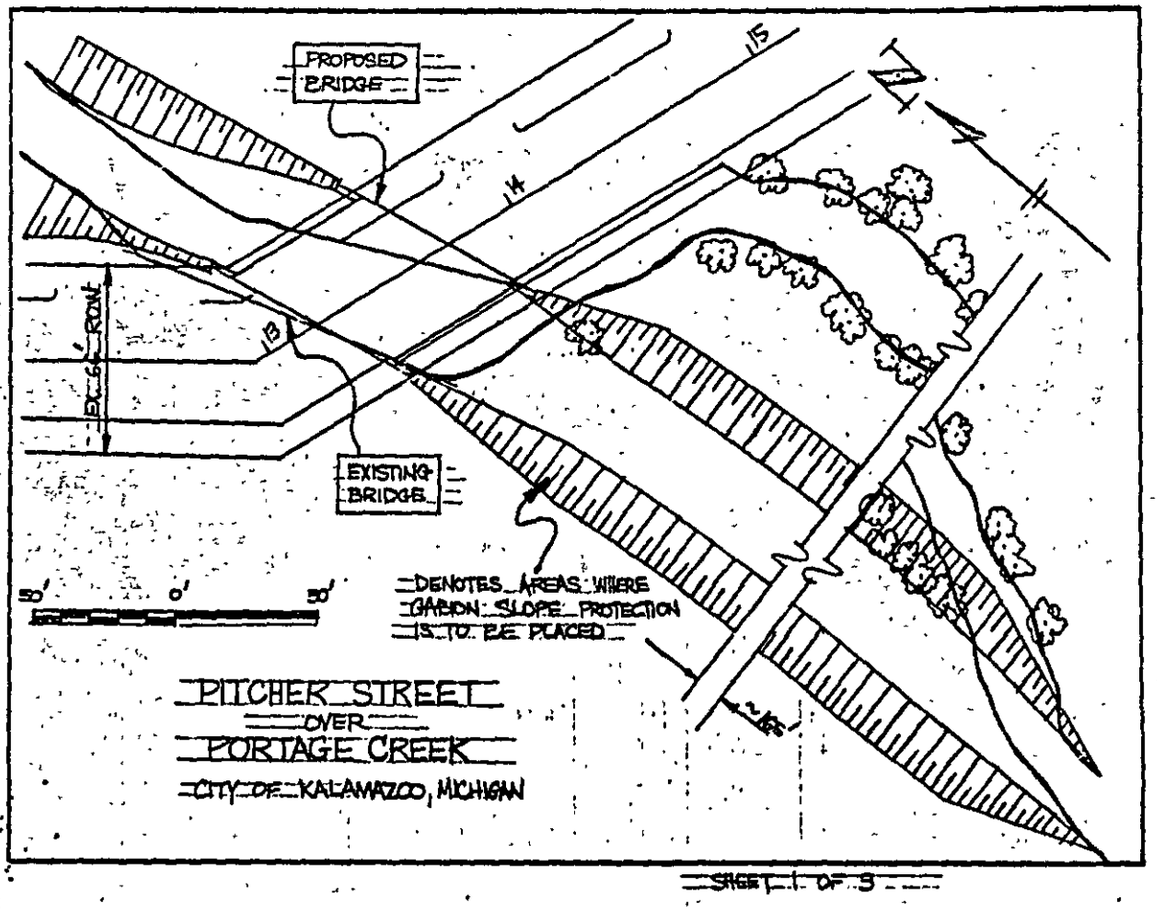
CHANNEL ALTERATIONS
Approximate Starting Date of Project 8/1/81
Approximate Date of Completion 12/1/81

New Structures and Replacements may not require a Permit under this statute if certified by the owner or his engineering consultant to meet the exceptions defined by the Administrative Rules. These CERTIFICATIONS are provided on the



DESCRIPTION OF EXISTING BRIDGE

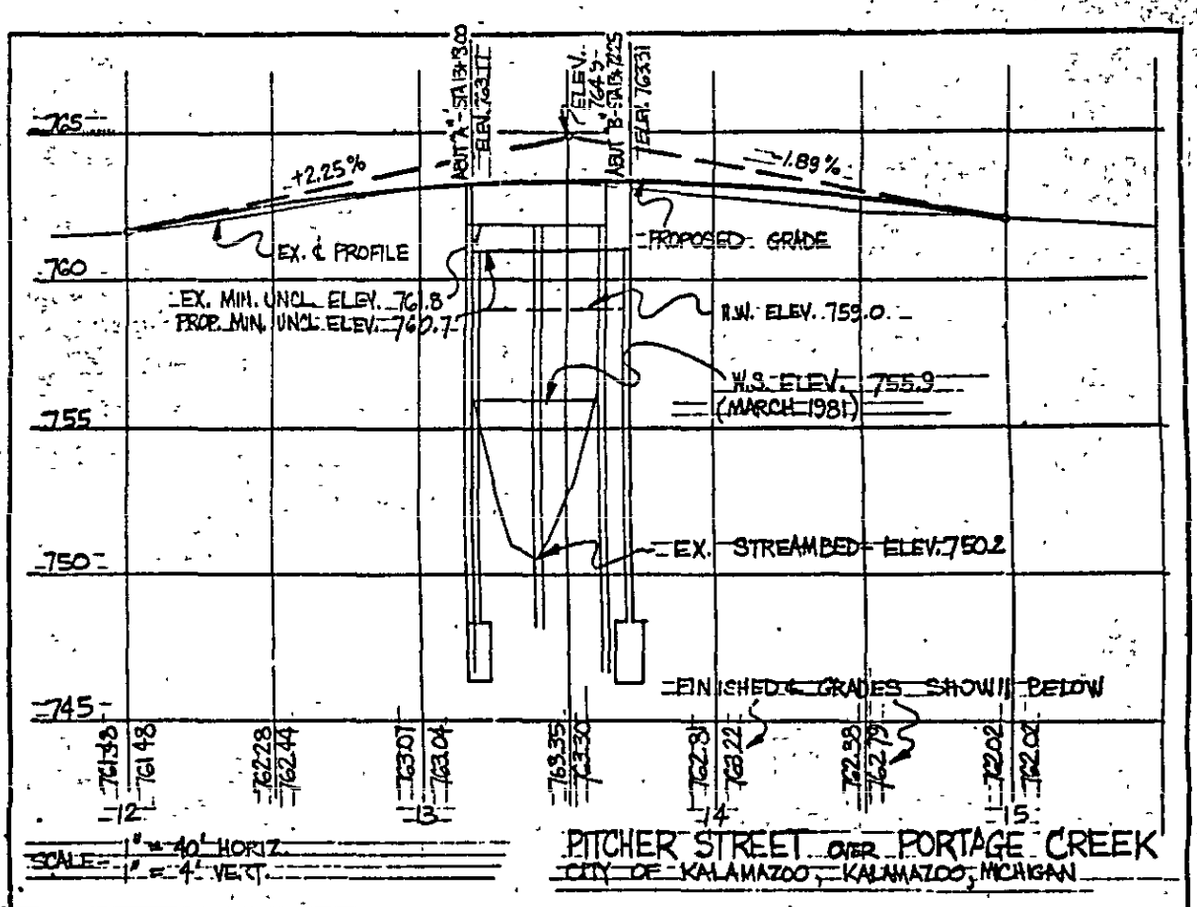
THE EXISTING BRIDGE IS A TWO SPAN POURED DECK CONSISTING OF 7" LONGITUDINAL I-BEAMS, 2'-0" CENTER-TO-CENTER ENCASED IN 15" OF CONCRETE WITH BITUMINOUS SURFACE. CL. SPAN = 28.0', CL. HEIGHT = 5.9'; CL. ROADWAY = 43.0'. ABUTMENTS AND PIER ARE COBBLESTONE. THE BRIDGE IS IN POOR CONDITION.



SHEET 1 OF 3

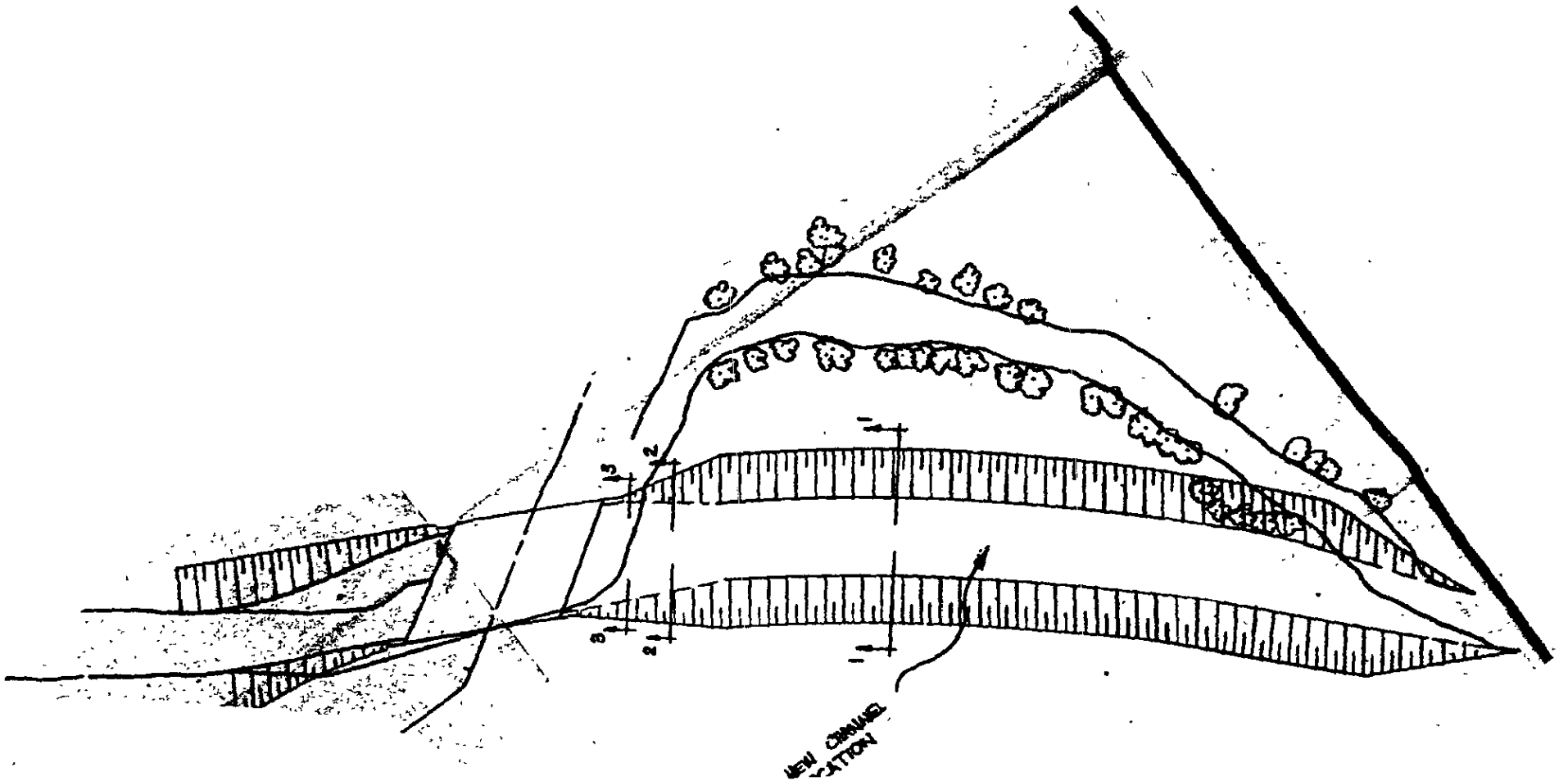
APPLICATION for constructing of New Bridges and Culverts or Replacements under Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968:

City of Kalamazoo Name of Individual or Organization	Pitcher Street Name of Road
241 W. South Street Street Address Kalamazoo, Michigan	Portage Creek Watercourse



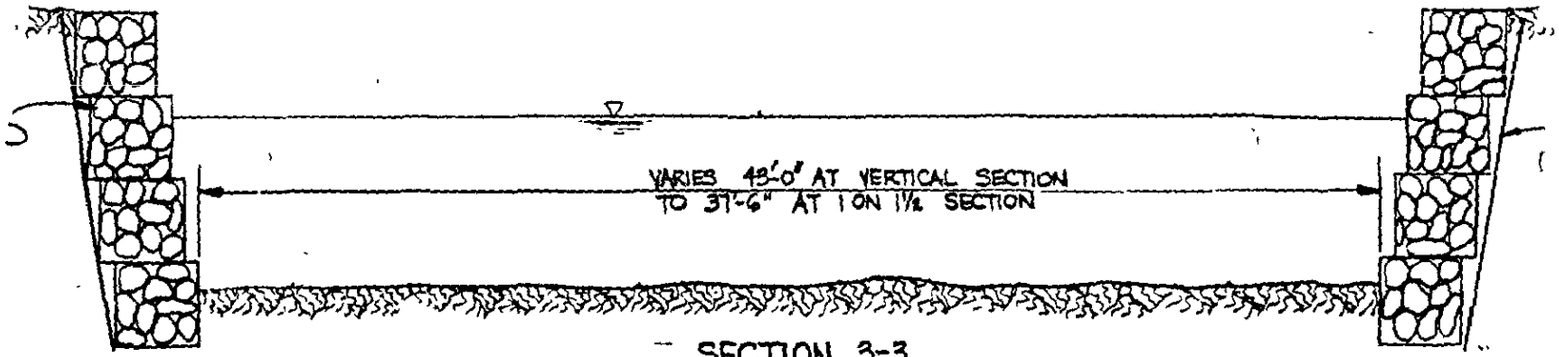
765
760
755
750
745
+2.25%
-1.89%
ABUT "A" - STA 13+13.00
ELEV. 763.11
ELEV. 764.9
ABUT "B" - STA 13+72.25
ELEV. 763.31
EX. ℄ PROFILE
PROPOSED GRADE
EX. MIN. UNCL. ELEV. 761.8
PROP. MIN. UNCL. ELEV. 760.7
H.W. ELEV. 759.0
W.S. ELEV. 755.9
(MARCH 1981)
EX. STREAMBED ELEV. 750.2
FINISHED ℄ GRADES SHOWN BELOW
761.48
761.48
762.28
762.44
763.07
763.04
763.35
763.30
762.81
763.22
762.38
762.79
762.02
762.02
12
13
14
15
SCALE 1" = 40' HORIZ.
1" = 4' VERT.
PITCHER STREET OVER PORTAGE CREEK
CITY OF KALAMAZOO, KALAMAZOO, MICHIGAN

SHEET 2 OF 3

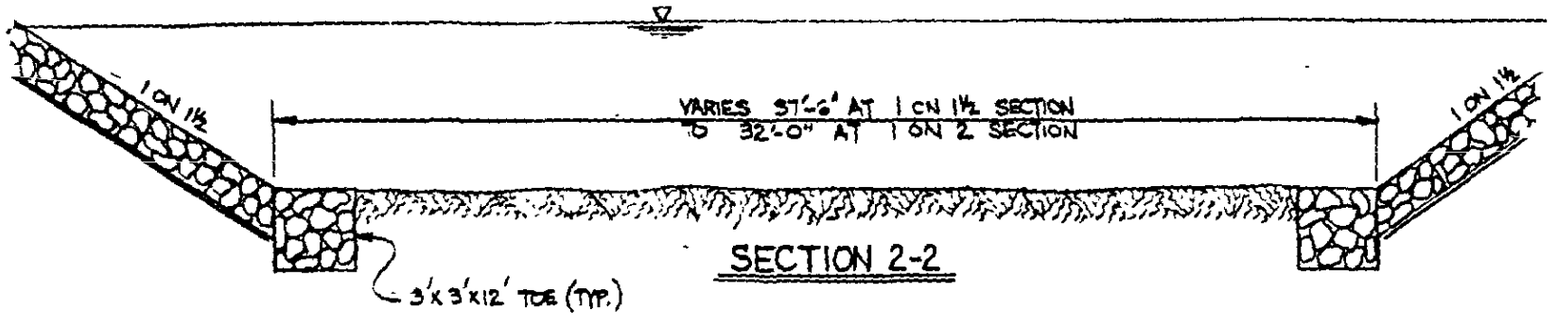

3
2
1
NEW CHANNEL

SECTION A-A

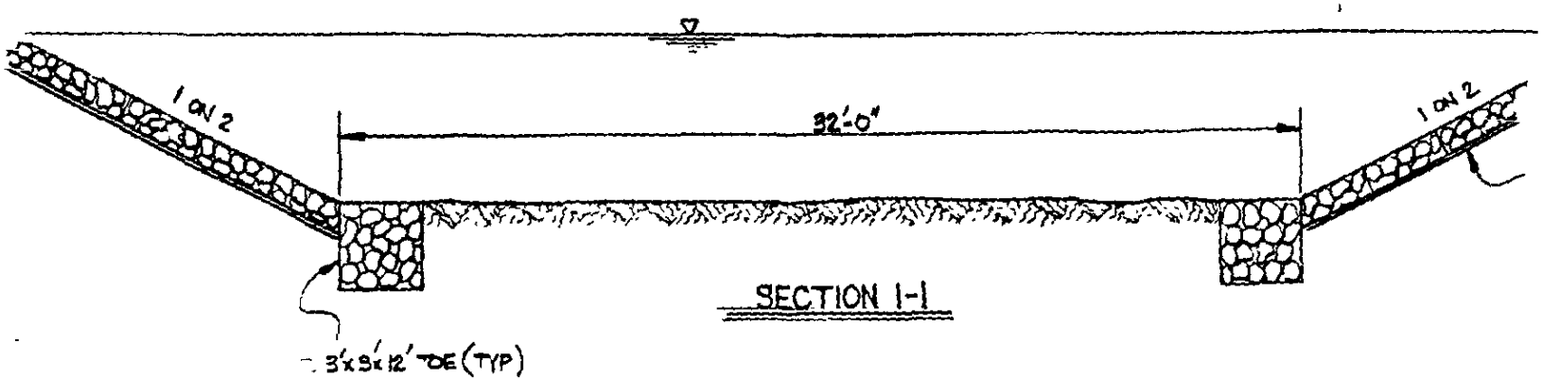
SCALE: 1/4" = 1'-0"



SECTION 3-3



SECTION 2-2



SECTION 1-1

GABION SECTIONS



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: SUMMARY 100-YR RUN
SEGMENT 1



THIS RUN EXECUTED 23 JUN 89 14:18:37

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	755.20	0.00	755.31	90.26	1.62	576 90	1.48	0.00	0.00	408.00	490.00	0.00
0.000	755.30	0.10	755.41	82.00	0.00	580.00	0.00	0.01	408.00	408.00	490.00	490.00
229.000	755 48	0.00	755.81	40.30	0 00	580.00	0.00	0.00	0.00	820.85	861.15	0.00
229.000	755.56	0.08	755.87	40.30	0.00	580.00	0.00	0.00	820.85	820.85	861.15	861.15
230.000	755.48	0.00	755.81	40.30	0.00	580.00	0.00	0 00	0.00	820.85	861.15	0.00
230.000	755.56	0.08	755.88	40.30	0.00	580.00	0.00	0.00	820.85	820.85	861.15	861.15
322.000	755.59	0.00	755.90	40.30	0.00	580.00	0.00	0.00	0.00	820.85	861.15	0.00
322.000	755.66	0.07	755.95	40.30	0.00	580.00	0.00	0.00	820.85	820.85	861.15	861.15
323.000	755.59	0.00	755.90	40.30	0.00	580.00	0.00	0.00	0.00	820.85	861.15	0.00
323.000	755.66	0.07	755.96	40.30	0.00	580.00	0.00	0.00	820.85	820.85	861 15	861.15
372.000	755.61	0.00	756.18	26.35	0.00	580.00	0.00	0.00	0.00	796.00	822.00	0.00
372 000	755.68	0.07	756.23	25.86	0.00	580.00	0.00	0.00	796.00	796.00	822.00	822.00
669.000	756.75	0.00	757.01	35.01	0.00	580.00	0.00	0.00	0.00	0.10	56.00	0.00
669.000	756.78	0.03	757.03	35.05	0.00	580.00	0.00	0.00	0.10	0.10	56.00	56 00
670.000	756.76	0.00	757.01	35.02	0.00	580.00	0.00	0.00	0.00	0.10	56.00	0.00
670.000	756.78	0.03	757.03	35.06	0.00	580.00	0.00	0.00	0.10	0.10	56.00	56.00
674.000	756.76	0.00	757.02	35 03	0.00	580.00	0.00	0.00	0.00	0.10	56.00	0.00
674.000	756 79	0.03	757.04	35.07	0.00	580.00	0.00	0.00	0.10	0.10	56.00	56.00
675.000	756.77	0.00	757.02	35.03	0.00	580.00	0.00	0 00	0.00	0.10	56.00	0.00
675.000	756 79	0.03	757.04	35.07	0.00	580.00	0.00	0.00	0.10	0.10	56.00	56.00
890.000	757.10	0.00	757.40	34.62	0.94	578.98	0.07	0.00	0.00	892.50	925.50	0.00
890.000	757.15	0.05	757.45	33.00	0.00	580.00	0.00	0.00	892.50	892.50	925.50	925.50

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
989.000	757.30	0.00	757.57	33.00	0.00	580.00	0.00	0.00	0.00	892.50	925.50	0.00
989.000	757.36	0.06	757.63	33.00	0.00	580.00	0.00	0.00	892.50	892.50	925.50	925.50
990.000	757.30	0.00	757.57	33.00	0.00	580.00	0.00	0.00	0.00	892.50	925.50	0.00
990.000	757.36	0.06	757.63	33.00	0.00	580.00	0.00	0.00	892.50	892.50	925.50	925.50
1009.000	757.21	0.00	757.76	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1009 000	757.27	0.07	757.81	24.00	0.00	580.00	0.00	0.00	897.00	897.00	921.00	921.00
1010.000	757.21	0 00	757.76	24.00	0.00	580.00	0.00	0.00	0.00	897.00	921.00	0.00
1010.000	757.28	0.07	757.81	24.00	0.00	580.00	0.00	0.00	897.00	897.00	921.00	921.00

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0 00	0.00	752.00	580.00	755.20	0.00	755.31	11.38	2.71	220.33	171.90
0 000	0.00	0 00	0.00	752.00	580.00	755.30	0.00	755.41	10.76	2.62	221.35	176.81
229.000	229.00	0.00	0.00	751.20	580.00	755.48	0.00	755.81	27.61	4.61	125.81	110.38
229.000	229.00	0.00	0.00	751.20	580.00	755 56	0.00	755 87	25.76	4.50	128.78	114.28
230.000	1 00	765.60	761.40	751.20	580.00	755.48	0.00	755 81	9.07	4.62	125.59	192.58
230.000	1.00	765.60	761.40	751.20	580.00	755.56	0.00	755.88	8.40	4.50	128.84	200.14
322.000	92.00	766 60	762.40	751.20	580.00	755.59	0.00	755.90	8.12	4.47	129.85	203.60
322 000	92.00	766.60	762.40	751.20	580.00	755.66	0.00	755.95	7.62	4.37	132.77	210.10
323.000	1.00	0.00	0.00	751.20	580.00	755.59	0.00	755.90	24.84	4.47	129.88	116.38
323.000	1.00	0.00	0.00	751.20	580.00	755.66	0.00	755.96	23.31	4.37	132.83	120.14
372.000	49.00	0.00	0.00	750.60	580.00	755.61	0.00	756.18	42.47	6.05	95.95	89.00
372.000	49.00	0.00	0.00	750.60	580.00	755.68	0.00	756 23	40.78	5.94	97.64	90.83
669.000	297.00	0.00	0.00	751.50	580.00	756.75	0.00	757.01	16.06	4.04	143.39	144.72
669 000	297.00	0.00	0.00	751.50	580.00	756.78	0.00	757.03	15.77	4.02	144.29	146.06
670.000	1.00	762.00	761.90	751.50	580.00	756.76	0.00	757.01	16.02	4.04	143.50	144.89
670.000	1.00	762.00	761.90	751.50	580.00	756.78	0.00	757.03	15.74	4.02	144.37	146.19
674.000	4.00	762.00	761.90	751.50	580.00	756.76	0.00	757.02	15.96	4.04	143.70	145 18
674 000	4 00	762.00	761.90	751.50	580.00	756.79	0.00	757.04	15.67	4.01	144.60	146.53
675.000	1.00	0.00	0.00	751.50	580.00	756.77	0 00	757.02	15.93	4.03	143.79	145.31
675.000	1.00	0.00	0.00	751.50	580.00	756.79	0.00	757.04	15.64	4.01	144.69	146.67
890.000	215.00	0.00	0.00	752.00	580.00	757.10	0.00	757.40	17 66	4.41	133.44	138.03
890.000	215.00	0.00	0 00	752.00	580.00	757.15	0.00	757.45	20.27	4.38	132.46	128.83
989 000	99.00	0.00	0.00	752.00	580.00	757.30	0.00	757.57	15.19	4.22	137.54	148.80
989.000	99 00	0.00	0.00	752.00	580.00	757.36	0.00	757.63	15.16	4.15	139.65	148.94
990.000	1.00	763.00	761.20	752.00	580.00	757.30	0.00	757.57	18.05	4.22	137.59	136.53
990.000	1.00	763.00	761.20	752.00	580.00	757.36	0.00	757 63	17.23	4.15	139 70	139.72
1009.000	19 00	763.00	761.20	752.00	580.00	757.21	0 00	757.76	34.17	5.96	97.32	99.22
1009.000	19.00	763.00	761.20	752.00	580.00	757.27	0.00	757.81	32.48	5.86	98.91	101.76
1010 000	1.00	0.00	0.00	752.00	580.00	757.21	0 00	757.76	32.20	5.96	97.38	102.21
1010.000	1.00	0.00	0.00	752 00	580.00	757.28	0.00	757.81	32.42	5.86	98.98	101.87

100-YEAR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	580.00	755.20	0.00	0.00	0.00	90.26	0.00
0.000	580.00	755 30	0.10	0.00	0.10	82.00	0.00
229.000	580.00	755.48	0.00	0.28	0.00	40.30	229.00
229 000	580.00	755.56	0.08	0.26	0.08	40.30	229.00
230.000	580.00	755.48	0.00	0.00	0.00	40.30	1.00
230.000	580.00	755.56	0.08	0.00	0.08	40.30	1.00
322.000	580.00	755.59	0.00	0.11	0.00	40.30	92.00
322.000	580.00	755.66	0.07	0.10	0.07	40 30	92.00
323.000	580.00	755.59	0.00	0.00	0.00	40.30	1.00
323.000	580.00	755.66	0.07	0.00	0.07	40.30	1.00
372.000	580.00	755.61	0.00	0.03	0.00	26.35	49.00
372.000	580.00	755.68	0 07	0.02	0.07	25.86	49.00
669.000	580.00	756.75	0.00	1.14	0.00	35.01	297.00
669.000	580.00	756.78	0.03	1.10	0 03	35.05	297.00
670.000	580.00	756.76	0.00	0.00	0.00	35.02	1.00
670.000	580.00	756.78	0.03	0.00	0.03	35.06	1.00
674.000	580.00	756.76	0 00	0.01	0.00	35.03	4.00
674.000	580.00	756.79	0.03	0.01	0.03	35.07	4.00
675.000	580.00	756.77	0.00	0.00	0.00	35.03	1.00
675.000	580.00	756.79	0.03	0.00	0.03	35.07	1.00
890.000	580.00	757.10	0.00	0.34	0.00	34.62	215.00
890 000	580.00	757.15	0.05	0.36	0.05	33.00	215.00
989.000	580.00	757.30	0.00	0.19	0.00	33.00	99.00
989.000	580.00	757.36	0.06	0 21	0.06	33.00	99.00
990.000	580.00	757.30	0 00	0.00	0.00	33.00	1 00
990.000	580.00	757.36	0.06	0.00	0.06	33.00	1.00
1009.000	580.00	757.21	0.00	-0.09	0.00	24.00	19.00
1009.000	580.00	757.27	0.07	-0.09	0.07	24.00	19.00
1010.000	580.00	757 21	0.00	0.00	0.00	24.00	1.00
1010.000	580 00	757.28	0.07	0.00	0.07	24.00	1.00

SUMMARY OF ERRORS AND SPECIAL NOTES

FLOODWAY DATA, 100-YEAR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.000	82	221.	2.6	755 3	755.2	0.1
229.000	40.	129.	4.5	755.6	755.5	0.1
230.000	40.	129.	4.5	755.6	755.5	0.1
322.000	40.	133.	4.4	755.7	755.6	0.1
323.000	40.	133.	4.4	755.7	755.6	0 1
372.000	26.	98.	5.9	755 7	755.6	0.1
669.000	35.	144.	4.0	756.8	756.8	0 0
670.000	35.	144.	4.0	756.8	756.8	0.0
674.000	35.	145.	4.0	756.8	756.8	0.0
675.000	35.	145.	4.0	756.8	756 8	0.0
890.000	33.	132.	4.4	757.1	757.1	0.0
989.000	33.	140.	4.2	757 4	757.3	0.1
990 000	33.	140.	4 2	757.4	757.3	0.1
1009·000	24.	99.	5.9	757.3	757.2	0.1
1010.000	24.	99.	5.9	757.3	757.2	0.1

THIS RUN EXECUTED 23 JUN 89 14:18:39

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO, CITY OF

3) WATERCOURSE: PORTAGE CREEK

4) DOCUMENT TYPE: SURVEY NOTES

00BREAK00



City of Kalamazoo FIS
Portage Creek
X-sec, locations

the Geological Survey
gan agencies

ods from aerial

CONTOUR INTERVAL 0 FEET

PORTAGE CREEK

x-sec. 3617, 3618, 3688, 3689 on HEC-2 run

BRIDGE DATA PLUS DRAWING

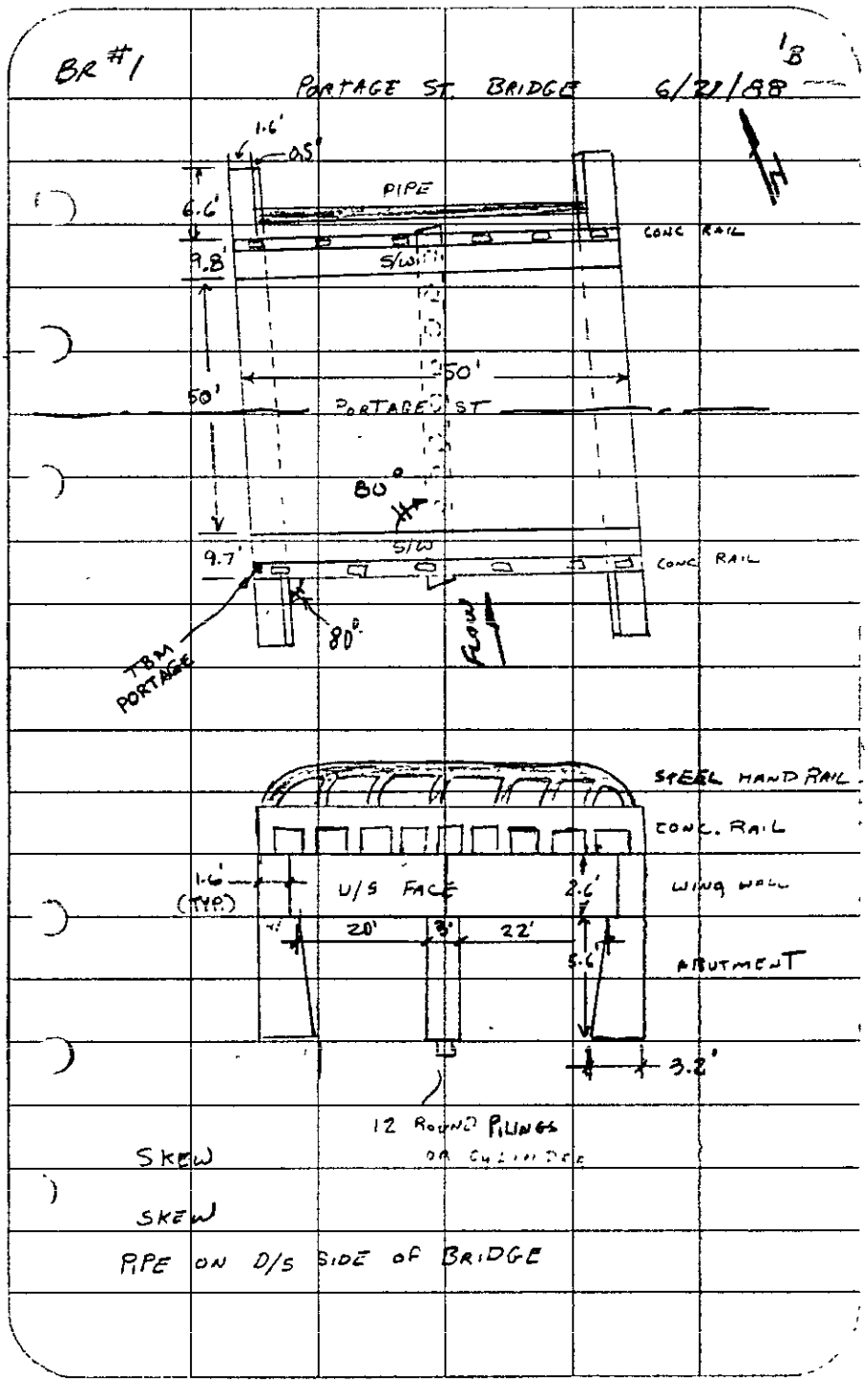
BRIDGE #1 - PORTAGE STREET BRIDGE OVER PORTAGE CREEK

1B					
TBM PORTAGE ST				765 266	REF. PG. 2C OR 3L
	HI 2.822	768.0~~8~~9			
	DESC	DIST	RoD	ELEV	
	L/S @ LT ABUT	0	7.99	760.10	
	℄ RD OVER LT ABUT	0	6.03	762.06	
	℄ OF ROAD	25' L	6.43	761.66	
	"	50' L	6.69	761.40	
	"	75' L	6.66	761.43	
	"	100' L	6.46	761.63	
	"	125' L	6.28	761.81	
Portage St	Center line intersection	150' L	6.26	761.83	
	℄ OF ROAD	175' L	5.91	762.18	
	"	200' L	5.77	762.32	
	"	225' L	5.60	762.49	
	"	250' L	5.59	762.50	
	L/S @ RT ABUT		7.3	760.72	
EDGE	℄ RD OVER RT ABUT	50' R	5.63	762.46	
	℄ OF ROAD	75' R	6.08	762.01	
	"	100' R	6.49	761.60	
VRHarris 22 June 88		NEXT PAGE			

BR #1

1B

PORTAGE ST. BRIDGE 6/21/88



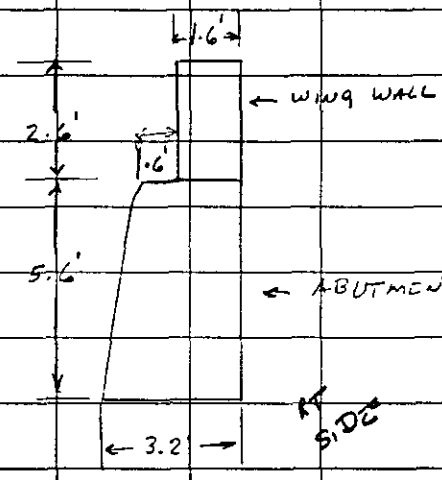
2B

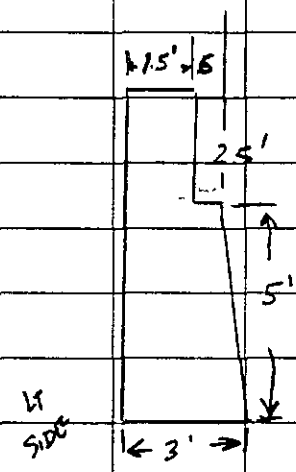
		A1.			
		768.09			
	DESC	Dist	ROD	ELEV	
	INTERSECTION PORTAGE & WALLNUT	125'R	5.75	762.34	
	℄ RD	150'R	6.15	761.94	
	"	175'R	6.12	761.97	
	"	200'R	5.52	762.57	
	"	225'R	5.38	762.71	
	"	250'R	5.37	762.72	
	"	275'R	5.28	762.81	
	"	300 R	5.17	762.92	
	(3) Shots on Pipe on D/S side of Bridge				
12" DIA					
	TOP LT SIDE @ WING WALL	1.5RT	5.93	762.16	
	℄ TOP PIPE	23R	6.85	761.24	
	TOP RT SIDE @ WING WALL	41R	6.34	761.75	
RHarris 22 June '83					

4B					
	HI 768.09				
	DESC	DIST	ROD	ELEV	
	LT FACE OF ABUT (S)	0 L	1.2	755.3	
	W/S L	0'	11.6	756.5	
	SOUNDING	5'R	13'	755.0	
	"	10'R	13'	755.3	
	LT TOE OF PIER	20'R	1.6	754.9	
	℄ OF PIER ON TOP	21.5'R	7.79	760.30	
	RT TOE OF PIER	23'R	1.4'	755.1	
	SOUNDING	23'R	0.6	755.9	
	SOUNDING	35'R	0.5	756.0	
	"	40'R	0.9	755.6	
	RT FACE OF (ABUT)	45'5R	1.2	755.3	
	W/S R		11.6	756.5	
		MISC.			
EDGE	TOP OF WING WALL LT	0'L	5.46	762.63	
	TOP OF NEW FACE OF WING WALL	1.7'R	8.05	760.04	
	TOP OF ABUT FACE OF WING	48.3'R	7.44	760.65	
EDGE	TOP OF WING WALL	50'R	4.32	763.27	

BR #1 6/21/88 4B

PG 1B





℄ OF OF PIPE 1' OFF FACE OF D/S SIDE

TBM PORTAGE	HI 2.91	768.~~26~~ 18		765.266	PG 3
	DESC Top of Pipe LT	DIST	ROD 7.04	ELEV 761.~~22~~ 4	
	℄		7.00	761.2618	
	RT		6.45	~~765.81~~	761.73

[illegible] 22 June '88

X-sec. 3919, 3920, 3996, 3997 on HEC-2 run.

5B

BRIDGE DATA #2

BRIDGE #2 - WALNUT STREET

BRIDGE OVER PORTAGE

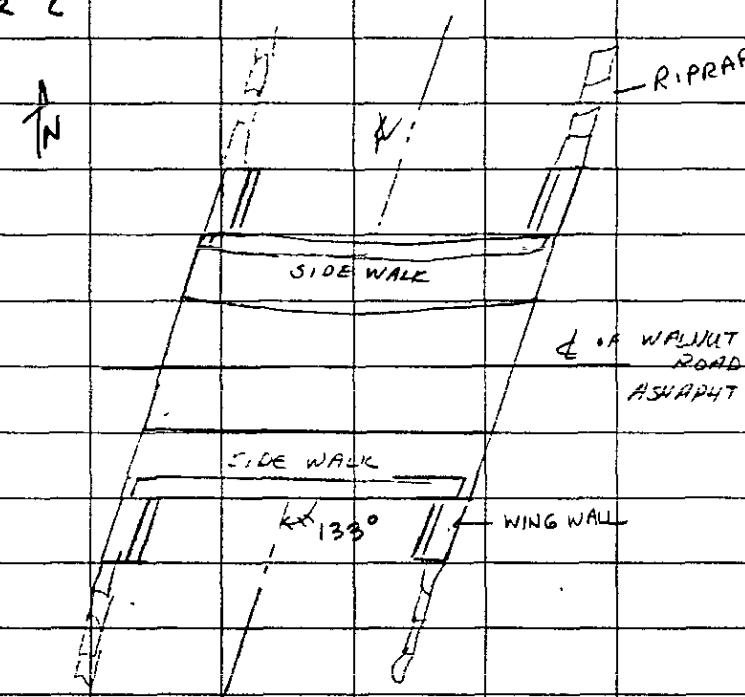
CREEK

GB					
TBM WILLIAMS	HI			762.421	REF. PG. 2C OR 3L
	4.26	766.68			
	DESC	DIST	ROD	ELEV	
	L/S @ LT ABUT	0	7.78	758.90	
	℄ RD OVER LT ABUT	0	4.98	761.70	
	℄ OF ROAD	25'L	4.95	761.73	
	"	50'L	4.80	761.88	
	"	75'L	4.83	761.85	
	"	100'L	5.01	761.67	
	"	125'L	5.08	761.60	
	"	150'L	5.05	761.63	
	"	175'L	5.08	761.60	
	"	200'L	5.05	761.63	
	"	225'L	5.03	761.65	
	℄ OF ROAD	250'L	5.04	761.64	
	L/S @ RT ABUT		8.03	758.65	
	℄ RD OVER RT ABUT	48'R	5.25	761.43	
	℄ OF ROAD	75'R	5.35	761.33	
	"	100'R	5.41	761.27	
	NEXT PG				✓

PTLY CLDY
80°F
BR#2

22 JUN '88

GB

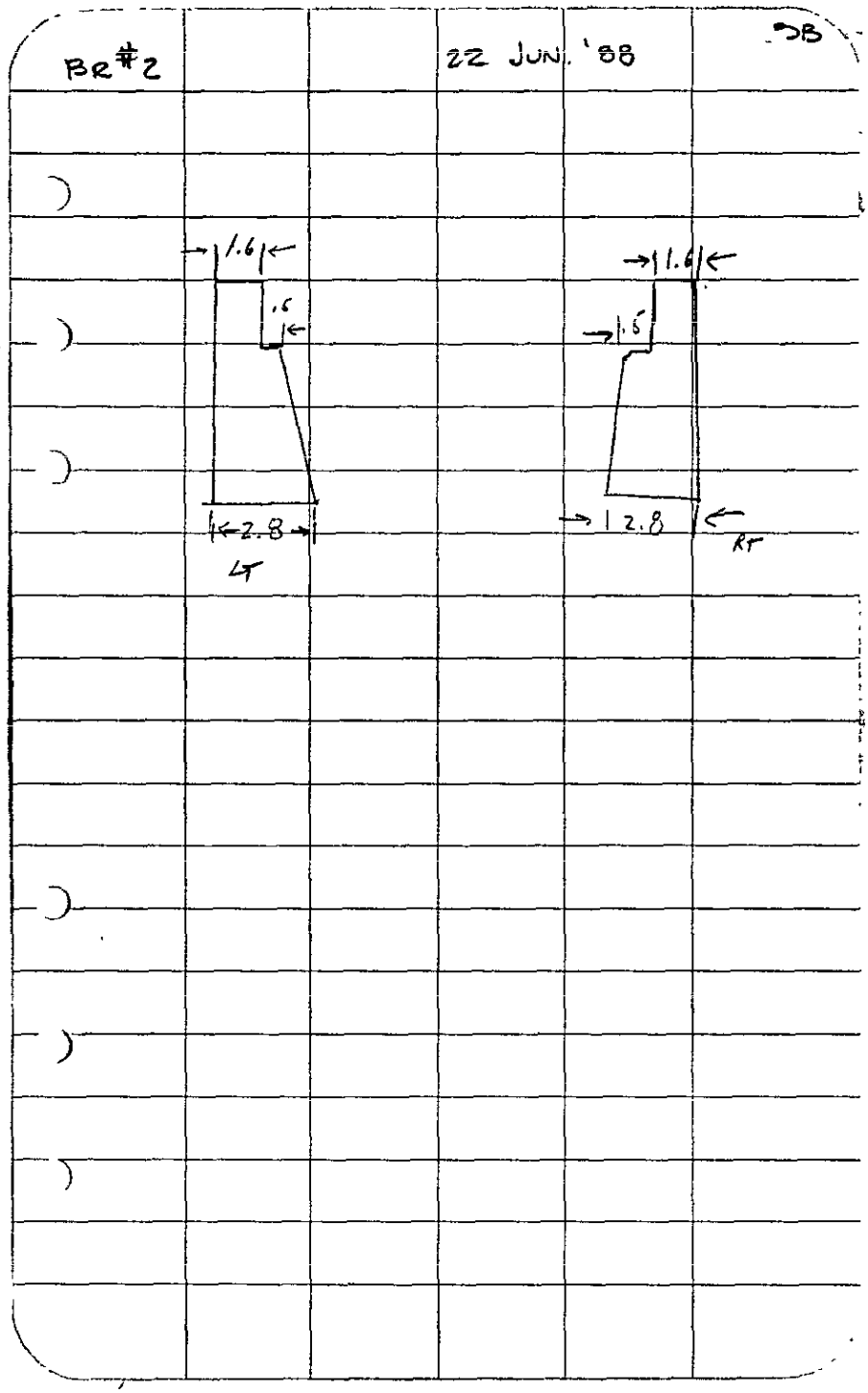


TOP VIEW

SEE PAGE 2D FOR SKETCH

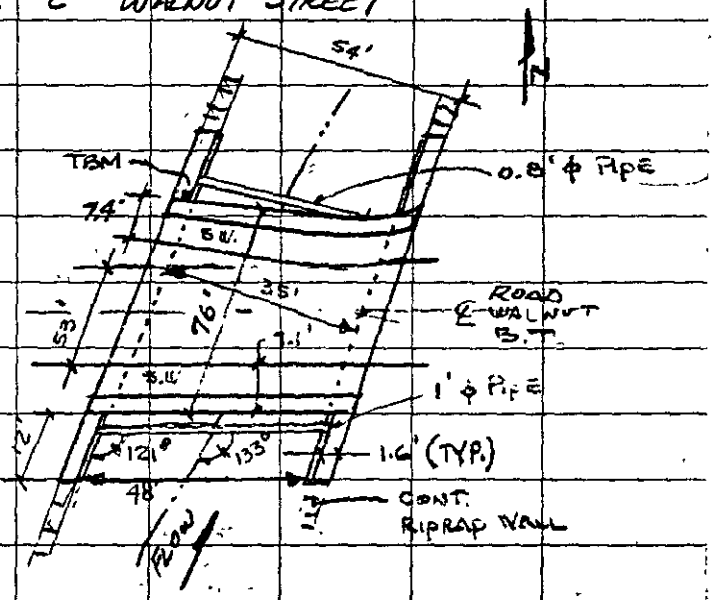
7B		H.I. 766.68			PG. 6B
	DESC.	DIST	ROD	ELEV.	
	℄ of Road	125'R	5.60	761.08	
	"	150'R	5.74	760.94	
	"	175'R	5.82	760.86	
	"	200'R	5.64	761.04	
	"	225'R	5.34	761.34	
	"	250'R	5.00	761.68	
	"	275'R	4.70	761.98	
AT [illegible]	[illegible] PIPE	300'R	4.45	762.23	
	(3) PIPE (UPSTREAM)				
1.0' DIA					
(12")	TOP LT SIDE WING WALL		5.18	761.50	
	℄ TOP WALL		5.20	761.48	
DOWNSTREAM	RT SIDE @ WING WALL		5.34	761.34	
0.8' DIA	TOP LT SIDE @ WING WALL		6.01	760.67	
(9.6")	℄ TOP WALL		5.98	760.70	
	RT SIDE @ WING WALL		5.97	760.71	

DB					
	HI 766.68				PG 6B
	DESC	DIST	ROD	ELEV	
	W/S		10.0	756.7	
SOUND @	LT ABUT	0'L	0.8	~~755.9~~ 755.8	
	SOUND LT	5'R	0.5	756.2	
	"	10'R	0.6	756.1	
	"	15'R	0.9	755.8	
	"	20'R	1.0	755.7	
	"	25'R	1.3	755.4	
	"	30'R	1.1	755.6	
	"	35'R	1.3	755.4	
	"	40'R	1.6	755.1	
	"	45'R	1.6	755.1	
SOUND @	RT ABUT	48'R	1.2	755.5	
	W/S		10.0	756.7	
		MISC			
Top of LT Wing curb			7.83	758.85	
Top of LT [illegible]			4.35	762.33	
[illegible]			8.10	758.53	
[illegible]			4.60	762.08	✓

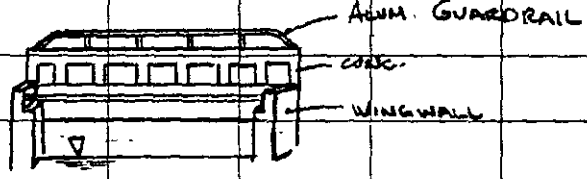

BR #2
22 JUN. '88
DB
1.6
1.6
.6
1.6
1.6
2.8
LT
2.8
RT

2D

BRIDGE #2 - WALNUT STREET

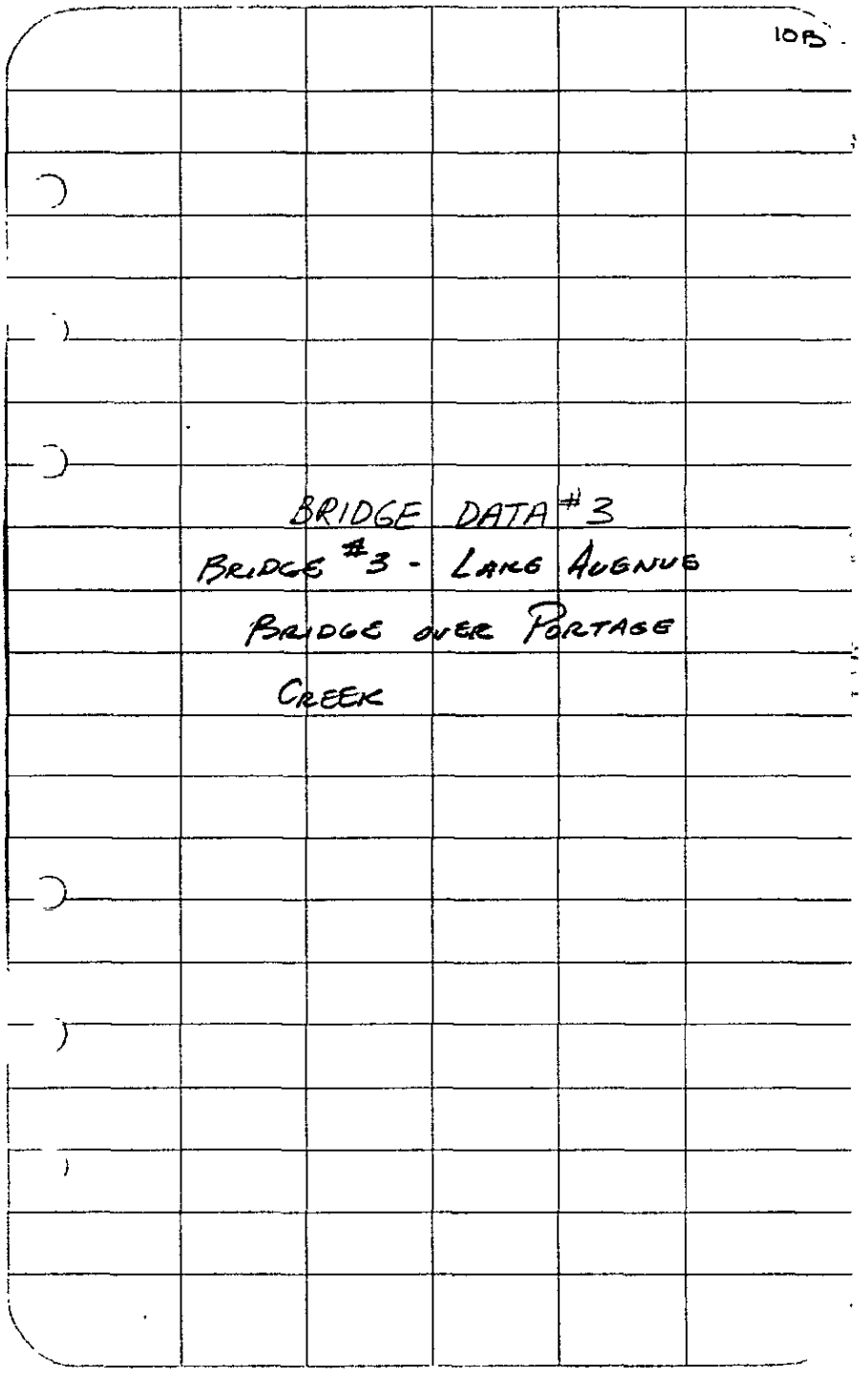


PLAN VIEW



U/S FACE LOOKING D/S

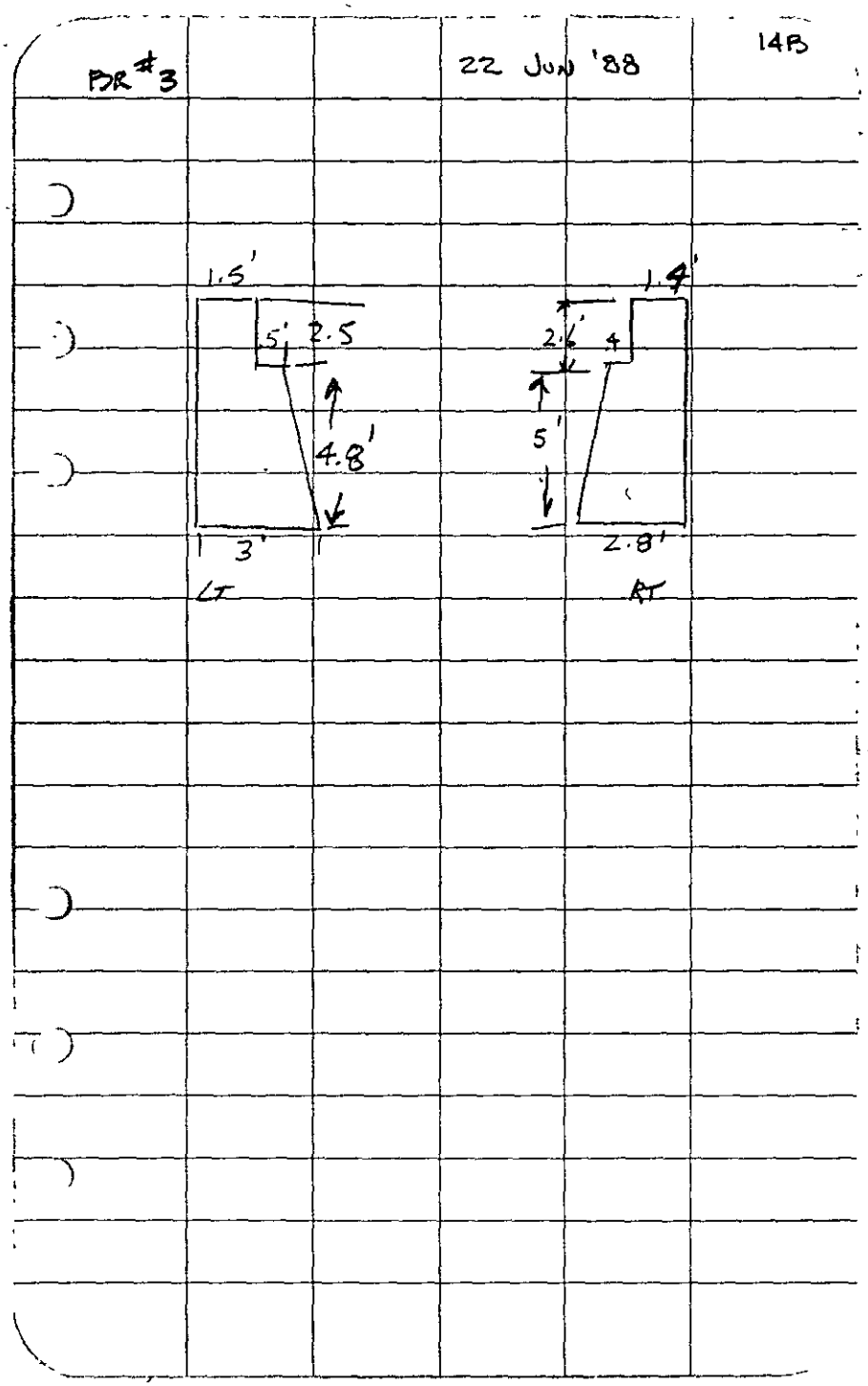
X-sec. 6400, 6401, 6446, 6447 on HEC-2 run



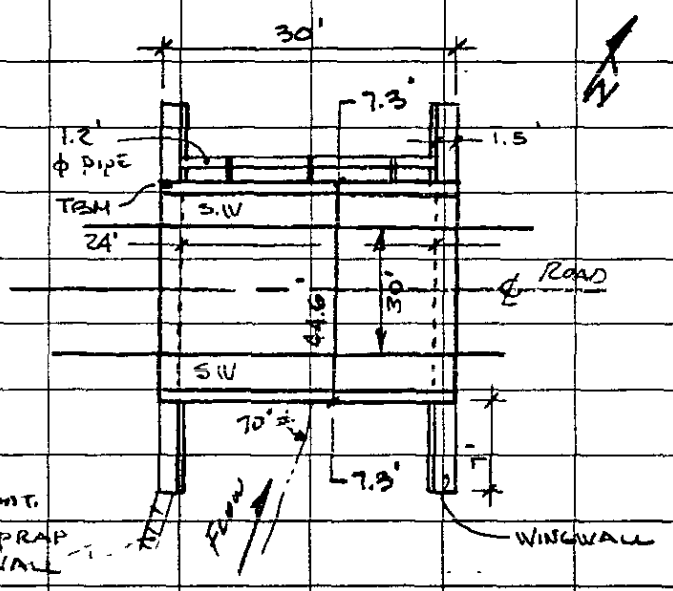
IIB BR#3					
TBM LAKE AVE	HI			762.48	ADJ.
	4.87	767.80			
	DESC	DIST	ROD	ELEV.	
	L/S @ LT ABUT	0'	7.29	760.51	
	℄ RD INTER LT ABUT	0'	5.36	762.44	
	℄ OF ROAD	25'L	5.20	762.60	
	"	50'L	5.21	762.59	
	"	75'L	5.42	762.38	
	"	100L	5.41	762.39	
	"	125'L	5.38	762.42	
	"	150'L	5.52	762.28	
	"	175'L	5.59	762.21	
	"	200'L	5.73	762.07	
	"	225'L	5.85	761.95	
	℄ OF ROAD	250'L	6.02	761.78	
	L/S @ RT ABUT		7.55	760.25	
	℄ RD INTER RT ABUT	30R	5.63	762.17	
	℄ OF ROAD	50'R	5.77	762.03	
	"	75'R	6.13	761.67	
RE 6/29/91					

12B					
	H.I.				
	767.80				
	Desc	Dist	Rod	Elev	
	℄ of Road	100'R	6.38	761.42	/
	"	125'R	6.63	761.17	/
	"	150'R	6.67	761.13	/
	"	175'R	6.70	761.10	/
	"	200'R	6.74	761.06	/
	"	225'R	6.37	761.43	/
	"	250'R	6.35	761.45	/
	℄ of Road	275'R	6.30	761.50	/
1.2' D.A.	(3)	Pipe	(Downstream)		
	Top LT Side Wing Wall		5.85	761.95	/
	℄ Top Wall		5.95	761.85	"
	RT Side @ Wing Wall		6.17	761.63	/
RE 6/24/78					

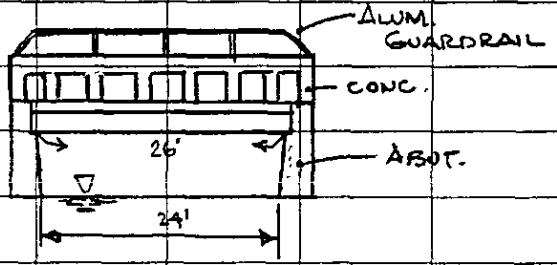
114B					
	H.I.				
	767.80				
	DESC	DIST	ROD	ELEV.	
	W/S		11.2	756.6	
SOUNDG @	LT ABUT	0'L	0.8	~~755.8~~ ~~767.0~~ 755.9	
	SOUNDINGS	5'R	1.1	~~756.5~~	
	"	10'R	1.2	~~755.4~~	
	"	15'R	1.2	~~755.4~~	
	"	20'R	1.0	755.6	
SOUNDG @	RT ABUT	24'R	1.3	~~755.5~~ ~~766.5~~	
	W/S		11.1	756.7	
		MISC			
	TOP OF LT WING WALL		4.82	2.98 ~~765.00~~	
	TOP OF LT ABUT		7.34	760.46	
	TOP OF RT WING WALL		5.03	762.77	
	TOP OF RT ABUT		7.61	760.19	


PDR #3
22 JUN '88
14B
1.5'
.5'
2.5
4.8'
3'
LT
1.4'
2.4'
4
5'
2.8'
RT

BRIDGE # 3 - LAKE AVENUE



PLAN VIEW



U/S FACE LOOKING D/S

X-sec. 7399, 7400, 7469, 7470 on HEC-2 run.

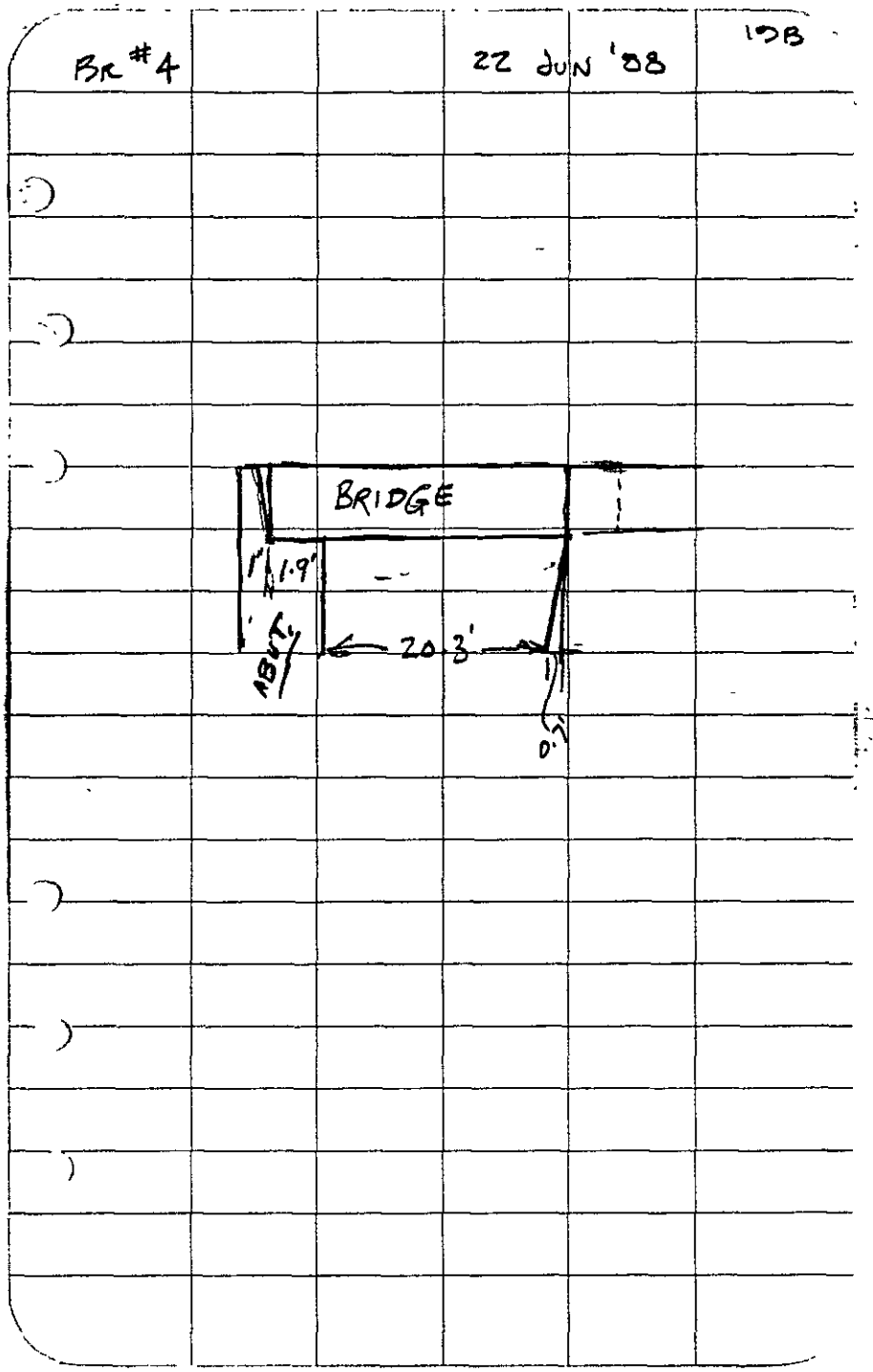
BRIDGE DATA #4

BRIDGE #4 - STOCKBRIDGE AVENUE BRIDGE OVER PORTAGE CREEK

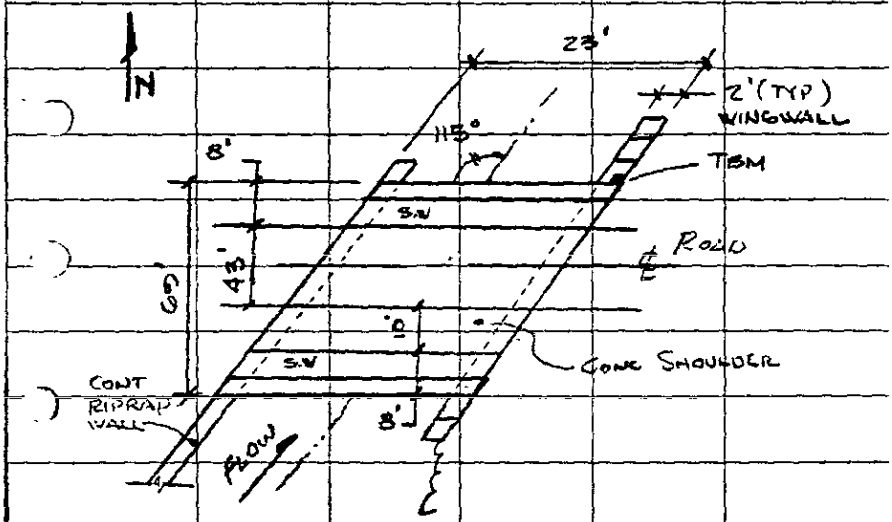
16B #4					
TBM STOCKBRIDGE AVE	HI			766.678	ADJ.
	4.84	771.52			
	DESC	DIST	ROD	ELEV.	
	L/S @ LT ABUT	0'	7.27	764.25	
	℄ RD OVER LT ABUT	0'	5.70	765.82	
	℄ OF ROAD	25'L	5.85	765.67	
	"	50'L	6.12	765.40	
	"	75'L	6.24	765.28	
	"	100'L	6.32	765.20	
	"	125'L	6.54	764.98	
	"	150'L	6.69	764.83	
	"	175'L	6.80	764.72	
	"	200'L	6.91	764.61	
	"	225'L	7.25	764.27	
	℄ OF ROAD	250'L	7.23	764.29	
	L/S @ RT ABUT		7.11	764.41	
	℄ RD OVER RT ABUT	23'R	5.50	766.02	
	℄ Rd front	50'R	5.47	~~767.05~~	
	℄ OF ROAD	75'R	5.46	766.06	

17B					
	H.I.				
	771.52				
	DESC.	DIST	ROD	ELEV	
	℄ of Road	100'R	5.75	765.77	
	"	125R	6.12	765.40	
	"	150'R	6.66	764.86	
	"	175'R	7.00	764.52	
INTERSECTION PEDOT		200'R	7.04	764.48	
	"	225'R	7.10	764.42	
	"	250'R	7.10	764.42	
	℄ of Road	275'R	6.94	764.58	

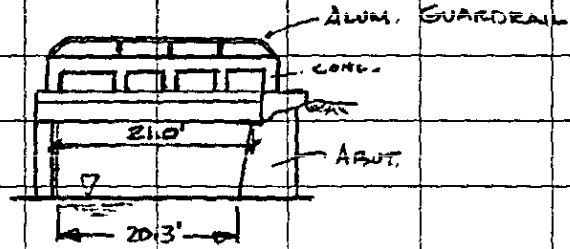
108	HI.				
	771.52				
	DESC	DIST	ROD	ELEV	
	W/S (RT)		12.3	759.2	
SOUND'G @	LT ABUT	0'L	0.2	759.0	
	SOUNDING	5'R	1.2	758.0	
	"	10'R	1.0	758.2	
	"	15'R	0.4	758.8	
SOUND'G @	RT ABUT	20.3'R	0.3	758.5	
IRT	W/S		12.5	759.2	
		MISC			
	TOP OF LT WALL		5.35	766.17	
	TOP OF LT ABUT				
	TOP OF RT WING WALL		4.81	766.71	
	TOP OF RT ABUT		7.54	769.98	


BR #4
22 JUN '08
1DB
BRIDGE
1'
1.9'
20.3'
0'

BRIDGE # 4 - STOCKBRIDGE AVENUE

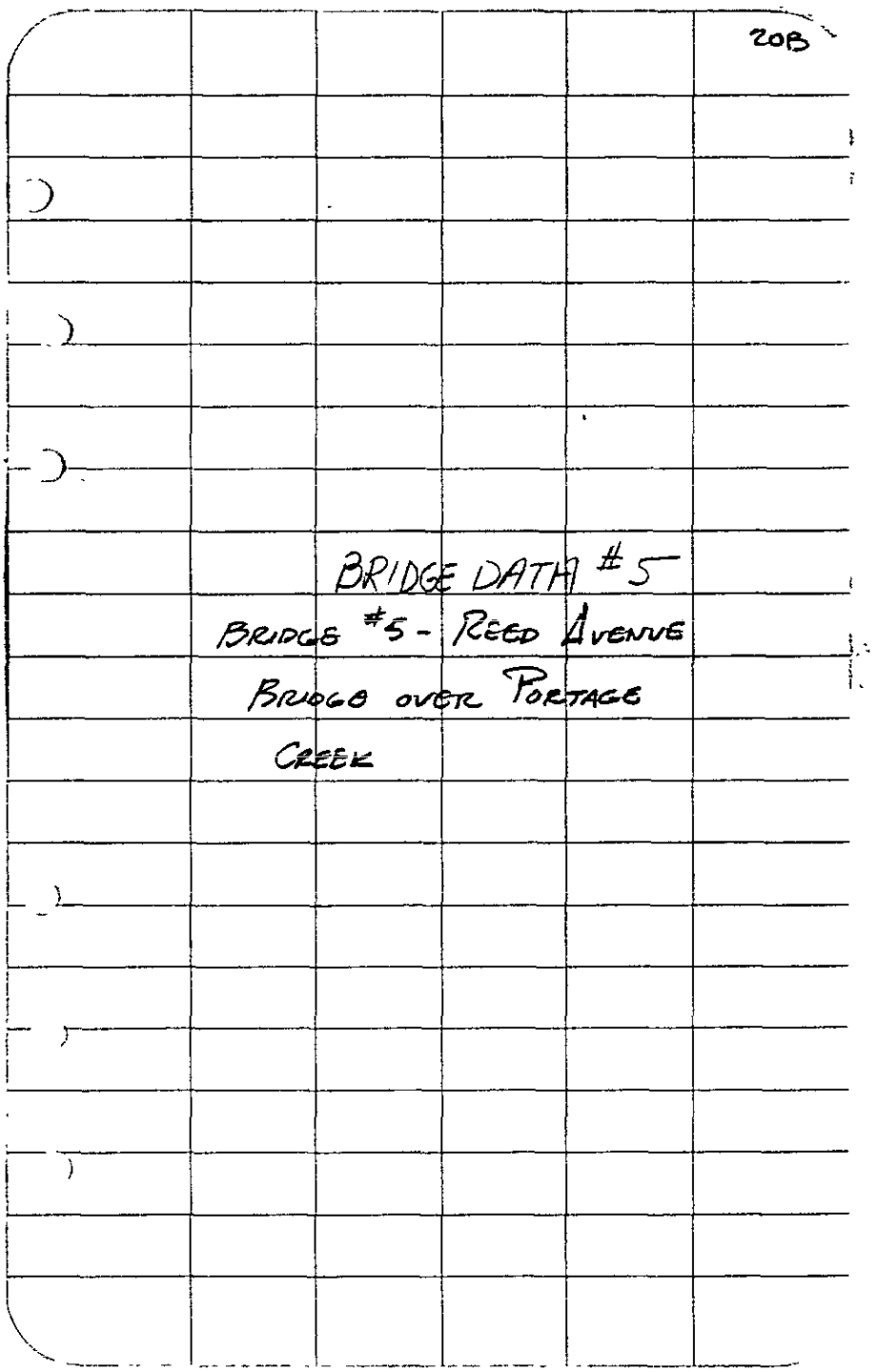


PLAN VIEW



U/S FACE LOOKING D/S

X-sec. 8719, 8720, 8788, 8789 on HEC-2 runs.



21B

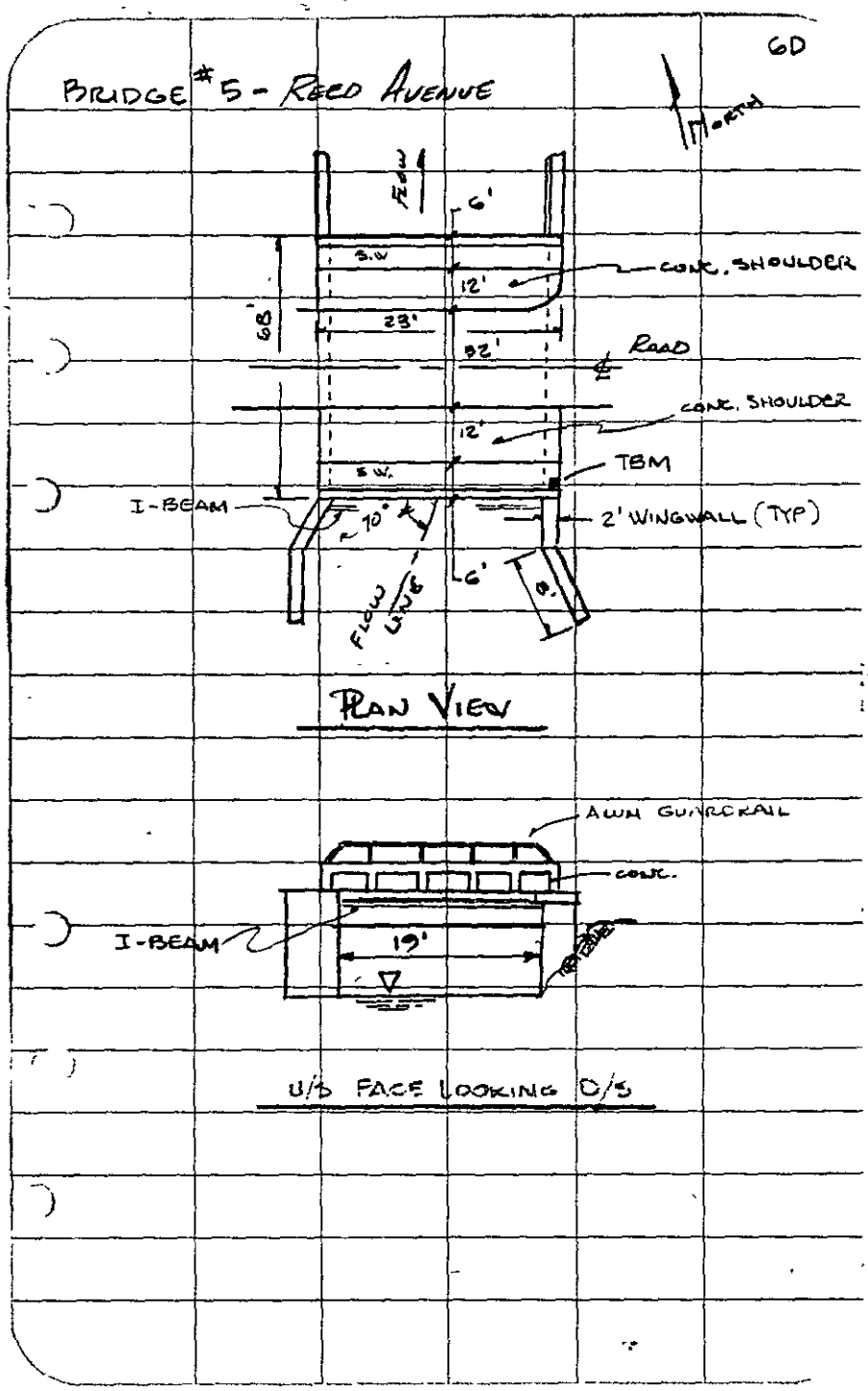
TBM REED AVG	HI			771.028	ADJ.
	4.99	776.02			
	DESC	DIST	ROD	ELEV.	
	L/S @ LT ABUT	0'	7.19	768.83	
	℄ RD OVER RT ABUT	0'	5.61	770.41	
	℄ OF ROAD	25'L	5.98	770.04	
	"	50'L	6.39	769.63	
	"	75'L	6.67	769.35	
	"	100'L	6.76	769.26	
	"	125'L	6.68	769.34	
	"	150'L	6.48	769.54	
	"	175'L	6.21	769.81	
	"	200'L	5.94	770.08	
	"	225L	5.50	770.52	
	℄ OF ROAD	250'L	4.61	771.41	
	L/S @ RT ABUT		7.15	768.87	
	℄ RD OVER RT ABUT	23'R	5.50	770.52	
	℄ OF ROAD	50'R	5.69	770.33	
	"	75'R	5.86	770.16	

22B	Hi. 776.02				
	DESC	DIST	ROD	ELEV.	
	℄ of ROAD	100'R	5.98	770.04	
	"	125'R	5.64	770.38	
	"	150'R	5.43	770.59	
	"	175'R	5.17	770.85	
	"	200'R	4.42	771.60	
	"	225'R	3.53	772.49	
	"	250'R	2.54	773.48	
	℄ of ROAD	275'R	1.86	774.16	
	℄ Intersection ON REDACT AND REED AVE	32'R	5.56	770.46	

24B	HI.				
	776.02				
	DESC	DIST	ROD	ELEV.	
	W/S (LT)		12.3	763.7	"
SOUNDG @	LT ABUT	0' L	1.7	762.0	"
ROCK	SOUNDING	5' "	1.4	762.3	"
ROCK	"	10' "	0.9	762.8	"
ROCK	"	15' "	1.0	762.7	
SOUND'G @	RT ABUT	19 R	1.0	762.7	"
	W/S (RT)		12.3	763.7	"
		MISC			
	TOP OF LT WING WALL		5.60	770.42	"
	TOP OF RT WING WALL		5.41	770.61	"
	I. BEAM (RT)		5.69	770.33	
	I BEAM (LT)		5.82	770.20	"
					"

6D

BRIDGE #5 - REED AVENUE

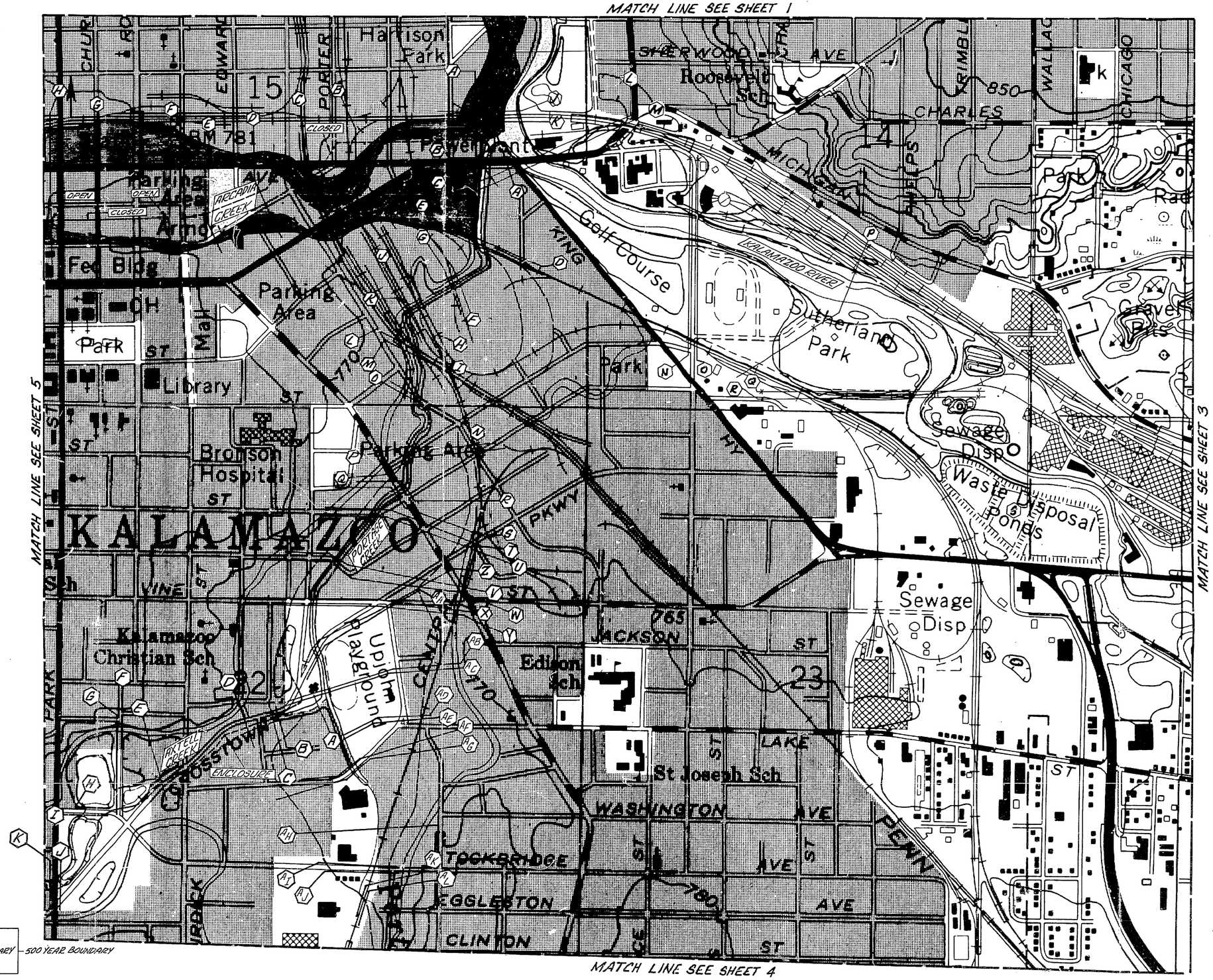


MATCH LINE SEE SHEET 1

MATCH LINE SEE SHEET 5

MATCH LINE SEE SHEET 3

MATCH LINE SEE SHEET 4



LEGEND

FLOODWAY — 100 YEAR BOUNDARY — 500 YEAR BOUNDARY

A — A CROSS SECTION

CORPORATE BOUNDARIES

FLOOD MAP

CITY OF KALAMAZOO

KALAMAZOO COUNTY MICHIGAN

SCALE: 1"=400'

Sheet 1 of 3

SHEET 2 OF 6

HUD 2027-10

ARCADIA CREEK PROFILES

REACH 1 ZONE A-1

CITY OF KALAMAZOO

HARRISON ST.
MALBERRIE ST.
PORTER ST.
PENNSYLVANIA AVE.
FITCHER ST.
EDWARDS ST.
BURDICK ST.
LOCUST ST.
ENDRESS ST.
PARK ST.
COOLEY ST.
WESTNEDGE AVE.

ELEVATION IN FEET (N.G.V.D.)

790
785
780
775
770
765
760
755

A B C D E F G H I J

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000

DISTANCE IN FEET

LEGEND

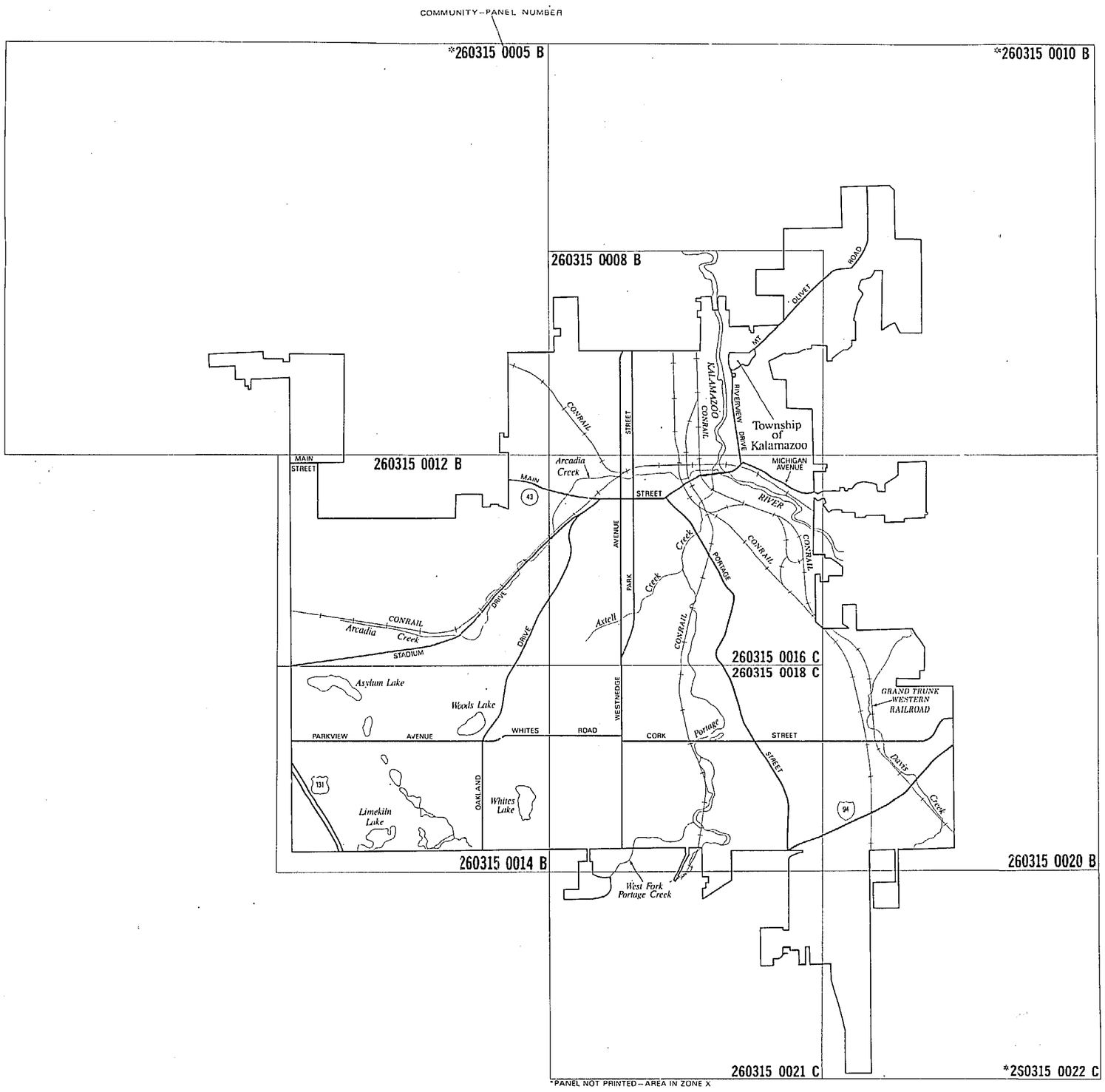
- 500 YEAR WATER SURFACE
- 100 YEAR WATER SURFACE
- 50 YEAR WATER SURFACE
- 10 YEAR WATER SURFACE
- ENCLOSURE
- CHANNEL BOTTOM

SCALE
HORIZ. 1"=500
VERT. 1"=5'

RECEIVED
JUL 6 1981
WATER MANAGEMENT

2-81
SHEET 1 of 6
HUD 2027-07

TRIM FOLD FOLD FOLD FOLD TRIM TRIM



*PANEL NOT PRINTED—AREA IN ZONE X

MAP REPOSITORY

N

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
KALAMAZOO,
MICHIGAN
KALAMAZOO COUNTY

MAP INDEX

PANELS PRINTED: 8, 12, 14, 16, 18, 20, 21

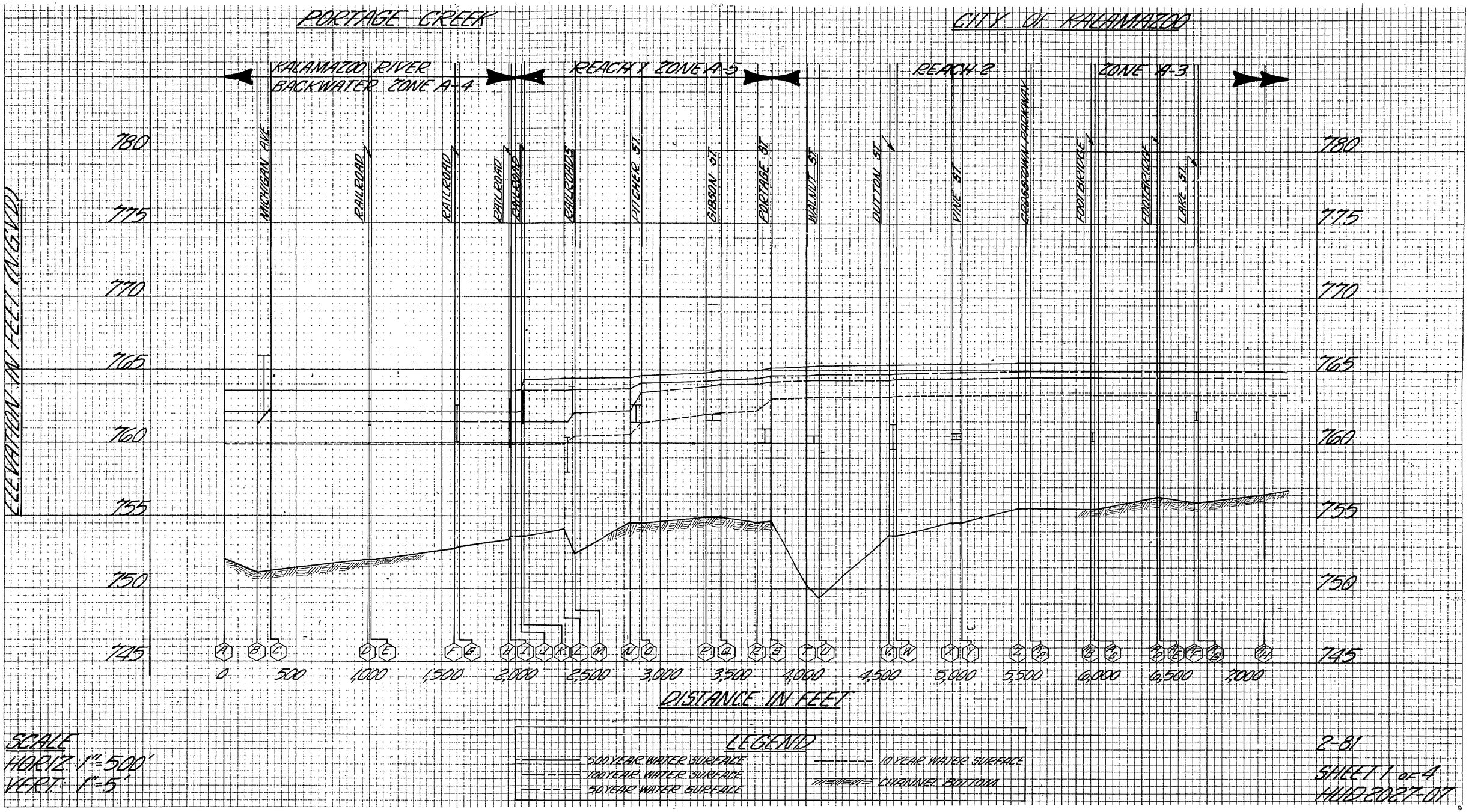
COMMUNITY-PANEL NUMBERS
260315 0005-0022

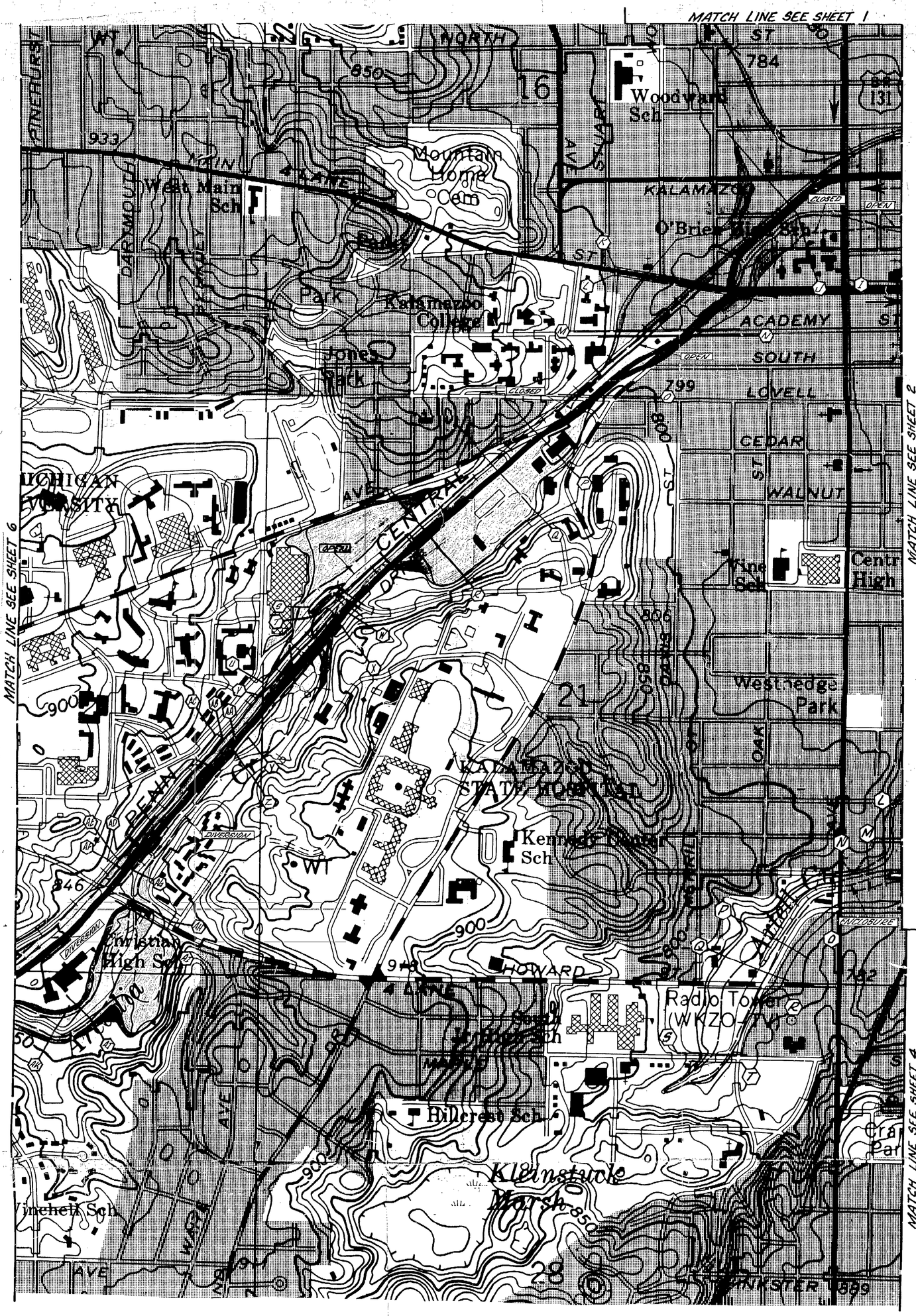
MAP REVISED:

PRELIMINARY
Federal Emergency Management Agency

TRIM FOLD FOLD FOLD FOLD TRIM TRIM

GREENHORNE & O'MARA A FRAME


PORTAGE CREEK
CITY OF KALAMAZOO
KALAMAZOO RIVER BACKWATER ZONE A-4
REACH 1 ZONE A-5
REACH 2
ZONE A-3
MICHIGAN AVE
RAILROAD
RAILROAD
RAILROAD
RAILROAD
RAILROADS
PITCHER ST.
GIBSON ST.
PORTAGE ST.
WALNUT ST.
DUTTON ST.
VINE ST.
CROSSTOWN PARKWAY
FOOTBRIDGE
FOOTBRIDGE
LAKE ST.
ELEVATION IN FEET (N.G.V.D.)
780
775
770
765
760
755
750
745
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
5,000
5,500
6,000
6,500
7,000
DISTANCE IN FEET
LEGEND
500 YEAR WATER SURFACE
100 YEAR WATER SURFACE
50 YEAR WATER SURFACE
10 YEAR WATER SURFACE
CHANNEL BOTTOM
SCALE
HORIZ. 1"=500'
VERT. 1"=5'
2-81
SHEET 1 OF 4
HUD 2027-07



LEGEND

FLOODWAY — 100 YEAR BOUNDARY — 500 YEAR BOUNDARY

A — A CROSS SECTION

CORPORATE BOUNDARIES

FLOOD MAP

CITY OF KALAMAZOO

KALAMAZOO COUNTY, MICHIGAN

SCALE: 1" = 400'

SHEET 5 OF 6

HUD 2027-10

ARCADIA CREEK PROFILES

REACH 1 ZONE A-1

CITY OF KALAMAZOO

ELM ST. | W. MAIN ST. | RICHLAND ST. | LOVELL ST. | MICHIGAN AVE.

ELEVATION IN FEET (NGVD)

815 810 805 800 795 790 785 780

K L M N O P Q R

5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10,000

DISTANCE IN FEET

LEGEND

- 500 YEAR WATER SURFACE
- 100 YEAR WATER SURFACE
- 50 YEAR WATER SURFACE
- 10 YEAR WATER SURFACE
- CHANNEL BOTTOM
- ENCLOSURE

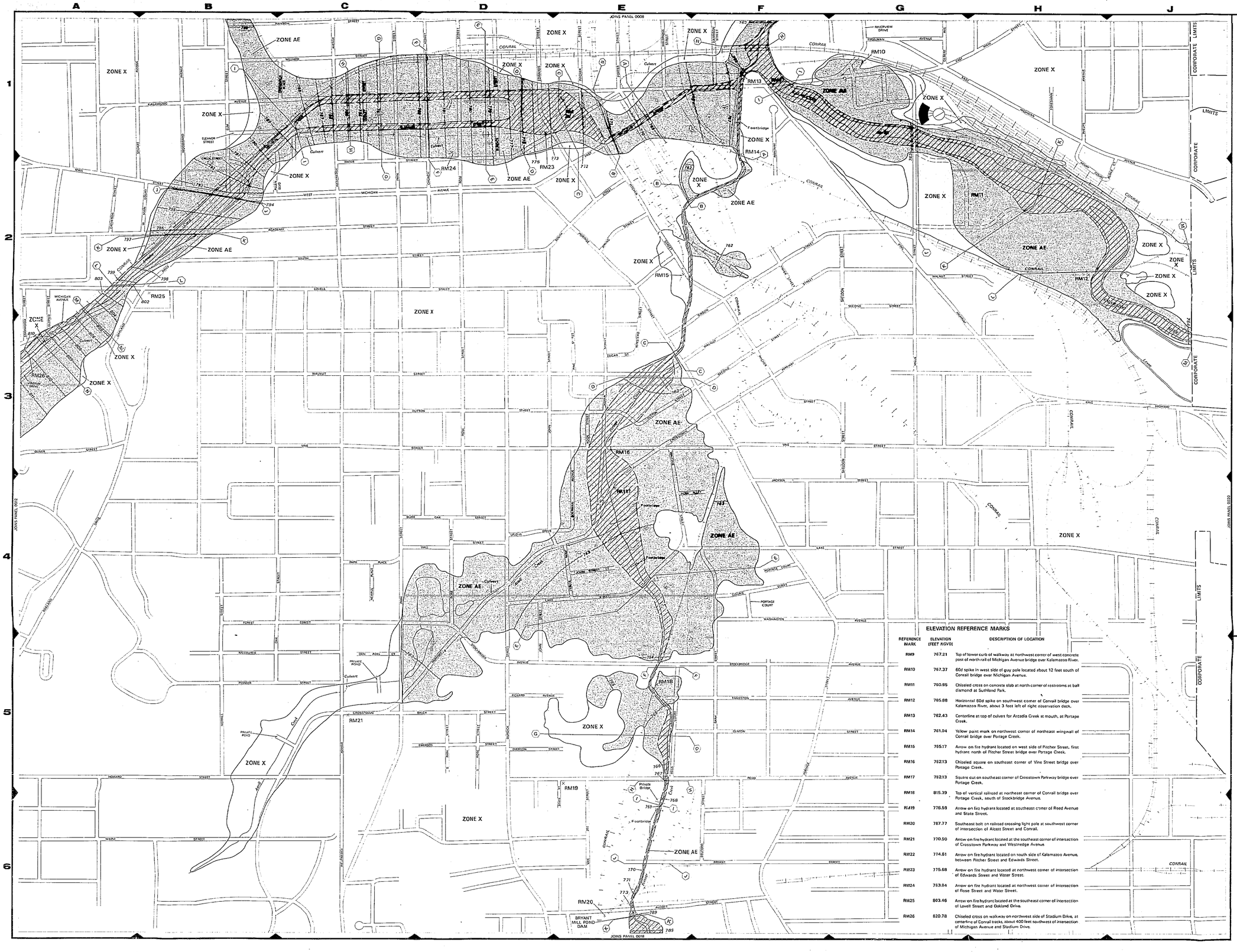
SCALE
HORIZ. 1"=500'
VERT. 1"=5'

RECEIVED
JUL 6 1981
WATER MANAGEMENT

281

SHEET 2 OF 6

HUD 2027-07



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year flood plain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zone

567 Base Flood Elevation Line; Elevation in feet*

A — A Cross Section Line

(EL 19) Base Flood Elevation in feet Where Uniform Within Zone*

RM5$_{X}$ Elevation Reference Mark

M3.0$_{M}$ Mile Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all hazardous features outside Special Flood Hazard Areas or all areas subject to flooding, particularly from local drainage sources of small size.

Areas of Special Flood Hazard (100-year flood) include zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 500 inch.

Coastal base flood elevations apply only landward of the shoreline.

This map incorporates approximate boundaries of coastal barriers established under the Coastal Barrier Resources Act (PL 97-348).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For adjoining panels, see separately printed Map Index.

MAP REPOSITORY

INITIAL IDENTIFICATION:
FEBRUARY 15, 1974

FLOOD HAZARD BOUNDARY MAP REVISION:
AUGUST 15, 1975

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 1, 1985

FLOOD INSURANCE RATE MAP REVISIONS:
Map revised
to change special flood hazard areas, base flood elevations, zone designations, and corporate limits.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620

APPROXIMATE SCALE IN FEET
400 0 400

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM9	767.21	Top of lower curb of walkway at northwest corner of west concrete post of north rail of Michigan Avenue bridge over Kalamazoo River.
RM10	767.37	60d spike in west side of guy pole located about 12 feet south of Conrail bridge over Michigan Avenue.
RM11	760.95	Chiseled cross on concrete slab at north corner of restrooms at ball diamond at Suthland Park.
RM12	765.88	Horizontal 60d spike on southwest corner of Conrail bridge over Kalamazoo River, about 3 feet left of right observation deck.
RM13	762.43	Centerline at top of culvert for Arcadia Creek at mouth, at Portage Creek.
RM14	761.04	Yellow paint mark on northwest corner of northeast wingwall of Conrail bridge over Portage Creek.
RM15	765.17	Arrow on fire hydrant located on west side of Pitcher Street, first hydrant north of Pitcher Street bridge over Portage Creek.
RM16	762.13	Chiseled square on southeast corner of Vine Street bridge over Portage Creek.
RM17	782.13	Square cut on southeast corner of Crosstown Parkway bridge over Portage Creek.
RM18	815.39	Top of vertical railroad at northeast corner of Conrail bridge over Portage Creek, south of Stockbridge Avenue.
RM19	776.58	Arrow on fire hydrant located at southeast corner of Reed Avenue and State Street.
RM20	787.77	Southeast bolt on railroad crossing light pole at southwest corner of intersection of Alcott Street and Conrail.
RM21	770.50	Arrow on fire hydrant located at the southeast corner of intersection of Crosstown Parkway and Westnedge Avenue.
RM22	774.61	Arrow on fire hydrant located on south side of Kalamazoo Avenue, between Pitcher Street and Edwards Street.
RM23	775.68	Arrow on fire hydrant located at northwest corner of intersection of Edwards Street and Water Street.
RM24	783.84	Arrow on fire hydrant located at northwest corner of intersection of Rose Street and Water Street.
RM25	803.46	Arrow on fire hydrant located at the southeast corner of intersection of Lovell Street and Oakland Drive.
RM26	820.78	Chiseled cross on walkway on northwest side of Stadium Drive, at centerline of Conrail tracks, about 400 feet southwest of intersection of Michigan Avenue and Stadium Drive.

NATIONAL FLOOD INSURANCE PROGRAM

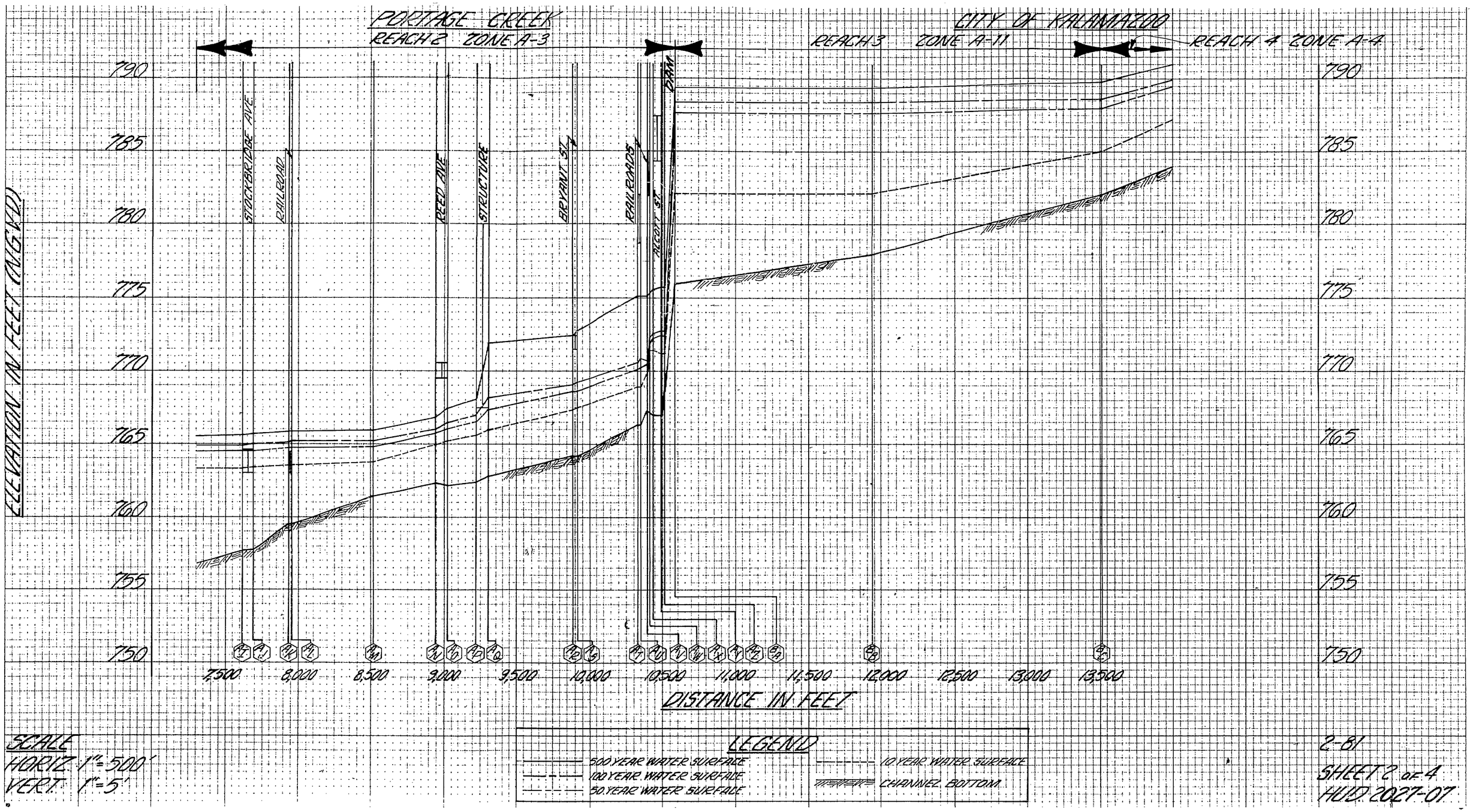
FIRM
FLOOD INSURANCE RATE MAP

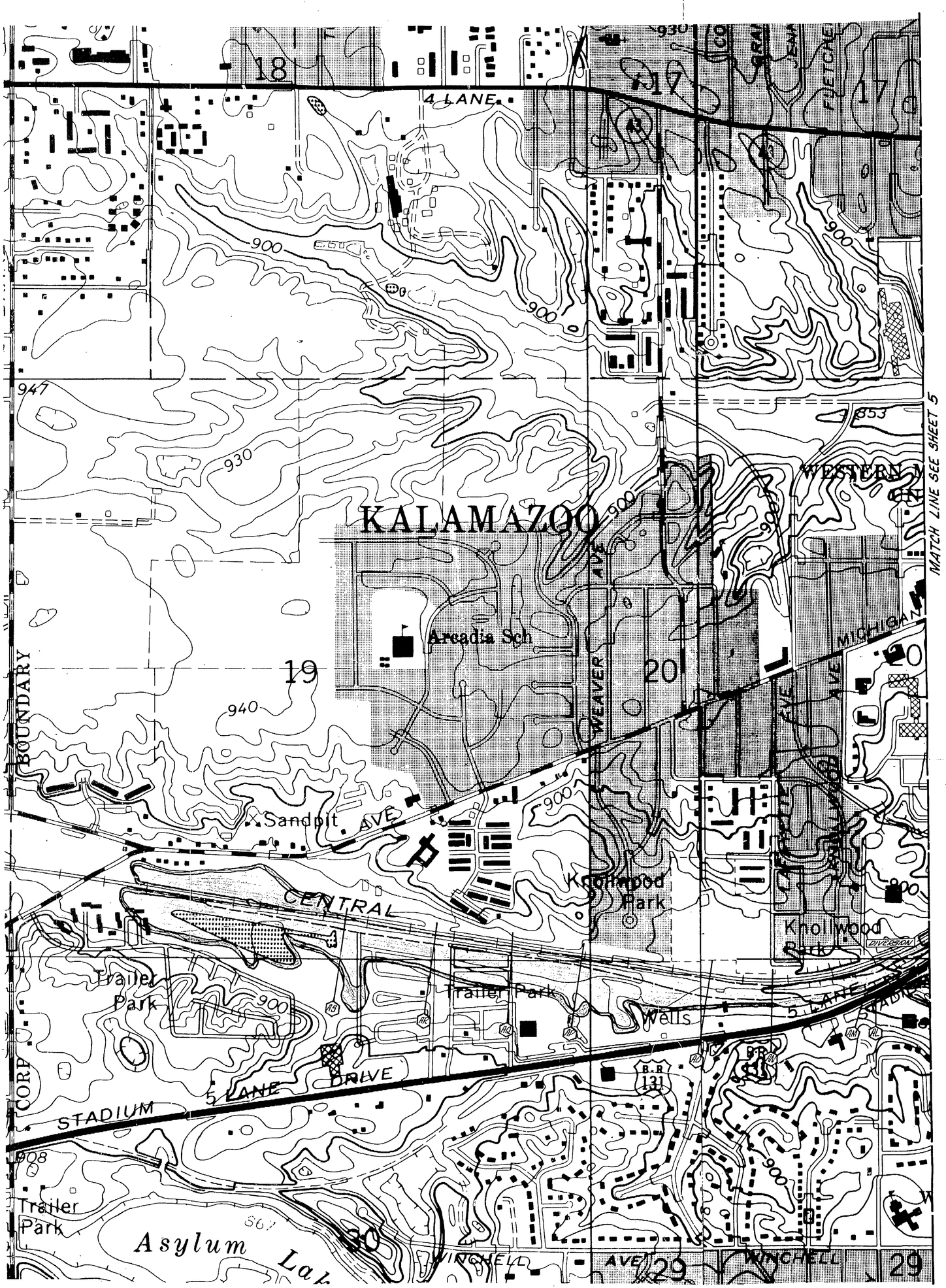
CITY OF
KALAMAZOO,
MICHIGAN
KALAMAZOO COUNTY

PANEL 16 OF 22
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY—PANEL NUMBER:
260315 0016 C
MAP REVISED:

PRELIMINARY
Federal Emergency Management Agency


PORTAGE CREEK
REACH 2 ZONE A-3
CITY OF KALAMAZOO
REACH 3 ZONE A-11
REACH 4 ZONE A-4
STOCKBRIDGE AVE
RAILROAD
REED AVE
STRUCTURE
BRYANT ST.
RAILROADS
ALCOTT ST.
DAM
ELEVATION IN FEET (N.G.V.D.)
790
785
780
775
770
765
760
755
750
7,500
8,000
8,500
9,000
9,500
10,000
10,500
11,000
11,500
12,000
12,500
13,000
13,500
DISTANCE IN FEET
LEGEND
500 YEAR WATER SURFACE
100 YEAR WATER SURFACE
50 YEAR WATER SURFACE
10 YEAR WATER SURFACE
CHANNEL BOTTOM
SCALE
HORIZ. 1"=500'
VERT. 1"=5'
2-81
SHEET 2 OF 4
HUD 2027-07



LEGEND

FLOODWAY | 100 YEAR BOUNDARY | 500 YEAR BOUNDARY

A — A CROSS SECTION

CORPORATE BOUNDARIES

FLOOD MAP

CITY OF KALAMAZOO

KALAMAZOO COUNTY, MICHIGAN

SCALE: 1" = 400'

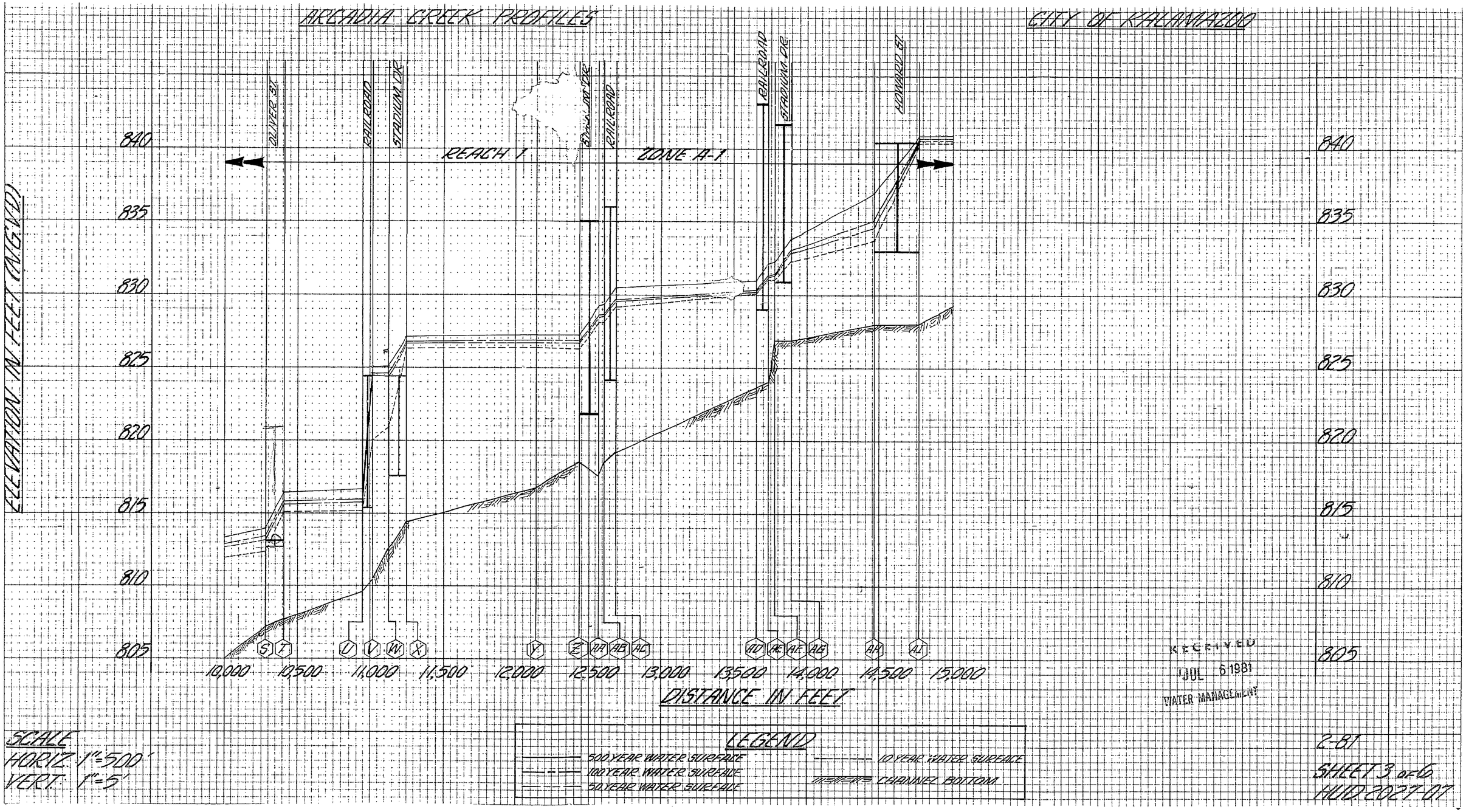
Sheet 5/6

SHEET 6 of 6

HUD 2027-10

ARCADIA CREEK PROFILES

CITY OF KALAMAZOO



SCALE
HORIZ. 1"=500'
VERT. 1"=5'

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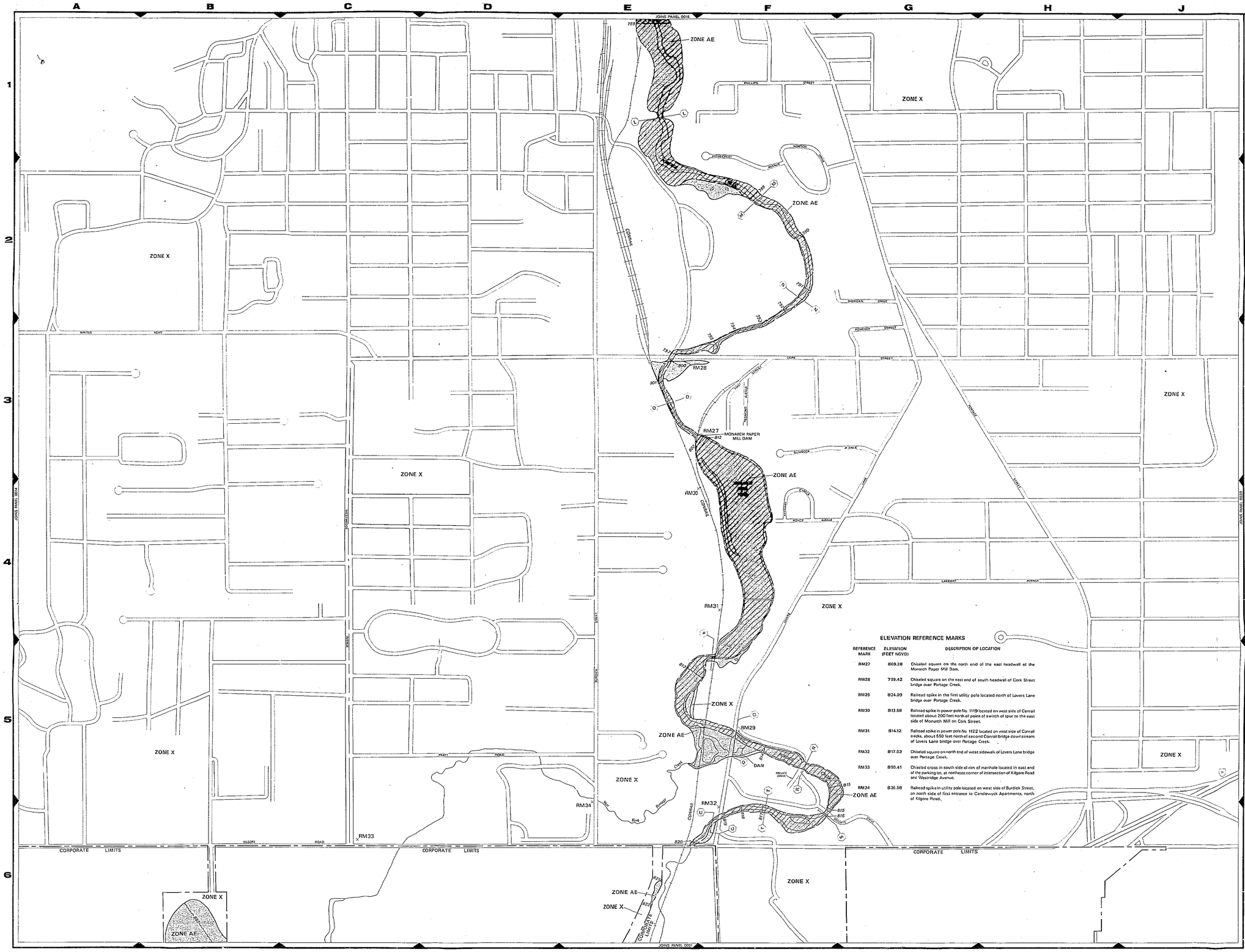
JUL 6 1981
WATER MANAGEMENT

2-81
SHEET 3 OF 6
HUD 2027-01



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AE — Base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year flood plain.
- ZONE D — Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zone.

567 — Base Flood Elevation Line; Elevation in Feet*

A — A — Cross Section Line

(EL 13) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM5 — Elevation Reference Mark

M3.0 — Mile Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all gleomentic features outside Special Flood Hazard Area or all areas subject to flooding, particularly from local drainage sources of small size.

Areas of Special Flood Hazard (100-year flood) include zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross-sections and interpolated between cross-sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of the shoreline.

This map incorporates approximate boundaries of coastal barriers established under the Coastal Barrier Resources Act (PL 97-348).

Elevation reference marks are described in the Flood Insurance Study Report.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if successive limits have changed subsequent to the issuance of this map.

For adjoining panels, see separately printed Map Index.

MAP REPOSITORY

INITIAL IDENTIFICATION:
FEBRUARY 15, 1974

FLOOD HAZARD BOUNDARY MAP REVISION:
AUGUST 15, 1978

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 1, 1985

FLOOD INSURANCE RATE MAP REVISIONS:
Map revised
to change special flood hazard areas, base flood elevations, zone designations, and corporate limits.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
400 0 400

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM27	809.28	Chiseled square on the north end of the east headwall of the Monarch Paper Mill Dam.
RM28	799.42	Chiseled square on the east end of south headwall of Cork Street bridge over Portage Creek.
RM29	824.09	Railroad spike in the first utility pole located north of Lovers Lane bridge over Portage Creek.
RM30	813.58	Railroad spike in power pole No. 1119 located on west side of Conrail located about 200 feet north of point of switch of spur to the east side of Monarch Mill on Cork Street.
RM31	814.12	Railroad spike in power pole No. 1122 located on west side of Conrail tracks, about 550 feet north of second Conrail bridge downstream of Lovers Lane bridge over Portage Creek.
RM32	817.03	Chiseled square on north end of west sidewalk of Lovers Lane bridge over Portage Creek.
RM33	850.41	Chiseled cross in south side of rim of manhole located in east end of the parking lot, at northeast corner of intersection of Kilgore Road and Westridge Avenue.
RM34	836.58	Railroad spike in utility pole located on west side of Burdick Street, on north side of first entrance to Candlewyck Apartments, north of Kilgore Road.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
KALAMAZOO,
MICHIGAN
KALAMAZOO COUNTY

PANEL 18 OF 22
(SEE MAP INDEX FOR PANELS NOT PRINTED)

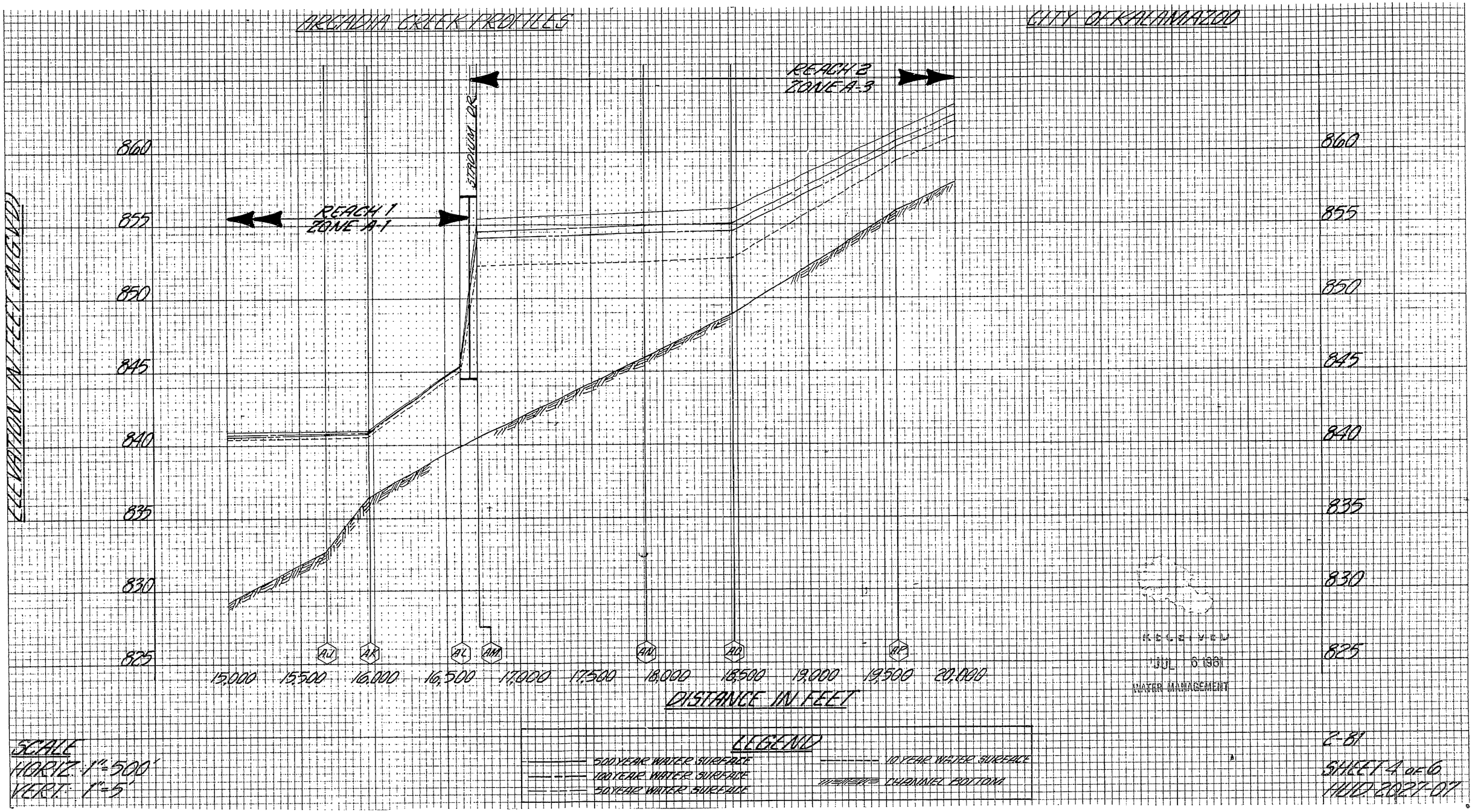
COMMUNITY—PANEL NUMBER:
260315 0018 C
MAP REVISED:

PRELIMINARY
Federal Emergency Management Agency

GREENHORNE & O'MARA E FRAME 88/12 STANDARD MIP

ARCADIA CREEK PROFILES

CITY OF KALAMAZOO



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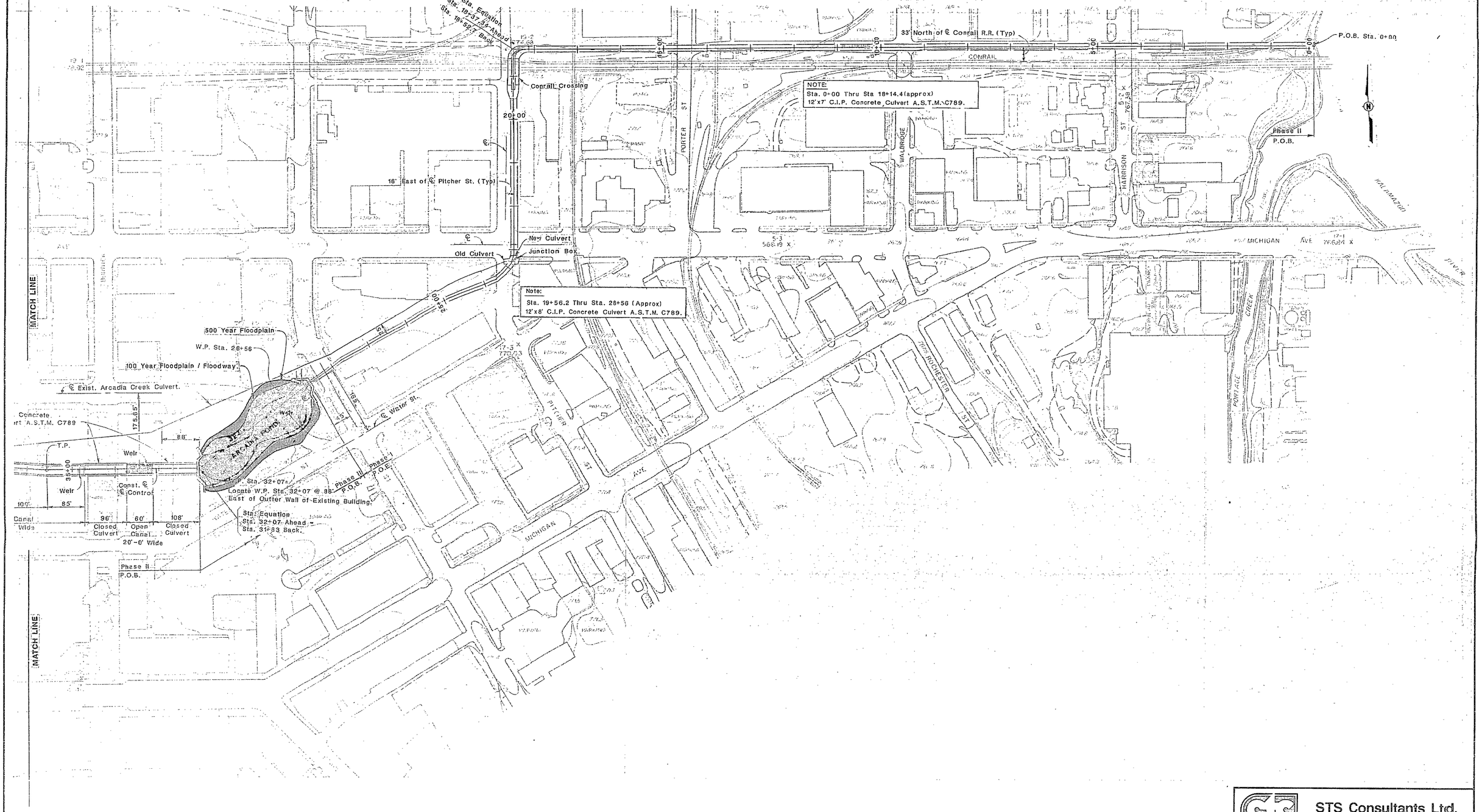
JUL 6 1981
WATER MANAGEMENT

LEGEND

500 YEAR WATER SURFACE
100 YEAR WATER SURFACE
50 YEAR WATER SURFACE
10 YEAR WATER SURFACE
CHANNEL BOTTOM

SCALE
HORIZ. 1"=500'
VERT. 1"=5'

E-81
SHEET 4 of 6
HUD 2027-07



LEGEND

— 100 Year Floodplain / Floodway.

— 500 Year Floodplain

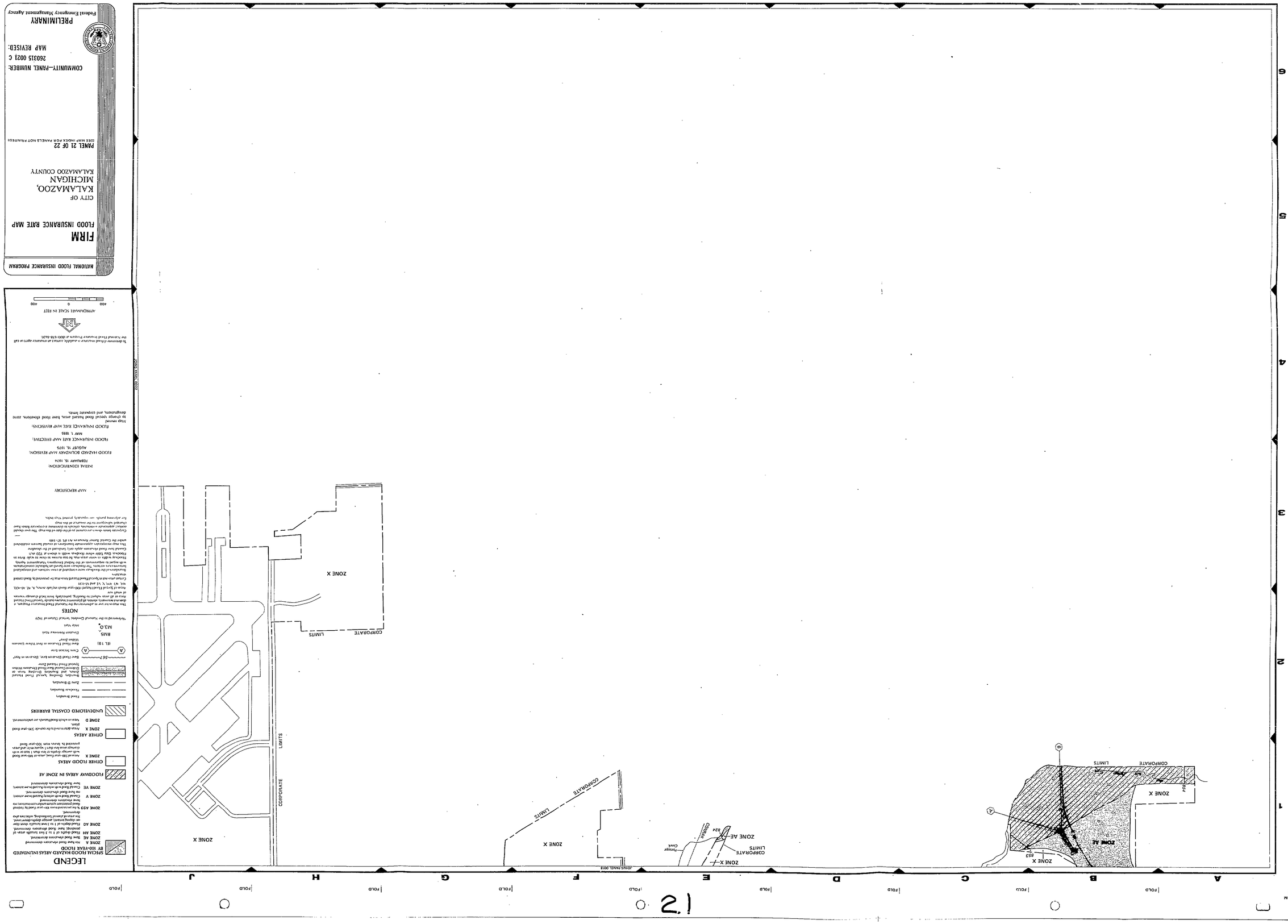
REVISIONS			
NO.	DESCRIPTION	DATE	BY

STS Consultants Ltd.
Consulting Engineers

FIGURE 6 - FLOODPLAIN / FLOODWAY MAP
EAST END
ARCAIDA CREEK PROJECT
KALAMAZOO DOWNTOWN DEVELOPMENT AUTHORITY
KALAMAZOO, MICHIGAN

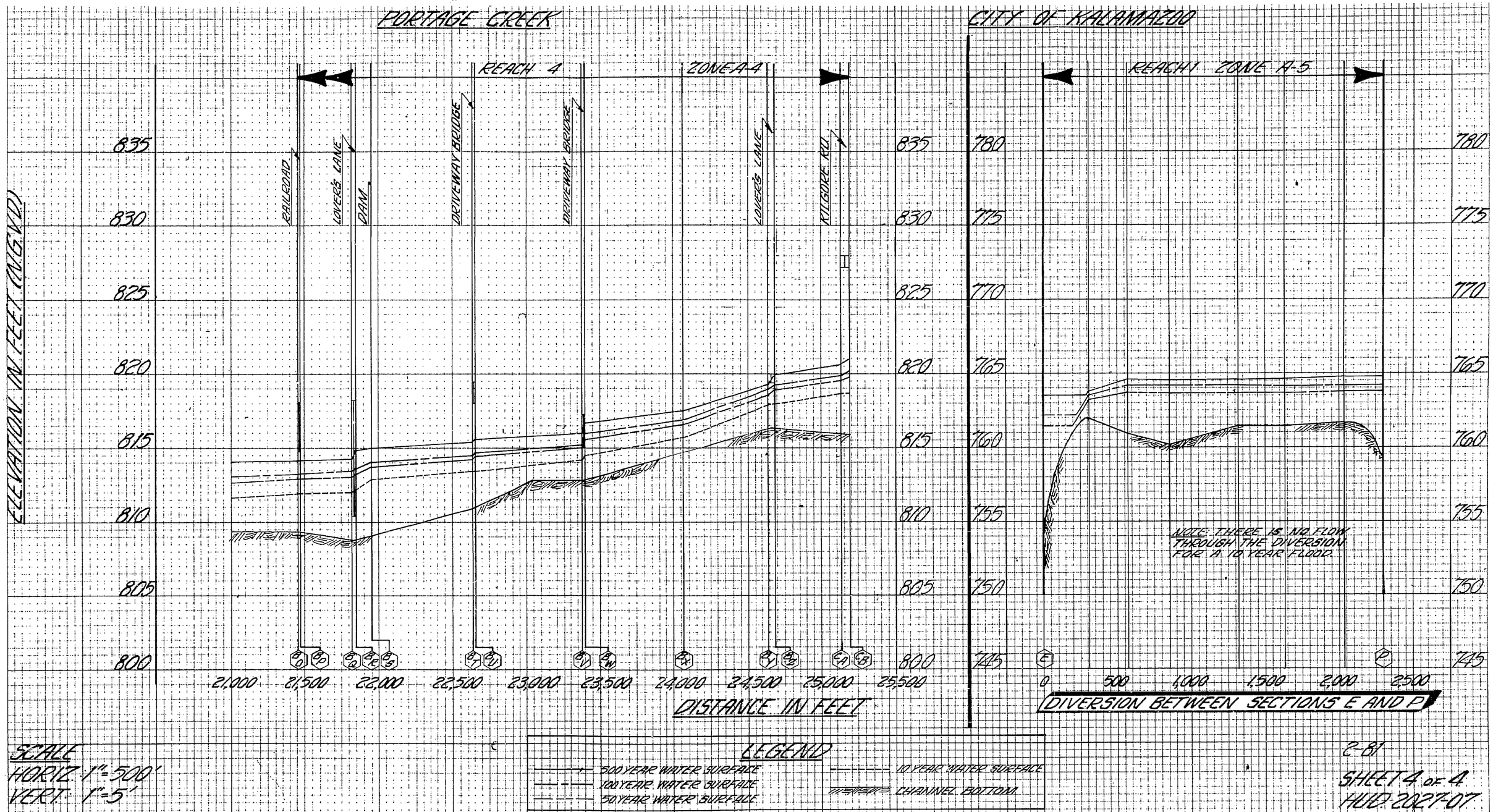
DRAWN BY	DATE	SCALE	STS PROJECT NO.
C.G.	12/90	1" = 100'	1069AJ
CHECKED BY	DATE	SHEET NO.	STS FILE NO.

DRAWING 031817


ZONE X
CORPORATE LIMITS
ZONE AE
ZONE X
ZONE AE
ZONE X
CORPORATE LIMITS
ZONE X
CORPORATE LIMITS
ZONE X
CORPORATE LIMITS
ZONE AE
ZONE X
ZONE AE
ZONE X
CORPORATE LIMITS

PORTAGE CREEK

CITY OF KALAMAZOO



SCALE
HORIZ. 1"=500'
VERT. 1"=5'

C-81
SHEET 4 OF 4
HUD 2027-07

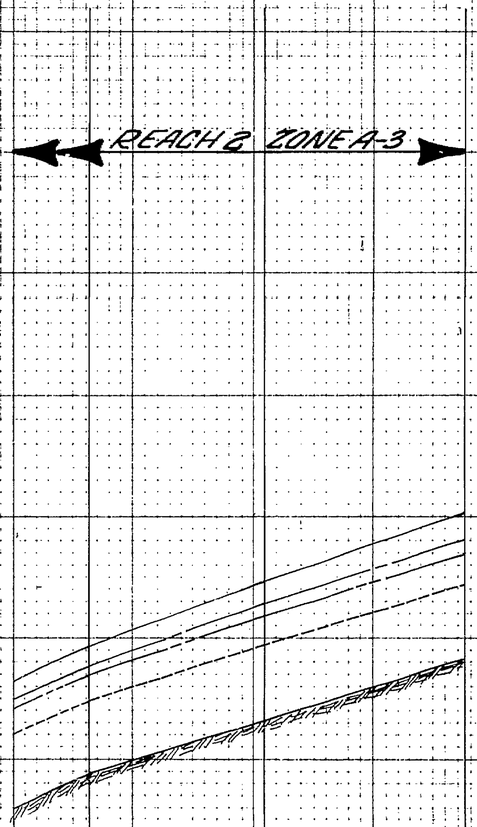
ARCADIA CREEK PROFILES

CITY OF KALAMAZOO

REACH 2 ZONE A-3

ELEVATION IN FEET (NGVD)

885
880
875
870
865
860
855
850



20,000 20,500 21,000 21,500 22,000

DISTANCE IN FEET

RECEIVED
JUL 6 1981
WATER MANAGEMENT

LEGEND

500 YEAR WATER SURFACE
100 YEAR WATER SURFACE
50 YEAR WATER SURFACE
10 YEAR WATER SURFACE
CHANNEL BOTTOM

SCALE
HORIZ. 1"=500'
VERT. 1"=5'

281

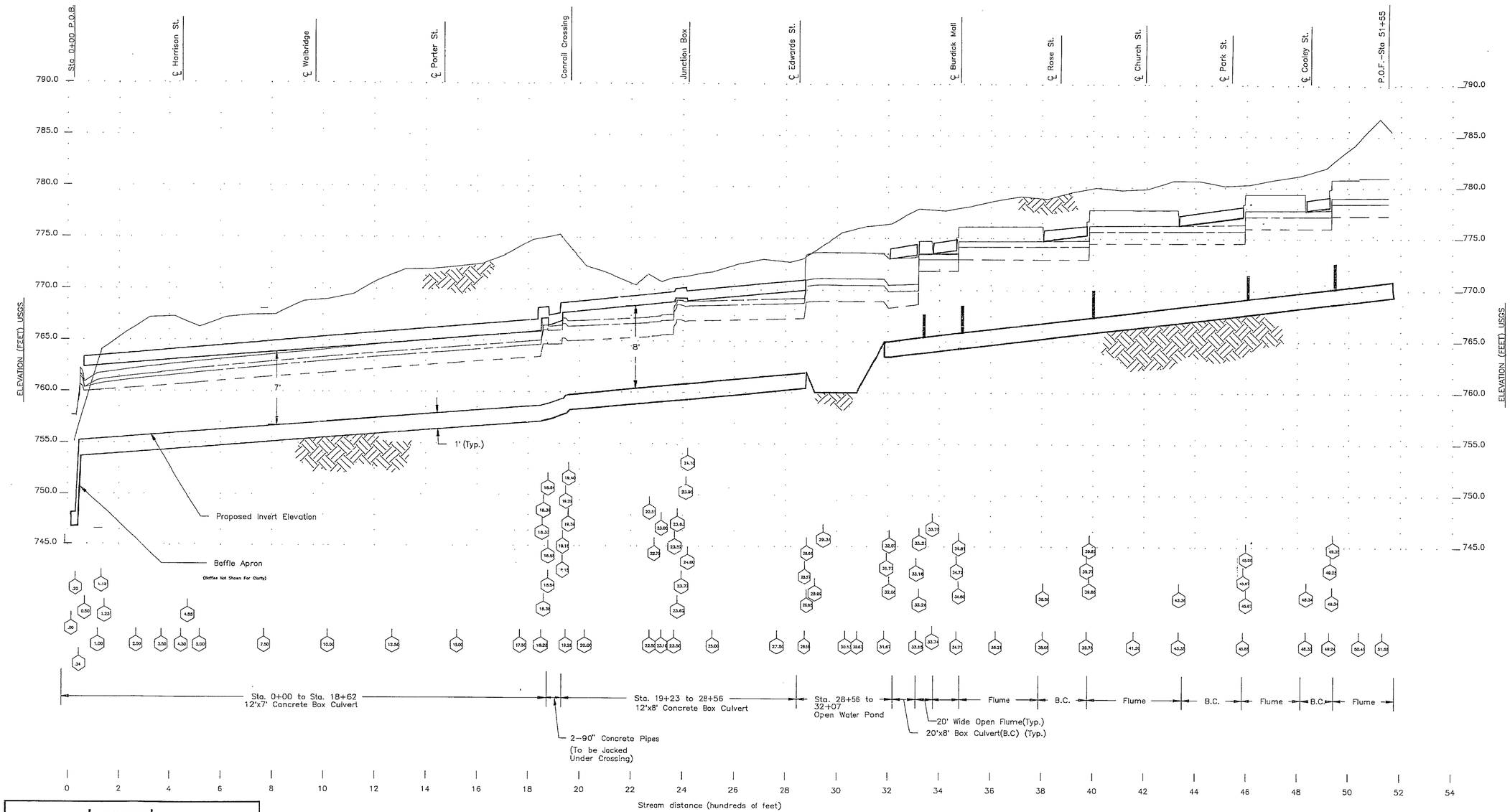
SHEET 5 OF 6

HUD 2027-07

E

W

Arcadia Creek
Proposed Hydraulic Profile



Legend

- 500-Year Flood Elev.
- 100-Year Flood Elev.
- 50-Year Flood Elev.
- 10-Year Flood Elev.
- STS Design Cross Section Designation

Scale:
Horiz. 1" = 200'-0"
Vert. 1" = 5'-0"

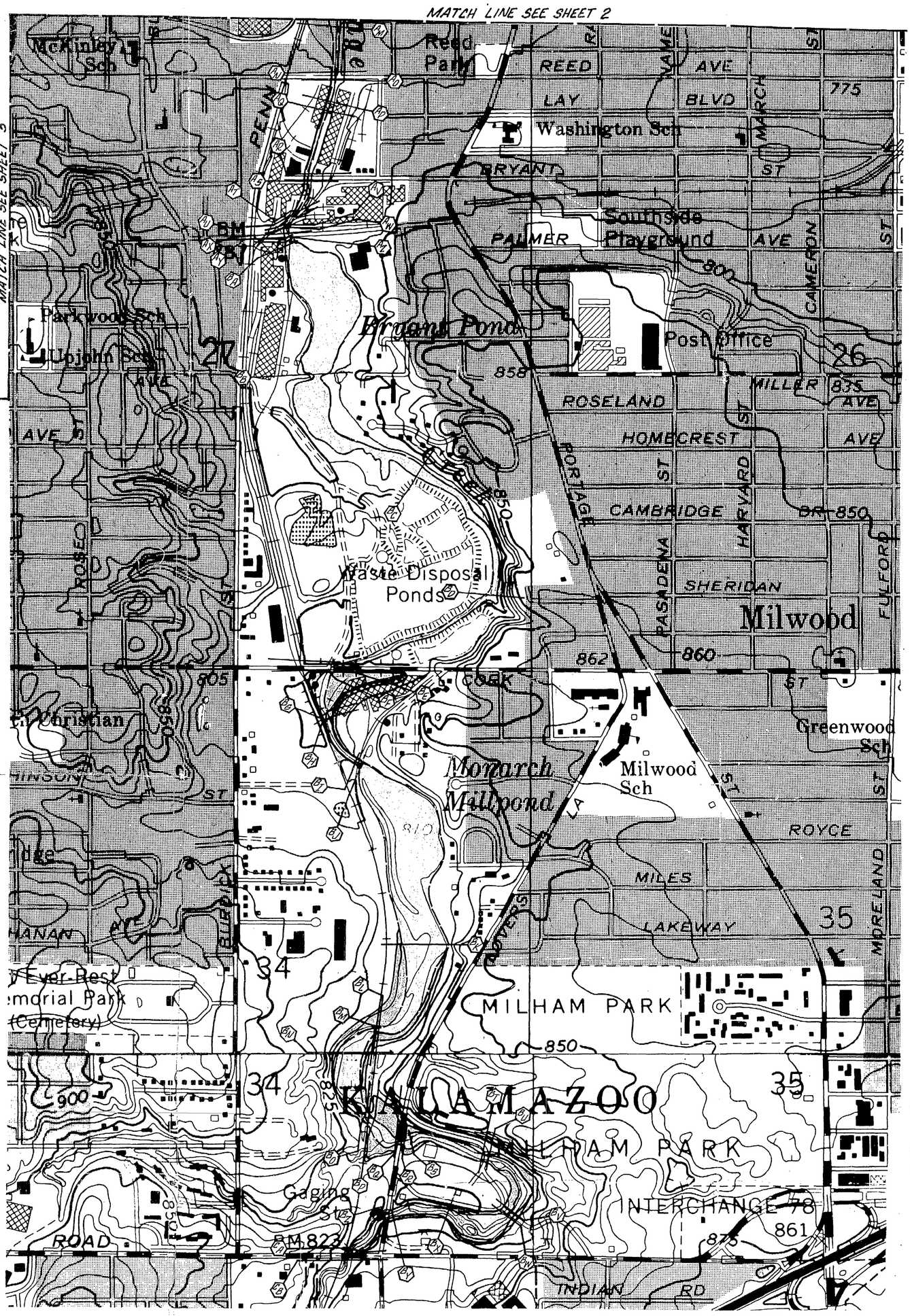
REVISIONS			
NO.	DESCRIPTION	DATE	BY

STS Consultants Ltd.
Consulting Engineers

FIGURE 4
PROPOSED HYDRAULIC PROFILE
ARCAIDA CREEK PROJECT
KALAMAZOO DOWNTOWN DEVELOPMENT AUTHORITY
KALAMAZOO, MICHIGAN

DRAWN BY	DATE	SCALE	STS PROJECT NO.
DEH	12/90	AS NOTED	1069AJ
CHECKED BY	DATE	SHEET NO.	STS FILE NO.

BRUNING 23107



FLOOD MAP

LEGEND

FLOODWAY — 100 YEAR BOUNDARY — 500 YEAR BOUNDARY

A — A CROSS SECTION

CORPORATE BOUNDARIES

CITY OF KALAMAZOO

KALAMAZOO COUNTY, MICHIGAN

SCALE: 1"=400'

SHEET 2 OF 2

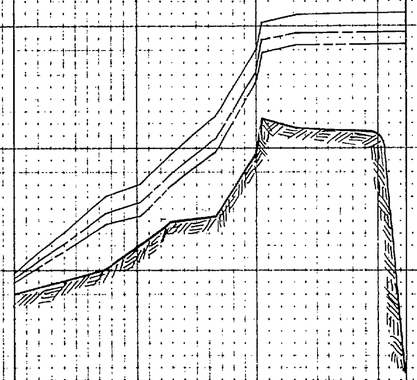
SHEET 4 of 6.

HUD 2027-10

ARCADIA CREEK PROFILES

REACH 1 ZONE A-1

ELEVATION IN FEET (NGVD)



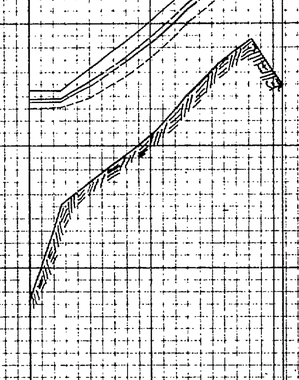
NOTE: THERE IS NO FLOW FOR A TEN YR. STORM.

0 500 1,000 1,500 2,000

DIVERSION BETWEEN SECTIONS AH AND AM

CITY OF KALAMAZOO

REACH 1 ZONE A-1



0 500 1,000 1,500

DIVERSION BETWEEN SECTIONS Z AND AZ

RECEIVED
JUL 6 1981
WATER MANAGEMENT

DISTANCE IN FEET

LEGEND

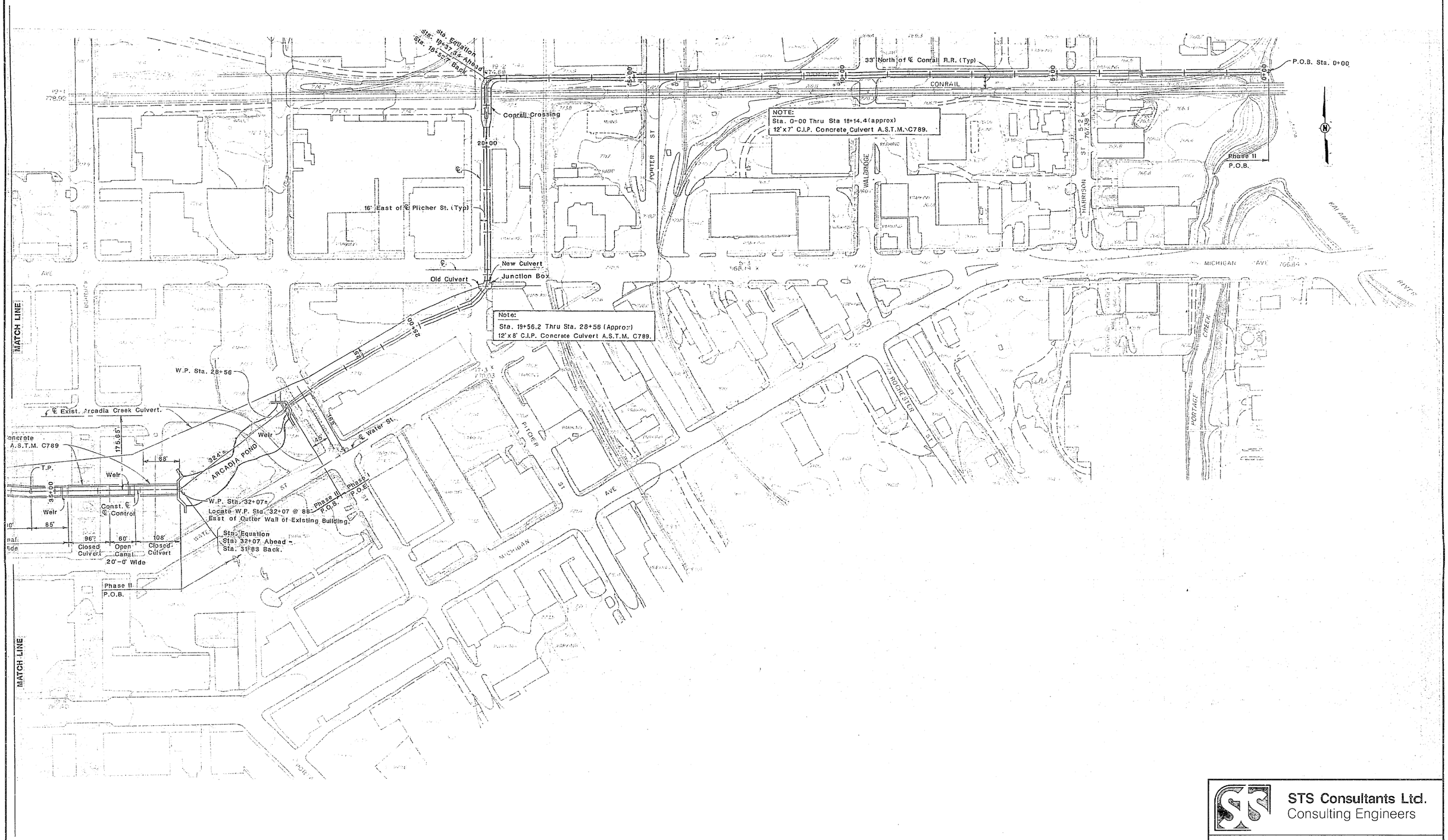
- 500 YEAR WATER SURFACE
- 100 YEAR WATER SURFACE
- 50 YEAR WATER SURFACE
- 10 YEAR WATER SURFACE
- CHANNEL BOTTOM

SCALE
HORIZ. 1"=500'
VERT. 1"=5'

2-81

SHEET 6 OF 6

HUD 2027-07



STS Consultants Ltd.
Consulting Engineers

FIGURE 3 - PROJECT CONCEPT

EAST END

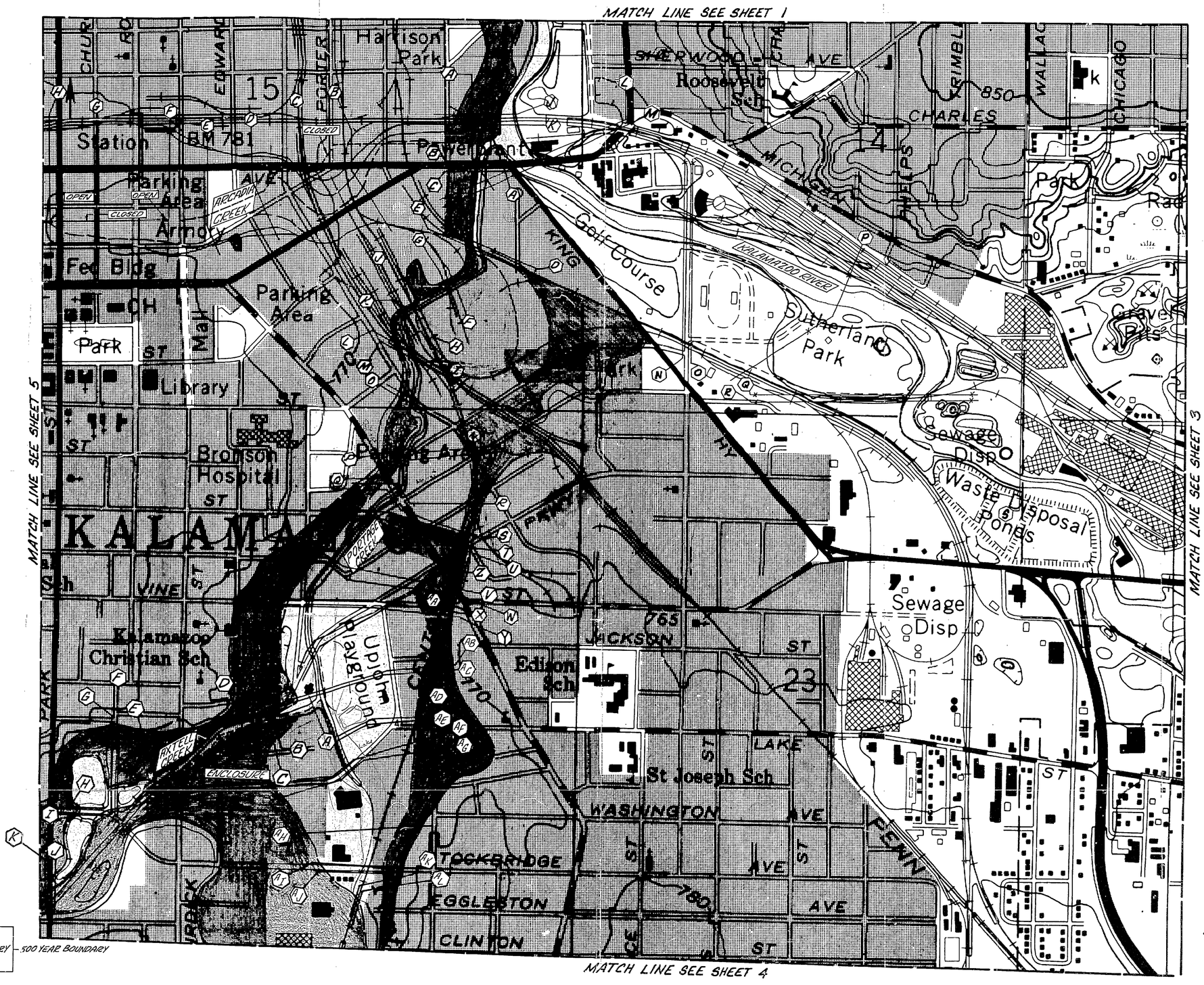
ARCAIDA CREEK PROJECT

KALAMAZOO DOWNTOWN DEVELOPMENT AUTHORITY

KALAMAZOO, MICHIGAN

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DRAWN BY	DATE	SCALE	STS PROJECT NO.
C.G.	12/90	1" = 100'	1069AJ
CHECKED BY	DATE	SHEET NO.	STS FILE NO.



LEGEND

FLOODWAY – 100 YEAR BOUNDARY – 500 YEAR BOUNDARY

A — A CROSS SECTION

CORPORATE BOUNDARIES

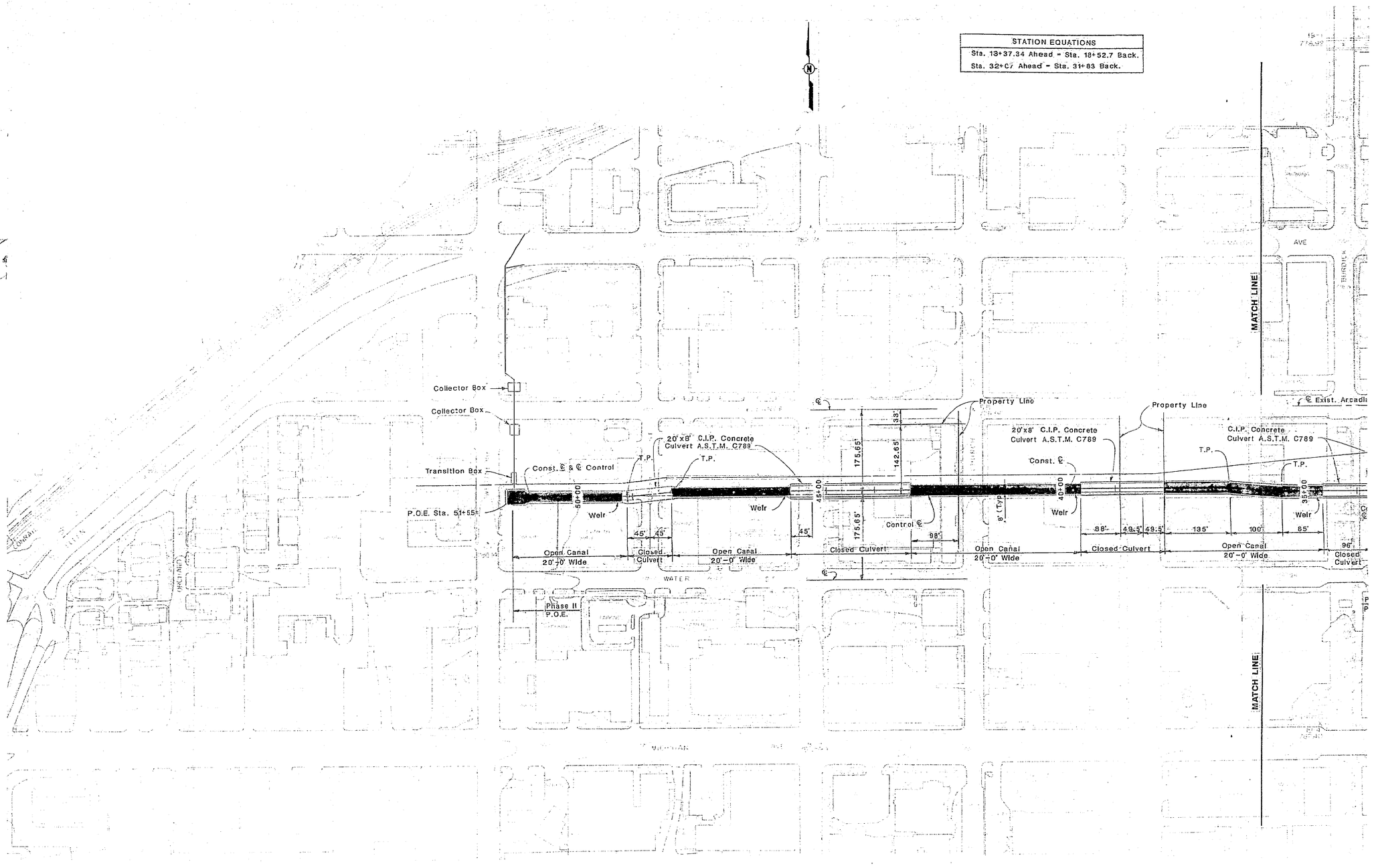
CITY OF KALAMAZOO

KALAMAZOO COUNTY, MICHIGAN

SCALE: 1"=400'

FLOOD MAP

STATION EQUATIONS
Sta. 13+37.34 Ahead = Sta. 18+52.7 Back.
Sta. 32+07 Ahead = Sta. 31+83 Back.



REVISIONS			
NO.	DESCRIPTION	DATE	BY

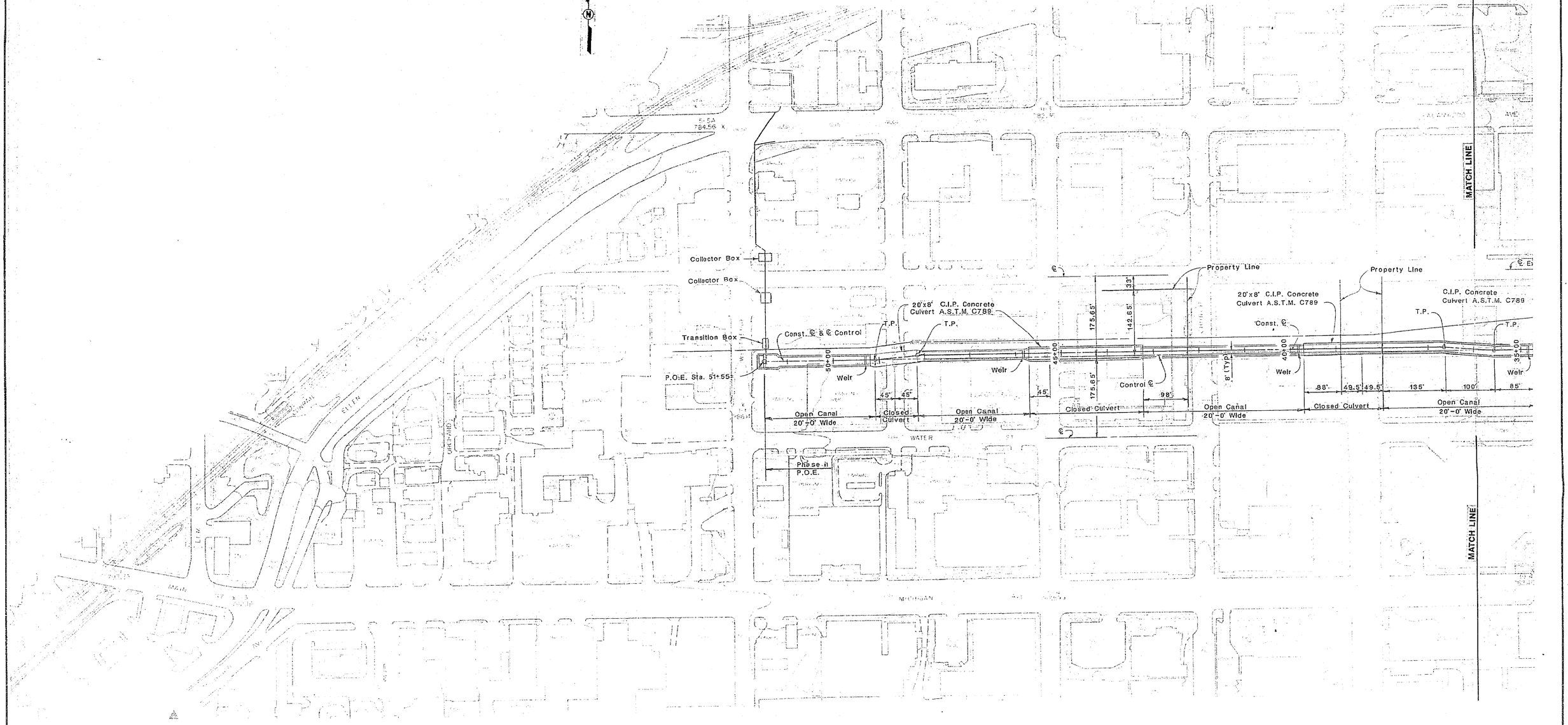
STS Consultants Ltd.
Consulting Engineers

FIGURE 5 - FLOODPLAIN / FLOODWAY MAP
WEST END
ARCAIDA CREEK PROJECT
KALAMAZOO DOWNTOWN DEVELOPMENT AUTHORITY
KALAMAZOO, MICHIGAN

DRAWN BY	DATE	SCALE	STS PROJECT NO.
C.G.	12/90	1" = 100'	1069AJ
CHECKED BY	DATE	SHEET NO.	STS FILE NO.

DRAWING 53187

STATION EQUATIONS
Sta. 18+37.34 Ahead = Sta. 18+52.7 Back.
Sta. 32+07 Ahead = Sta. 31+83 Back.



REVISIONS			
NO.	DESCRIPTION	DATE	BY

STS Consultants Ltd.
Consulting Engineers

FIGURE 2 – PROJECT CONCEPT

WEST END

ARCAIDA CREEK PROJECT

KALAMAZOO DOWNTOWN DEVELOPMENT AUTHORITY

KALAMAZOO, MICHIGAN

DRAWN BY	DATE	SCALE	STS PROJECT NO.
C.G.	12/90	1" = 100'	1069AJ
CHECKED BY	DATE	SHEET NO.	STS FILE NO.

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP/COMSTOCK TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN

00BREAK00

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
  ERROR CORR -  01
  MODIFICATION -  50,51,52
*****************************************************

T1100 YR. STORM
T2ENCROACHMENT RUN
T3 .    KALAMAZOO RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     [illegible]      [illegible]      FQ

       0.        5.        0.        0.  0.000000      0.00       0.0        0.   763.680     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

```
*PROF 2

CCHV=   0.100 CEHV=   0.300
*SECNO 8.000
 2800 NAT Q1=   3478.98  WSEL=    763.58  ENC Q1=   3478.98  WSEL=    763.68  RATIO=  0.0000
 NAT Q1=   3521.  RATIOS LOB,CH,ROB=  0.0134  0.9741  0.0125  WSEL=    763.68
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        ULOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IH2       ICONT     CORAR     TOPWID    ENDST

3470 ENCROACHMENT STATIONS=        1.1       97.6  TYPE=      4  TARGET=        0.012

        VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY

     8.00     16.68    763.68      0.00    763.58    764.18      0.50      0.00      0.00    754.50
    6910.       53.     6817.       40.       57.     1197.       47.        0.        0.    753.30
     0.00      0.92      5.70      0.85     0.080     0.030     0.080     0.000    747.00      1.08
 0.000395     1630.     1400.      700.         0         0         0      0.00     96.33     97.41

CCHV=   0.300 CEHV=   0.500
*SECNO 8.900
 2800 NAT Q1=   4622.19  WSEL=    764.30  ENC Q1=   4622.19  WSEL=    764.40  RATIO=  0.0000
 NAT Q1=   4687.  RATIOS LOB,CH,ROB=  0.0253  0.9649  0.0097  WSEL=    764.40

3470 ENCROACHMENT STATIONS=        2.3      161.1  TYPE=      4  TARGET=        0.014

        VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE

     8.90     15.01    764.41      0.00    764.30    764.65      0.24      0.39      0.08    754.90
    6900.      131.     6755.       14.      146.     1712.       28.       49.        4.    754.60
     0.10      0.90      3.95      0.50     0.080     0.030     0.080     0.030    749.40      2.27
 0.000223     1300.     1350.     1400.         2         0         0      0.00    158.84    161.11

*SECNO 9.500
 2800 NAT Q1=   5384.14  WSEL=    764.42  ENC Q1=   5457.98  WSEL=    764.52  RATIO= -0.0137
 NAT Q1=   5458.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    764.52

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       769.00 ELREA=       769.00

        D/S FACE OF KING HWY. BRIDGE

     9.00     15.34    764.54      0.00    764.42    764.68      0.15      0.01      0.03    769.00
    6900.        0.     6900.        0.        0.     2203.        0.        52.        4.    [illegible]
     0.10      0.30      [illegible]      0.00      [illegible]      [illegible]      0.000     [illegible]    [illegible]
 0.000159       50.       50.       50.         2         [illegible]         0      0.00    [illegible]    [illegible]

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        [illegible]     [illegible]
     1.25      1.50      3.00      0.00    159.00      6.00   1975.00      0.00    751.30    749.20

*SECNO 9.100
 2800 NAT Q1=   5296.33  WSEL=    764.55  ENC Q1=   5369.41  WSEL=    764.65  RATIO= -0.0138
 NAT Q1=   5369.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    764.65
 WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

U/S FACE OF KING HWY. BRIDGE

9.10	13.37	764.67	0.00	764.55	764.82	0.15	0.01	0.00	769.00
6900.	0.	6900.	0.	0.	2216.	0.	55.	5.	768.30
0.11	0.00	3.11	0.00	0.080	0.030	0.080	0.030	751.30	0.00
0.000164	50.	50.	50.	0	0	0	0.00	190.00	190.00

CCHV= 0.100 CEHV= 0.300

*SECNO 9.200

2800 NAT Q1= 5502.22 WSEL= 764.56 ENC Q1= 5375.86 WSEL= 764.66 RATIO= -0.0137

NAT Q1= 5376. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 764.66

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IR2	ICONT	CORAR	TOPWID	ENDST
9.20	13.37	764.67	0.00	764.56	764.82	0.15	0.01	0.00	769.00
6900.	0.	6900.	0.	0.	2217.	0.	57.	5.	768.80
0.11	0.00	3.11	0.00	0.080	0.030	0.080	0.030	751.30	0.00
0.000164	50.	50.	50.	0	0	0	0.00	190.00	190.00

*SECNO 10.000

2800 NAT Q1= 5482.45 WSEL= 764.86 ENC Q1= 5482.45 WSEL= 764.96 RATIO= 0.0000

NAT Q1= 5585. RATIOS LOB,CH,ROB= 0.0076 0.8686 0.1238 WSEL= 764.96

3470 ENCROACHMENT STATIONS= 8.0 382.5 TYPE= 4 TARGET= 0.018

VALLEY SECT. JUST D/S OF WESTERLY OXBOW

10.00	13.37	764.97	0.00	764.86	765.11	0.13	0.28	0.00	755.40
6900.	0.	6077.	823.	0.	1948.	1097.	160.	16.	754.30
0.11	0.00	3.12	0.75	0.080	0.030	0.080	0.030	751.60	8.00
0.000168	1700.	1700.	1700.	2	1	0	0.00	374.46	382.46

CCHV= 0.100 CEHV= 0.300

*SECNO 11.000

2800 NAT Q1= 6109.63 WSEL= 765.09 ENC Q1= 6109.63 WSEL= 765.19 RATIO= 0.0000

NAT Q1= 6230. RATIOS LOB,CH,ROB= 0.0121 0.7375 0.2504 WSEL= 765.19

3470 ENCROACHMENT STATIONS= 38.5 644.9 TYPE= 4 TARGET= 0.019

VALLEY SECT. THROUGH MAIN RIVER IN OXBOW IN KALAMAZOO TWP.

11.00	11.21	765.21	0.00	765.09	765.29	0.00	0.12	0.61	756.70
6900.	16.	5176.	1708.	36.	1984.	2467.	264.	29.	756.70
0.43	0.43	2.61	0.69	0.080	0.030	0.080	0.030	754.00	38.45
0.000126	1200.	1200.	1200.	2	0	0	0.00	606.40	644.85

*SECNO 11.200

2800 NAT Q1= 5545.36 WSEL= 765.22 ENC Q1= 5545.36 WSEL= 765.32 RATIO= 0.0000

NAT Q1= 5690. RATIOS LOB,CH,ROB= 0.1594 0.5565 0.2841 WSEL= 765.32

3470 ENCROACHMENT STATIONS= 90.1 1068.0 TYPE= 4 TARGET= 0.025

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW X

11.20	9.34	765.34	0.00	765.22	765.40	0.06	0.11	0.00	758.90
6900.	1038.	3938.	1923.	1676.	1587.	2505.	351.	43.	758.90
0.56	0.62	2.48	0.77	0.080	0.030	0.080	0.030	756.00	90.13
0.000154	950.	850.	600.	2	0	0	0.00	977.83	1067.96

CCHV= 0.100 CEHV= 0.500
*SECNO 12.000
2800 NAT Q1= 6830.32 WSEL= 765.27 ENC Q1= 6800.32 WSEL= 765.67 RATIO= 0.0040
NAT Q1= 6935. RATIOS LOB/CH/ROB= 0.1376 0.8496 0.0128 WSEL= 765.37

3470 ENCROACHMENT STATIONS= 84.0 950.6 TYPE= 4 TARGET= 0.019

VALLEY SECT. JUST U/S OF D/S CROSS

12.00	15.59	765.39	0.00	765.27	765.48	0.09	0.07	0.01	757.30
6900.	904.	5974.	22.	2194.	2261.	49.	414.	53.	756.80
0.63	0.41	2.64	0.45	0.080	0.030	0.080	0.030	749.80	83.98
0.000102	350.	600.	720.	2	0	0	0.00	884.65	950.63

CCHV= 0.300 CEHV= 0.500
*SECNO 12.800
2800 NAT Q1= 4229.54 WSEL= 765.48 ENC Q1= 4273.02 WSEL= 765.58 RATIO= -0.0103
NAT Q1= 4323. RATIOS LOB/CH/ROB= 0.0071 0.9865 0.0044 WSEL= 765.58

SECNO	DEPTH	CWSEL	CPIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IN2	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.012

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD.

12.80	11.41	765.61	0.00	765.48	765.77	0.17	0.25	0.04	757.50
6900.	0.	6900.	0.	0.	2116.	0.	536.	73.	756.00
0.77	0.00	3.26	0.00	0.080	0.030	0.080	0.030	754.20	17.00
0.000280	1600.	1600.	1600.	2	0	0	0.00	252.00	269.00

*SECNO 12.900
2800 NAT Q1= 4177.37 WSEL= 765.51 ENC Q1= 4266.38 WSEL= 765.61 RATIO= -0.0213
NAT Q1= 4266. RATIOS LOB/CH/ROB= 0.0000 1.0000 0.0000 WSEL= 765.61

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.000

3470 OVERBANK AREA ASSUMED NON-EFFECTIVE/BELOW= 770.00 ELEV= 777.24

D/S FACE OF SPRINKLE RD. BRIDGE

12.90	11.44	765.64	0.00	765.51	765.80	0.16	0.0[illegible]	0.00	757.5[illegible]
6900.	0.	6900.	0.	0.	2123.	0.	541.	74.	756.50
0.77	0.00	3.25	0.50	0.080	0.030	0.080	0.030	754.20	17.00
0.000277	100.	100.	100.	2	0	0	0.00	252.00	269.00

*SECNO 13.000
2800 NAT Q1= 3955.92 WSEL= 765.50 ENC Q1= 4031.10 WSEL= 765.60 RATIO= -0.0190
NAT Q1= 4031. RATIOS LOB/CH/ROB= 0.0000 1.0000 0.0000 WSEL= 765.60

```
3370 NORMAL BRIDGE,NRD= 20 MIN ELTRD=  770.30 MAX ELLC=  774.60

3470 ENCROACHMENT STATIONS=       17.0      269.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       770.30 ELREA=       777.20

        1' INSIDE D/S FACE OF SPRINKLE RD. BRIDGE

     13.00     11.43    765.63      0.00    765.50    765.81      0.18      0.00      0.01    757.50
     6900.        0.     6900.        0.        0.     2053.        0.      541.       74.    758.00
      0.78      0.00      3.36      0.00     0.080     0.030     0.080     0.030    754.20     17.00
  0.000309        1.        1.        1.         0         0         0    -69.79    252.00    269.00

*SECNO 13.100
 2800 NAT Q1=   3965.77  WSEL=    765.52  ENC Q1=   4046.67  WSEL=    765.62  RATIO= -0.0204
 NAT Q1=   4047.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    765.62

3370 NORMAL BRIDGE,NRD= 20 MIN ELTRD=  770.30 MAX ELLC=  774.60

3470 ENCROACHMENT STATIONS=       17.0      269.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       770.30 ELREA=       777.20

        1' INSIDE SPRINKLE ROAD BRIDGE  U/S

     13.10     11.45    765.65      0.00    765.52    765.83      0.17      0.02      0.00    757.50
     6900.        0.     6900.        0.        0.     2057.        0.      544.       74.    758.00
      0.78      0.00      3.36      0.00     0.080     0.030     0.080     0.030    754.20     17.00
  0.000308       62.       62.       62.         0         0         0    -69.90    252.00    269.00

*SECNO 13.200
 2800 NAT Q1=   4201.25  WSEL=    765.54  ENC Q1=   4291.89  WSEL=    765.64  RATIO= -0.0210
 NAT Q1=   4292.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    765.64

3470 ENCROACHMENT STATIONS=       17.0      269.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       770.30 ELREA=       777.20

        U/S FACE SPRINKLE ROAD BRIDGE

     13.20     11.47    765.67      0.00    765.54    765.83      0.16      0.00      0.00    757.50
     6900.        0.     6900.        0.        0.     2129.        0.      544.       74.    758.00
      0.78      0.00      3.04      0.00     0.080     0.030     0.080     0.030    754.20     17.00
  0.000274        1.        1.        1.         1         0         0      0.00    252.00    269.00

*SECNO 14.000
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALCH      ACH       AROB      VOL       TWA      LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN    SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IHZ       ICONT     CORAP     TOPWID   ENDST

3470 ENCROACHMENT STATIONS=     2672.0     3024.0  TYPE=      1  TARGET=      352.000

        VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.
```

14.00	11.64	765.74	0.00	765.61	765.86	0.12	0.01	0.01	763.70
6900.	16.	6814.	70.	45.	2477.	110.	547.	75.	759.40
0.79	0.36	2.75	0.63	0.080	0.030	0.080	0.030	754.10	2672.00
0.000190	50.	50.	50.	2	0	0	0.00	352.00	3024.00

CCHV= 0.100 CEHV= 0.300
*SECNO 15.000
2800 NAT Q1= 3972.84 WSEL= 765.97 ENC Q1= 3972.84 WSEL= 766.07 RATIO= 0.0000
NAT Q1= 4052. RATIOS LOB/CH/ROB= 0.0300 0.8988 0.0712 WSEL= 766.07

3470 ENCROACHMENT STATIONS= 2016.7 2399.9 TYPE= 4 TARGET= 0.019

VALLEY SECT.APPROX. 1050 FT. U/S OF SPRINKLE ROAD

15.00	12.77	766.07	0.00	765.97	766.30	0.23	0.41	0.03	762.70
6780.	144.	6210.	426.	199.	1554.	597.	646.	89.	760.90
0.92	0.72	4.00	0.71	0.080	0.030	0.080	0.030	753.30	2016.67
0.000290	1800.	1800.	1300.	2	1	0	0.00	353.22	2399.88

CCHV= 0.100 CEHV= 0.300
*SECNO 16.000
2800 NAT Q1= 3500.22 WSEL= 766.06 ENC Q1= 3500.22 WSEL= 766.16 RATIO= 0.0000
NAT Q1= 3562. RATIOS LOB/CH/ROB= 0.0103 0.9740 0.0157 WSEL= 766.16

3470 ENCROACHMENT STATIONS= 2049.9 2263.3 TYPE= 4 TARGET= 0.017

VALLEY SECT. APPROX. 2325 FT. D/S OF RIVER ST. BRIDGE

16.00	12.47	766.17	0.00	766.06	766.47	0.30	0.15	0.02	763.20
6780.	10.	6722.	48.	17.	1515.	92.	666.	92.	762.00
0.95	0.56	4.44	0.53	0.080	0.030	0.080	0.030	753.70	2049.91
0.000375	450.	450.	450.	2	0	0	0.00	213.40	2263.31

*SECNO 17.000
2800 NAT Q1= 3443.47 WSEL= 766.32 ENC Q1= 3443.47 WSEL= 766.42 RATIO= 0.0000
NAT Q1= 3509. RATIOS LOB/CH/ROB= 0.0048 0.9616 0.0336 WSEL= 766.42

3470 ENCROACHMENT STATIONS= 2424.0 2660.0 TYPE= 4 TARGET= 0.019

VALLEY SECT. APPROX. 1700 FT. D/S OF RIVER ST. BRIDGE

17.00	11.92	766.42	0.00	766.32	766.72	0.30	0.26	0.00	763.76
6780.	0.	6642.	138.	0.	1499.	207.	691.	95.	762.00
0.99	0.00	4.43	0.66	0.080	0.030	0.080	0.030	754.50	2424.00
0.000397	640.	650.	660.	1	0	0	0.00	236.04	2660.04

*SECNO 18.000
2800 NAT Q1= 2913.13 WSEL= 766.53 ENC Q1= 2913.13 WSEL= 766.63 RATIO= 0.0000
NAT Q1= 2974. RATIOS LOB/CH/ROB= 0.0066 0.9320 0.0613 WSEL= 766.63

3470 ENCROACHMENT STATIONS= 2674.0 2915.0 TYPE= 4 TARGET= 0.021

VALLEY SECT. APPROX. 1100 FT. D/S OF RIVER ST. BRIDGE

18.00	11.34	766.64	0.00	766.53	767.00	0.36	0.26	0.02	763.10
6780.	0.	6444.	336.	0.	1307.	336.	715.	98.	763.60
1.02	0.00	4.93	1.00	0.080	0.030	0.080	0.030	755.30	2874.00
0.000556	540.	560.	590.	2	0	0	0.00	241.80	3115.80

*SECNO 19.000
2800 NAT Q1= 3021.92 WSEL= 766.71 ENC Q1= 3021.92 WSEL= 766.81 RATIO= 0.0000
NAT Q1= 3085. RATIOS LOB,CH,ROB= 0.0073 0.9279 0.0648 WSEL= 766.61

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

3470 ENCROACHMENT STATIONS= 2874.0 3119.5 TYPE= 4 TARGET= 0.020

VALLEY SECT. JUST D/S OF OXBOW CONFLUENCE

19.00	11.52	766.52	0.00	766.71	767.17	0.54	0.16	0.00	763.15
6780.	0.	6443.	367.	0.	1333.	368.	724.	100.	763.60
1.04	0.00	4.81	1.00	0.080	0.030	0.080	0.030	755.30	2874.00
0.000516	300.	300.	300.	2	0	0	0.00	245.53	3119.53

CCHV= 0.100 CEHV= 0.300
*SECNO 21.000
2800 NAT Q1= 3809.12 WSEL= 766.97 ENC Q1= 3809.12 WSEL= 767.07 RATIO= 0.0000
NAT Q1= 4084. RATIOS LOB,CH,ROB= 0.0567 0.8576 0.0858 WSEL= 767.07

3470 ENCROACHMENT STATIONS= 1970.0 2363.8 TYPE= 4 TARGET= 0.067

VALLEY SECT.APPROX. 553 FT. D/S OF RIVER RD.

21.00	10.29	767.09	0.00	766.97	767.28	0.18	0.10	0.02	765.30
6780.	159.	6231.	380.	269.	1741.	410.	756.	102.	767.50
1.06	0.63	3.58	0.93	0.080	0.030	0.080	0.030	756.30	1969.9
0.000314	200.	240.	300.	2	0	0	0.00	393.63	2363.79

CCHV= 0.300 CEHV= 0.500
*SECNO 22.000
2800 NAT Q1= 4567.57 WSEL= 767.10 ENC Q1= 4627.49 WSEL= 767.20 RATIO= -0.0131
NAT Q1= 5096. RATIOS LOB,CH,ROB= 0.0919 0.9081 0.0000 WSEL= 767.20

3470 ENCROACHMENT STATIONS= 2363.0 2529.0 TYPE= 4 TARGET= 0.092

VALLEY SECT.APPROX. 50 FT. D/S OF RIVER RD.

22.00	14.22	767.22	0.00	767.10	767.42	0.20	0.14	0.01	765.20
6780.	0.	6780.	0.	0.	1871.	0.	761.	105.	769.50
1.10	0.00	3.62	0.00	0.060	0.030	0.060	0.030	753.00	2363.00
0.000221	430.	530.	430.	1	3	0	0.00	162.67	2525.67

*SECNO 22.000
2800 NAT Q1= 3963.26 WSEL= 767.08 ENC Q1= 4025.85 WSEL= 767.18 RATIO= -0.0145
NAT Q1= 4026. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 767.18

3470 ENCROACHMENT STATIONS= 2351.0 2477.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 772.60 ELREA= 772.60

D/S FACE OF RIVER RD. BRIDGE

23.00	14.81	767.21	0.00	767.08	767.47	0.26	0.01	0.03	762.50
6780.	0.	6780.	0.	0.	1656.	0.	763.	105.	762.30

1.10	0.00	4.09	0.00	0.060	0.030	0.080	0.030	752.40	2331.00
0.000298	50.	50.	50.	2	0	0	0.00	146.00	2477.00

*SECNO 23.100
2800 NAT Q1= 3705.69 WSEL= 767.07 ENC Q1= 3756.90 ⁎SEL= 767.17 RATIO= -0.0138
NAT Q1= 3757. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 767.17

3370 NORMAL BRIDGE,NRD= 17 MIN ELTRD= 769.80 MAX ELLC= 769.80

3470 ENCROACHMENT STATIONS= 2331.0 2477.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 772.60 ELREA= 773.60

1' INSIDE D/S FACE OF RIVER RD. BRIDGE

23.10	14.79	767.19	0.00	767.07	767.48	0.28	0.00	0.01	762.50
6780.	0.	6780.	0.	0.	1590.	0.	765.	105.	762.50
1.10	0.00	4.26	0.00	0.060	0.030	0.080	0.030	752.40	2331.00
0.000341	1.	1.	1.	1	0	0	-65.75	146.00	2477.00

*SECNO 23.900
2800 NAT Q1= 3141.25 WSEL= 767.06 ENC Q1= 3192.13 WSEL= 767.15 RATIO= -0.0162
NAT Q1= 3192. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 767.16

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	EL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IN2	ICONT	CORAR	TOPWID	ENDST

3370 NORMAL BRIDGE,NRD= 17 MIN ELTRD= 769.80 MAX ELLC= 769.80

3470 ENCROACHMENT STATIONS= 2331.0 2477.0 TYPE= 4 TARGET= 0.500

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 772.60 ELREA= 773.60

1' INSIDE U/S FACE OF RIVER RD. BRIDGE

23.90	13.19	767.19	0.00	767.06	767.53	0.34	0.02	0.03	760.50
6780.	0.	6780.	0.	0.	1442.	0.	765.	105.	762.20
1.11	0.00	4.70	0.00	0.060	0.030	0.080	0.030	754.00	2331.00
0.000477	55.	55.	55.	2	0	0	-50.68	146.00	2477.00

*SECNO 24.000
2800 NAT Q1= 3345.42 WSEL= 767.09 ENC Q1= 3399.43 WSEL= 767.19 RATIO= -0.0161
NAT Q1= 3399. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 767.19

3470 ENCROACHMENT STATIONS= 2331.0 2477.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 772.60 ELREA= 773.60

U/S FACE OF RIVER RD. BRIDGE

24.00	13.22	767.22	0.00	767.09	767.54	0.32	0.00	0.01	760.50
6780.	0.	6780.	0.	0.	1498.	0.	765.	105.	762.20
1.11	0.00	4.53	0.00	0.060	0.030	0.080	0.030	754.00	2331.00

```
 0.000421       1.       1.       1.        2        0        0     0.00   146.00  2477.00


 *SECNO 25.000
  2800 NAT Q1=   3460.02  WSEL=    767.13  ENC Q1=   3482.79  WSEL=    767.23  RATIO= -0.0066
  NAT Q1=   3522.  RATIOS LOB,CH,ROB=  0.0078  0.9888  0.0034  WSEL=    767.23

 3470 ENCROACHMENT STATIONS=    2331.0    2477.0  TYPE=     4  TARGET=      0.011

          VALLEY SECT, APPROX, 30 FT, U/S Of RIVER RD,

     25.00     13.24    767.24     0.00    767.13    767.56      0.32      0.02      0.00    760.50
     6780.        0.     6780.        0.        0.     1501.        0.      767.      106.    762.20
      1.11      0.00      4.52      0.00     0.060     0.030     0.080     0.030    754.00   2331.00
 0.000419       50.       50.       50.         0         0         0      0.00    146.00   2477.00


 CCHV=   0.100 CEHV=   0.300
 *SECNO 26.000
  2800 NAT Q1=   4069.02  WSEL=    767.62  ENC Q1=   4069.02  WSEL=    767.72  RATIO=  0.0030
  NAT Q1=   4182.  RATIOS LOB,CH,ROB=  0.0364  0.7581  0.2054  WSEL=    767.72

 3470 ENCROACHMENT STATIONS=    2041.8    2679.3  TYPE=     4  TARGET=      0.027

          VALLEY SECT, 12  APPROX, 1015 FT U/S Of RIVER RD,

     26.00     10.84    767.74     0.00    767.62    767.28      0.14      0.31      0.62    754.70
     6770.      161.     5270.     1339.      279.     1549.     1336.      812.      113.    763.50
      1.20      0.58      3.40      1.00     0.080     0.030     0.060     0.030    756.90   2041.75
 0.000274      1050.      965.      950.         2         0         0      0.00    637.51   2679.26


 CCHV=   0.100 CEHV=   0.300
 *SECNO 27.000
  2800 NAT Q1=   3762.69  WSEL=    768.56  ENC Q1=   3762.69  WSEL=    768.66  RATIO=  0.0000
  NAT Q1=   3870.  RATIOS LOB,CH,ROB=  0.1401  0.8206  0.0393  WSEL=    768.66

 3470 ENCROACHMENT STATIONS=    2246.5    2889.3  TYPE=     4  TARGET=      0.028

          VALLEY SECT, 13  APPROX, 1470 FT D/S OF COMSUMERS POWER  BRIDGE

     27.00      9.58    768.68     0.00    768.56    768.82      0.15      0.94      0.00    766.10
     6770.      880.     5712.      178.     1292.     1718.      307.     1046.      159.    765.40
      1.50      0.68      5.32      0.50     0.100     0.030     0.100     0.030    759.10   2246.52
 0.000321      2900.     3180.     3300.         2         0         0      0.00    642.50   2889.32


 CCHV=   0.300 CEHV=   0.500
 *SECNO 28.000
  2800 NAT Q1=   4125.80  WSEL=    768.95  ENC Q1=   4182.27  WSEL=    769.05  RATIO= -0.0137
  NAT Q1=   4289.  RATIOS LOB,CH,ROB=  0.8607  0.1680  0.0012  WSEL=    769.05
    SECNO      DEPTH     CWSEL     CRIWS     WSELK       EG        HV        AL        SLOPE    FAL ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IN2       ICONT     CORAR     TOPWID     ENDST


 3470 ENCROACHMENT STATIONS=    1934.0    2154.0  TYPE=     4  TARGET=      0.832

          VALLEY SECT, 14  APPROX, 50   FT D/S OF COMSUMERS POWER  BRIDGE

     28.00     69.07    769.08     0.00    768.95    769.26      0.18      0.41      0.02    765.40
     6770.        0.     6770.        0.        0.     1972.        0.     1129.      172.    764.90
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     1.62      0.00      3.43      0.00     0.120     0.030     0.120     0.030    700.00   1934.00
 0.000273     1230.     1420.     1100.         2         0         0      0.00    220.00   2154.00

 *SECNO 29.000
  2800 NAT Q1=    4176.93  WSEL=     769.00  ENC Q1=    4253.11  WSEL=     769.10  RATIO= -0.0182
  NAT Q1=    4253.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     769.10

  3470 ENCROACHMENT STATIONS=     1350.0     1630.0  TYPE=      4  TARGET=        0.000

  3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      778.60 ELREA=      778.20

          D/S FACE OF CONSUMERS POWER BRIDGE

     29.00     11.03    769.13      0.00    769.00    769.28      0.15      0.01      0.01    770.40
    6770.         0.    6770.         0.        0.      2151.        0.      1131.      172.    770.50
      1.62      0.00      3.15      0.00     0.120     0.030     0.120     0.030    758.10   1356.61
 0.000251        50.       50.       50.         2         0         0      0.00    265.99   1622.60

 *SECNO 29.100
  2800 NAT Q1=    2649.25  WSEL=     768.94  ENC Q1=    2699.88  WSEL=     769.04  RATIO= -0.0191
  NAT Q1=    2700.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     769.04

  3370 NORMAL BRIDGE,NRD=  26 MIN ELTRD=   778.20 MAX ELLC=   774.50

  3470 ENCROACHMENT STATIONS=     1350.0     1630.0  TYPE=      4  TARGET=        0.000

          1' INSIDE D/S FACE OF CONSUMERS POWER BRIDGE

     29.10     10.97    769.07      0.00    768.94    769.34      0.27      0.00      0.66    770.40
    6770.         0.    6770.         0.        0.      1637.        0.      1131.      172.    770.50
      1.62      0.00      4.14      0.00     0.120     0.030     0.120     0.030    758.10   1356.90
 0.000623         1.        1.        1.         2         0         0   -499.39    265.40   1622.30

 *SECNO 29.900
  2800 NAT Q1=    2661.95  WSEL=     768.98  ENC Q1=    2715.71  WSEL=     769.08  RATIO= -0.0202
  NAT Q1=    2716.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     769.08

  3370 NORMAL BRIDGE,NRD=  26 MIN ELTRD=   778.20 MAX ELLC=   774.50

  3470 ENCROACHMENT STATIONS=     1350.0     1630.0  TYPE=      4  TARGET=        0.000

  3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      778.60 ELREA=      778.20

          1' INSIDE D/S FACE OF CONSUMERS POWER BRIDGE

     29.90     11.00    769.10      0.00    768.98    769.36      0.26      0.03      0.00    770.40
    6770.         0.    6770.         0.        0.      1642.        0.      1133.      172.    770.50
      1.62      0.00      4.12      0.00     0.120     0.030     0.120     0.030    758.10   1356.75
 0.000516        44.       44.       44.         2         0         0   -499.39    265.69   1622.44

 *SECNO 30.000
  2800 NAT Q1=    4274.98  WSEL=     769.15  ENC Q1=    4351.85  WSEL=     769.23  RATIO= -0.0180
  NAT Q1=    4352.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     769.23

  3470 ENCROACHMENT STATIONS=     1350.0     1630.0  TYPE=      4  TARGET=        0.000
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 778.60 ELREA= 778.20

U/S FACE OF CONSUMERS POWER BRIDGE

30.00	11.15	769.25	0.00	769.13	769.40	0.15	0.00	0.03	770.40
6770.	0.	6770.	0.	0.	2184.	0.	1133.	172.	770.50
1.62	0.00	3.10	0.00	0.120	0.030	0.120	0.030	756.10	1355.97
0.000240	1.	1.	1.	2	0	0	0.00	267.30	1623.29

*SECNO 31.000
2800 NAT Q1= 4292.02 WSEL= 769.14 ENC Q1= 4362.41 WSEL= 769.24 RATIO= -0.0164
NAT Q1= 4362. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 769.24

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	KL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IM2	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 1350.0 1630.0 TYPE= 4 TARGET= 0.000

VALLEY SECT. APPROX. 50 FT U/S OF CONSUMERS POWER BRIDGE

31.00	11.16	769.26	0.00	769.14	769.41	0.15	0.01	0.00	770.46
6770.	0.	6770.	0.	0.	2187.	0.	1135.	173.	770.50
1.63	0.00	3.10	0.00	0.120	0.030	0.120	0.030	756.10	1355.91
0.000239	50.	50.	50.	0	0	0	0.00	267.42	1623.33

CCHV= 0.100 CEHV= 0.300
*SECNO 32.000
2800 NAT Q1= 12351.56 WSEL= 769.30 ENC Q1= 12496.44 WSEL= 769.40 RATIO= -0.0117
NAT Q1= 12519. RATIOS LOB,CH,ROB= 0.0005 0.9982 0.0014 WSEL= 769.40

3470 ENCROACHMENT STATIONS= 1271.0 1651.0 TYPE= 4 TARGET= 0.002

VALLEY SECT. APPROX. 400 FT D/S OF MORROW DAM

32.00	17.52	769.42	0.00	769.30	769.45	0.03	0.03	0.01	768.10
6770.	0.	6770.	0.	0.	4775.	0.	1167.	176.	766.40
1.70	0.00	1.42	0.00	0.080	0.030	0.120	0.030	751.90	1271.00
0.000030	394.	394.	394.	2		0	0.00	380.00	1651.00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP/COMSTOCK TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-yr NATURAL RUN

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*PROF 1

CCHV=   0.100 CEHV=   0.300
*SECNO 8.000
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       CLMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IHR       ICONT     CORAR     TOPWID    ENDST

        VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY

     8.00     16.58    763.53      0.00    763.58    764.07      0.49      0.00      0.00    754.50
    6910.       92.     6734.       85.       64.     1188.       85.        0.        0.    753.30
     0.00      1.44      5.67      1.00     0.080     0.030     0.080     0.000    747.00      0.02
 0.000395     1650.     1400.     700.         0         0         0      0.00    108.16    108.18

FLOW DISTRIBUTION FOR SECNO=      8.00          CWSEL=    763.58

STA=        0.        8.       92.      108.
  PER Q=      1.3      97.4       1.2
  AREA=     63.7    1188.2      84.5
   VEL=      1.4       5.7       1.0

CCHV=   0.300 CEHV=   0.500
*SECNO 8.900

        VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE

     8.90     14.90    764.30      0.00      0.00    764.54      0.25      0.39      0.03    754.90
    6900.      174.     6661.       65.      159.     1697.       91.       51.        5.    754.60
     0.10      1.10      3.93      0.72     0.080     0.030     0.080     0.030    749.40      0.03
 0.000223     1300.     1350.     1400.         2         0         0      0.00    182.00    182.03

FLOW DISTRIBUTION FOR SECNO=      8.90          CWSEL=    764.30

STA=        0.       20.      158.      174.      182.
  PER Q=      2.5      96.5       0.9       0.0
  AREA=    158.3    1696.9      83.3       8.0
   VEL=      1.1       3.9       0.8       0.3

*SECNO 9.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      769.00 ELREA=      769.00

        D/S FACE OF KING HWY. BRIDGE

     9.00     15.22    764.42      0.00      0.00    764.57      0.15      0.01      0.02    769.00
    6900.        0.     6900.        0.        0.     2210.        0.       53.        5.    766.80
     0.10      0.00      3.12      0.00     0.080     0.030     0.080     0.030    749.20      0.00
 0.000164       50.       50.       50.         2         [illegible]      0.00    [illegible]

FLOW DISTRIBUTION FOR SECNO=      9.00          CWSEL=    764.42

STA=        0.      190.
  PER Q=    100.0
  AREA=    2210.3
   VEL=      3.1
```

Still is under effects of d/s condition and it ft higher than 1997 Flood profile c/E

This may be low if d/s condition are reduced

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	3.00	0.00	159.00	6.00	1975.00	0.00	751.30	749.20

*SECNO 9.100
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
764.70	764.59	0.01	0.	6900.	1975.	1974.	764.20	768.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 769.00 ELREA= 769.00

U/S FACE OF KING HWY. BRIDGE

above 1997 flood

9.10	13.25	764.55	0.00	0.00	764.70	0.15	0.13	0.00	769.00
6900.	0.	6900.	0.	0.	2193.	0.	56.	5.	768.80
0.11	0.00	3.15	0.00	0.080	0.030	0.080	0.030	751.30	0.00
0.000170	56.	56.	56.	2	0	0	0.00	190.00	190.00

FLOW DISTRIBUTION FOR SECNO= 9.10 CWSEL= 764.55

STA= 0. 190.
PER Q= 100.0
AREA= 2193.2
VEL= 3.1

CCHV= 0.100 CEHV= 0.300
*SECNO 9.200

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	AL	LLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IH2	ICONT	CORAR	TOPWID	ENDST
9.20	13.26	764.56	0.00	0.00	764.71	0.15	0.01	0.00	769.00
6900.	0.	6900.	0.	0.	2195.	0.	59.	5.	768.80
0.11	0.00	3.14	0.00	0.080	0.030	0.080	0.030	751.30	0.00
0.000169	50.	50.	50.	0	0	0	0.00	190.00	190.00

FLOW DISTRIBUTION FOR SECNO= 9.20 CWSEL= 764.56

STA= 0. 190.
PER Q= 100.0
AREA= 2194.7
VEL= 3.1

*SECNO 10.000

VALLEY SECT. JUST D/S OF WESTERLY OXBOW

10.00	13.26	764.86	0.00	0.00	764.99	0.13	0.28	0.00	755.40
6900.	52.	6009.	839.	61.	1927.	1309.	106.	19.	754.60
0.28	0.86	3.12	0.64	0.060	0.030	0.080	0.030	751.60	0.05
0.000158	1700.	1700.	1700.	1	0	0	0.00	525.24	525.29

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FLOW DISTRIBUTION FOR SECNO=      10.00          CWSEL=     764.86

STA=        0.        8.      180.      192.      342.      525.
  PER Q=      0.8      87.1       1.4       8.6       2.2
   AREA=     60.8    1927.0     101.4     818.3     389.4
    VEL=      0.9       3.1       0.9       0.7       0.4

CCHV=   0.100 CEHV=   0.300
*SECNO 11.000

        VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP.

    11.00     11.09    765.09      0.00      0.00    765.17      0.08      0.17      0.01    756.70
    6900.       83.     5105.     1713.      129.     1960.     2527.      275.       36.    756.70
     0.44      0.64      2.60      0.68     0.080     0.030     0.080     0.030    754.00     15.93
 0.000128     1200.     1200.     1200.         2         0         0      0.00    663.05    678.98

FLOW DISTRIBUTION FOR SECNO=      11.00          CWSEL=     765.09

STA=       16.       30.       43.      238.      242.      334.      420.      504.      584.      644.      679.
  PER Q=      0.2       1.0      74.0       0.3       5.8       4.9       4.6       4.7       3.9       0.7
   AREA=     38.6      90.2    1960.5      29.3     564.5     497.6     473.5     470.9     377.2     113.5
    VEL=      0.4       0.8       2.6       0.7       0.7       0.7       0.7       0.7       0.7       0.5

*SECNO 11.200

        VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW  X

    11.20      9.22    765.22      0.00      0.00    765.28      0.06      0.11      0.00    756.90
    6900.     1083.     3860.     1957.     1859.     1564.     2583.      366.       51.    756.90
     0.57      0.58      2.47      0.76     0.080     0.030     0.080     0.030    756.00      0.63
 0.000155      950.      850.      600.         2         0         0      0.00   1104.04   1104.72

FLOW DISTRIBUTION FOR SECNO=      11.20          CWSEL=     765.22

STA=        1.      455.      468.      663.      667.      759.      845.      929.     1009.     1069.     1105.
  PER Q=     14.8       0.9      55.9       0.3       6.6       5.6       5.2       5.3       4.5       0.9
   AREA=   1781.7      77.7    1564.2      25.5     577.2     509.4     485.0     481.9     385.4     118.3
    VEL=      0.6       0.8       2.5       0.8       0.8       0.8       0.7       0.8       0.8       0.5

CCHV=   0.100 CEHV=   0.300
*SECNO 12.000

        VALLEY SECT. JUST U/S OF D/S OXBOW

    12.00     15.47    765.27      0.00      0.00    765.[illegible]      0.09      0.07      0.11    757.[illegible]
    [illegible]      917.     [illegible]      86.     2310.     2239.     [illegible]      4[illegible]       63.    [illegible]
     0.64      [illegible]      2.6[illegible]      0.42     [illegible]      [illegible]      [illegible]      [illegible]      [illegible]      [illegible]
 0.000103      350.      600.      720.         2         0         0      0.30   1016.63   1017.25

FLOW DISTRIBUTION FOR SECNO=      12.00          CWSEL=     765.27

STA=        1.      750.      758.      944.      956.     1017.
  PER Q=     12.9       0.4      85.5       0.7       0.6
   AREA=   2262.6      47.0    2239.3      75.8     127.7
    VEL=      0.4       0.6       2.6       0.6       0.3

CCHV=   0.300 CEHV=   0.500
*SECNO 12.800
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IH2	ICONT	CORAR	TOPWID	ENDST

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD.

12.80	11.28	765.48	0.00	0.00	765.65	0.16	0.05	0.04	757.50
6900.	48.	6822.	30.	68.	2083.	46.	560.	86.	758.00
0.78	0.71	3.28	0.66	0.080	0.030	0.030	0.030	754.20	0.05
0.000266	1600.	1600.	1600.	0	0	0	0.00	281.16	281.21

FLOW DISTRIBUTION FOR SECNO= 12.80 CWSEL= 765.48

STA=	0.	17.	269.	281.
PER Q=	0.7	98.9	0.4	
AREA=	67.6	2082.9	45.6	
VEL=	0.7	5.3	0.7	

*SECNO 12.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

D/S FACE OF SPRINKLE RD. BRIDGE

12.90	11.31	765.51	0.00	0.00	765.68	0.17	0.03	0.00	757.50
6900.	0.	6900.	0.	0.	2090.	0.	564.	87.	758.00
0.78	0.00	3.30	0.00	0.080	0.030	0.000	0.030	754.20	17.00
0.000273	100.	100.	100.	0	0	0	0.00	252.00	269.00

FLOW DISTRIBUTION FOR SECNO= 12.90 CWSEL= 765.51

STA=	17.	269.
PER Q=	100.0	
AREA=	2089.6	
VEL=	3.3	

*SECNO 13.000

3370 NORVAL BRIDGE,NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

1' IN I.C D/S FACE OF SPRINKLE RD. BRIDGE

13.00	11.30	765.50	0.00	0.00	765.68	0.18	0.00	0.01	757.50
6900.	0.	6900.	0.	0.	2022.	0.	565.	87.	758.00
0.78	0.00	5.41	0.01	0.080	0.030	0.080	0.030	754.20	17.00
0.000364	1.	1.	1.	0	1	1	0.00	252.00	269.00

FLOW DISTRIBUTION FOR SECNO= 13.00 CWSEL= 765.50

STA=	17.	269.
PER Q=	100.0	
AREA=	2022.4	
VEL=	5.4	

*SECNO 13.100

337° NORMAL BRIDGE,NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

1' I.SIDE SPRINKLE ROAD BRIDGE U/S

13.10	11.32	765.52	0.00	0.00	765.70	0.18	0.02	0.00	757.50
6900.	0.	6900.	0.	0.	2025.	0.	567.	67.	758.00
0.79	0.00	3.41	0.00	0.080	0.030	0.060	0.030	754.20	17.00
0.000303	62.	62.	62.	0	0	0	-68.00	252.00	269.00

FLOW DISTRIBUTION FOR SECNO= 13.10 CWSEL= 765.52

STA= 17. 269.
PER Q= 100.0
AREA= 2025.4
VEL= 3.4

*SECNO 13.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

U/S FACE SPRINKLE ROAD BRIDGE

13.20	11.54	765.54	0.00	0.00	765.71	0.17	0.00	0.00	757.50
6900.	0.	6900.	0.	0.	2097.	0.	567.	67.	758.00
0.79	0.00	3.29	0.00	0.080	0.030	0.060	0.030	754.20	17.00
0.000270	1.	1.	1.	1	0	0	0.00	252.00	269.00

FLOW DISTRIBUTION FOR SECNO= 13.20 CWSEL= 765.54

STA= 17. 269.
PER Q= 100.0
AREA= 2096.8
VEL= 3.3

*SECNO 14.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	BE	ULOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	FLMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IH2	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 2672.0 3024.0 TYPE= 1 TARGET= 352.000

VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.

14.00	11.51	765.61	0.00	0.00	765.73	0.12	0.01	0.00	757.50
6900.	14.	6917.	68.	92.	2440.	157.	773.	88.	759.00
0.80	0.35	2.79	0.64	0.080	0.030	0.060	0.030	754.10	2672.00
0.000200	50.	50.	50.	2	0	0	0.00	352.00	3024.00

FLOW DISTRIBUTION FOR SECNO= 14.00 CWSEL= 765.61

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STA=    2672.    2698.    2998.    3024.
  PER Q=      0.2     98.8      1.0
   AREA=     41.6   2440.0    107.1
    VEL=      0.3      2.8      0.6

CCHV=   0.100 CEHV=   0.300
*SECNO 15.000

        VALLEY SECT.APPROX. 1030 FT. D/S OF SPRINKLE ROAD

    15.00    12.67   765.97     0.00     0.00   766.19     0.22     0.42     0.03   762.70
    6780.     196.    6116.     467.     310.    1538.     695.     672.     104.   760.90
     0.93     0.63     3.98     0.67    0.080    0.030    0.080    0.030   753.30  1956.68
 0.000291    1800.    1300.    1300.        2        0        0     0.00   506.82  2463.49

FLOW DISTRIBUTION FOR SECNO=     15.00          CWSEL=    765.97

STA=    1957.    2018.    2066.    2073.    2222.    2280.    2420.    2463.
  PER Q=      0.9      1.[illegible]      0.2     90.2      2.8      [illegible]      0.3
   AREA=    121.7    166.5     21.8   1538.4    233.0    401.5     60.2
    VEL=      0.5      0.7      0.7      4.0      0.8      0.6      0.4

CCHV=   0.100 CEHV=   0.300
*SECNO 16.000

        VALLEY SECT. APPROX. 2325 FT. D/S OF RIVER ST. BRIDGE

    16.00    12.36   766.06     0.00     0.00   766.36     0.29     0.15     0.02   763.20
    6780.      65.    6617.      98.     134.    1500.     211.     694.     109.   762.00
     0.96     0.48     4.41     0.46    0.080    0.030    0.080    0.030   753.70  1947.56
 0.000375     450.     451.     450.        1        0        0     0.00   412.37  2359.92

FLOW DISTRIBUTION FOR SECNO=     16.00          CWSEL=    766.06

STA=    1948.    2018.    2056.    2206.    2214.    2242.    2334.    2360.
  PER Q=      0.2      0.7     97.6      0.2      0.5      0.       0.1
   AREA=     51.5     82.5   1500.4     23.4     39.8    126.2     21.7
    VEL=      0.3      0.6      4.4      0.7      0.5      0.4      0.5

*SECNO 17.000

        VALLEY  SECT. APPROX. 1700 FT. D/S OF RIVER ST. BRIDGE

    17.00    11.32   766.32     0.00     0.00   766.61     0.29     0.2[illegible]     0.00   7[illegible].7[illegible]
    6780.      30.    6533.     218.      69.    1484.     327.     722.     114.   762.00
     1.00     0.44     4.40     0.67    0.080    0.030    0.080    0.030   754.50  2371.65
 0.000388     640.     650.     660.        2        0        0     0.00   340.12  2711.75

FLOW DISTRIBUTION FOR SECNO=     17.00          CWSEL=    766.[illegible]

STA=    2372.    2424.    2576.    2582.    2600.    2704.    2712.
  PER Q=      0.4     96.3      0.1      0.2      2.8      0.1
   AREA=     68.[illegible]   1[illegible]3.[illegible]     15.1     29.1    272.[illegible]     1[illegible]
    VEL=      0.4      4.4      0.5      0.[illegible]      0.7      0.4

*SECNO 18.000

        VALLEY SECT. APPROX. 1100  FT. D/S OF RIVER ST. BRIDGE

    18.00    11.23   766.53     0.00     0.00   766.88     0.35     0.26     0.02   763.10
    6780.      43.    6335.     402.      69.    1291.     448.     746.     119.   763.60
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     1.04      0.62      4.91      0.90     0.080     0.030     0.080     0.030    755.30   2833.82
 0.000542      540.      560.      590.         0         0         0      0.00    364.54   3198.36

FLOW DISTRIBUTION FOR SECNO=      18.00          CWSEL=     766.53

STA=     2834.     2874.     3018.     3048.     3084.     3096.     3130.     3198.
  PER Q=       0.6      93.4       0.5       1.2       1.0       2.3       0.6
   AREA=      69.0    1290.8      73.0      98.4      56.5     140.5      27.7
    VEL=       0.6       4.9       0.8       0.8       1.2       1.1       0.5

*SECNO 19.000
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA      LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IH2       ICONT     CORAR     TOPWID      ENDST

        VALLEY SECT. JUST D/S OF OXBOW CONFLUENCE

    19.00     11.41    766.71      0.00      0.00    767.04      0.33      0.10      0.00    763.10
     6780.       47.     6307.      426.       76.     1316.      480.      759.      121.    763.60
     1.05      0.62      4.79      0.89     0.080     0.030     0.080     0.030    755.30   2831.77
 0.000503      300.      300.      300.         2         0         0      0.00    371.72   3203.49

FLOW DISTRIBUTION FOR SECNO=      19.00          CWSEL=     766.71

STA=     2832.     2874.     3018.     3048.     3084.     3096.     3130.     3203.
  PER Q=       0.7      93.0       0.9       1.3       1.0       2.4       0.7
   AREA=      76.2    1316.0      78.2     104.7      58.9     146.4      92.1
    VEL=       0.6       4.8       0.8       0.8       1.2       1.1       0.5

CCHV=    0.100 CEHV=    0.300
*SECNO 21.000

3470 ENCROACHMENT STATIONS=     1956.0     2392.0  TYPE=      1  TARGET=      436.000

        VALLEY SECT.APPROX. 553 FT. D/S OF RIVER RD.

    21.00     10.17    766.97      0.00      0.00    767.15      0.18      0.10      0.02    765.30
     6780.      194.     6108.      478.      308.     1716.      528.      771.      124.    762.50
     1.07      0.63      3.56      0.91     0.080     0.030     0.080     0.030    756.80   1956.00
 0.000317      200.      240.      300.         2         0         0      0.00    436.00   2392.00

FLOW DISTRIBUTION FOR SECNO=      21.00          CWSEL=     766.97

STA=     1956.     1962.     2067.     2279.     2293.     2342.     2392.
  PER Q=       0.7       2.7      90.1       1.5       1.0       2.5
   AREA=      21.7     261.9    1715.7     101.1     214.4     212.5
    VEL=       0.6       0.6       3.6       1.0       0.9       0.8

CCHV=    0.300 CEHV=    0.500
*SECNO 22.000

3470 ENCROACHMENT STATIONS=     2360.0     2531.0  TYPE=      1  TARGET=      171.000

        VALLEY SECT.APPROX. 50  FT. D/S OF RIVER RD.

    22.00     14.10    767.10      0.00      0.00    767.30      0.21      0.14      0.01    763.20
     6780.        6.     6774.        0.        11.     1851.        0.      797.      127.    769.50
     1.11      0.52      3.66      0.00     0.060     0.030     0.080     0.030    753.00   2360.00
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 0.000220      430.      530.      430.        2         0         0      0.00    165.50   2525.50

FLOW DISTRIBUTION FOR SECNO=      22.00          CWSEL=     767.10

STA=     2360.     2363.     2529.
  PER Q=       0.1      99.9
   AREA=      11.4    1351.4
    VEL=       0.5       3.7

*SECNO 23.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       772.60 ELREA=       773.60

        D/S FACE OF RIVER RD. BRIDGE

     23.00     14.68    767.08      0.00      0.00    767.35      0.27      0.01      0.03    762.50
     6780.        0.     6780.        0.        0.     1638.        0.      799.      127.    762.30
      1.12      0.00      4.14      0.00     0.060     0.030     0.030     0.030    752.40   2331.00
 0.000292       50.       50.       50.         2         0         0      0.00    146.00   2477.00

FLOW DISTRIBUTION FOR SECNO=      23.00          CWSEL=     767.08

STA=     2331.     2477.
  PER Q=     100.0
   AREA=    1638.0
    VEL=       4.1

*SECNO 23.100

3370 NORMAL BRIDGE,NRD= 17 MIN ELTRD=  769.80 MAX ELLC=  769.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       772.60 ELREA=       773.60

        1' INSIDE D/S FACE OF RIVER RD. BRIDGE

     23.10     14.67    767.07      0.00      0.00    767.36      0.29      0.00      0.01    762.50
     6780.        0.     6780.        0.        0.     1572.        0.      799.      127.    762.30
      1.12      0.00      4.31      0.00     0.060     0.030     0.030     0.030    752.40   2331.00
 0.000335        1.        1.        1.         1         0         0    -65.56    146.00   2477.00

FLOW DISTRIBUTION FOR SECNO=      23.10          CWSEL=     767.07

STA=     2331.     2477.
  PER Q=     100.0
   AREA=    1572.1
    VEL=       4.3

*SECNO 23.900
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        FL        OLOSS     BANK ELEV
   Q         WLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TRA       LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     OSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IHZ       ICONT     CORAR     TOPWID    PMOST

3370 NORMAL BRIDGE,NRD= 17 MIN ELTRD=  769.80 MAX ELLC=  769.80
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE ELEV= 772.60 ELEV= 773.50

1' INSIDE U/S FACE OF RIVER RD. BRIDGE

	23.97	1.00	767.97	0.00	0.00	767.91	0.56	0.04	0.03	730.30
	6732.	0.	5210.	0.	0.	1920.	0.	521.	132.	702.20
	1.12	0.00	4.76	0.00	0.000	0.000	0.000	0.000	736.00	2331.30
	0.000466	53.	55.	53.	2	5	6	-30.26	146.00	2477.30

FLOW DISTRIBUTED FOR ELEV= 773.50 QTOTAL= 767.91

STA= 2331. 2477.
PER Q= 100.0
AREA= 1524.4
VEL= 2.1

*SECNO 24.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE ELEV= 772.60 ELEV= 773.50

U/S FACE OF BRIDGE (TYP.)

	24.00	5.39	767.39	0.00	0.00	767.52	0.35	0.30	0.23	704.53
	6760.	0.	5251.	0.	0.	1779.	0.	301.	129.	702.20
	1.12	1.00	4.56	0.00	0.000	0.000	0.000	0.000	755.20	2531.50
	0.000466	53.	55.	53.	2	5	6	-30.26	146.00	2477.30

FLOW DISTRIBUTED FOR ELEV= 773.50 QTOTAL= 767.52

STA= 2331. 2477.
PER Q= 100.0
AREA= 1524.4
VEL= 2.1

*SECNO 25.000

VALLEY SECT. APPROX. 12' BELOW BOT. OF U/S OF RIVER RD.

	25.00	13.43	767.11	0.00	0.00	767.46	0.31	0.25	0.00	730.30
	6752.	52.	6730.	22.	51.	1630.	30.	430.	120.	702.20
	1.12	1.03	4.52	0.06	0.000	0.000	0.000	0.000	736.00	2415.33
	0.000334	50.	50.	50.	1	4	6	1.00	174.90	2490.73

FLOW DISTRIBUTED FOR ELEV= 773.50 QTOTAL= 767.46

STA= 2331. 2333. 2531. 2477. 2481.
PER Q= 3.7 0.6 93.9 1.8
AREA= 57.7 9.7 873.3 33.1
VEL= 1.7 1.7 4.5 1.1

CONV= 0.900 CONV= 0.000
*SECNO 26.000

VALLEY SECT. 12' APPROX. 15' AT U/S OF RIVER RD.

	26.00	0.72	767.62	0.51	0.10	767.70	0.1	0.10	0.2	724.10
	5770.	2.9.	5171.	4534.	455.	1526.	1751.	852.	152.	705.50
	1.22	0.47	3.39	0.92	2.030	0.350	0.360	0.230	736.20	1877.30
	0.000377	0.0	0.0	450	2		0	0.00	503.12	2490.42

1.94
59.1
0.6
1.10

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FLOW DISTRIBUTION FOR SECNO=      26.00          CWSEL=     767.62

STA=     1877.     2066.     2126.     2147.     2329.     2364.     2620.     2670.     2780.
  PER Q=       1.9       1.2       0.4      76.4       2.7      13.9       1.9       1.6
   AREA=     303.6     145.1      47.6    1526.4     159.9     951.8     150.9     188.7
    VEL=       0.4       0.6       0.5       3.4       1.1       1.0       0.9       0.4

CCHV=   0.100 CEHV=   0.300
*SECNO 27.000

        VALLEY SECT. 13  APPROX. 1470 FT D/S OF COMSUMERS POWER  BRIDGE

    27.00      9.46    768.56      0.00      0.00    768.71      0.14      0.55      0.00    766.16
    6770.      932.     5583.      254.     1474.     1691.      547.     1111.      205.    765.40
     1.53      0.63      3.30      0.47     0.100     0.030     0.100     0.030    759.10   2114.98
 0.000324     2900.     3180.     3300.         2         0         0      0.00    973.01   3087.99

FLOW DISTRIBUTION FOR SECNO=      27.00          CWSEL=     768.56

STA=     2115.     2222.     2496.     2556.     2560.     2796.     2828.     2928.     2980.     3054.     3088.
  PER Q=       0.7      10.1       2.9       0.1      82.5       1.0       2.1       0.2       0.3       0.1
   AREA=     147.9    1048.0     267.8      13.1    1691.3     107.6     276.4      57.9      75.0      30.0
    VEL=       0.3       0.7       0.7       0.6       3.3       0.6       0.5       0.3       0.3       0.2

CCHV=   0.500 CEHV=   0.500
*SECNO 28.000
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA      LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IH2       ICONT     CORAR     TOPWID     ENDST


3470 ENCROACHMENT STATIONS=    1901.0     2187.0  TYPE=      1  TARGET=      286.000

        VALLEY SECT. 14  APPROX. 50   FT D/S OF COMSUMERS POWER  BRIDGE

    28.00      9.85    768.95      0.00      0.00    769.14      0.18      0.41      0.02    765.40
    6770.       14.     6726.       30.       48.     1944.       83.     1200.      223.    764.90
     1.64      0.30      3.46      0.36     0.120     0.030     0.120     0.030    759.10   1906.97
 0.000269     1230.     1420.     1100.         1         0         0      0.00    280.03   2187.0

FLOW DISTRIBUTION FOR SECNO=      28.00          CWSEL=     768.95

STA=     1907.     1934.     2154.     2156.     2187.
  PER Q=       0.2      [illegible]       0.0       0.4
   AREA=      47.9    194[illegible]       6.9      76.[illegible]
    VEL=       0.[illegible]       3.5       0.4       [illegible]

*SECNO 29.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE/CLEAR      770.60 ELEVA=      770.[illegible]

        D/S FACE OF CONSUMERS POWER BRIDGE

    29.00     10.90    769.00      0.00      0.00    769.16      0.16      0.01      0.01    770.40
    6770.        0.     6770.        0.        0.     2118.        0.     1202.      224.    770.50
     1.64      0.00      3.20      0.00     0.120     0.030     0.120     0.030    758.10   1357.25
 0.000263       50.       50.       50.         2         0         0      0.00    264.67   1621.93
```

FLOW DIST INUTION FOR SECNO= 29.00 CWSEL= 769.00

STA= 1357. 1630.
PER Q= 100.0
AREA= 2117.8
VEL= 5.2

*SECNO 29.100

3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD= 778.20 MAX ELLC= 774.50

1' INSIDE D/S FACE OF COMSUMERS POWER BRIDGE

29.10	10.84	768.94	0.00	0.00	769.22	0.27	0.00	0.06	770.40
6770.	0.	6770.	0.	0.	1610.	0.	1202.	224.	770.50
1.64	0.00	4.20	0.00	0.120	0.030	0.120	0.030	758.10	1357.55
0.000653	1.	1.	1.	2	3	0	-492.56	264.07	1621.62

FLOW DISTRIBUTION FOR SECNO= 29.10 CWSEL= 768.94

STA= 1358. 1630.
PER Q= 100.0
AREA= 1610.1
VEL= 4.2

*SECNO 29.900

3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD= 778.20 MAX ELLC= 774.50

5495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 778.60 ELREA= 778.20

1' INSIDE U/S FACE OF COMSUMERS POWER BRIDGE

29.90	10.88	768.98	0.00	0.00	769.25	0.27	0.00	0.00	770.40
6770.	0.	6770.	0.	0.	1615.	0.	1204.	224.	770.50
1.65	0.00	4.19	0.00	0.120	0.030	0.120	0.030	758.10	1357.42
0.000647	44.	44.	44.	1	0	0	-493.92	264.33	1621.75

FLOW DISTRIBUTION FOR SECNO= 29.90 CWSEL= 768.98

STA= 1357. 1630.
PER Q= 100.0
AREA= 1615.3
VEL= 4.2

*SECNO 30.000

5495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 778.60 ELREA= 778.20

U/S FACE OF COMSUMERS POWER BRIDGE

30.00	11.03	769.13	0.00	0.00	769.28	0.15	0.00	0.04	770.40
6770.	0.	6770.	0.	0.	2152.	0.	1204.	224.	770.50
1.65	0.00	3.15	0.00	0.120	0.030	0.120	0.030	758.10	1356.58
0.000251	1.	1.	1.	2	0	0	0.00	266.03	1622.62

FLOW DISTRIBUTION FOR SECNO= 30.00 CWSEL= 769.13

STA= 1357. 1630.

PER Q= 100.0
AREA= 2151.9
VEL= 3.1

*SECNO 31.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IH2	ICONT	CORAR	TOPWID	ENDST

VALLEY SECT, APPROX. 50 FT U/S OF COMSUMERS POWER BRIDGE

31.00	11.04	769.14	0.00	0.00	769.30	0.15	0.01	0.00	770.40
6770.	0.	6770.	0.	0.	2155.	0.	1201.	224.	770.50
1.65	0.00	3.14	0.00	0.120	0.030	0.120	0.030	758.10	1556.47
0.000242	50.	50.	50.	0	3	3	0.00	256.27	1622.74

FLOW DISTRIBUTION FOR SECNO= 31.00 CWSEL= 769.14

STA= 1556. 1630.

PER Q= 100.0
AREA= 2157.8
VEL= 3.1

CCHV= 0.100 CEHV= 0.300

*SECNO 32.000

VALLEY SECT. APPROX. 400 FT D/S OF MORROW DAM

32.00	17.40	769.30	0.00	0.00	769.34	0.03	0.03	0.01	768.10
6770.	5.	6759.	9.	35.	4732.	96.	1236.	225.	766.40
1.75	0.07	1.43	0.09	0.080	0.030	0.120	0.030	751.90	1212.67
0.000030	394.	394.	394.	2	3	0	0.00	505.79	1715.40

FLOW DISTRIBUTION FOR SECNO= 32.00 CWSEL= 769.30

STA= 1213. 1271. 1651. 1714.

PER Q=	0.0	99.8	0.1
AREA=	35.1	4731.5	97.9
VEL=	0.1	1.4	0.1

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP / COMSTOCK TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR SUMMARY

00BREAK00

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
  ERROR CORR -  01
  MODIFICATIONS -  50,51,52
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C
T1T1 JEAN PROFILE
T2STARTING WATER SURFACE FROM KALAMAZOO TWP. STUDY
T3      KALAMAZOO R. KALAMAZOO
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J1	ICHECK	INN	IDIR	METRIC	SPFT	NTYPE	KRECS		SEL	FN
	0.	2.	0.	0.	0.100000	0.00	1.00		0.	255.250	0.000

J2	NPROF	IPLOT	PRVEL	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	1.000	1.00	1.000	1.000	0.000

J3 VARIABLE CODE FOR JUNCTION PRINTOUT

150.000	201.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

J4 SPACE [illegible] ********** EXPANSION SECT. AND CONTRACTION **********

-10.000	-10.000	0.000	0.00	1.00	0.000	0.000	0.00	0.000	0.000	
QT	5.000	4950.000	6650.000	7390.000	7390.000	91.5.000	0.000	0.000	0.000	0.000
NC	0.079	0.079	0.030	0.100	0.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION [illegible] ********** EXPANSION ********** CONTRACTION

X1	7.000	12.000	2016.000	2154.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	765.000	1060.000	760.000	1130.000	758.300	1000.000	754.100	2016.000	747.900	2062.000
[illegible]										
QT	5.000	-4940.000	6640.000	7390.000	7390.000	91.5.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	9.100	7.100	720.000	1729.000	998.000	1490.000

VALLEY SECTION APPROX. 1000 FT. W/O [illegible]

X1	5.000	23.000	1325.000	1455.000	1600.000	1.00.000	1600.000	0.000	0.000	0.000
GR	777.000	1060.000	761.600	1070.000	758.400	1000.000	761.400	1603.000	762.600	760.000
GR	761.100	1060.000	757.600	1064.000	757.500	1130.000	761.300	1103.000	764.000	1131.000
[illegible]										
QT	5.000	-4940.000	6640.000	7390.000	7390.000	91.5.000	0.000	0.000	0.000	0.000
NC	0.100	0.079	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.100	0.000	0.000	1605.000	1885.000

VALLEY SECT. APPROX. 50 FT. U/S OF [illegible]

X1	9.100	21.000	1650.000	1840.000	1100.000	1100.000	1100.000	0.000	0.000	0.000
GR	764.000	450.000	762.200	564.000	761.100	766.000	762.200	1160.000	766.400	1352.000
GR	769.400	1552.000	768.100	1590.000	764.700	1595.000	756.200	1615.000	755.600	1650.000

PRINTED IN U.S.A.
FORM 1411-GB PRINTED BY ROTARY MANIFOLD FORMS.

GR	750.700	1673.000	750.000	1690.000	747.700	1720.000	745.500	1740.000	744.500	1760.000
GR	749.200	1780.000	751.200	1800.000	753.700	1805.000	754.100	1840.000	772.500	1890.000
GR	774.600	1934.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF PATTERSON RD. BRIDGE

X1	9.200	28.000	1602.000	1878.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000
GR	765.100	445.000	761.400	732.000	761.900	9[illegible].000	764.200	1270.000	767.[illegible]	1452.000
GR	769.400	1552.000	769.[illegible]	[illegible]9.000	763.[illegible]	1[illegible].000	763.200	1002.100	754.800	1635.000
GR	755.000	1668.200	755.300	1668.300	751.[illegible]	1[illegible].600	[illegible].300	1[illegible].700	745.700	1758.800
GR	745.700	1758.900	745.700	1741.100	745.700	17[illegible].200	744.700	1775.000	748.900	1609.400
GR	748.900	1809.500	752.000	1811.700	752.000	1811.800	754.400	1844.300	768.100	1877.900
GR	768.100	1878.000	774.800	1891.700	774.600	1[illegible].000	0.000	0.000	0.000	0.000

X

1 FT. ISSUE W/ FACE PATTERSON RD. BRIDGE.

X1	9.300	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000
GT	1[illegible].000	15[illegible].100	759.[illegible]00	[illegible].000	1[illegible].[illegible]00	7[illegible].[illegible]00	0.[illegible]00	[illegible].[illegible]00	759.800	765.300
GT	1[illegible].200	771.00[illegible]	756.900	[illegible].[illegible]00	771.000	0.000	[illegible].[illegible]00	771.000	0.000	1470.700
GT	771.500	[illegible].[illegible]00	1759.[illegible]00	77[illegible].[illegible]00	76[illegible].[illegible]00	17[illegible].[illegible]00	77[illegible].[illegible]00	0.000	1741.100	772.300
GT	0.000	1741.200	772.300	767.800	1809.400	775.500	769.000	1809.500	775.500	0.000
GT	1811.700	773.500	0.000	1811.800	773.500	769.000	1877.900	774.800	770.300	1878.000
GT	774.800	0.000	1891.700	774.800	0.000	0.000	0.000	0.000	0.000	0.000

1 FT. ISSUE W/O FACE PATTERSON RD. BRIDGE

X1	9.400	0.000	0.000	0.000	45.000	[illegible].000	45.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
ET	10.000	[illegible].[illegible]00	0.000	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	769.[illegible]00	774.300	0.000

D/S FACE OF PATTERSON RD. BRIDGE

X1	9.501	0.000	0.000	[illegible].000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.[illegible]00	[illegible].000	[illegible].[illegible]00	[illegible].000	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].000	769.[illegible]00	774.[illegible]00	0.000
ET	[illegible].000	0.000	0.100	[illegible].[illegible]00	1.400	[illegible].[illegible]00	[illegible].000	[illegible].[illegible]00	1552.[illegible]00	1908.000

VALLEY SECT. APPROX. 50 FT. D/S OF PATTERSON RD. BRIDGE

X1	[illegible].000	[illegible].000	[illegible].000	[illegible].[illegible]00	[illegible].000	[illegible].[illegible]00	[illegible].000	[illegible].000	[illegible].000	0.000
NC	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].100	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	0.000	0.000
ET	0.000	[illegible].100	[illegible].100	[illegible].100	[illegible].100	[illegible].100	[illegible].[illegible]00	1472.000	0.000	0.000

VALLEY SECT. APPROA.

[illegible]	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00	[illegible].[illegible]00

VALLEY SECT. APPROX. 50 FT. D/S OF GULL ST. BRIDGE

X1	11.100	30.000	1208.000	1358.000	1250.000	300.000	750.000	0.000	0.000	0.000
GR	764.600	164.000	764.400	406.000	763.600	630.000	763.000	854.000	762.700	874.000
GR	764.300	1036.000	766.600	1150.000	764.200	1150.000	761.000	1165.000	756.400	1165.100
GR	754.700	1208.000	751.000	1219.000	749.700	1253.000	748.300	1273.000	749.800	1285.000
GR	750.600	1308.000	751.800	1328.000	754.300	1356.000	754.500	1357.000	763.700	1378.000
GP	764.000	1400.000	762.500	1516.000	762.200	1682.000	762.300	1866.000	760.400	1914.000
GR	760.400	2040.000	761.000	2074.000	761.400	2196.000	764.600	2206.000	766.200	2320.000
FT	0.000	0.000	0.000	0.000	1.400	1.000	1.000	0.000	0.000	0.000

D/S FACE OF GULL ST. BRIDGE

X1	11.200	35.000	1196.500	1337.500	50.000	[illegible]	50.000	0.000	0.000	0.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	767.400	766.200	0.000
GP	766.700	91.100	764.600	[illegible]	764.100	[illegible]	[illegible]	[illegible]	[illegible]	622.000
GR	763.000	962.000	766.400	11[illegible]	767.200	11[illegible]	767.000	1196.500	757.000	1196.600
GR	755.700	1211.000	755.900	1226.000	754.300	1243.000	755.100	1255.500	755.100	1255.600
GR	751.700	1262.400	751.700	1262.500	750.600	1275.000	749.500	1292.000	749.700	1306.000
GP	749.900	1321.500	749.900	1321.600	751.400	1326.400	751.400	1326.500	751.200	1341.000
GR	751.000	1354.000	751.700	1374.000	752.400	1387.400	754.700	1387.500	766.800	1390.000
GP	762.400	1516.000	760.400	1952.000	767.300	2414.000	0.000	0.000	0.000	0.000

1 FT. INSIDE D/S FACE GULL ST. BRIDGE

X1	11.500	1.200	0.000	[illegible]	1.000	1.000	1.000	0.000	0.000	0.000
[illegible]	[illegible]	[illegible]	0.000	0.000	[illegible]	[illegible]	1.000	767.400	766.[illegible]	0.000
ST	[illegible]	1153.[illegible]	767.200	0.000	1196.500	767.400	[illegible]	1196.600	771.900	757.900
BT	1211.000	772.200	762.000	1226.000	772.400	764.700	1243.000	772.700	762.000	1255.500
BT	773.100	759.100	1255.600	773.100	0.000	1262.400	773.100	0.000	1262.500	773.100
BT	759.100	1275.000	773.300	762.500	1292.000	773.600	765.000	1306.000	773.400	762.500
BT	1321.500	773.[illegible]	759.[illegible]	[illegible]	773.[illegible]	[illegible]	1326.400	773.[illegible]	0.000	1328.500
BT	773.200	759.000	1341.000	772.800	752.[illegible]	1387.[illegible]	772.400	764.700	1374.000	772.100
BT	762.000	1387.400	771.900	757.700	1387.500	767.400	0.000	1390.000	766.800	0.000
GP	766.700	90.000	764.600	186.000	764.100	312.000	763.800	476.000	762.800	622.000
GR	763.000	962.000	766.400	1188.000	767.200	1196.600	757.000	1196.500	757.000	1196.600
GR	755.700	1211.000	754.900	1226.000	754.300	1243.000	755.100	1255.500	755.800	1255.600
GR	751.700	1262.400	751.700	1262.500	750.600	1275.000	749.500	1292.000	749.700	1306.000
GP	749.900	1321.500	749.900	1321.600	751.400	1326.400	751.400	1326.500	751.200	1341.000
GR	750.500	1354.000	751.600	1374.000	752.900	1387.400	756.100	1387.500	766.800	1390.000
GP	762.400	1516.000	760.400	1952.000	767.300	2414.000	0.000	0.000	0.000	0.000

1 FT. INSIDE U/S FACE GULL ST. BRIDGE

U/S FACE OF GULL ST. BRIDGE

X1	11.500	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X1	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.400	766.800	0.000
BT	0.000	7.100	7.100	7.100	7.100	7.100	1146.000	1440.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. U/S OF GULL ST.

X1	11.600	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
NC	0.100	0.100	0.030	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	1089.000	1625.000	0.000	0.000

VALLEY SECT. APPROX.500 FT. U/S OF GULL ST.

X1	11.700	24.000	1297.000	1451.000	250.100	[illegible]	[illegible]	0.000	0.000	0.000
GR	767.500	[illegible]	763.400	548.000	765.400	766.300	767.200	[illegible]	761.000	1040.000
GR	760.800	1240.000	757.100	1247.000	755.100	1290.000	755.900	1297.000	750.000	1302.000
GR	747.600	1327.000	745.500	1357.000	745.900	1367.000	746.200	1377.000	747.800	1397.000
GR	749.200	1417.000	750.900	1432.000	753.200	1440.000	754.700	1451.000	757.700	1463.000
GR	761.200	1482.000	763.400	1520.000	775.400	1532.000	780.400	1542.000	761.000	1766.000
GR	761.000	2054.100	761.600	2136.000	767.000	2140.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	677.600	1162.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. D/S OF R.R. BRIDGE N. OF MICH. AVE.

X1	12.000	22.000	934.000	1099.500	100.000	600.000	[illegible]	[illegible]	0.000	0.000
GR	765.700	110.000	757.000	654.000	764.100	765.000	766.700	[illegible]	764.100	774.000
GR	741.800	892.000	759.700	914.000	752.000	934.000	748.800	959.500	746.000	979.000
GR	748.800	999.000	747.600	1019.000	747.700	1039.000	742.300	1059.000	746.600	1059.000
GR	752.500	1084.000	755.000	1099.000	755.900	1119.000	770.900	1149.000	777.000	1252.000
GR	775.900	1370.000	772.000	1421.000	766.700	1430.000	[illegible]	1484.000	750.000	2156.000
GR	771.400	2472.000	777.100	2491.000	0.000	[illegible]	[illegible]	[illegible]	0.000	0.000
ET	0.100	1.000	0.100	0.000	0.100	0.000	0.000	0.000	37.000	1243.000

D/S FACE OF R.R. BRIDGE N. OF MICHIGAN AVE.

X1	12.100	25.000	[illegible]	1149.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000
NC	0.000	0.000	[illegible]	0.300	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000
X1	10.000	2.000	0.000	0.000	0.000	0.000	0.000	[illegible]	[illegible]	0.000
GT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	0.000	1025.500	769.700	761.300	1053.500	769.200	761.700	1083.500	769.200	0.000
BT	1090.400	769.200	0.000	1070.500	769.200	761.700	1149.900	769.100	762.100	1149.000
BT	769.100	0.000	1175.000	769.500	0.000	0.000	0.000	0.000	0.000	0.000
GR	[illegible]	[illegible]	769.100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	758.500	895.000	756.900	926.000	754.000	[illegible]	754.000	[illegible]	754.000	960.400
GR	752.600	960.500	751.400	979.500	752.600	1018.500	[illegible]	1018.600	752.600	1025.400
GR	752.600	1025.500	752.900	1054.000	755.000	1083.500	755.000	1083.000	755.600	1090.400
GR	755.600	1070.500	755.300	1118.000	758.500	1142.900	758.500	1149.000	769.500	1175.000
GR	770.200	1244.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

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VALLEY SECT. APPROX. 50 FT. U/S OF R.R. BRIDGE N. OF MICH. AVE.

	XT	12.500	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
	NC	0.100	0.060	0.030	0.500	0.500	0.000	0.000	0.000	0.000	0.000
1	ET	0.000	7.100	7.100	7.100	7.100	7.100	730.000	917.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. U/S OF MICHIGAN AVE.

	XT	13.100	22.700	744.300	925.000	700.000	500.000	501.000	0.000	0.000	0.000
	GR	766.100	888.000	767.300	737.600	754.400	744.300	756.900	744.400	753.000	748.900
	GR	752.200	774.900	749.700	789.600	749.700	769.700	749.700	808.200	749.700	806.300
	GR	748.900	834.700	749.400	862.200	749.400	862.300	749.400	850.800	749.400	880.900
	GR	749.500	895.700	751.300	924.300	755.200	924.900	756.200	923.000	756.200	956.900
	GR	780.400	1506.500	767.000	1507.000	0.000	1.000	1.000	.000	0.000	0.000
	ET	1.000	1.100	0.000	0.000	1.400	1.200	1.000	1.000	0.000	0.000

D/S FACE OF MICHIGAN AVE. BRIDGE

	XT	13.200	0.000	0.000	0.000	50.000	50.000	50.000	.000	0.000	0.000
	XT	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

1 FT. INSIDE D/S FACE MICHIGAN AVE. BRIDGE (SKEWED 45 DEGREES)

	XT	13.300	0.000	0.000	0.000	1.000	1.000	1.000	.000	0.000	0.000
	XT	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000
	BT	17.000	737.600	767.300	0.000	744.300	767.300	0.000	744.400	767.300	755.500
	BT	774.900	767.100	743.300	739.600	767.400	756.400	769.700	767.400	0.000	808.200
	BT	767.400	0.000	809.500	767.400	756.400	814.700	767.400	765.100	802.200	767.400
	BT	754.400	812.100	767.100	0.000	800.500	767.400	0.000	806.900	767.400	756.400
	BT	796.700	767.100	767.300	824.800	767.100	796.600	843.600	767.400	0.000	836.900
	BT	767.400	1.100	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000

1 FT. RISING U/S FACE MICHIGAN AVE. BRIDGE

	XT	13.400	1.300	0.000	0.000	50.000	.000	1.000	0.000	0.000	0.000
	X	0.100	1.000	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000
	XT	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

U/S FACE OF MICHIGAN AVE. BRIDGE

	XT	13.500	1.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
	XT	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

VALLEY SECT. APPROX. 50 FT. U/S OF ICHIGAN AVE. (SKEWED 45 DEGREES)

	XT	13.400	1.300	0.000	0.000	50.000	.000	1.000	0.000	0.000	0.000
	GR	767.200	1142.000	766.600	1164.300	766.400	1172.000	767.000	1333.600	755.100	1341.000
	GR	751.700	1345.000	749.700	1358.000	749.300	1365.600	748.500	1379.000	747.600	1390.000
	GR	747.100	1401.000	747.300	1412.000	746.700	1420.000	748.900	1433.000	752.700	1438.000
	GR	754.200	1441.000	755.100	1445.000	757.700	1446.000	765.100	1454.000	765.200	1470.000
	NC	0.060	0.120	0.030	0.500	0.500	0.000	0.000	0.000	0.000	0.000
	ET	0.000	7.100	7.100	7.100	7.100	7.100	1271.000	1477.000	0.000	0.000
	BT	0.000	4620.000	6210.000	6910.000	6910.000	8580.000	0.000	0.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. D/S OF MILL ST.

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X1	14.100	33.000	1284.000	1464.000	1850.000	850.000	1250.000	0.000	0.000	0.000
GR	764.500	356.000	763.000	488.000	763.100	924.000	764.300	1190.000	765.000	1248.000
GR	765.200	1275.000	755.000	1284.000	755.000	1264.100	755.500	1298.000	752.100	1312.200
GR	752.500	1326.000	753.000	1340.500	753.000	1340.600	754.900	1347.400	754.900	1347.500
GR	750.200	1360.000	750.500	1374.000	751.600	1367.000	752.700	1400.500	752.700	1400.600
GR	753.400	1407.400	753.400	1407.500	751.100	1420.000	748.800	1436.000	750.000	1450.000
GR	751.300	1463.900	751.300	1464.000	766.400	1475.000	765.600	1482.000	763.000	1870.000
GR	762.700	1998.000	765.500	2008.000	770.400	2054.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

D/S FACE OF MILL ST. BRIDGE

X1	14.200	0.000	0.000	0.000	50.000	0.000	0.000	0.000	0.000	0.000
X2	10.000	1.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000

1 FT. INSIDE D/S FACE MILL ST. BRIDGE

X1	14.300	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000
GR	765.000	1275.000	766.000	0.000	764.600	767.400	0.000	1264.100	767.400	756.700
ET	1298.000	767.700	760.200	1312.200	767.900	755.600	1326.000	766.300	761.000	1340.500
BT	768.600	758.000	1340.600	766.600	0.000	1347.400	766.600	0.000	1347.500	768.600
BT	758.000	1360.000	758.900	761.500	1374.000	765.100	764.900	1367.000	766.800	761.600
BT	1400.500	768.400	758.100	1400.600	762.400	0.000	1407.400	766.400	0.000	1407.500
BT	768.400	758.100	1436.000	766.500	762.400	0.000	1420.000	766.400	1450.000	767.600
BT	760.200	1463.900	767.400	766.700	1482.000	767.600	0.000	1475.000	766.400	0.000

1 FT. INSIDE U/S FACE MILL ST. BRIDGE

X1	14.400	55.000	1284.000	1464.000	1850.000	850.000	1250.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000
BT	765.000	1275.000	766.000	0.000	764.600	767.400	0.000	1264.100	767.400	756.700
BT	1298.000	767.700	760.200	1312.200	767.900	755.600	1326.000	766.300	761.000	1340.500
BT	768.600	758.000	1340.600	766.600	0.000	1347.400	766.600	0.000	1347.500	768.600
BT	758.000	1360.000	758.900	761.500	1374.000	765.100	764.900	1367.000	766.800	761.600
BT	1400.500	768.400	758.100	1400.600	762.400	0.000	1407.400	766.400	0.000	1407.500
BT	768.400	758.100	1436.000	766.500	762.400	0.000	1420.000	766.400	1450.000	767.600
BT	760.200	1463.900	767.400	766.700	1482.000	767.600	0.000	1475.000	766.400	0.000
GR	764.500	356.000	763.000	488.000	763.100	924.000	764.300	1190.000	765.000	1248.000
GR	766.000	1275.000	763.100	1284.000	755.100	1264.100	752.000	1298.000	751.200	1312.200
GR	751.800	1326.000	752.400	1340.500	752.400	1340.600	752.400	1347.400	752.400	1347.500
GR	751.300	1360.000	750.500	1374.000	751.600	1367.000	752.700	1400.500	752.700	1400.600
GR	753.000	1407.400	753.000	1407.500	751.100	1420.000	748.800	1436.000	750.000	1450.000
GR	751.300	1463.900	751.400	1464.000	766.400	1475.000	765.600	1482.000	763.000	1870.000
GR	762.700	1998.000	765.500	2008.000	770.400	2054.000	0.000	0.000	0.000	0.000

U/S FACE OF MILL ST. BRIDGE

X1	14.500	0.000	0.000	0.000	50.000	0.000	0.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.400	0.000

VALLEY SECT. 10 FT. U/S OF MILL ST.

X1	14.600	0.000	0.000	0.000	50.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

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VALLEY SECT. APPROX. 1450 FT. U/S OF MILLS ST. BRIDGE

	X1	15.000	16.000	1472.000	1644.000	1150.000	1450.000	1400.000	0.000	0.000	0.000
	GR	770.000	1090.000	765.000	1146.000	762.800	1196.000	758.700	1416.000	757.400	1472.000
	GR	756.100	1441.000	752.800	1494.000	749.900	1544.000	748.800	1554.000	747.800	1584.000
1	GR	745.700	1614.000	751.100	1634.000	756.100	1644.000	762.000	1714.000	762.100	1864.000
2	GR	765.800	1976.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3	NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
4	ET	0.000	7.100	7.100	7.100	7.100	7.100	1500.300	1732.000	0.000	0.000
5											
6											
7		VALLEY SECT. 50 FT. D/S OF R.R. BRIDGE									
8											
9	X1	16.100	51.000	1512.400	1689.500	900.000	1451.000	1325.000	0.000	0.000	0.000
10	G	765.000	1[illegible]	761.500	2[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	764.500	[illegible]
11	GR	765.000	1[illegible]	7[illegible]	1[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	756.000	1404.000
12	GR	747.200	1435.[illegible]	7[illegible]	1[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	752.400	1515.000
13	GR	751.000	1518.700	751.000	1518.800	751.000	1529.300	751.000	1529.400	749.100	1535.200
14	GR	749.200	1541.000	749.200	1541.100	749.200	1551.600	749.200	1551.700	749.400	1557.400
15	GR	747.600	1563.200	747.600	1563.300	746.700	1567.100	746.700	1567.200	742.800	1580.000
16	G	743.30[illegible]	1592.5[illegible]	743.500	1592.600	74[illegible]	1[illegible]	7[illegible]	1[illegible]	744.200	1611.100
17	GR	747.200	1625.600	747.200	1625.700	747.400	1635.500	747.400	1635.600	750.000	1643.700
18	G	751.200	1667.900	751.200	1668.000	751.[illegible]	1671.[illegible]	751.500	1681.900	756.900	1675.700
19	GR	756.800	1689.400	756.800	1689.500	757.400	1838.000	766.200	1892.000	765.500	2038.000
20	GR	772.000	2068.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21	ET	0.000	0.000	0.000	0.000	9.100	0.000	0.000	0.000	143.000	2067.000
22											
23											
24		D/S FACE OF R.R.[illegible]									
25											
26	X1	16.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
27	X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.400	766.200	0.000
28		1.[illegible]	1.550	1.[illegible]	0.000	141.200	[illegible]	[illegible]	[illegible]	743.[illegible]	742.80[illegible]
29											
30											

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31		D/S FACE OF R.R.[illegible]									
32											
33	X1	16.400	51.000	1512.400	1659.500	10.500	11.[illegible]	10.500	0.000	0.000	0.000
34	[illegible]	[illegible]	1.[illegible]	1.[illegible]	7[illegible]	7[illegible]	[illegible]	[illegible]	0.[illegible]	0.0[illegible]	0.000
35	[illegible]	10.[illegible]	1.[illegible]	0.[illegible]	0.0[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	766.[illegible]	0.000
36	[illegible]	[illegible]	1[illegible]	7[illegible]	0.300	1512.[illegible]	[illegible]	[illegible]	1[illegible]	766.8[illegible]	765.600
37	GR	1518.700	766.800	765.600	1518.800	766.800	0.000	1529.300	766.600	0.000	1529.400
38	BT	766.800	765.300	1541.000	767.700	765.000	1541.100	766.700	0.000	1551.600	766.700
39	BT	0.000	1551.700	766.700	765.[illegible]	1563.200	767.700	765.600	1563.300	766.700	0.000
40	BT	[illegible]	7[illegible]	0.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	752.700	765.500	1592.600
41	BT	[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1625.600	766.700
42	BT	[illegible]	[illegible]	[illegible]	[illegible]	1625.[illegible]	[illegible]	[illegible]	1629.[illegible]	766.700	765.600
43	BT	1667.900	765.800	765.700	16[illegible]	766.[illegible]	[illegible]	1681.900	765.[illegible]	0.000	1661.900
44	BT	766.800	765.[illegible]	1689.400	766.[illegible]	765.[illegible]	16[illegible]	[illegible]	0.000	1592.600	766.200
45	BT	0.000	[illegible]	1.000	0.300	0.000	[illegible]	0.000	0.000	0.000	0.000
46		[illegible]	[illegible]	[illegible]	[illegible]	7[illegible]	[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]
47		[illegible]	[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1515.[illegible]
49	GR	747.600	1563.200	747.600	1563.300	746.[illegible]	1567.[illegible]	746.700	1529.400	747.600	1535.200
50	GR	747.000	1541.000	747.000	1541.100	746.500	1551.[illegible]	746.700	1551.700	746.500	1557.400
51	GR	745.900	1563.200	745.700	1563.300	745.7[illegible]	1567.1[illegible]	745.700	1567.200	745.000	1580.000
52	G	744.700	1[illegible]	744.700	1592.6[illegible]	744.7[illegible]	1[illegible]	744.700	1[illegible]	743.500	1611.100
53	G	744.500	1[illegible]	744.500	1625.7[illegible]	744.7[illegible]	1[illegible]	744.700	1629.600	747.500	1643.700
54	GR	752.000	1667.900	752.000	1681.[illegible]	752.000	1681.900	752.000	1681.900	755.100	1675.700
55	GR	758.000	1689.400	758.000	1689.500	757.400	1838.000	766.200	1892.000	765.500	2038.000
56	GR	772.000	2068.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
57	ET	0.000	7.100	7.100	7.100	7.100	7.100	1462.000	1740.000	0.000	0.000

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VALLEY SECT. APPROX. 50 FT. OF R.R. BRIDGE

X1	16.500	23.000	1519.000	1684.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	764.000	142.000	761.800	234.000	765.400	348.000	761.100	572.000	764.500	834.000
GR	765.000	1020.000	764.000	1058.000	759.600	1072.000	756.000	1214.000	758.000	1404.000
GR	767.200	1436.000	766.400	1474.000	756.200	1519.000	752.700	1528.000	747.100	1549.000
GR	745.700	1574.000	747.100	1600.000	748.700	1624.000	750.800	1649.000	753.100	1672.000
GR	759.300	1684.000	757.400	1838.000	766.200	1892.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000
NC	0.100	0.100	0.030	0.100	0.100	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY

X1	17.000	9.000	5.000	92.000	1650.000	[illegible]	[illegible]	0.000	0.000	0.000
GR	[illegible]	0.100	7[illegible]6.600	0.100	754.500	[illegible]	7[illegible]1.[illegible]	[illegible]	74[illegible].600	[illegible]
GR	[illegible]	73.000	753.300	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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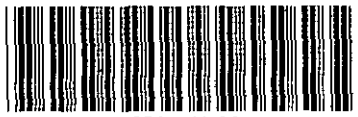
FORM 1411-GB PRINTED BY ROTARY MANIFOLD FORMS.



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP/COMSTOCK TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE INPUT



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**********************************************************
     RECOMPILED DATED NOV 76 UPDATED FEB 1977
     ERROR CODE = 01
     MODIFICATION = 30.01.12
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C
KALAMAZOO CITY FLOOD INSURANCE STUDY
TABULTA - DETAIL OUT
T3       KALAMAZOO RIVER

J1  ICHECK    ITAPE     JPLOT     IDAYF     STRT      METRIC    ANAL      ULOG      USEL      PC
          0.        4.        5.        6.  0.500000      1.0       0.0       3.   751.0PD  0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLEC     IOM       CHECK     ITRACE
        1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE TOLER  (1 E.g. 0.01)  PLOTOUT
      150.000   200.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J5  LPRINT    XUISEC                    ********** REQUESTED SECTION OUTPUT **********
       -1.000   -10.000     0.001     0.002     1.130     1.370     0.300     0.300     0.000     0.000
DT       5.00      0.10      0.10      0.00      0.00      0.10      0.10      2.00      1.00      0.00
NC       0.080     0.370     0.020     0.100     0.500     0.300     0.000     0.030     0.000     1.000
ET       0.000     0.300     0.000     0.000     1.700     0.300     0.300     0.000     0.000     0.000

WALLEY SECT. 40 FT. U/S OF KALAMAZOO/PORTAGE TWP. CORP. LINE
X1       0.000     9.300     0.000    98.000  1500.000   700.000  1430.300     0.300     0.000     0.000
GR     765.000     0.000   715.600     0.100   754.500     0.000   771.300    20.200   747.600    43.000
GR     747.000    78.000   753.500    92.000   763.300   108.000   765.000   139.100     0.100     3.000
NC       0.020     0.100     0.030     0.050     0.050     0.000     0.000     0.000     0.000     0.000
ET       5.000  7620.000  5211.000  4949.000  5000.000  1575.000     0.000     0.000     0.000     0.000

VALLEY SECT. 30 FT. D/S OF MAIN RAY. BRIDGE
X1       3.900    11.000    30.000   153.000  1509.200   802.000  1310.000     0.000     0.000     0.000
GR     757.000     0.000   747.100     1.100   751.500     0.000   771.000    43.000   749.900    71.000
GR     753.400   110.000   751.000   134.000   754.700     0.000   771.000   176.000   755.000   133.000
GR     767.000   172.100     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

D/S EDGE OF MAIN RAY. BRIDGE
X1       0.000    21.000     0.300   139.000    30.000    50.000     0.000     0.000     0.000     0.000
GR     770.000     0.000     0.000     0.000     0.000     0.000     0.000   765.000   709.000     0.000
GR     769.000     0.000   750.600     0.000   734.900    10.000   751.300    52.000   749.200    62.000
GR     750.600    58.500   750.600    78.600   750.600    91.500   750.000    99.600   751.000    74.000
GR     751.000    94.000   752.900   127.000   755.200   148.500   755.200   163.000   760.300   191.000
GR     753.300   131.200   754.400   146.000   751.300   168.200   757.100   170.100   760.700   190.000
GR     768.800   190.200     0.000     0.000     0.000     0.200     0.000     0.000     0.000     0.000
SD       1.250     0.500     3.000     0.000    59.000     0.000  1975.000     0.000   751.500   749.250
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D/S FACE OF KING HWY. BRIDGE

X1	9.100	21.000	0.000	190.000	56.000	56.000	56.000	0.000	0.000	0.300
X2	0.000	0.000	1.000	736.200	738.800	0.050	0.000	0.000	0.000	0.300
XS	10.000	0.000	0.300	0.300	0.300	0.030	0.000	0.000	0.000	0.000
GT	12.000	0.000	0.300	0.300	0.300	0.000	0.000	0.000	0.000	0.000
GT	50.000	0.000	0.300	0.300	0.300	0.000	0.000	0.000	0.000	0.000
BT	788.900	764.200	120.600	768.900	732.500	131.500	768.900	732.300	131.600	760.900
BT	766.200	190.000	760.800	734.200	190.000	766.000	0.000	0.000	0.000	0.000
GT	769.500	0.000	758.300	0.000	754.800	12.000	752.000	32.000	751.700	42.000
GT	731.100	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GT	731.100	56.000	731.000	115.100	752.000	42.500	752.000	182.000	752.000	142.500
GT	732.500	131.000	751.500	142.000	751.000	166.000	752.000	112.000	750.900	192.000
GR	768.500	190.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	7.250	0.000	0.000	0.000	0.000	0.000	20.000	0.000	0.000	0.000

VALLEY SECT. JUST D/S OF WESTERLY CROSS

X1	12.000	12.000	0.000	0.000	190.000	120.000	120.000	0.000	0.000	0.000
GR	775.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GT	75.700	93.000	732.000	126.000	751.600	150.000	754.600	102.000	752.200	192.000
GR	760.600	542.100	766.600	522.000	0.000	0.000	0.000	0.000	0.000	0.000
BC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH CROSS X

X1	11.200	12.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GT	770.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	756.500	0.000	757.700	539.000	757.600	0.000	756.000	0.000	0.000	0.000
GR	761.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	758.600	1069.000	767.500	1117.000	0.000	0.000	0.000	0.000	0.000	0.000
BC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. JUST D/S OF D/S SECTION

X1	12.000	12.000	757.000	964.000	350.000	720.000	600.000	0.000	0.000	0.000
GT	771.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GS	740.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	751.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. 100 FT. D/S OF S.R.R.BLE RD.

X1	12.000	50.000	17.000	204.000	1002.000	1000.000	1300.000	0.000	0.000	0.000
GR	770.300	0.000	765.500	0.000	757.500	17.000	752.000	37.000	736.200	52.000
GT	756.600	95.100	756.000	97.000	755.000	97.100	752.000	79.000	737.900	99.000

GR	761.200	159.000	758.100	165.000	755.230	174.000	755.700	176.100	755.200	175.000
GR	755.200	176.100	754.400	217.000	734.200	236.000	754.200	236.100	754.200	238.000
GR	754.200	238.700	755.000	257.000	759.000	269.000	772.700	295.000	777.200	293.000

U/S FACE OF SPRINGLE RD. BRIDGE

X1	12.900	3.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X5	10.000	3.000	0.000	0.000	0.000	0.000	0.000	778.300	777.200	0.000

1' DOWN U/S FACE OF SPRINGLE RD. BRIDGE

X1	13.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X5	10.000	0.000	0.000	0.000	0.000	0.000	0.000	778.300	777.200	0.000
RT	20.300	0.000	779.330	0.000	0.000	775.300	767.700	55.000	771.300	768.900
BT	25.100	779.300	775.000	0.000	0.000	0.000	0.000	771.300	768.700	114.000
BT	770.000	170.300	775.100	772.000	761.000	116.000	77.000	111.300	116.100	773.100
BT	770.000	172.300	775.000	777.000	775.100	774.000	735.700	170.300	774.400	715.200
GT	176.100	774.400	771.000	230.000	775.900	773.300	230.000	773.300	754.200	238.000
ST	775.900	754.200	236.100	775.900	773.300	293.000	777.200	774.000	293.000	777.200
ST	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

U/S FACE SPRINGLE ROAD BRIDGE c/c

X1	13.100	0.000	0.000	0.000	12.000	12.000	12.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
[illegible]	10.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

U/S FACE SPRINGLE ROAD BRIDGE

X1	13.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ST	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2572.00	[illegible]	[illegible]	[illegible]

VALLEY SECT. 50 FT. U/S OF SPRINGLE RD.

X1	14.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	770.200	0.100	761.000	56.100	762.700	35.000	761.200	530.000	777.000	65[illegible]
GR	771.000	[illegible]	760.200	[illegible]	762.400	711.000	765.000	792.300	781.500	191[illegible]
GT	763.000	1086.300	767.600	1155.000	765.200	1252.000	764.200	1530.200	783.000	1571.000
GT	765.700	1532.200	770.100	1407.000	769.000	1912.000	770.400	1930.200	765.600	2142.000
GT	763.400	2640.200	763.000	2664.000	762.700	2692.000	759.200	2727.200	756.900	2723.000
GT	755.500	2753.000	759.200	2761.000	758.100	2781.000	762.000	2790.000	760.100	2304.000
GT	759.100	2373.300	763.900	2375.000	759.100	2901.000	755.700	2911.200	754.100	2961.000
GT	759.700	2914.200	756.400	299.000	765.600	3036.000	759.600	3214.700	760.100	3261.000
GT	793.700	3628.200	779.200	3702.000	763.000	3754.000	800.700	3612.200	0.000	0.000
BT	5.000	4330.000	4100.000	6760.000	3700.000	6420.000	0.000	0.000	0.000	0.000
BC	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. APPROX. 1000 FT. U/S OF SPRINGLE ROAD

X1	15.000	16.000	2073.000	2222.000	1300.000	1300.000	1400.000	0.000	0.000	0.000
GR	775.000	1371.000	767.100	1375.000	767.100	1300.000	776.500	[illegible]	784.000	2[illegible]
GT	761.000	[illegible]	[illegible]	2373.000	757.000	2345.000	[illegible]	[illegible]	754.000	2541.000
GT	754.000	2173.000	757.000	2210.000	760.900	2232.000	765.200	2200.000	763.200	2410.300
GR	768.000	2513.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PC	0.000	0.000	0.000	0.100	0.000	0.000	0.200	0.000	0.000	0.000

VALLEY SECT. APPROX. 2325 FT. D/S OF RIVER ST. BRIDGE

X1	16.000	15.000	2056.000	2206.000	650.000	450.000	450.000	0.000	0.000	0.000
GR	773.000	1097.300	767.600	1083.600	764.200	2018.000	765.200	2230.000	758.900	2057.300
GR	763.700	2106.300	759.200	2139.000	754.400	2154.000	757.300	2193.300	753.900	2153.200
GR	752.000	2284.300	749.300	2314.000	746.000	2272.000	744.400	2234.300	749.300	2413.200

VALLEY SECT. APPROX. 1700 FT. D/S OF RIVER ST. BRIDGE

X1	17.000	15.000	2476.000	2626.000	670.000	650.000	650.000	0.000	0.000	0.000
GR	766.400	2301.000	765.700	2288.000	756.600	2451.000	753.300	2448.000	751.600	2464.000
GR	755.300	2502.000	756.300	2564.000	756.200	2534.000	752.000	2578.000	745.650	2502.000
GR	763.000	2900.000	767.600	2714.000	767.800	2716.000	769.600	2741.000	0.000	0.000

VALLEY SECT. APPROX. 1100 FT. D/S OF RIVER ST. BRIDGE

X1	18.000	17.000	2875.000	3018.000	540.000	590.000	562.000	0.000	0.000	0.000
GR	770.000	2454.000	763.800	2543.300	757.400	2632.000	765.000	2796.000	767.200	2826.000
GR	763.100	2874.000	757.500	2874.000	756.000	2909.000	755.300	2929.000	750.300	2945.000
GR	759.500	3013.300	761.200	3017.000	754.000	3017.000	762.000	3036.000	750.000	3029.000
GR	757.300	3041.300	761.600	3027.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. JUST D/S OF LAGOON CONFLUENCE

X1	19.000	0.000	0.000	0.000	500.000	500.000	0.000	0.000	0.000	0.000
GR	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. APPROX. 535 FT. D/S OF RIVER ST.

X1	21.000	15.000	2677.000	2827.000	700.000	550.000	550.000	0.000	0.000	0.000
GR	771.400	1137.000	767.000	1190.000	761.200	2013.000	760.500	2067.000	757.000	2119.000
GR	756.200	2159.000	756.900	2174.000	756.300	2199.000	752.000	2209.000	759.500	2268.000
GR	760.600	2269.000	761.100	2276.000	762.500	2279.000	760.600	2293.000	763.600	2342.000
GR	752.000	2394.000	765.600	2420.000	766.700	2436.000	772.300	2500.000	0.000	0.000
XT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. D/S OF RIVER ST.

X1	22.000	27.000	2362.000	2526.000	550.000	450.000	550.000	0.000	0.000	0.000
GR	773.200	79.000	772.600	774.000	770.000	3[illegible].000	772.900	3[illegible].000	773.700	57[illegible].000
GR	775.300	3[illegible].000	772.300	922.000	770.000	1030.000	771.900	1110.000	773.600	1172.000
GR	771.900	1548.000	772.000	1556.000	763.000	2246.000	765.000	2530.000	763.000	2365.000
GR	759.800	2371.000	753.400	2401.000	753.900	2421.000	755.500	2446.000	754.200	2491.000
GR	759.200	2514.000	769.300	2529.000	774.400	2534.000	773.700	2552.000	775.400	2768.000
GR	777.600	2903.000	765.700	2902.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF RIVER ST. BRIDGE

X1	23.000	27.000	2391.000	2477.000	50.000	50.000	50.000	0.000	0.000	0.000
XT	10.000	0.000	0.000	0.000	0.000	0.000	0.000	772.300	773.000	0.000
GR	776.000	0.000	771.900	808.000	771.000	1134.000	765.900	1146.000	772.000	1268.000
GR	771.000	1311.000	762.500	1402.000	762.000	1391.000	760.000	2136.000	755.400	1362.000
GR	754.300	2377.700	754.500	2377.000	754.300	2301.200	754.300	2320.300	754.400	2304.000
GR	753.800	2427.700	753.000	2477.000	753.700	2431.200	754.300	2430.300	757.000	2413.000

GR	775.600	2743.000	761.000	3114.000	0.000	0.000	0.300	0.000	0.000	0.000

1' INSIDE D/S FACE OF RIVER RD. BRIDGE

X1	25.100	0.000	0.000	0.300	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.300	0.000	0.000	0.000	772.000	773.000	0.000
DT	17.000	2248.000	772.300	0.300	2312.000	775.400	0.000	2330.900	775.300	0.000
BT	2331.000	773.800	769.800	2377.700	773.400	769.300	2377.600	773.000	0.000	2360.200
BT	775.000	0.000	2380.300	769.800	769.800	2424.000	773.000	769.000	2427.700	773.000
DT	769.000	2247.000	773.000	0.300	2314.000	773.400	0.000	2330.900	773.300	0.000
BT	2377.000	773.000	769.300	2377.700	773.000	0.000	2403.000	773.000	0.000	2364.000
BT	771.000	0.000	0.300	0.300	0.000	0.000	0.000	0.000	0.000	0.000

1' INSIDE U/S FACE OF RIVER RD. BRIDGE

X1	25.000	47.300	900.000	3124.000	57.100	56.300	2.300	0.000	0.300	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	772.000	773.000	0.000
DT	17.000	2249.000	772.000	0.000	2312.000	773.000	0.000	2330.900	773.000	0.000
BT	2331.000	773.000	769.000	2377.700	773.000	769.000	2377.000	773.000	0.000	2360.200
BT	77.000	0.000	2380.300	769.000	769.000	2406.000	773.000	769.300	2427.700	773.000
DT	769.000	2247.000	773.000	0.000	2313.000	773.000	0.000	2330.900	773.000	0.000
BT	2377.000	773.000	769.000	2377.700	773.000	0.000	2403.000	773.000	0.000	2364.000
BT	77.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	774.000	0.000	773.000	591.000	771.000	1102.000	769.300	1943.000	772.000	2243.000
GR	766.000	2112.000	760.300	2350.900	760.500	2331.000	759.400	2336.000	756.300	2365.000
GR	757.700	2372.700	757.700	2377.400	757.700	2330.200	757.700	2340.300	754.000	2404.000
GR	756.000	2377.700	756.000	2377.400	756.000	2424.000	755.400	2427.000	753.000	2484.000
GR	750.000	2377.700	750.000	2377.400	750.000	2477.700	749.400	2480.000	747.000	2564.000
GR	745.000	2477.700	745.000	2477.400	0.000	0.000	0.000	0.000	0.000	0.000

U/S FACE OF RIVER RD. BRIDGE

X1	25.000	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	772.000	773.000	0.000

VALLEY SECT. APPROX. 50 FT. U/S OF RIVER RD.

X1	25.000	0.000	0.00	1.000	0.000	0.000	0.000	0.000	0.000	0.00
BT	5.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.080	0.080	0.080	0.100	0.300	0.000	0.000	0.000	0.000	0.000
EP	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. 12 APPROX. 130. FT U/S OF RIVER RD.

X1	26.000	74.000	2147.000	2325.000	1050.000	350.000	555.300	0.000	0.000	0.000
GR	775.000	1117.000	774.000	1121.000	774.000	1102.000	775.300	1344.000	768.000	1900.000
GR	764.600	2089.000	766.000	2126.000	764.700	2147.000	762.700	2170.000	761.700	2206.000
GR	759.000	2150.000	758.000	2201.000	758.900	2232.000	758.300	2270.000	758.000	2305.000
GR	759.900	2230.000	757.300	2325.000	756.000	2364.000	755.300	2421.000	761.000	2612.000
GR	757.000	2311.000	777.000	2332.000	776.000	2356.000	777.300	2414.000	0.000	0.000
NC	0.100	0.100	0.000	0.150	0.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. 14 APPROX. 1470 FT U/S OF CONSUMERS POWER BRIDGE

X1	37.000	93.000	2366.000	2746.000	1300.000	1300.000	1110.000	0.000	0.000	0.000
GR	773.400	0.000	772.600	96.000	772.600	712.000	770.400	647.000	771.600	933.000
GR	770.600	679.000	771.000	906.000	772.700	1128.000	771.900	1130.000	770.600	1202.000

G1	770.500	2040.000	765.100	2222.000	753.700	2496.000	764.500	2555.000	766.100	2560.000
G2	764.900	2580.000	762.900	2545.000	758.100	2558.000	762.700	2391.000	761.000	2512.000
GP	759.100	2662.000	759.300	2679.000	760.000	2715.000	761.000	2760.000	762.500	2787.000
GR	765.400	2796.000	765.000	2828.000	766.600	2928.000	768.300	2900.000	766.800	3054.000
TS	797.000	3830.300	795.400	3750.000	795.000	4012.000	797.000	4264.000	802.000	4772.000
GT	801.700	4134.100	804.400	4262.000	803.600	4304.000	0.000	0.000	0.200	0.300
DC	0.120	0.120	1.000	1.000	1.500	0.000	0.000	0.000	0.200	0.500
ET	0.000	7.100	7.100	7.100	0.000	0.000	1901.000	2387.000	0.200	0.200

VALLEY SECT. 15' UPSTR. O/S TWIN SS CONSUMERS POWER BRIDGE

X1	30.100	29.000	1500.100	2101.000	1500.100	1130.200	1420.200	0.200	0.000	1.000
G1	770.700	1900.000	759.000	1200.000	772.900	1546.000	760.200	1030.000	776.000	1873.000
G2	769.500	1902.000	755.400	1564.000	762.900	1939.000	759.400	984.000	759.400	2034.000
G3	759.200	2064.000	759.100	2044.000	760.300	2131.200	762.600	2140.000	764.900	2154.000
GT	766.100	2126.000	771.500	2252.000	770.100	2470.000	772.700	2014.000	772.000	2300.000
ST	773.300	2126.300	771.300	2252.300	772.900	1934.200	772.700	2024.000	782.000	2300.000

D/S FACE OF CONSUMERS POWER BRIDGE

X1	29.000	31.500	1501.100	2101.000	1500.100	1130.200	1420.200	0.200	0.000	0.000
G1	770.700	1900.000	759.000	1200.000	772.900	1546.000	760.200	1030.000	776.000	1873.000
G2	769.500	1902.000	755.400	1564.000	762.900	1939.000	759.400	984.000	759.400	2034.000
G3	759.200	2064.000	759.100	2044.000	760.300	2131.200	762.600	2140.000	764.900	2154.000
GT	766.100	2126.000	771.500	2252.000	770.100	2470.000	772.700	2014.000	772.000	2300.000
ST	773.300	2126.300	771.300	2252.300	772.900	1934.200	772.700	2024.000	782.000	2300.000

U/S FACE OF CONSUMERS POWER BRIDGE

X1	30.000	0.000	0.000	0.000	1.000	1.000	1.000	0.100	0.000	0.000
G1	770.700	1900.000	759.000	1200.000	772.900	1546.000	760.200	1030.000	776.000	1873.000
G2	769.500	1902.000	755.400	1564.000	762.900	1939.000	759.400	984.000	759.400	2034.000
G3	759.200	2064.000	759.100	2044.000	760.300	2131.200	762.600	2140.000	764.900	2154.000
GT	766.100	2126.000	771.500	2252.000	770.100	2470.000	772.700	2014.000	772.000	2300.000
ST	773.300	2126.300	771.300	2252.300	772.900	1934.200	772.700	2024.000	782.000	2300.000

VALLEY SECT. APPROX. 50 FT U/S OF CONSUMERS POWER BRIDGE

NC	0.030	0.120	0.030	0.100	0.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. APPROX. 400 FT D/S OF MORROW DAM

X1	52.000	[illegible]	[illegible]	1631.000	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000
GR	781.000	96.000	[illegible]	[illegible]	772.000	[illegible]	[illegible]	775.000	[illegible]	1000.000
GR	776.000	1146.000	769.400	1208.000	753.100	1271.000	756.700	1272.000	756.000	1396.000
GR	756.000	1451.000	757.500	1486.000	754.300	1525.000	751.900	1571.000	739.100	1621.000
GR	761.900	1656.000	765.400	1651.000	769.600	1750.000	770.600	1918.000	770.400	2024.000
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	765.100	[illegible]	[illegible]	[illegible]	793.100	[illegible]	0.000	0.000	0.000	0.000
SJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10.000	900.00	0.00	0.00	745.90	4940.00	759.21	0.00	759.32	1.81	2.69	2066.21	3675.31
10.000	900.00	0.00	0.00	745.90	6640.00	760.57	0.00	760.74	2.08	3.13	2518.73	4607.67
10.000	900.00	0.00	0.00	745.90	7390.00	761.11	0.00	761.28	2.19	3.32	2721.59	4988.86
10.000	900.00	0.00	0.00	745.90	9180.00	762.23	0.00	762.40	2.45	3.71	3169.73	5855.75
11.100	750.00	0.00	0.00	748.50	4940.00	759.36	0.00	759.58	1.06	3.02	1442.66	2241.50
11.100	750.00	0.00	0.00	748.50	6640.00	760.70	0.00	761.02	1.41	4.04	1731.32	2957.34
11.100	750.00	0.00	0.00	748.50	7390.00	761.27	0.00	761.46	1.53	4.37	1870.48	3217.33
11.100	750.00	0.00	0.00	748.50	9180.00	762.63	0.00	762.78	1.81	5.06	2178.32	3849.96
11.200	50.00	0.00	0.00	749.50	4940.00	759.41	0.00	759.61	1.28	3.58	1379.66	2149.56
11.200	50.00	0.00	0.00	749.50	6640.00	760.81	0.00	761.36	1.51	4.02	1649.76	2881.29
11.200	50.00	0.00	0.00	749.50	7390.00	761.42	0.00	761.60	1.63	4.22	1795.77	3175.60
11.200	50.00	0.00	0.00	749.50	9180.00	762.82	0.00	762.96	1.93	4.60	1962.76	3607.57
11.300	1.00	766.80	765.60	749.50	4940.00	759.39	0.00	759.64	9.57	3.98	1242.63	1596.74
11.300	1.00	766.80	765.60	749.50	6640.00	760.79	0.00	761.12	10.80	4.63	1454.51	2020.54
11.300	1.00	766.80	765.60	749.50	7390.00	761.31	0.00	761.68	11.43	4.91	1506.22	2186.47
11.300	1.00	766.80	765.60	749.50	9180.00	762.57	0.00	762.78	12.85	5.52	1632.01	2547.49
11.400	41.00	766.80	765.60	748.70	4940.00	759.47	0.00	759.69	7.48	3.87	1339.67	1866.33
11.400	41.00	766.80	765.60	748.70	6640.00	760.86	0.00	761.17	8.68	4.33	1535.73	2253.87
11.400	41.00	766.80	765.60	748.70	7390.00	761.41	0.00	761.74	9.24	4.60	1606.42	2430.86
11.400	41.00	766.80	765.60	748.70	9180.00	762.53	0.00	762.97	17.09	5.31	1728.32	2220.84
11.500	1.00	766.80	765.60	748.70	4940.00	759.53	0.00	759.67	7.03	3.69	1512.49	2421.70
11.500	1.00	766.80	765.60	748.70	6640.00	760.92	0.00	761.12	8.14	4.22	1713.28	3241.52
11.500	1.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.76	8.20	3.92	1884.76	3560.24
11.500	1.00	0.00	0.00	748.70	9180.00	762.72	0.00	763.01	4.53	4.34	2115.16	4314.94
11.600	50.00	0.00	0.00	748.70	4940.00	759.55	0.00	759.71	1.28	3.27	1515.11	2517.74
11.600	50.00	0.00	0.00	748.70	6640.00	761..	0.00	761.26	1.44	3.71	1717.42	3365.71
11.600	50.00	0.00	0.00	748.70	7390.00	761..	0.00	761.79	1.52	3.91	1904.41	3653.12
11.600	50.00	0.00	0.00	748.70	9180.00	762.75	0.00	763.04	4.31	4.33	2139.97	4419.52
11.700	500.00	0.00	0.00	745.50	4940.00	759.71	0.00	759.85	1.29	2.79	1975.54	4356.42
11.700	500.00	0.00	0.00	745.50	6640.00	761.1	0.00	761.35	1.52	3.29	2352.24	5362.92
11.700	500.00	0.00	0.00	745.50	7390.00	761.74	0.00	761.96	1.61	3.49	2501.33	5820.70
11.700	500.00	0.00	0.00	745.50	9180.00	763.11	0.00	763.29	1.91	3.92	3017.65	6626.47
12.000	500.00	0.00	0.00	747.60	4940.00	759.79	0.00	759.92	1.45	2.84	1895.15	4095.68
12.000	600.00	0.00	0.00	747.60	6640.00	761.28	0.00	761.44	1.66	3.32	2225.79	5146.57
12.000	500.00	0.00	0.00	747.60	7390.00	761.85	0.00	762.03	1.76	3.51	2355.54	5572.94
12.000	500.00	0.00	0.00	747.60	9180.00	763.07	0.00	763.26	1.96	3.95	2610.11	6559.88
12.100	50.00	0.00	0.00	747.60	4940.00	759.80	0.00	759.92	2.52	2.82	1750.15	3112.59
12.100	50.00	0.00	0.00	747.60	6640.00	761.31	0.00	761.46	2.87	3.11	2153.07	4311.74
12.100	50.00	0.00	0.00	747.60	7390.00	761.93	0.00	762.04	2.36	3.24	2278.43	4805.40
12.100	50.00	0.00	0.00	747.60	9180.00	763.31	0.00	763.47	2.65	3.55	2570.73	5956.72
12.400	2.00	765.60	764.40	751.60	4940.00	760.12	0.00	760.28	4.42	3.03	1770.12	3158.13
12.400	2.00	765.60	764.40	751.60	6640.00	761.52	0.00	761.68	4.89	3.70	1964.06	3740.82
12.400	2.00	765.60	764.40	751.60	7390.00	762.09	0.00	762.31	5.09	3.93	2337.12	4490.22
12.400	2.00	765.60	764.40	751.60	9180.00	763.36	0.00	763.58	5.39	4.39	2572.74	5517.74

PRINTED IN U.S.A.

FORM 1411-GB PRINTED BY ROTARY MANIFOLD FORMS.

SECTO	XLON	ELTOD	ELAC	CLOSE	Q	CHSLL	CHLS	LE	SOKES	VCA	AREA	ADJ
10.200	900.00	0.00	0.00	745.30	6940.00	759.21	0.00	759.52	1.01	2.69	2060.21	2575.27
10.300	900.00	0.00	0.00	745.90	6640.00	760.59	0.00	760.74	2.06	3.13	2318.73	2647.17
10.000	900.00	0.00	0.00	745.90	7190.00	761.11	0.00	761.26	2.19	3.36	2761.59	2490.36
10.300	900.00	0.00	0.00	745.90	9130.30	762.20	0.00	762.70	2.65	3.71	3169.73	3625.15
11.100	750.00	0.00	0.00	748.30	6940.30	759.31	0.00	759.56	5.06	4.12	1966.73	2271.40
11.100	750.00	0.00	0.00	748.30	6640.00	760.76	0.00	761.02	5.61	4.34	1734.12	2003.30
11.100	750.00	0.00	0.00	748.30	7190.00	761.29	0.00	761.60	5.25	4.57	1913.93	2217.33
11.100	750.00	0.00	0.00	748.30	9130.30	762.99	0.00	762.76	5.69	5.06	2075.30	2449.96
11.200	50.00	0.00	0.00	749.50	6940.00	759.61	0.00	759.91	5.06	4.18	1928.06	2194.46
11.200	50.00	0.00	0.00	749.50	6640.00	760.20	0.00	760.36	5.61	4.40	1663.72	2001.20
11.200	50.00	0.00	0.00	749.50	7190.00	761.36	0.00	761.65	5.25	4.22	1754.77	2125.30
11.200	50.00	0.00	0.00	749.50	9130.30	762.40	0.00	762.60	5.73	4.84	1984.76	2427.57
11.300	1.00	766.30	765.60	749.50	6940.00	759.33	0.00	759.63	5.97	4.24	1824.54	2077.77
11.300	1.00	766.30	765.60	749.50	6640.00	760.79	0.00	761.02	10.00	4.49	1644.71	1906.24
11.300	1.00	766.30	765.60	749.50	7190.00	761.31	0.00	761.60	11.40	4.71	1802.24	2118.17
11.300	1.00	766.30	765.60	749.50	9130.30	762.39	0.00	762.76	10.20	5.22	1962.01	2319.47
11.400	61.00	766.30	764.60	748.70	6940.00	759.17	0.00	759.46	2.46	4.05	1838.07	1969.23
11.400	61.00	766.30	764.60	748.70	6640.00	760.54	0.00	760.84	2.85	4.26	1556.72	1866.87
11.400	61.00	766.30	764.60	748.70	7190.00	761.14	0.00	761.42	2.55	4.48	1705.41	2006.36
11.400	61.00	766.30	764.60	748.70	9130.30	762.29	0.00	762.56	2.91	5.01	1857.69	2184.67
11.500	1.00	0.00	0.00	748.70	6940.00	759.17	0.00	759.39	5.80	5.20	1916.39	2255.74
11.500	1.00	0.00	0.00	748.70	6640.00	760.54	0.00	760.73	6.16	5.42	1720.20	2023.76
11.500	1.00	0.00	0.00	748.70	7190.00	761.14	0.00	761.30	5.80	5.67	1884.76	2217.36
11.500	1.00	0.00	0.00	748.70	9130.30	762.29	0.00	762.44	6.36	6.20	2054.10	2416.59
11.600	50.00	0.00	0.00	748.70	6940.00	759.55	0.00	759.87	5.80	5.27	1915.11	2253.54
11.600	50.00	0.00	0.00	748.70	6640.00	760.54	0.00	760.84	5.99	5.51	1707.66	2009.02
11.600	50.00	0.00	0.00	748.70	7190.00	761.14	0.00	761.49	6.39	5.81	1884.41	2217.12
11.600	50.00	0.00	0.00	748.70	9130.30	762.29	0.00	762.64	7.07	6.41	2054.10	2416.59
11.700	100.00	0.00	0.00	748.70	6940.00	759.55	0.00	759.87	1.35	5.20	1915.11	2253.54
11.700	100.00	0.00	0.00	748.70	6640.00	760.54	0.00	760.84	1.51	5.42	1707.66	2009.02
11.700	100.00	0.00	0.00	748.70	7190.00	761.14	0.00	761.49	1.51	5.67	1884.41	2217.12
11.700	100.00	0.00	0.00	748.70	9130.30	762.29	0.00	762.64	1.91	6.20	2054.10	2416.59
12.000	100.00	0.00	0.00	747.60	6940.00	759.55	0.00	759.87	1.35	5.20	1915.11	2253.54
12.000	100.00	0.00	0.00	747.60	6640.00	760.54	0.00	760.84	1.51	5.42	1707.66	2009.02
12.000	100.00	0.00	0.00	747.60	7190.00	761.14	0.00	761.49	1.51	5.67	1884.41	2217.12
12.000	100.00	0.00	0.00	747.60	9130.30	762.29	0.00	762.64	1.91	6.20	2054.10	2416.59
12.100	50.00	0.00	0.00	747.20	6940.00	759.55	0.00	759.87	1.35	5.20	1915.11	2253.54
12.100	50.00	0.00	0.00	747.20	6640.00	760.54	0.00	760.84	1.51	5.42	1707.66	2009.02
12.100	50.00	0.00	0.00	747.20	7190.00	761.14	0.00	761.49	1.51	5.67	1884.41	2217.12
12.100	50.00	0.00	0.00	747.20	9130.30	762.29	0.00	762.64	1.91	6.20	2054.10	2416.59
12.400	50.00	764.30	764.10	748.10	6940.00	759.55	0.00	759.87	1.35	5.20	1915.11	2253.54
12.400	50.00	764.30	764.10	748.10	6640.00	760.54	0.00	760.84	1.51	5.42	1707.66	2009.02
12.400	50.00	764.30	764.10	748.10	7190.00	761.14	0.00	761.49	1.51	5.67	1884.41	2217.12
12.400	50.00	764.30	764.10	748.10	9130.30	762.29	0.00	762.64	1.91	6.20	2054.10	2416.59
12.500	50.00	764.30	764.10	748.10	6940.00	759.55	0.00	759.87	1.35	5.20	1915.11	2253.54
12.500	50.00	764.30	764.10	748.10	6640.00	760.54	0.00	760.84	1.51	5.42	1707.66	2009.02
12.500	50.00	764.30	764.10	748.10	7190.00	761.14	0.00	761.49	1.51	5.67	1884.41	2217.12
12.500	50.00	764.30	764.10	748.10	9130.30	762.29	0.00	762.64	1.91	6.20	2054.10	2416.59

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FORM 1411-GG PRINTED BY ROTARY MANIFOLD FORMS.

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
12.500	50.00	0.00	0.00	751.30	4940.00	759.85	0.00	760.04	5.58	3.55	1396.94	2130.77
12.500	50.00	0.00	0.00	751.30	6640.00	761.35	0.00	761.57	4.51	3.74	1807.71	3199.06
12.500	50.00	0.00	0.00	751.30	7390.00	762.11	0.00	762.33	3.77	3.74	2021.65	3806.91
12.500	50.00	0.00	0.00	751.30	9180.00	763.58	0.00	763.82	3.24	3.90	2446.83	5096.10
13.100	300.00	0.00	0.00	748.90	4940.00	760.01	0.00	760.15	1.81	2.94	1649.28	3670.92
13.100	300.00	0.00	0.00	748.90	6640.00	761.48	0.00	761.67	2.08	3.43	1943.43	4625.90
13.100	300.00	0.00	0.00	748.90	7390.00	762.22	0.00	762.42	2.07	3.54	2076.56	5150.54
13.100	300.00	0.00	0.00	748.90	9180.00	763.68	0.00	763.90	2.21	3.91	2332.99	6160.75
13.200	50.00	0.00	0.00	748.90	4940.00	760.04	0.00	760.16	1.89	2.83	1746.99	3800.17
13.200	50.00	0.00	0.00	748.90	6640.00	761.51	0.00	761.66	1.92	3.30	2013.15	4706.59
13.200	50.00	0.00	0.00	748.90	7390.00	762.26	0.00	762.43	1.93	3.44	2146.33	5314.33
13.200	50.00	0.00	0.00	748.90	9180.00	763.72	0.00	763.94	2.05	3.81	2401.42	6417.41
13.300	1.00	766.20	763.30	748.90	4940.00	759.96	0.00	760.28	15.06	4.57	1080.10	1365.68
13.300	1.00	766.20	763.30	748.90	6640.00	761.55	0.00	761.84	17.63	5.64	1178.04	1572.87
13.300	1.00	766.20	763.30	748.90	7390.00	762.34	0.00	762.62	19.33	6.02	1227.34	1680.90
13.300	1.00	766.20	763.30	748.90	9180.00	763.80	0.00	764.15	22.36	7.00	1327.22	1901.40
13.400	49.00	766.20	763.30	748.90	4940.00	760.07	0.00	760.32	12.70	4.55	1084.75	1375.26
13.400	49.00	766.20	763.30	748.90	6640.00	761.44	0.00	761.93	17.51	5.61	1184.52	1586.74
13.400	49.00	766.20	763.30	748.90	7390.00	762.16	0.00	762.72	16.97	5.99	1234.45	1696.72
13.400	49.00	766.20	763.30	748.90	9180.00	763.59	0.00	764.33	22.88	7.02	1307.38	1900.90
13.500	1.00	0.00	0.00	748.90	4940.00	760.07	0.00	760.29	1.58	2.76	1792.05	3952.81
13.500	1.00	0.00	0.00	748.90	6640.00	761.67	0.00	761.86	1.71	3.19	2079.45	5067.69
13.500	1.00	0.00	0.00	748.90	7390.00	762.66	0.00	762.84	1.73	3.33	2222.52	5624.43
13.500	1.00	0.00	0.00	748.90	9180.00	764.31	0.00	764.52	1.77	3.64	2520.66	6896.00
13.600	50.00	0.00	0.00	748.90	9180.00	764.28	0.00	764.50	2.06	4.27	2336.55	6395.93
14.100	1250.00	0.00	0.00	748.80	4620.00	760.51	0.00	760.65	2.00	2.94	1605.63	3265.40
14.100	1250.00	0.00	0.00	748.80	6210.00	762.15	0.00	762.33	2.02	3.32	1911.36	4361.65
14.100	1250.00	0.00	0.00	748.80	6910.00	762.93	0.00	763.14	1.96	3.45	2054.56	4939.00
14.100	1250.00	0.00	0.00	748.80	8530.00	764.66	0.00	764.87	1.97	3.81	2330.92	6239.78
14.200	50.00	0.00	0.00	748.80	4620.00	760.52	0.00	760.66	2.09	2.95	1566.59	3197.43
14.200	50.00	0.00	0.00	748.80	6210.00	762.17	0.00	762.34	2.14	3.33	1862.35	4240.61
14.200	50.00	0.00	0.00	748.80	6910.00	762.95	0.00	763.15	2.08	3.46	2005.92	4760.13
14.200	50.00	0.00	0.00	748.80	8530.00	764.68	0.00	764.89	2.04	3.78	2300.00	6005.22
14.300	1.00	760.00	764.90	748.80	4620.00	760.53	0.00	760.68	5.39	3.45	1338.24	1989.51
14.300	1.00	760.00	764.90	748.80	6210.00	762.11	0.00	762.59	9.64	4.29	1647.47	1999.59
14.300	1.00	760.00	764.90	748.80	6910.00	762.89	0.00	763.22	11.11	4.67	1800.24	2074.83
14.300	1.00	760.00	764.90	748.80	8530.00	764.62	0.00	764.87	15.17	5.53	1952.97	2459.53
14.400	49.00	760.00	764.90	748.80	4620.00	760.54	0.00	760.69	5.39	3.45	1338.24	1989.51
14.400	49.00	760.00	764.90	748.80	6210.00	762.14	0.00	762.43	9.59	4.28	1646.32	2005.52
14.400	49.00	760.00	764.90	748.80	6910.00	762.92	0.00	763.27	11.03	4.65	1459.96	2080.19
14.400	49.00	760.00	764.90	748.80	8530.00	764.64	0.00	765.05	17.71	5.71	1512.08	2059.01

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FORM 1411-SB PRINTED BY NOTARY MANIFOLD FORMS.

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
14.500	1.00	0.00	0.00	749.80	4620.00	760.59	0.00	760.76	2.13	2.96	1563.37	3167.89
14.500	1.00	0.00	0.00	749.80	6210.00	762.36	0.00	762.47	2.14	3.32	1871.39	4249.43
14.500	1.00	0.00	0.00	749.80	6910.00	763.13	0.00	763.32	2.05	3.42	2022.12	4620.96
14.500	1.00	0.00	0.00	749.80	8580.00	764.93	0.00	765.14	1.98	3.66	2345.00	6135.44
14.600	50.00	0.00	0.00	749.80	4620.00	760.66	0.00	760.73	1.99	2.94	1591.40	3273.31
14.600	50.00	0.00	0.00	749.80	6210.00	762.37	0.00	762.48	1.99	3.20	1910.99	4421.53
14.600	50.00	0.00	0.00	749.80	6910.00	763.15	0.00	763.33	1.92	3.40	2072.16	5032.44
14.600	50.00	0.00	0.00	749.80	8580.00	764.97	0.00	765.17	1.77	3.62	2425.36	6441.00
15.000	1400.00	0.00	0.00	745.70	4620.00	760.64	0.00	760.93	1.03	2.42	2210.02	4561.42
15.000	1400.00	0.00	0.00	745.70	6210.00	762.57	0.00	762.66	1.05	2.70	3086.89	6072.01
15.000	1400.00	0.00	0.00	745.70	6910.00	763.43	0.00	763.52	0.99	2.74	3472.84	6948.82
15.000	1400.00	0.00	0.00	745.70	8580.00	765.26	0.00	765.38	0.97	2.88	4284.11	9161.07
16.100	1325.00	0.00	0.00	742.80	4620.00	760.90	0.00	761.04	0.87	2.12	2273.30	5020.20
16.100	1325.00	0.00	0.00	742.80	6210.00	762.71	0.00	762.81	0.78	2.49	2622.95	7039.21
16.100	1325.00	0.00	0.00	742.80	6910.00	763.53	0.00	763.63	0.79	2.62	2789.34	7755.04
16.100	1325.00	0.00	0.00	742.80	8580.00	765.36	0.00	765.49	0.77	2.89	3151.22	9464.53
16.200	50.00	0.00	0.00	742.80	4620.00	760.93	0.00	761.03	0.70	2.14	2134.36	5423.79
16.200	50.00	0.00	0.00	742.80	6210.00	762.71	0.00	762.81	0.65	2.52	2460.66	6729.00
16.200	50.00	0.00	0.00	742.80	6910.00	763.55	0.00	763.64	0.68	2.65	2606.70	7365.35
16.200	50.00	0.00	0.00	742.80	8580.00	765.36	0.00	765.46	0.93	2.93	2925.93	8887.74
16.400	10.50	766.43	766.70	743.50	4620.00	761.01	0.00	761.06	0.5	2.00	2304.07	6067.14
16.400	10.50	766.43	766.70	743.50	6210.00	762.77	0.00	762.83	1.72	2.35	2614.56	7440.12
16.400	10.50	766.43	766.70	743.50	6910.00	763.60	0.00	763.69	0.72	2.50	2761.32	8120.52
16.400	10.50	766.43	766.70	743.50	8580.00	765.62	0.00	765.75	0.75	2.75	3119.02	9886.10
16.500	50.00	0.00	0.00	745.70	4620.00	761.11	0.00	761.19	0.93	2.41	2067.37	4765.91
16.500	50.00	0.00	0.00	745.70	6210.00	762.79	0.00	762.87	1.03	2.76	2457.39	6111.72
16.500	50.00	0.00	0.00	745.70	6910.00	763.57	0.00	763.71	1.04	2.95	2700.27	7152.10
16.500	50.00	0.00	0.00	745.70	8580.00	765.61	0.00	765.75	1.00	3.12	3227.71	8582.42
17.300	1400.00	0.00	0.00	747.60	4620.00	761.37	0.00	761.40	3.46	4.66	1866.90	2462.00
17.300	1400.00	0.00	0.00	747.60	6210.00	762.77	0.00	762.83	3.93	5.44	1247.71	3132.64
17.300	1400.00	0.00	0.00	747.60	6910.00	763.55	0.00	763.61	3.91	5.69	1326.35	3462.75
17.300	1400.00	0.00	0.00	747.60	8580.00	765.36	0.00	765.43	3.94	6.17	1530.32	4324.90

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FORM 1411-GB PRINTED BY ROTARY MANIFOLD FORMS,

KALAMAZOO V. KALAMAZOO

SUMMARY PRINTOUT TABLE 150

SPEED		DIESEL	DIF.SI	GASOLN	DIESEL	TEMPER	ALC
7.300	5950.30	757.45	1.60	0.30	0.50	49.00	0.00
7.100	6650.00	759.57	1.02	0.00	0.00	110.50	0.00
7.700	7399.00	759.05	1.02	0.30	0.00	110.50	0.00
7.000	9150.00	761.00	1.00	0.50	0.50	150.30	0.00
6.100	4941.00	756.74	1.00	0.51	0.01	107.10	1800.30
6.000	6 3.00	7 3.50	1.00	0.52	0.01	109.10	1 00.30
6.000	7951.00	750.46	1.00	0.51	1.02	401.21	1800.30
7.000	9150.00	761.45	0.00	0.60	2.24	405.50	1800.30
9.100	4950.00	756.37	0.00	0.01	0.01	205.10	1150.30
9.100	6550.00	760.16	0.00	0.01	0.01	107.50	1150.30
9.100	7950.00	761.15	0.00	0.01	0.01	205.10	1150.30
9.100	9540.00	761.85	0.00	0.01	0.01	256.76	1150.30
9.005	6750.00	759.05	0.00	0.00	0.00	49.10	50.00
9.004	8151.00	761.87	0.00	0.00	0.01	107.07	50.00
9.000	9450.00	761.51	0.00	0.00	0.01	205.10	50.00
9.000	9150.00	761.05	0.00	0.00	0.01	256.76	50.00
7.300	6750.00	759.05	0.00	-0.00	0.00	49.10	1.00
7.300	8550.00	760.71	0.00	-0.00	0.00	107.50	1.00
7.300	9750.00	761.51	0.00	-0.00	0.00	205.10	1.00
7.300	9150.00	761.05	0.00	-0.00	0.00	256.76	1.00
11.300	6750.00	759.05	0.00	0.00	0.00	49.10	1.00
11.300	8550.00	760.71	0.00	0.00	0.00	107.50	1.00
11.300	9750.00	761.51	0.00	0.00	0.00	205.10	1.00
11.300	9150.00	761.05	0.00	0.00	0.00	256.76	1.00
13.150	6350.00	759.03	0.00	0.00	0.00	49.50	750.00
13.150	8150.00	760.79	0.00	0.00	0.00	107.50	750.00
13.150	9350.00	761.59	0.00	0.00	0.00	205.10	750.00
13.150	9150.00	761.05	0.00	0.00	0.00	256.76	750.00
11.300	4950.00	759.41	0.00	0.00	0.00	111.50	50.00
11.300	6550.00	760.81	0.00	0.00	0.00	111.50	50.00
11.300	7950.00	761.55	0.00	0.00	0.00	111.50	50.00
11.300	9150.00	761.05	0.00	0.00	0.00	111.50	50.00

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SECS.D	D	CUBEL	DI..eP	DIFNER	DIFK.S	TSMPID	ALC-
11.300	6940.30	759.59	0.05	-0.52	0.00	191.00	1.00
11.300	6640.30	760.79	0.05	-0.34	1.40	191.00	1.00
11.300	7390.00	761.31	0.00	-0.53	1.92	191.00	1.00
11.300	9160.00	762.59	0.06	-0.27	3.10	191.20	1.00
11.00	4[illegible]3.01	7[illegible]	0.00	1.61	0.[illegible]	191.20	[illegible]
11.400	3648.01	759.98	0.00	1.07	[illegible]	191.[illegible]	91.60
11.400	7392.03	761.41	0.30	1.92	1.[illegible]	191.[illegible]	91.60
11.500	9186.02	762.93	0.30	1.14	2.[illegible]	191.[illegible]	91.20
11.502	4941.02	759.5[illegible]	0.30	1.0[illegible]	2.[illegible]	1[illegible]	1.20
11.[illegible]	6[illegible]	[illegible]	1.30	[illegible]	[illegible]	1[illegible]	[illegible]
11.502	7390.00	761.51	0.30	0.12	2.06	191.00	1.20
11.500	9180.00	762.71	0.30	0.19	3.17	191.20	1.00
11.[illegible]	[illegible]50.00	7[illegible]	[illegible]	0.0[illegible]	[illegible]	1[illegible]	[illegible]
11.[illegible]	6[illegible]0.00	7[illegible]	[illegible]	[illegible]	[illegible]	19[illegible]	[illegible]
11.[illegible]	7[illegible]0.00	7[illegible]	[illegible]	0.0[illegible]	[illegible]	19[illegible]	[illegible]
11.[illegible]	9130.00	76[illegible]	0.30	0.05	3.22	19[illegible]	50.[illegible]
11.700	5950.30	759.71	0.02	0.27	0.00	192.00	200.00
11.700	6[illegible]0.30	7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.[illegible]	9[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.000	5947.03	759.79	0.02	1.[illegible]	0.30	21[illegible]	[illegible]
1[illegible].000	6[illegible]	761.37	0.06	[illegible]	1.4[illegible]	[illegible]	[illegible]
12.000	7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.[illegible]	[illegible]	[illegible]	[illegible]	2.[illegible]	[illegible]	[illegible]	[illegible]
12.[illegible]	[illegible]	759.[illegible]	[illegible]	1.[illegible]	0.[illegible]	[illegible]	[illegible]
12.[illegible]	5[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.[illegible]	7592.03	7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.[illegible]	9[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.[illegible]	[

SECND	Q	C.SEL	DIFUSP	DIF.SX	DIFCHS	TOPNID	XLCH
15.300	4960.00	759.94	0.00	-0.12	0.03	180.70	1.90
13.300	6643.00	761.35	0.00	-0.14	1.49	180.20	1.50
13.500	7393.00	762.06	0.30	-0.19	2.19	180.20	1.50
13.300	9137.00	763.49	0.30	-0.27	3.61	180.20	1.21
13.400	6812.0	760.63	0.30	-0.09	1.01	183.10	49.60
13.400	6542.00	761.44	0.30	-0.07	0.45	182.70	49.63
13.400	7395.00	762.19	0.30	-0.12	2.12	180.20	49.60
13.400	9317.00	763.57	0.30	-0.16	3.99	182.70	49.67
14.500	6345.00	761.37	0.30	-0.07	0.02	180.70	1.50
13.200	7340.00	762.17	0.30	-0.07	1.02	180.20	1.50
13.500	7390.00	764.69	0.30	-0.30	2.00	182.70	1.50
13.500	9930.00	764.31	0.30	-0.27	4.04	183.70	1.50
15.000	6750.00	761.23	0.30	-0.01	1.0	182.70	49.60
13.400	6550.00	761.63	0.30	-0.06	1.6	182.70	49.63
13.000	7390.00	762.03	0.30	-0.08	2.02	182.70	49.60
13.600	9730.00	764.21	0.30	-0.05	4.00	183.70	50.00
14.100	6620.00	761.51	0.00	0.02	1.00	182.70	1.50.00
14.100	6710.00	762.11	0.00	0.00	1.00	182.70	49.60
14.100	6910.00	763.49	0.00	0.01	2.00	182.70	49.60
14.100	9530.00	765.41	0.00	0.01	4.01	182.70	49.60
14.100	6520.00	761.51	2.31	0.01	0.00	182.70	49.60
14.100	6710.00	762.11	2.00	0.01	1.00	182.70	49.62
14.100	6910.00	763.49	2.00	0.01	2.00	182.70	49.60
14.100	9510.00	765.41	2.00	0.01	4.01	182.70	49.60
14.300	6520.00	761.52	2.00	-0.02	0.00	182.70	1.50
14.300	6710.00	762.11	2.00	-0.01	1.00	182.70	49.62
14.300	6910.00	763.49	2.00	-0.01	2.00	182.70	1.50
14.300	9510.00	765.41	2.00	-0.01	4.00	182.70	1.50
14.500	6520.00	761.52	0.30	0.01	0.00	182.70	1.50
14.400	6710.00	762.12	0.30	0.01	1.00	182.70	49.60
14.400	6911.00	763.50	0.30	0.02	2.00	182.70	49.60
14.300	9510.00	765.42	0.30	0.03	4.01	182.70	49.60
14.000	6525.00	761.53	0.30	0.02	0.00	182.70	1.50
14.500	6711.00	762.13	0.30	0.02	1.00	182.70	1.50
14.500	6910.00	763.51	0.30	0.02	2.00	182.70	1.50
14.500	9510.00	765.43	0.30	0.03	4.00	182.70	1.50
14.000	6521.00	761.53	0.00	0.00	0.00	182.70	1.50
14.000	6711.00	762.13	0.00	0.00	1.00	182.70	1.50
14.000	6911.00	763.51	0.00	0.00	2.00	182.70	1.50
14.000	9511.00	765.43	0.00	0.00	4.00	182.70	1.50
15.200	6620.00	761.54	2.00	0.00	0.00	182.70	1.50.00
14.200	6710.00	762.14	2.00	0.00	1.00	182.70	49.62
14.200	6910.00	763.51	2.00	0.00	2.00	182.70	49.60
14.200	9510.00	765.43	2.00	0.00	4.00	182.70	49.60
14.300	6520.00	761.54	2.00	-0.02	0.00	182.70	1.50
14.300	6710.00	762.14	2.00	-0.01	1.00	182.70	49.62
14.300	6910.00	763.51	2.00	-0.01	2.00	182.70	1.50
14.300	9510.00	765.43	2.00	-0.01	4.00	182.70	1.50
14.500	6520.00	761.52	0.30	0.01	0.00	182.70	1.50
14.400	6710.00	762.12	0.30	0.01	1.00	182.70	49.60
14.400	6911.00	763.50	0.30	0.02	2.00	182.70	49.60
14.300	9510.00	765.42	0.30	0.03	4.01	182.70	49.60
14.000	6525.00	761.53	0.30	0.02	0.00	182.70	1.50
14.500	6711.00	762.13	0.30	0.02	1.00	182.70	1.50
14.500	6910.00	763.51	0.30	0.02	2.00	182.70	1.50
14.500	9510.00	765.43	0.30	0.03	4.00	182.70	1.50
14.000	6521.00	761.53	0.00	0.00	0.00	182.70	1.50
14.000	6711.00	762.13	0.00	0.00	1.00	182.70	1.50
14.000	6911.00	763.51	0.00	0.00	2.00	182.70	1.50
14.000	9511.00	765.43	0.00	0.00	4.00	182.70	1.50
15.200	6620.00	761.54	2.00	0.00	0.00	182.70	1.50.00
14.200	6710.00	762.14	2.00	0.00	1.00	182.70	49.62
14.200	6910.00	763.51	2.00	0.00	2.00	182.70	49.60
14.200	9510.00	765.43	2.00	0.00	4.00	182.70	49.60

PRINTED IN U.S.A.
FORM 1411.00 PRINTED BY ROTARY MANIFOLD FORMS.

SECNO	L	LOSEL	MOFUSP	DIFUSP	SIFUSP	FLOWID	ALGP
16.100	5021.00	760.97	0.00	2.13	2.03	212.00	1320.00
16.100	4210.00	762.71	0.00	2.11	1.71	222.00	1520.00
16.100	5010.00	763.53	0.00	0.12	2.56	202.00	1920.00
16.100	5560.00	761.31	0.10	2.10	4.55	211.00	1520.00
16.150	4540.00	760.47	0.20	0.00	4.00	192.10	1.00
16.200	5210.00	762.71	0.27	0.00	1.75	192.10	1.00
16.250	4510.00	763.57	0.30	0.00	2.03	192.10	1.00
16.300	5570.00	765.37	0.33	0.00	4.54	192.10	1.00
16.400	5540.00	761.01	2.17	0.00	6.00	192.10	1.00
16.400	5210.21	764.77	2.07	0.00	1.97	192.10	1.00
16.400	5570.20	765.50	2.02	0.37	2.54	192.10	1.00
16.400	5520.33	765.54	2.03	0.20	4.20	192.10	10.20
16.500	4327.27	761.31	0.00	-0.07	0.00	192.10	10.20
16.400	5211.27	762.74	0.00	-0.34	0.00	192.10	10.20
16.200	4410.00	765.59	0.00	-0.01	2.03	252.00	20.20
16.150	5330.07	764.04	0.00	-0.01	4.01	232.00	20.20
17.150	4570.00	761.37	0.00	0.00	2.00	152.00	1420.20
17.200	4210.00	762.72	0.00	0.00	1.70	172.00	1.00
17.250	4910.00	763.57	0.00	-0.00	2.00	192.00	1.00
17.300	5530.00	765.37	0.00	-0.00	4.00	192.00	1.00

PRINTED IN U.S.A.

FORM 1411-GS PRINTED BY ROTARY MANIFOLD FORMS.

FLOOD INSURANCE ZONE DATA FOR KALAMAZOO R. KALAMAZOO

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

STATION	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE (FEET) FOR FLOOD HAZARD FACTOR OF		
		1.0	2.0	4.0
7.000	0.	-1.7	-0.3	1.1
8.000	5423.	-1.7	+0.1	1.4
9.100	2704.	-1.4	-0.1	1.4
9.200	2751.	-1.1	-0.1	1.3
9.300	2797.	-1.7	-0.3	1.1
9.400	2794.	-1.3	-0.1	1.1
9.500	2795.	-1.5	-0.3	1.1
9.600	2711.	-1.7	-0.3	1.1
10.000	3769.	-1.5	-0.2	1.1
10.500	4397.	-1.9	-0.3	1.1
11.200	4345.	-1.9	-0.3	1.1
11.300	4546.	-1.9	-0.5	1.1
11.400	4307.	-1.9	-1.5	1.1
11.700	5520.	-2.0	-1.2	1.1
11.800	5330.	-2.0	-1.2	1.2
11.900	5130.	-2.0	-1.2	1.2
12.300	5736.	-2.0	-1.2	1.2
12.400	5700.	-2.0	-1.2	1.2
12.500	5654.	-2.0	-1.2	1.2
13.100	6115.	-2.0	-1.2	1.2
13.200	6152.	-2.0	-1.2	1.2
13.300	6192.	-2.0	-1.2	1.2
14.500	7078.	-2.0	-1.2	1.2
15.300	7378.	-2.0	-1.7	1.4
15.400	7414.	-2.0	-1.7	1.4
15.500	7452.	-2.0	-1.7	1.4
16.000	7705.	-2.0	-1.7	1.4
16.100	7747.	-2.0	-1.7	1.4
16.200	7787.	-2.0	-1.7	1.4
16.300	7832.	-2.0	-1.7	1.4
16.400	7877.	-2.0	-1.7	1.4

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP/COMSTOCK TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

****

HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
ERROR CORR - U1
MODIFICATION = 50,51,52

****

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

KALAMAZOO RIV

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	IWR*3	VCH	AREA	.01K
8.000	1400.00	0.00	0.00	747.00	6910.00	763.58	0.00	764.07	3.95	5.67	1336.42	3478.98
8.000	1400.00	0.00	0.00	747.00	8580.00	765.55	0.00	766.12	3.89	6.14	1550.72	4352.16
8.900	1350.00	0.00	0.00	749.40	6210.00	763.46	0.00	764.04	2.36	4.01	1795.76	4695.62
8.900	1350.00	0.00	0.00	749.40	6910.00	764.54	0.00	764.98	2.47	4.34	1946.76	5062.19
8.900	1350.00	0.00	0.00	749.40	8570.00	766.32	0.00	766.58	2.04	4.16	2314.05	6000.06
9.000	50.00	0.00	0.00	749.20	4620.00	761.73	0.00	761.85	1.70	2.72	1700.41	3540.31
9.000	50.00	0.00	0.00	749.20	6210.00	763.57	0.00	763.71	1.82	3.05	2049.32	4772.80
9.000	50.00	0.00	0.00	749.20	6910.00	764.43	0.00	764.57	1.64	3.17	2210.24	5354.14
9.000	50.00	0.00	0.00	749.20	8570.00	766.45	0.00	766.64	1.56	3.36	2623.76	6745.06
9.100	56.00	768.80	764.20	751.30	4620.00	761.74	0.00	761.86	1.86	2.78	1659.94	3391.69
9.100	56.00	768.80	764.20	751.30	6210.00	763.58	0.00	763.73	1.82	3.09	2009.46	4606.86
9.100	56.00	768.80	764.20	751.30	6900.00	764.55	0.00	764.70	1.70	3.25	2193.21	5268.53
9.100	56.00	768.80	764.20	751.30	8570.00	766.72	0.00	766.88	1.56	3.49	2626.26	6738.63
9.200	50.00	0.00	0.00	751.30	4620.00	761.75	0.00	761.87	1.85	2.78	1661.61	3397.18
9.200	50.00	0.00	0.00	751.30	6210.00	763.59	0.00	763.74	1.81	3.09	2011.13	4612.57
9.200	50.00	0.00	0.00	751.30	6900.00	764.56	0.00	764.71	1.69	3.14	2194.73	5302.22
9.200	50.00	0.00	0.00	751.30	8570.00	766.7	0.00	766.89	1.51	3.39	2628.19	6774.69
10.000	1700.00	0.00	0.00	751.60	4620.00	762.02	0.00	762.21	2.11	2.95	2004.60	5174.79
10.000	1700.00	0.00	0.00	751.60	6210.00	763.91	0.00	764.05	1.81	3.14	2813.27	4620.13
10.000	1700.00	0.00	0.00	751.60	6900.00	764.86	0.00	764.99	1.58	3.12	3297.07	5482.45
10.000	1700.00	0.00	0.00	751.60	8570.00	767.1	0.00	767.15	1.22	3.07	4520.40	7769.54
11.000	1200.00	0.00	0.00	754.00	4620.00	762.53	0.00	762.66	1.53	2.60	3018.	5245.94
11.000	1200.00	0.00	0.00	754.	6210.	764.	0.00	764.13	1.33	2.85	4015.	6267.36
11.000	1200.00	0.00	0.00	754.00	6900.00	765.07	0.00	765.17	1.26	2.96	4615.75	6109.67
11.000	1200.00	0.00	0.00	754.00	8570.00	767.15	0.00	767.26	0.94	2.53	6020.15	8844.7
11.[illegible]	[illegible]	[illegible]	[illegible]	756.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2360
11.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	431
11.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	55
11.200	850.00	0.00	0.00	756.00	8570.00	767.[illegible]	0.00	767.34	0.95	2.23	8303.79	8

SECOND	ELEV	FLTID	ELEV	ELMIN		ESEL	CNTRS	FD	TIMES	VEL	AREA	.01K
12.000	800.00	0.00	.00	749.80	4620.00	762.71	.00	762.61	1.35	2.57	2619.10	3962.51
12.000	800.00	0.00	0.00	749.80	6210.00	764.59	0.00	764.49	1.19	2.69	3864.36	5692.72
12.000	800.00	0.00	0.00	749.80	6900.00	765.27	0.00	765.16	1.05	2.63	4752.38	6800.32
12.000	800.00	0.00	0.00	749.80	8570.00	767.32	0.00	767.19	0.76	2.50	6864.95	9859.46
12.400	1600.00	0.00	.00	754.20	4620.00	763.06	.00	762.96	3.56	3.15	1511.50	2344.00
12.400	1600.00	0.00	0.00	754.20	6210.00	764.69	0.00	764.61	3.07	3.41	1963.07	3545.37
12.800	1600.00	0.00	0.00	754.20	6900.00	765.46	0.00	765.35	2.66	3.28	2196.16	4229.54
12.800	1600.00	0.00	0.00	754.20	8570.00	767.46	0.00	767.32	2.00	3.27	2755.12	6066.00
12.900	100.00	0.00	.00	754.20	4620.00	763.06	.00	762.96	3.56	3.14	1471.39	2359.75
12.900	100.00	0.00	0.00	754.20	6210.00	764.68	0.00	764.60	3.14	3.37	1972.58	3545.65
12.900	100.00	0.00	0.00	754.20	6900.00	765.45	0.00	765.34	2.73	3.31	2205.55	4177.37
12.900	100.00	0.00	0.00	754.20	8570.00	767.46	0.00	767.32	2.08	3.31	2585.89	5943.73
13.000	1.00	770.30	774.60	754.20	4620.00	763.06	0.00	763.22	4.35	3.24	1425.87	2215.23
13.000	1.00	770.30	774.60	754.20	6210.00	764.67	0.00	764.55	3.51	3.43	1917.45	3517.26
13.000	1.00	770.30	774.60	754.20	6900.00	765.51	0.00	765.40	3.04	3.41	2162.43	4255.92
13.000	1.00	770.30	774.60	754.20	8570.00	767.47	0.00	767.33	2.32	3.41	2544.11	6026.94
13.100	62.00	770.30	774.60	754.20	4620.00	763.09	0.00	763.25	4.30	3.23	1430.81	2226.00
13.100	62.00	770.30	774.60	754.20	6210.00	764.69	0.00	764.87	3.48	3.41	1923.06	3330.86
13.100	62.00	770.30	774.60	754.20	6900.00	765.52	0.00	765.40	3.05	3.41	2167.44	4265.77
13.100	62.00	770.30	774.60	754.20	8570.00	767.49	0.00	767.37	2.31	3.42	2548.27	6034.25
13.200	1.00	0.00	0.00	754.20	4620.00	763.10	0.00	763.25	3.82	3.12	1482.78	2364.47
13.200	1.00	0.00	0.00	754.20	6210.00	764.71	0.00	764.88	3.09	3.29	1887.85	3530.37
13.200	1.00	0.00	0.00	754.20	6900.00	765.54	0.00	765.71	2.70	3.29	2096.78	4201.25
13.200	1.00	0.00	0.00	754.20	8570.00	767.51	0.00	767.37	2.07	3.31	2571.18	5975.37
14.000	50.00	0.0	0.00	754.10	4620.00	763.17	0.00	763.26	2.54	3.59	1750.61	2670.62
14.000	50.00	0.00	0.00	754.10	6210.00	764.78	0.00	764.91	2.33	2.81	2295.90	4069.07
14.000	50.00	0.00	0.00	754.10	6900.00	765.61	0.00	765.75	2.00	2.79	2588.74	4881.95
14.000	50.00	0.00	0.00	754.10	8570.00	767.58	0.00	767.70	1.48	2.78	3280.02	7042.45
15.000	1800.00	0.00	0.00	753.30	4530.00	763.6	0.00	763.79	3.56	3.76	1466.11	2413.77
15.000	1800.00	0.00	0.00	753.30	6100.00	765.20	0.00	765.46	3.23	3.93	2101.15	3852.22
15.000	1800.00	0.00	0.00	753.30	6760.00	765.97	0.00	766.19	2.91	3.98	2543.09	3972.84
15.000	1800.00	0.00	0.00	753.30	8420.00	767.84	0.00	768.04	2.24	3.89	3606.94	5628.10
16.000	450.00	0.00	0.00	753.70	4530.00	763.85	0.00	763.97	4.09	3.59	1171.14	2254.94
16.000	450.00	0.00	0.00	753.70	6100.00	765.51	0.00	765.61	4.05	4.33	1554.19	3030.02
16.000	450.00	0.00	0.00	753.70	6760.00	766.30	0.00	766.36	3.75	4.41	1748.72	3900.22
16.000	450.00	0.00	0.00	753.70	8420.00	767.90	0.00	768.18	3.01	4.41	2754.22	4656.46
17.000	650.00	0.00	0.00	754.50	4530.00	764.15	0.00	764.35	4.37	3.94	1195.55	2166.46
17.000	650.00	0.00	0.00	754.50	6100.00	765.81	0.00	765.92	4.15	4.04	1581.93	2972.92
17.000	650.00	0.00	0.00	754.50	6760.00	766.60	0.00	766.67	3.84	4.12	1779.53	4445.47
17.000	650.00	0.00	0.00	754.50	8420.00	768.20	0.00	768.35	3.1	4.3	2754.03	4.6.55
18.000	560.00	0.00	0.00	755.30	4530.00	764.35	0.00	764.67	6.75	5.55	1111.67	1743.54
18.000	560.00	0.00	0.00	755.30	6100.00	765.88	0.00	766.17	5.99	4.88	1553.53	2493.18
18.000	560.00	0.00	0.00	755.30	6760.00	766.5	0.00	766.78	5.62	4.77	1751.61	2752.13
18.000	560.00	0.00	0.00	755.30	8420.00	768.2	0.00	768.37	4.7	4.5	2251.07	4113.01

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EC	10K*S	VCH	AKCA	.01K
19.000	300.00	0.00	0.00	755.30	4530.00	764.57	0.00	764.86	6.02	4.39	1171.46	1845.71
19.000	300.00	0.00	0.00	755.30	6100.00	766.01	0.00	766.35	5.49	4.75	1624.71	2604.37
19.000	300.00	0.00	0.00	755.30	6780.00	766.71	0.00	767.04	5.03	4.79	1872.50	3021.92
19.000	300.00	0.00	0.00	755.30	8420.00	768.41	0.00	768.72	3.97	4.77	2708.20	4225.09
21.000	240.00	0.00	0.00	756.80	4530.00	764.80	0.00	765.00	4.30	3.40	1621.13	2185.36
21.000	240.00	0.00	0.00	756.80	6100.00	766.29	0.00	766.47	3.55	3.55	2252.11	3239.55
21.000	240.00	0.00	0.00	756.80	6780.00	766.97	0.00	767.15	3.17	3.56	2551.12	3809.12
21.000	240.00	0.00	0.00	756.80	8420.00	768.67	0.00	768.81	2.09	3.28	4351.46	5825.73
22.000	530.00	0.00	0.00	753.00	4530.00	765.01	0.00	765.15	1.86	2.99	1520.88	3320.06
22.000	530.00	0.00	0.00	753.00	6100.00	766.45	0.00	766.61	2.16	3.50	1752.22	4149.04
22.000	530.00	0.00	0.00	753.00	6780.00	767.10	0.00	767.30	2.20	3.66	1882.81	4567.57
22.000	530.00	0.00	0.00	753.00	8420.00	768.76	0.00	768.91	1.59	3.37	3910.48	6679.48
23.000	50.00	0.00	0.00	752.40	4530.00	765.00	0.00	765.18	2.54	3.39	1334.54	2840.22
23.000	50.00	0.00	0.00	752.40	6100.00	766.41	0.00	766.65	2.89	3.97	1540.35	3590.30
23.000	50.00	0.00	0.00	752.40	6780.00	767.08	0.00	767.35	2.92	4.14	1636.02	3966.26
23.000	50.00	0.00	0.00	752.40	8420.00	768.69	0.00	768.90	2.92	4.50	1872.79	4931.03
23.100	1.00	769.80	769.80	752.40	4530.00	764.99	0.00	765.19	2.92	3.54	1279.82	2648.79
23.100	1.00	769.80	769.80	752.40	6100.00	766.40	0.00	766.66	3.31	4.13	1477.93	3351.15
23.100	1.00	769.80	769.80	752.40	6780.00	767.07	0.00	767.36	3.35	4.31	1572.03	3705.69
23.100	1.00	769.80	769.80	752.40	8420.00	768.67	0.00	769.01	3.34	4.68	1796.63	4610.56
23.900	52.50	769.80	769.80	754.00	4530.00	764.98	0.00	765.23	4.41	4.00	1132.16	2158.08
23.900	52.50	769.80	769.80	754.00	6100.00	766.39	0.00	766.72	4.71	4.59	1330.37	2810.17
23.900	52.50	769.80	769.80	754.00	6780.00	767.06	0.00	767.41	4.66	4.76	1424.38	3141.26
23.900	52.50	769.80	769.80	754.00	8420.00	768.66	0.00	769.07	4.45	5.10	1650.65	3992.05
24.000	1.00	0.00	0.00	754.00	4530.00	765.01	0.00	765.24	3.89	3.85	1175.26	2296.65
24.000	1.00	0.00	0.00	754.00	6100.00	766.42	0.00	766.72	4.15	4.42	1381.63	2992.62
24.000	1.00	0.00	0.00	754.00	6780.00	767.09	0.00	767.42	4.11	4.58	1479.33	3345.42
24.000	1.00	0.00	0.00	754.00	8420.00	768.70	0.00	769.08	3.92	4.91	1714.30	4251.30
25.000	50.00	0.00	0.00	754.00	4530.00	765.03	0.00	765.26	3.74	3.82	1213.53	2343.63
25.000	50.00	0.00	0.00	754.00	6100.00	766.45	0.00	766.75	3.92	4.36	1451.91	3081.79
25.000	50.00	0.00	0.00	754.00	6780.00	767.13	0.00	767.44	3.84	4.52	1568.07	3460.02
25.000	50.00	0.00	0.00	754.00	8420.00	768.75	0.00	769.10	3.57	4.81	1859.22	4454.45
26.000	965.00	0.00	0.00	756.90	4530.00	765.47	0.00	765.66	4.68	3.62	1753.75	2094.60
26.000	965.00	0.00	0.00	756.90	6090.00	766.94	0.00	767.09	3.30	3.50	2882.54	3354.01
26.000	965.00	0.00	0.00	756.90	6770.00	767.62	0.00	767.76	2.77	3.39	3474.16	4069.02
26.000	965.00	0.00	0.00	756.90	8410.00	769.25	0.00	769.36	1.88	3.14	5069.66	6140.25
27.000	3180.00	0.00	0.00	759.10	4530.00	766.91	0.00	767.05	4.10	3.12	2262.83	2237.46
27.000	3180.00	0.00	0.00	759.10	6090.00	768.24	0.00	768.38	3.56	3.29	3211.21	3228.63
27.000	3180.00	0.00	0.00	759.10	6770.00	768.90	0.00	769.04	3.24	3.36	3711.91	3762.69
27.000	3180.00	0.00	0.00	759.10	8410.00	770.51	0.00	770.64	2.4	3.24	5105.52	5336.98
28.000	1420.00	0.00	0.00	759.10	4530.00	767.36	0.00	767.48	2.36	2.84	1639.82	2951.22
28.000	1420.00	0.00	0.00	759.10	6090.00	768.45	0.00	768.62	2.64	3.30	1939.37	3747.45
28.000	1420.00	0.00	0.00	759.10	6770.00	769.12	0.00	769.24	2.69	3.46	2075.06	4125.30
28.000	1420.00	0.00	0.00	760.00	8410.00	770.11	0.00	770.11	0.10	0.72	19320.75	26655.20

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	TOPWS	VCH	AREA	.01K
	29.000	50.00	0.00	0.00	758.10	4530.00	767.49	0.00	767.50	2.22	2.66	1703.05	3038.62
1	29.000	50.00	0.00	0.00	758.10	6090.00	768.49	0.00	768.64	2.57	3.07	1984.94	3801.49
2	29.000	50.00	0.00	0.00	758.10	6770.00	769.00	0.00	769.16	2.63	3.20	2117.79	4176.93
3	29.000	50.00	0.00	0.00	758.10	8410.00	770.02	0.00	770.21	2.85	3.52	2392.19	4982.00
4													
5	29.100	1.00	778.20	774.50	758.10	4530.00	767.53	0.00	767.54	5.62	3.52	1288.49	1910.04
6	29.100	1.00	778.20	774.50	758.10	6090.00	768.44	0.00	768.70	5.43	4.04	1505.67	2401.94
7	29.100	1.00	778.20	774.50	758.10	6770.00	768.94	0.00	769.22	6.53	4.20	1610.05	2649.25
8	29.100	1.00	778.20	774.50	758.10	8410.00	769.95	0.00	770.28	6.98	4.60	1826.44	3183.13
9													
10	29.900	44.00	778.20	774.50	758.10	4530.00	767.56	0.00	767.57	5.58	3.51	1291.75	1917.86
11	29.900	44.00	778.20	774.50	758.10	6090.00	768.47	0.00	768.72	6.37	4.03	1510.72	2413.75
12	29.900	44.00	778.20	774.50	758.10	6770.00	768.95	0.00	769.25	6.47	4.19	1615.34	2661.95
13	29.900	44.00	778.20	774.50	758.10	8410.00	769.98	0.00	770.31	6.91	4.59	1832.53	3198.56
14													
15	30.000	1.00	0.00	0.00	758.10	4530.00	767.48	0.00	767.59	2.13	2.62	1728.48	3105.48
16	30.000	1.00	0.00	0.00	758.10	6090.00	768.62	0.00	768.76	2.45	3.02	2016.22	3889.03
17	30.000	1.00	0.00	0.00	758.10	6770.00	769.15	0.00	769.28	2.51	3.15	2151.93	4274.98
18	30.000	1.00	0.00	0.00	758.10	8410.00	770.17	0.00	770.35	2.71	3.46	2433.53	5106.57
19													
20	31.000	50.00	0.00	0.00	758.10	4530.00	767.50	0.00	767.60	2.11	2.61	1733.22	3117.98
21	31.000	50.00	0.00	0.00	758.10	6090.00	768.63	0.00	768.77	2.43	3.01	2022.08	3905.47
22	31.000	50.00	0.00	0.00	758.10	6770.00	769.14	0.00	769.30	2.49	3.14	2157.34	4292.02
23	31.000	50.00	0.00	0.00	758.10	8410.00	770.16	0.00	770.37	2.69	3.45	2440.22	5126.83
24													
25	32.000	394.00	0.00	0.00	751.90	4530.00	767.61	0.00	767.63	0.22	1.11	4105.87	9677.36
26	32.000	394.00	0.00	0.00	751.90	6090.00	768.78	0.00	768.81	0.28	1.34	4608.72	11486.35
27	32.000	394.00	0.00	0.00	751.90	6770.00	769.30	0.00	769.34	0.30	1.43	4864.56	12351.36
28	32.000	394.00	0.00	0.00	751.90	8410.00	770.37	0.00	770.41	0.35	1.65	5460.18	14209.09
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KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
8.000	4620.00	761.07	0.00	0.00	0.00	104.59	1400.00
8.000	6210.00	762.77	0.00	0.00	0.00	107.1.	1400.00
8.000	**6910.00**	**763.58**	**0.00**	**0.00**	**0.00**	**108.16**	**1400.00**
8.000	**8580.00**	**765.59**	**0.00**	**0.00**	**0.00**	**109.10**	**1400.00**
8.900	4620.00	761.65	0.00	0.58	0.00	170.47	1350.00
8.900	6210.00	763.46	0.00	0.69	0.00	179.90	1350.00
8.900	6900.00	764.30	0.00	0.72	0.00	182.00	1350.00
8.900	**8570.00**	**766.32**	**0.00**	**0.77**	**0.00**	**182.06**	**1350.00**
9.000	4620.00	761.73	0.00	0.09	0.00	190.00	50.00
9.000	6210.00	763.57	0.00	0.11	0.00	190.00	50.05
9.000	6900.00	764.42	0.00	0.11	0.00	190.00	50.00
9.000	8570.00	766.45	0.00	0.12	0.00	190.00	50.00
9.100	**4620.00**	**761.74**	**0.00**	**0.01**	**0.00**	**190.00**	**56.00**
9.100	**6210.00**	**763.58**	**0.00**	**0.01**	**0.00**	**190.00**	**56.00**
9.100	6900.00	764.55	0.00	0.13	0.00	190.00	56.00
9.100	8570.00	766.72	0.00	0.27	0.00	190.00	56.00
9.200	**4620.00**	**761.75**	**0.00**	**0.01**	**0.00**	**190.00**	**50.00**
9.200	**6210.00**	**763.59**	**0.00**	**0.01**	**0.00**	**190.00**	**50.00**
9.200	**6900.00**	**764.56**	**0.00**	**0.01**	**0.00**	**190.00**	**50.00**
9.200	8570.00	766.72	0.00	0.01	0.00	190.00	50.00
10.000	4620.00	762.08	0.00	0.33	0.00	405.51	1700.00
10.000	**6210.00**	**763.91**	**0.00**	**0.32**	**0.00**	**484.42**	**1700.00**
10.000	**6900.00**	**764.86**	**0.00**	**0.30**	**0.00**	**525.24**	**1700.00**
10.000	**8570.00**	**767.00**	**0.00**	**0.28**	**0.00**	**591.97**	**1700.00**
11.000	4620.00	762.37	0.00	0.29	0.00	641.44	1200.00
11.000	6210.00	764.16	0.00	0.25	0.00	655.72	1200.00
11.000	**6900.00**	**765.09**	**0.00**	**0.23**	**0.00**	**663.05**	**1200.00**
11.000	**8570.00**	**767.19**	**0.00**	**0.18**	**0.00**	**679.70**	**1200.00**
11.200	4620.00	762.53	0.00	0.21	0.00	1034.07	850.00
11.200	6210.00	764.32	0.00	0.16	0.00	1099.00	850.00
11.200	6900.00	765.22	0.00	0.14	0.00	1104.04	850.00
11.200	**8570.00**	**767.29**	**0.00**	**0.11**	**0.00**	**1115.50**	**850.00**
12.000	4620.00	762.71	0.00	0.13	0.00	833.6[illegible]	600.00
12.000	6210.00	764.37	0.00	0.07	0.00	1003.27	600.00
12.000	6900.00	765.17	0.00	0.05	0.00	1015.[illegible]	600.00
12.000	8570.00	767.32	0.00	0.04	0.00	1047.[illegible]	600.00
12.800	**4620.00**	**763.03**	**0.00**	**0.32**	**0.00**	**271.95**	**1600.00**
12.800	**6210.00**	**764.65**	**0.00**	**0.26**	**0.00**	**278.06**	**1600.00**
12.800	6900.00	765.43	0.00	0.21	0.00	281.1[illegible]	1600.00
12.800	8570.00	767.46	0.00	0.14	0.00	284.4[illegible]	1600.00
12.900	**4620.00**	**763.06**	**0.00**	**0.04**	**0.00**	**252.00**	**100.00**
12.900	**6210.00**	**764.68**	**0.00**	**0.03**	**0.00**	**252.00**	**100.00**
12.900	**6900.00**	**765.51**	**0.00**	**0.02**	**0.00**	**252.00**	**100.00**
12.900	8570.00	767.46	0.00	0.02	0.00	252.00	100.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
13.000	4620.00	763.06	0.00	-0.00	0.00	252.00	1.00
13.000	6210.00	764.67	0.00	-0.01	0.00	252.00	1.00
13.000	6900.00	765.50	0.00	-0.01	0.00	252.00	1.00
13.000	8570.00	767.47	0.00	-0.01	0.00	252.00	1.00
13.100	4620.00	763.09	0.00	0.03	0.00	252.00	62.00
13.100	6210.00	764.6[illegible]	0.00	0.02	0.00	252.00	62.00
13.100	6900.00	765.52	0.00	0.02	0.00	252.00	62.00
13.100	8570.00	767.49	0.00	0.01	0.00	252.00	62.00
13.200	4620.00	763.10	0.00	0.01	0.00	252.00	1.00
13.200	6210.00	764.71	0.00	0.02	0.00	252.00	1.00
13.200	6900.00	765.54	0.00	0.02	0.00	252.00	1.00
13.200	8570.00	767.50	0.00	0.02	0.00	252.00	1.00
14.000	4620.00	763.17	0.00	0.07	0.00	322.52	50.00
14.000	6210.00	764.78	0.00	0.07	1.62	352.00	50.00
14.000	6900.00	765.61	0.00	0.07	2.44	352.00	50.00
14.000	8570.00	767.58	0.00	0.08	4.41	352.00	50.00
15.000	4530.00	763.68	0.00	0.51	0.00	435.57	1800.00
15.000	6100.00	765.20	0.00	0.41	1.51	482.75	1800.00
15.000	6780.00	765.97	0.00	0.35	2.29	506.82	1800.00
15.000	8420.00	767.84	0.00	0.26	4.16	613.99	1800.00
16.000	4530.00	763.83	0.00	0.15	0.00	173.41	450.00
16.000	6100.00	765.31	0.00	0.12	1.48	364.79	450.00
16.000	6780.00	766.06	0.00	0.10	2.23	412.37	450.00
16.000	8420.00	767.90	0.00	0.06	4.06	528.10	450.00
17.000	4530.00	764.10	0.00	0.27	0.00	272.06	650.00
17.000	6100.00	765.59	0.00	0.27	1.48	323.28	650.00
17.000	6780.00	766.32	0.00	0.25	2.21	340.12	650.00
17.000	8420.00	768.09	0.00	0.20	3.99	385.10	650.00
18.000	4530.00	764.35	0.00	0.25	0.00	261.73	560.00
18.000	6100.00	765.82	0.00	0.23	1.47	335.29	560.00
18.000	6780.00	766.53	0.00	0.21	2.18	364.54	560.00
18.000	8420.00	768.27	0.00	0.18	3.92	645.55	560.00
19.000	4530.00	764.57	0.00	0.22	0.00	282.39	300.00
19.000	6100.00	766.01	0.00	0.19	1.44	343.29	300.00
19.000	6780.00	766.71	0.00	0.16	2.14	371.72	300.00
19.000	8420.00	768.41	0.00	0.14	3.84	658.94	300.00
21.000	4530.00	764.83	0.00	0.26	0.00	409.01	240.00
21.000	6100.00	766.2[illegible]	0.00	0.27	1.46	[illegible]	240.00
21.000	6780.00	766.97	0.00	0.27	[illegible]	[illegible]	240.00
21.000	8420.00	768.67	0.00	0.26	[illegible]	[illegible]	240.00
22.000	4530.00	765.01	0.00	0.19	0.00	162.46	530.00
22.000	6100.00	766.43	0.00	0.14	1.42	164.52	530.00
22.000	6780.00	767.10	0.00	0.1[illegible]	[illegible]	[illegible]	[illegible]
22.000	8420.00	768.76	0.00	0.09	[illegible]	[illegible]	530.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
23.000	4530.00	765.00	0.00	-0.01	0.00	146.00	50.00
23.000	6100.00	766.41	0.00	-0.01	1.41	146.00	50.00
23.000	6780.00	767.08	0.00	-0.02	2.08	146.00	50.00
23.000	8420.00	768.69	0.00	-0.07	3.69	146.00	50.00
23.100	4530.00	764.99	0.00	-0.01	0.00	146.00	1.00
23.100	6100.00	766.40	0.00	-0.01	1.41	146.00	1.00
23.100	6780.00	767.07	0.00	-0.01	2.07	146.00	1.00
23.100	8420.00	768.67	0.00	-0.01	3.68	146.00	1.00
23.900	4530.00	764.98	0.00	-0.01	0.00	146.00	52.50
23.900	6100.00	766.39	0.00	-0.01	1.41	146.00	52.50
23.900	6780.00	767.06	0.00	-0.01	2.07	146.00	52.50
23.900	8420.00	768.66	0.00	-0.01	3.68	146.00	52.50
24.000	4530.00	765.01	0.00	0.02	0.00	146.00	1.00
24.000	6100.00	766.42	0.00	0.03	1.41	146.00	1.00
24.000	6780.00	767.09	0.00	0.03	2.08	146.00	1.00
24.000	8420.00	768.70	0.00	0.04	3.69	146.00	1.00
25.000	4530.00	765.03	0.00	0.03	0.00	164.35	50.00
25.000	6100.00	766.45	0.00	0.03	1.42	171.52	50.00
25.000	6780.00	767.13	0.00	0.04	2.09	174.96	50.00
25.000	8420.00	768.75	0.00	0.04	3.71	183.12	50.00
26.000	4530.00	765.47	0.00	0.44	0.00	679.83	965.00
26.000	6090.00	766.94	0.00	0.49	1.47	841.44	965.00
26.000	6770.00	767.62	0.00	0.49	2.15	903.14	965.00
26.000	8410.00	769.25	0.00	0.50	3.77	1069.09	965.00
27.000	4530.00	766.91	0.00	1.44	0.00	766.62	3180.00
27.000	6090.00	768.04	0.00	1.10	1.12	921.59	3180.00
27.000	6770.00	768.56	0.00	0.95	1.65	973.01	3180.00
27.000	8410.00	769.91	0.00	0.67	3.00	1160.97	3180.00
28.000	4530.00	767.36	0.00	0.44	0.00	267.92	1420.00
28.000	6090.00	768.45	0.00	0.42	1.09	276.31	1420.00
28.000	6770.00	768.95	0.00	0.39	1.60	280.03	1420.00
28.000	8410.00	770.11	0.00	0.20	2.75	980.65	1420.00
29.000	4530.00	767.39	0.00	0.03	0.00	247.55	50.00
29.000	6090.00	768.49	0.00	0.04	1.10	259.31	50.00
29.000	6770.00	769.00	0.00	0.05	1.61	264.67	50.00
29.000	8410.00	770.02	0.00	-0.09	2.63	275.42	50.00
29.100	4530.00	767.35	0.00	-0.04	0.00	247.19	1.00
29.100	6091.00	768.44	0.01	-0.05	1.09	258.74	1.00
29.100	6770.00	769.03	0.00	-0.06	1.68	264.67	1.00
29.100	8410.00	769.98	0.01	-0.07	2.63	274.70	1.00
29.900	4530.00	767.39	0.00	0.03	0.00	247.32	44.00
29.900	6090.00	768.47	0.00	0.03	1.10	259.00	44.00
29.900	6770.00	768.97	0.00	0.01	1.60	264.35	44.00
29.900	8410.00	769.98	0.00	0.02	2.61	274.49	44.00

SECNO	Q	CUSEL	DIFMEP	DIFMSX	DIFKMS	TOPWID	XLCP
30.000	4530.00	767.68	0.00	0.11	0.00	240.63	1.00
30.000	6090.00	766.62	0.00	0.14	1.12	260.53	1.00
30.000	6770.00	765.1[illegible]	0.00	0.16	1.65	266.0[illegible]	1.00
30.000	3410.00	770.1[illegible]	0.00	0.[illegible]	2.66	277.0[illegible]	[illegible]
31.000	4530.00	767.30	0.00	0.31	0.00	240.03	50.00
31.000	6090.00	768.65	0.00	0.31	1.15	260.82	50.00
31.000	6770.00	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
31.000	3410.00	[illegible]	0.00	[illegible]	2.59	[illegible]	50.00
32.000	4530.00	767.37	0.00	0.13	0.00	400.12	394.00
32.000	6090.00	768.73	0.00	0.15	1.17	468.12	394.00
32.000	6770.00	769.[illegible]	0.00	0.16	1.69	500.79	394.00
32.000	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]

SUMMARY OF ERRORS

FLOOD INSURANCE ZONE DATA FOR KALAMAZOO RIVER

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND [illegible]		
		100	25	0.2[illegible]
[illegible].000	[illegible]	[illegible]	-0.[illegible]	2.0
[illegible].900	[illegible]	[illegible]	-0.[illegible]	2.0
9.000	1400.	-2.7	-0.[illegible]	2.0
9.100	1456.	-2.[illegible]	-1.[illegible]	2.2
9.200	1506.	-2.8	-1.[illegible]	2.2
10.000	[illegible]	[illegible]	[illegible]	[illegible]
11.000	[illegible]	[illegible]	[illegible]	[illegible]
11.200	[illegible]	[illegible]	[illegible]	[illegible]
12.000	5056.	-2.6	-0.9	2.0
12.800	7456.	-2.5	-0.8	2.0
12.900	7556.	-2.4	-0.8	2.0
13.000	[illegible]	[illegible]	[illegible]	[illegible]
13.100	[illegible]	[illegible]	[illegible]	[illegible]
13.200	[illegible]	[illegible]	[illegible]	[illegible]
14.000	7670.	-2.4	-0.[illegible]	2.0
15.000	9470.	-2.3	-0.[illegible]	1.9
16.000	9920.	-2.2	-0.[illegible]	[illegible]
17.000	[illegible]	[illegible]	-0.7	[illegible]
1[illegible].000	[illegible]	[illegible]	-0.[illegible]	[illegible]
1[illegible].000	[illegible]	[illegible]	-0.7	1.7
21.000	11[illegible].	-2.1	-0.7	1.7
22.000	12200.	-2.1	-0.7	1.7
23.000	12[illegible].	-2.1	-0.7	1.[illegible]
2[illegible].100	[illegible]	-2.1	-0.7	1.[illegible]
2[illegible].000	[illegible]	-2.1	-0.7	1.[illegible]
24.000	12[illegible].	-2.1	-0.7	1.[illegible]
25.000	12355.	-2.1	-0.7	1.6
26.000	13[illegible].	-2.1	-0.7	1.6
27.000	16[illegible].	-1.6	-0.5	1.[illegible]
2[illegible].000	179[illegible].	-1.[illegible]	-0.[illegible]	[illegible]
2[illegible].000	179[illegible].	-1.[illegible]	-0.[illegible]	1.0
29.100	179[illegible].	-1.[illegible]	-0.[illegible]	1.0
29.900	18015.	-1.[illegible]	-0.5	1.0
30.000	18015.	-1.[illegible]	-0.5	1.0
31.000	18065.	-1.[illegible]	-0.5	1.0
3[illegible].000	18[illegible].	-1.7	-0.[illegible]	1.1
WEIGHTED [illegible]		-2.[illegible]	-0.[illegible]	1.[illegible]

PRF FOR THE REACH = 025 WITH 100.0[illegible] OF THE REACH WITHIN 1.0 FEET

ZONE FOR THE REACH = [illegible]

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10.000	900.00	0.00	0.00	745.90	4940.00	759.21	0.00	759.32	1.81	2.69	2066.21	3675.31
10.000	900.00	0.00	0.00	745.90	6640.00	760.59	0.00	760.74	2.08	3.13	2518.73	4607.87
10.000	900.00	0.00	0.00	745.90	7390.00	761.11	0.00	761.28	2.19	3.32	2721.59	4988.86
10.000	900.00	0.00	0.00	745.90	9180.00	762.20	0.00	762.40	2.46	3.71	3189.75	5855.75
11.100	750.00	0.00	0.00	748.30	4940.00	759.36	0.00	759.58	4.86	3.62	1442.66	2241.50
11.100	750.00	0.00	0.00	748.30	6640.00	760.75	0.00	761.04	5.11	4.34	1731.32	2957.34
11.100	750.00	0.00	0.00	748.30	7390.00	761.49	0.00	761.80	5.29	4.57	1840.48	3217.33
11.100	750.00	0.00	0.00	748.30	9180.00	762.39	0.00	762.70	5.69	5.06	2076.32	3849.96
11.200	50.00	0.00	0.00	749.50	4940.00	759.41	0.00	759.61	5.28	3.58	1379.86	2149.56
11.200	50.00	0.00	0.00	749.50	6640.00	760.85	0.00	761.08	5.31	4.02	1649.76	2881.29
11.200	50.00	0.00	0.00	749.50	7390.00	761.58	0.00	761.83	5.42	4.22	1750.77	3175.80
11.200	50.00	0.00	0.00	749.50	9180.00	762.46	0.00	762.68	5.75	4.69	1962.70	3827.57
11.300	1.00	766.80	765.60	749.50	4940.00	759.39	0.00	759.64	9.57	3.98	1242.63	1596.74
11.300	1.00	766.80	765.60	749.50	6640.00	760.79	0.00	761.12	10.80	4.63	1434.51	2020.54
11.300	1.00	766.80	765.60	749.50	7390.00	761.51	0.00	761.68	11.40	4.91	1506.22	2186.47
11.300	1.00	766.80	765.60	749.50	9180.00	762.39	0.00	762.66	12.26	5.62	1632.00	2465.49
11.400	41.00	766.80	765.60	748.70	4940.00	759.47	0.00	759.66	7.48	3.67	1339.87	1806.33
11.400	41.00	766.80	765.60	748.70	6640.00	760.86	0.00	761.17	8.68	4.33	1535.73	2253.67
11.400	41.00	766.80	765.60	748.70	7390.00	761.61	0.00	761.74	9.24	4.60	1606.42	2430.86
11.400	41.00	766.80	765.60	748.70	9180.00	762.53	0.00	762.97	17.09	5.31	1728.32	2220.84
11.500	1.00	0.00	0.00	748.70	4940.00	759.53	0.00	759.69	3.99	3.69	1562.99	2471.70
11.500	1.00	0.00	0.00	748.70	6640.00	760.96	0.00	761.19	4.14	3.73	1753.26	3241.52
11.500	1.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.76	4.20	3.92	1884.76	3560.24
11.500	1.00	0.00	0.00	748.70	9180.00	762.72	0.00	763.01	4.53	4.34	2113.10	4314.94
11.600	50.00	0.00	0.00	748.70	4940.00	759.55	0.00	759.71	3.66	3.27	1513.11	2567.74
11.600	50.00	0.00	0.00	748.70	6640.00	761.00	0.00	761.22	3.99	3.71	1797.42	3325.71
11.600	50.00	0.00	0.00	748.70	7390.00	761.75	0.00	761.79	4.09	3.91	1904.41	3655.12
11.600	50.00	0.00	0.00	748.70	9180.00	762.75	0.00	763.04	4.31	4.33	2139.97	4419.52
11.700	500.00	0.00	0.00	745.50	4940.00	759.71	0.00	759.83	1.29	2.79	1975.54	4356.42
11.700	500.00	0.00	0.00	745.50	6640.00	761.14	0.00	761.35	1.52	3.29	2352.84	5392.92
11.700	500.00	0.00	0.00	745.50	7390.00	761.74	0.00	761.96	1.61	3.49	2561.33	5820.76
11.700	500.00	0.00	0.00	745.50	9180.00	762.58	0.00	762.79	1.81	3.92	3017.65	6826.47
12.000	600.00	0.00	0.00	747.60	4940.00	759.79	0.00	759.92	1.45	2.84	1895.15	4095.68
12.000	600.00	0.00	0.00	747.60	6640.00	761.28	0.00	761.44	1.66	3.32	2225.79	5146.57
12.000	600.00	0.00	0.00	747.60	7390.00	761.85	0.00	762.03	1.76	3.51	2356.52	5572.94
12.000	600.00	0.00	0.00	747.60	9180.00	763.07	0.00	763.30	1.96	3.95	2670.11	6559.88
12.100	50.00	0.00	0.00	747.60	4940.00	759.80	0.00	759.92	2.52	2.82	1750.15	3112.59
12.100	50.00	0.00	0.00	747.60	6640.00	761.51	0.00	761.46	2.37	3.11	2133.07	4311.74
12.100	50.00	0.00	0.00	747.60	7390.00	761.88	0.00	762.04	2.36	3.24	2278.43	4805.40
12.100	50.00	0.00	0.00	747.60	9180.00	763.13	0.00	763.33	2.38	3.54	2576.79	5956.72
12.400	28.00	768.20	762.10	751.30	4940.00	759.84	0.00	760.02	3.90	3.36	1586.58	2110.29
12.400	28.00	768.20	762.10	751.30	6640.00	761.33	0.00	761.55	4.42	3.75	1770.02	3158.13
12.400	28.00	768.20	762.10	751.30	7390.00	762.09	0.00	762.31	3.89	3.76	1964.06	3746.62
12.400	28.00	768.20	762.10	751.30	9180.00	763.56	0.00	763.80	3.58	3.93	2337.12	4990.22

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	SECND	XLCH	ELF3D	ELAC	CLMJ%	Q	CHSLL	CHI=S	DE	TORES	VCS	AREA	=DIA
	10.000	900.00	0.00	0.00	745.90	4940.00	759.21	0.00	759.38	1.01	2.69	2060.21	5275.31
	10.000	900.00	0.00	0.00	745.90	6640.00	760.59	0.00	760.74	2.06	3.13	2318.73	4617.17
	10.000	900.00	0.00	0.00	745.90	7390.00	761.11	0.00	761.26	2.19	3.36	2721.59	4980.36
	10.000	900.00	0.00	0.00	745.90	9130.00	762.70	0.00	762.70	2.65	3.77	3169.73	5275.75
	11.100	750.00	0.00	0.00	746.10	4940.00	759.31	0.00	759.36	0.66	2.66	2466.63	4271.00
	11.100	750.00	0.00	0.00	746.10	6640.00	760.76	0.00	761.02	5.11	4.34	1734.12	2937.36
	11.100	750.00	0.00	0.00	746.10	7390.00	761.29	0.00	761.60	5.25	4.52	1643.43	2647.33
	11.100	750.00	0.00	0.00	746.10	9130.00	762.99	0.00	762.76	5.69	5.01	2075.32	3149.96
	11.200	50.00	0.00	0.00	749.50	4940.00	759.41	0.00	759.51	5.44	3.38	1593.69	2193.46
	11.200	50.00	0.00	0.00	749.50	6640.00	760.93	0.00	761.16	5.91	4.06	1643.75	2781.27
	11.200	50.00	0.00	0.00	749.50	7390.00	761.56	0.00	761.85	6.22	4.22	1756.77	3179.50
	11.200	50.00	0.00	0.00	749.50	9130.00	762.46	0.00	762.60	5.73	4.01	1964.76	3627.57
	11.300	1.00	766.30	765.60	749.50	4940.00	759.47	0.00	759.60	9.97	5.96	1334.92	2214.00
	11.300	1.00	766.30	765.60	749.50	6640.00	760.79	0.00	761.12	10.36	6.39	1434.51	2965.24
	11.300	1.00	766.30	765.60	749.50	7390.00	761.31	0.00	761.66	11.40	6.71	1502.52	3183.57
	11.300	1.00	766.30	765.60	749.50	9130.00	762.59	0.00	762.76	10.20	5.96	1530.01	3161.49
	11.400	61.00	766.30	765.60	748.70	4940.00	759.47	0.00	759.66	7.60	5.09	1335.07	1969.33
	11.400	61.00	766.30	765.60	748.70	6640.00	760.89	0.00	761.22	8.09	5.62	1441.71	2621.21
	11.400	61.00	766.30	765.60	748.70	7390.00	761.44	0.00	761.82	8.38	5.81	1502.52	2810.41
	11.400	61.00	766.30	765.60	748.70	9130.00	762.73	0.00	762.87	7.79	5.08	1527.01	2787.49
	11.503	1.07	0.30	0.30	745.72	4940.00	759.53	0.00	759.69	3.80	3.69	1518.79	2677.42
	11.503	1.00	0.30	0.30	745.72	6640.01	760.98	0.00	761.19	6.16	5.75	1720.26	3411.12
	11.503	1.00	0.30	0.30	745.72	7390.00	761.62	0.00	761.78	6.30	5.82	1734.14	3411.63
	11.503	1.00	0.31	0.30	745.72	9130.00	762.94	0.00	763.01	6.33	5.56	1731.16	3411.14
	11.603	50.00	0.30	0.30	746.70	4941.02	759.55	0.00	759.71	3.66	3.27	1515.11	2617.74
	11.603	50.00	0.30	0.30	746.72	6640.01	761.02	0.00	761.22	5.99	5.21	1727.44	3413.73
	11.603	50.00	0.30	0.30	746.72	7390.01	761.65	0.00	761.79	6.09	5.31	1734.41	3413.12
	11.603	50.00	0.30	0.30	746.72	9130.01	762.97	0.00	763.05	6.31	5.47	1731.16	3411.14
	11.703	100.00	0.30	0.30	746.73	4940.00	759.55	0.00	759.71	1.25	3.29	1518.79	2677.42
	11.703	100.00	0.30	0.30	746.73	6640.01	761.02	0.00	761.22	1.51	3.69	2307.32	3830.70
	11.703	100.00	0.30	0.30	746.73	7390.00	761.65	0.00	761.79	1.51	3.82	2317.45	4022.47
	11.703	100.00	0.30	0.30	746.73	9130.00	762.99	0.00	763.19	1.51	3.92	2317.45	4022.47
	12.000	301.30	0.30	0.30	747.33	4940.00	759.79	0.00	759.91	1.45	2.44	1303.15	1615.44
	12.000	301.30	0.00	0.00	747.33	6640.00	761.24	0.00	761.44	1.66	3.36	2018.19	3172.37
	12.000	300.00	0.00	0.00	747.60	7390.00	761.82	0.00	762.03	1.76	3.51	2321.54	3572.55
	12.000	300.00	0.00	0.00	747.60	9130.00	763.07	0.00	763.20	1.96	3.95	2601.11	3557.80
	12.100	10.00	0.00	0.00	747.90	4940.00	759.80	0.00	759.92	1.68	2.68	1303.15	1615.44
	12.100	10.00	0.00	0.00	747.90	6640.00	761.24	0.00	761.44	1.92	3.69	2018.19	3172.37
	12.100	10.00	0.00	0.00	747.90	7390.00	761.82	0.00	762.03	2.03	3.86	2321.54	3572.55
	12.100	10.00	0.00	0.00	747.90	9130.00	763.13	0.00	763.33	2.27	3.94	2579.77	3556.72
	12.400	30.00	760.30	760.10	751.30	4940.00	759.92	0.00	760.04	3.65	3.59	1518.40	2376.25
	12.400	30.00	760.30	760.10	751.30	6640.00	761.33	0.00	761.53	4.47	3.73	1720.26	3411.12
	12.400	30.00	760.30	760.10	751.30	7390.00	761.96	0.00	762.13	4.67	3.82	1734.14	3411.63
	12.400	30.00	760.30	760.10	751.30	9130.00	763.26	0.00	763.41	4.72	3.92	1731.16	3411.14

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
12.500	50.00	0.00	0.00	751.30	4940.00	759.85	0.00	760.04	5.38	3.55	1398.94	2130.77
12.500	50.00	0.00	0.00	751.30	6640.00	761.35	0.00	761.57	4.31	3.74	1807.71	3199.66
12.500	50.00	0.00	0.00	751.30	7390.00	762.11	0.00	762.33	3.77	3.74	2021.65	3806.91
12.500	50.00	0.00	0.00	751.30	9180.00	763.58	0.00	763.82	3.24	3.90	2446.83	5096.10
13.100	300.00	0.00	0.00	748.90	4940.00	760.01	0.00	760.15	1.81	2.94	1689.28	3670.92
13.100	300.00	0.00	0.00	748.90	6640.00	761.48	0.00	761.67	2.08	3.43	1943.43	4625.90
13.100	300.00	0.00	0.00	748.90	7390.00	762.22	0.00	762.42	2.07	3.52	2050.04	5156.54
13.100	300.00	0.00	0.00	748.90	9180.00	763.66	0.00	763.90	2.21	3.97	2352.99	6163.75
13.200	50.00	0.00	0.00	748.90	4940.00	760.04	0.00	760.16	1.69	2.83	1746.99	3800.17
13.200	50.00	0.00	0.00	748.90	6640.00	761.51	0.00	761.68	1.92	3.30	2013.15	4788.59
13.200	50.00	0.00	0.00	748.90	7390.00	762.25	0.00	762.45	1.95	3.44	2146.33	5514.53
13.200	50.00	0.00	0.00	748.90	9180.00	763.69	0.00	763.92	2.05	3.81	2468.43	6407.41
13.300	1.00	766.20	763.30	748.90	4940.00	759.96	0.00	760.26	13.06	4.57	1080.10	1365.68
13.300	1.00	766.20	763.30	748.90	6640.00	761.35	0.00	761.84	17.63	5.64	1178.04	1572.67
13.300	1.00	766.20	763.30	748.90	7390.00	762.06	0.00	762.62	19.33	6.02	1227.34	1680.90
13.300	1.00	766.20	763.30	748.90	9180.00	763.42	0.00	764.14	52.66	7.02	1307.27	1601.40
13.400	49.00	766.20	763.30	748.90	4940.00	760.00	0.00	760.32	12.90	4.55	1084.75	1375.26
13.400	49.00	766.20	763.30	748.90	6640.00	761.44	0.00	761.93	17.51	5.61	1184.52	1586.74
13.400	49.00	766.20	763.30	748.90	7390.00	762.16	0.00	762.72	18.97	5.99	1234.45	1696.72
13.400	49.00	766.20	763.30	748.90	9180.00	763.59	0.00	764.35	52.88	7.02	1307.88	1600.90
13.500	1.00	0.00	0.00	748.90	4940.00	760.07	0.00	760.39	1.56	2.76	1789.65	3952.61
13.500	1.00	0.00	0.00	748.90	6640.00	761.67	0.00	762.08	1.75	3.19	2079.45	5047.89
13.500	1.00	0.00	0.00	748.90	7390.00	762.66	0.00	762.84	1.73	3.33	2222.52	5624.43
13.500	1.00	0.00	0.00	748.90	9180.00	764.31	0.00	764.52	1.77	3.64	2520.66	6896.00
13.600	50.00	0.00	0.00	748.70	4940.00	760.28	0.00	760.41	1.70	3.15	1590.21	3795.12
13.600	50.00	0.00	0.00	748.70	6640.00	761.65	0.00	762.07	1.95	3.70	1867.65	4749.55
13.600	50.00	0.00	0.00	748.70	7390.00	762.64	0.00	762.87	1.98	3.87	1971.31	5236.41
13.600	50.00	0.00	0.00	748.70	9180.00	764.28	0.00	764.56	2.06	4.27	2336.85	6395.93
14.100	1250.00	0.00	0.00	748.80	4620.00	760.51	0.00	760.65	2.00	2.94	1605.63	3265.40
14.100	1250.00	0.00	0.00	748.80	6210.00	762.10	0.00	762.33	2.05	3.32	1914.30	4361.65
14.100	1250.00	0.00	0.00	748.80	6910.00	762.99	0.00	763.14	1.96	3.45	2072.59	4939.60
14.100	1250.00	0.00	0.00	748.80	8580.00	764.82	0.00	764.93	1.89	3.78	2396.63	6239.98
14.200	50.00	0.00	0.00	748.80	4620.00	760.52	0.00	760.66	2.09	2.95	1566.59	3197.45
14.200	50.00	0.00	0.00	748.80	6210.00	762.17	0.00	762.34	2.14	3.33	1862.35	4240.61
14.200	50.00	0.00	0.00	748.80	6910.00	762.96	0.00	763.15	2.06	3.44	2005.92	4760.15
14.200	50.00	0.00	0.00	748.80	8580.00	764.63	0.00	764.84	2.04	3.76	2306.60	6003.22
14.300	1.00	766.00	764.90	748.80	4620.00	760.50	0.00	760.68	5.39	3.45	1538.24	1989.51
14.300	1.00	766.00	764.90	748.80	6210.00	762.11	0.00	762.39	9.64	4.29	1447.47	1999.59
14.300	1.00	766.00	764.90	748.80	6910.00	762.89	0.00	763.22	11.11	4.67	1480.52	2072.83
14.300	1.00	766.00	764.90	748.80	8580.00	764.47	0.00	764.93	12.70	5.53	1532.99	2036.55
14.400	33.00	766.00	764.90	749.80	4620.00	760.41	0.00	760.70	3.51	3.31	1311.58	2003.96
14.400	33.00	766.00	764.90	749.80	6210.00	762.14	0.00	762.43	9.59	4.33	1426.82	2005.52
14.400	33.00	766.00	764.90	749.80	6910.00	762.92	0.00	763.27	11.03	4.73	1459.96	2060.19
14.400	33.00	766.00	764.90	749.80	8580.00	764.54	0.00	765.05	17.71	5.71	1502.08	2039.61

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
14.500	1.00	0.00	0.00	749.80	4620.00	760.59	0.00	760.72	2.13	2.96	1563.37	3167.89
14.500	1.00	0.00	0.00	749.80	6210.00	762.36	0.00	762.47	2.14	3.32	1871.39	4249.43
14.500	1.00	0.00	0.00	749.80	6910.00	763.13	0.00	763.32	2.05	3.42	2022.12	4820.98
14.500	1.00	0.00	0.00	749.80	8580.00	764.93	0.00	765.14	1.96	3.66	2345.60	6135.44
14.600	50.00	0.00	0.00	749.80	4620.00	760.60	0.00	760.73	1.99	2.94	1591.40	3273.31
14.600	50.00	0.00	0.00	749.80	6210.00	762.37	0.00	762.48	1.97	3.30	1916.99	4421.53
14.600	50.00	0.00	0.00	749.80	6910.00	763.15	0.00	763.33	1.88	3.46	2076.16	5035.44
14.600	50.00	0.00	0.00	749.80	8580.00	764.95	0.00	765.15	1.77	3.83	2425.36	6441.88
15.000	1400.00	0.00	0.00	745.70	4620.00	760.64	0.00	760.93	1.03	2.42	2210.02	4561.42
15.000	1400.00	0.00	0.00	745.70	6210.00	762.57	0.00	762.68	1.05	2.70	3086.89	6072.61
15.000	1400.00	0.00	0.00	745.70	6910.00	763.41	0.00	763.52	0.99	2.74	3672.64	6948.82
15.000	1400.00	0.00	0.00	745.70	8580.00	765.22	0.00	765.33	0.87	2.80	5069.11	9161.37
16.100	1325.00	0.00	0.00	742.80	4620.00	760.98	0.00	761.04	0.87	2.12	2273.30	5626.20
16.100	1325.00	0.00	0.00	742.80	6210.00	762.71	0.00	762.80	0.78	2.49	2622.95	7039.21
16.100	1325.00	0.00	0.00	742.80	6910.00	763.53	0.00	763.63	0.79	2.62	2789.34	7755.04
16.100	1325.00	0.00	0.00	742.80	8580.00	765.32	0.00	765.45	0.83	2.89	3151.22	9404.83
16.200	50.00	0.00	0.00	742.80	4620.00	760.95	0.00	761.05	0.73	2.14	2154.30	5423.79
16.200	50.00	0.00	0.00	742.80	6210.00	762.71	0.00	762.81	0.85	2.52	2460.66	6729.00
16.200	50.00	0.00	0.00	742.80	6910.00	763.55	0.00	763.64	0.88	2.65	2606.70	7385.35
16.200	50.00	0.00	0.00	742.80	8580.00	765.32	0.00	765.46	0.93	2.93	2923.93	8887.74
16.400	10.50	766.40	765.70	743.50	4620.00	761.02	0.00	761.06	0.53	2.06	2364.67	6068.14
16.400	10.50	766.40	765.70	743.50	6210.00	762.77	0.00	762.85	0.70	2.38	2614.56	7440.12
16.400	10.50	766.40	765.70	743.50	6910.00	763.60	0.00	763.69	0.72	2.50	2761.52	8126.52
16.400	10.50	766.40	765.70	743.50	8580.00	765.62	0.00	765.73	0.75	2.75	3119.02	9886.10
16.500	50.00	0.00	0.00	745.70	4620.00	761.01	0.00	761.10	0.93	2.41	2067.37	4765.91
16.500	50.00	0.00	0.00	745.70	6210.00	762.76	0.00	762.87	1.03	2.76	2497.39	6111.72
16.500	50.00	0.00	0.00	745.70	6910.00	763.59	0.00	763.71	1.04	2.96	2700.27	6792.10
16.500	50.00	0.00	0.00	745.70	8580.00	765.61	0.00	765.75	1.00	3.32	3227.71	8582.42
17.000	1400.00	0.00	0.00	747.00	4620.00	761.07	0.00	761.40	3.46	4.66	1068.90	2462.00
17.000	1400.00	0.00	0.00	747.00	6210.00	762.77	0.00	763.25	3.95	5.44	1249.71	3132.64
17.000	1400.00	0.00	0.00	747.00	6910.00	763.58	0.00	764.08	3.95	5.69	1336.85	3462.75
17.000	1400.00	0.00	0.00	747.00	8580.00	765.55	0.00	766.15	3.94	6.17	1550.65	4324.90

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KALAMAZOO S. KALAMAZOO

SUMMARY PRINTOUT TABLE 150

SECTS							
7.300	1950.00	759.35	0.0	0.30	0.50	1[illegible]	0.00
7.300	6650.00	759.47	0.02	0.00	0.00	1110.50	0.00
7.000	7390.00	759.95	0.02	0.20	0.00	1[illegible]	0.00
7.000	9150.00	761.00	0.00	0.10	0.20	1[illegible]	0.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8.000	7950.00	760.46	0.00	0.51	1.29	491.31	1600.00
8.000	9150.00	761.45	0.00	0.65	2.29	635.50	1600.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.100	6650.00	760.24	0.00	0.46	1.25	491.50	1120.30
9.100	7390.00	760.65	0.01	0.58	1.69	595.52	1120.30
9.100	9150.00	761.85	0.00	0.82	2.29	795.76	1120.30
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.300	6750.00	759.04	0.00	0.05	0.07	25[illegible]	50.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.430	6750.00	759.04	0.30	-0.00	0.00	25[illegible]	1.00
9.430	6640.00	760.61	0.30	-0.00	1.00	4[illegible]	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SECND	D	CYBEL	DI..SP	DIFFDR	DIFK..S	TSPMID	RLC-
11.300	6940.20	759.39	[illegible]	-0.02	0.00	991.00	1.00
11.300	6640.20	760.79	[illegible]	-0.04	1.40	991.00	1.00
11.300	7390.00	761.31	0.00	-0.03	1.32	991.00	1.00
11.300	9190.00	762.59	0.00	-0.27	3.20	991.00	1.00
11.400	6943.01	759.17	0.00	1.61	0.20	991.00	41.00
11.400	6643.01	760.58	0.00	1.05	1.41	991.00	41.00
11.400	7393.03	761.41	0.00	1.12	1.21	991.00	41.00
11.400	9193.03	762.53	0.00	1.14	2.12	991.00	41.00
11.500	6943.03	759.56	0.00	1.03	0.20	991.00	1.00
11.500	6643.03	760.97	0.00	1.10	1.41	991.00	1.00
11.500	7393.00	761.59	0.00	1.12	2.06	991.00	1.00
11.500	9193.00	762.72	0.00	1.14	3.13	991.00	1.00
11.600	6940.00	759.59	0.00	0.04	0.00	991.00	50.00
11.600	6640.00	761.00	0.00	0.00	1.41	991.00	50.00
11.600	7390.00	761.59	0.00	0.00	2.00	991.00	50.00
11.600	9190.00	762.75	0.00	0.05	3.22	991.00	50.00
11.700	6940.30	759.71	0.00	0.07	0.00	991.00	500.00
11.700	6640.30	761.11	0.00	0.03	1.41	991.00	500.00
11.700	7390.31	761.73	0.01	0.03	2.03	991.00	500.00
11.700	9190.31	762.90	0.01	0.01	3.20	991.00	500.00
12.000	6943.03	759.79	0.00	0.03	0.00	991.00	500.00
12.000	6643.03	761.20	0.00	0.03	1.41	991.00	500.00
12.000	7393.03	761.82	0.00	0.02	2.03	991.00	500.00
12.000	9193.03	762.97	0.00	0.01	3.17	991.00	500.00
12.100	6943.03	759.80	0.00	0.01	0.00	991.00	50.00
12.100	6643.03	761.22	0.00	0.02	1.42	991.00	50.00
12.100	7393.03	761.84	0.00	0.02	2.04	991.00	50.00
12.100	9193.03	762.99	0.00	0.01	3.19	991.00	50.00
12.200	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.200	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.200	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.200	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.300	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.300	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.300	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.300	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.400	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.400	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.400	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.400	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.500	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.500	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.500	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.500	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.600	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.600	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.600	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.600	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.700	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.700	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.700	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.700	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.800	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.800	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.800	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.800	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
12.900	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
12.900	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
12.900	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
12.900	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
13.000	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
13.000	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
13.000	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
13.000	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
13.100	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
13.100	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
13.100	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
13.100	9193.03	762.99	0.00	0.00	3.19	991.00	50.00
13.200	6943.03	759.80	0.00	0.00	0.00	991.00	50.00
13.200	6643.03	761.22	0.00	0.00	1.42	991.00	50.00
13.200	7393.03	761.84	0.00	0.00	2.04	991.00	50.00
13.200	9193.03	762.99	0.00	0.00	3.19	991.00	50.00

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SECNO	Q	C.SEL	DIFFUSP	DIF.SX	DIFCHS	TOPWID	XLCH
15.300	4963.00	759.94	0.00	-0.12	0.00	160.70	-1.90
15.300	6643.00	761.35	0.00	-0.14	1.49	160.70	1.60
15.300	7393.00	762.06	0.00	-0.15	2.15	160.70	5.00
15.300	7132.00	763.47	0.00	-0.17	3.84	160.70	10.01
15.200	6912.00	760.00	0.00	0.00	0.00	153.00	-0.00
15.400	6542.00	762.44	0.00	0.02	1.95	156.70	49.00
15.400	7395.00	762.15	0.00	0.15	2.15	160.70	59.00
15.400	7137.00	763.57	0.00	0.16	3.85	160.70	59.67
15.500	6965.00	760.27	0.00	0.00	0.00	153.00	1.20
15.500	7340.00	762.07	0.00	0.01	1.00	156.70	1.50
15.500	7390.00	762.65	0.00	0.50	2.00	160.70	1.00
15.500	9130.00	764.31	0.00	0.70	4.04	160.70	1.00
15.667	6950.00	760.23	0.00	-0.01	0.00	153.00	0.00
15.600	6940.00	761.05	0.00	-0.02	1.00	156.70	-0.20
15.600	7390.00	762.65	0.00	-0.02	2.00	160.70	-0.00
15.666	9130.00	764.21	0.00	-0.03	4.00	160.70	50.00
16.100	6920.00	760.51	0.00	0.00	0.00	153.00	0.00
16.100	6940.00	762.11	0.00	0.00	1.00	156.70	0.00
16.100	7390.00	762.93	0.00	0.01	2.00	160.70	0.00
16.100	9530.00	765.01	0.00	0.02	4.11	160.70	0.00
16.200	6920.00	760.52	0.00	0.01	0.00	153.00	0.00
16.200	6940.00	762.11	0.00	0.01	1.00	156.70	0.00
16.200	7390.00	762.93	0.00	0.01	2.00	160.70	0.00
16.200	9530.00	765.01	0.00	0.02	4.11	160.70	0.00
16.300	6920.00	760.54	0.00	0.01	0.00	153.00	0.00
16.300	6940.00	762.13	0.00	0.01	1.00	156.70	0.00
16.300	7390.00	762.95	0.00	0.01	2.00	160.70	0.00
16.300	9530.00	765.03	0.00	0.02	4.11	160.70	0.00
16.400	6915.00	760.19	0.00	0.01	0.00	153.00	0.00
16.400	6935.00	761.79	0.00	0.01	1.00	156.70	0.00
16.400	7385.00	762.61	0.00	0.01	2.00	160.70	0.00
16.400	9525.00	764.69	0.00	0.02	4.11	160.70	0.00
16.500	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
16.500	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
16.500	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
16.500	9535.00	764.87	0.00	0.00	4.11	160.70	0.00
16.600	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
16.600	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
16.600	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
16.600	9535.00	764.87	0.00	0.00	4.11	160.70	0.00
16.700	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
16.700	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
16.700	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
16.700	9535.00	764.87	0.00	0.00	4.11	160.70	0.00
16.800	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
16.800	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
16.800	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
16.800	9535.00	764.87	0.00	0.00	4.11	160.70	0.00
16.900	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
16.900	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
16.900	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
16.900	9535.00	764.87	0.00	0.00	4.11	160.70	0.00
17.000	6925.00	760.37	0.00	0.00	0.00	153.00	0.00
17.000	6945.00	761.97	0.00	0.00	1.00	156.70	0.00
17.000	7395.00	762.79	0.00	0.00	2.00	160.70	0.00
17.000	9535.00	764.87	0.00	0.00	4.11	160.70	0.00

FORM 1411-SD PRINTED BY ROTARY MANIFOLD FORMS.
PRINTED IN U.S.A.

SECNO	C	CSSEL	DIFMSP	DIFMSP	DIFMNS	TOPWID	ALCF
16.100	4620.00	760.97	0.00	0.13	0.03	202.00	1325.00
16.100	4210.00	762.71	0.00	0.11	1.73	202.00	1325.00
16.100	6910.00	763.53	0.00	0.12	2.55	202.00	1325.00
16.100	8580.00	765.32	0.00	0.10	4.35	202.00	1325.00
16.200	4620.00	760.92	0.00	0.00	0.00	177.10	0.00
16.200	6210.00	762.71	0.00	0.00	1.73	177.10	0.00
16.200	6910.00	763.53	0.00	0.00	2.55	177.10	0.00
16.200	8580.00	765.32	0.00	0.00	4.34	177.10	0.00
16.400	4620.00	761.02	0.00	0.00	0.00	177.10	10.50
16.400	6210.00	762.77	0.00	0.00	1.73	177.10	10.50
16.400	6910.00	763.60	0.00	0.07	2.58	177.10	10.50
16.400	8580.00	765.62	0.00	0.29	4.60	177.10	10.50
16.500	4620.00	761.01	0.00	-0.01	0.00	252.50	30.00
16.500	6210.00	762.71	0.00	-0.00	1.73	252.50	30.00
16.500	6910.00	763.59	0.00	-0.01	2.58	252.50	30.00
16.500	8580.00	765.61	0.00	-0.01	4.60	252.50	30.00
17.000	4620.00	762.07	0.00	0.00	0.00	124.00	1400.00
17.000	6210.00	762.77	0.00	0.00	1.73	127.10	1400.00
17.000	6910.00	763.53	0.00	-0.00	2.55	127.10	1400.00
17.000	8580.00	765.59	0.00	-0.00	4.34	127.10	1400.00

SUMMARY OF ERRORS

FORM 1411-GS PRINTED BY ROTARY MANIFOLD FORMS.
PRINTED IN U.S.A.

FLOOD INSURANCE ZONE DATA FOR KALAMAZOO R. KALAMAZOO

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATED DIFFERENCE FROM FLOOD RISE		
		1%	2%	4.2%
7.000	0.	-1.7	-0.5	1.1
8.000	5523.	-1.7	-0.5	1.1
9.100	2753.	-1.7	-0.5	1.1
9.200	2751.	-1.7	-0.5	1.1
9.300	2751.	-1.7	-0.5	1.1
9.400	2754.	-1.7	-0.5	1.1
9.500	2795.	-1.7	-0.5	1.1
9.600	2755.	-1.7	-0.5	1.1
10.000	3765.	-1.7	-0.5	1.1
10.500	4501.	-1.7	-0.5	1.1
11.200	4545.	-1.7	-0.5	1.1
11.300	4546.	-1.7	-0.5	1.1
11.400	4547.	-1.7	-0.5	1.1
11.500	4550.	-1.7	-0.5	1.1
11.600	4554.	-1.7	-0.5	1.1
11.700	4558.	-1.7	-0.5	1.1
12.000	4553.	-1.7	-0.5	1.1
12.100	4554.	-1.7	-0.5	1.1
12.400	4556.	-1.7	-0.5	1.1
12.500	4554.	-1.7	-0.5	1.1
13.100	4554.	-1.7	-0.5	1.1
13.400	4554.	-1.7	-0.5	1.1
15.500	5277.	-1.7	-0.5	1.1
15.600	5556.	-1.7	-0.5	1.1
15.700	5557.	-1.7	-0.5	1.1
15.800	5557.	-1.7	-0.5	1.1
16.000	5558.	-1.7	-0.5	1.1
16.500	7078.	-1.7	-0.5	1.1
16.600	7079.	-1.7	-0.5	1.1
16.700	7082.	-1.7	-0.5	1.1
17.000	7552.	-1.7	-0.5	1.1
17.100	7553.	-1.7	-0.5	1.1
17.200	10527.	-1.7	-0.5	1.1
18.200	10527.	-1.7	-0.5	1.1
18.400	13553.	-1.7	-0.5	1.1
18.500	13556.	-1.7	-0.5	1.1
19.000	14251.	-1.7	-0.5	1.1
DETENTION DAM (Proj.)		-1.7	-0.5	1.1

END FOR FLOOD PROFILE DATA AT 152.63 OF THE MAIN STREAM LENGTH

ZERO FOR THE MAIN STREAM

PRINTED IN U.S.A.
FORM 1411-GB-PRINTED BY ROTART MANIFOLD FORMS.



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: 100 YR INPUT



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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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Rec'd [illegible]

[illegible] JTH FI[illegible]

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C
T1      FIS KALAMAZOO TWP. KALAMAZOO COUNTY, MICHIGAN.
T2      100-YR FLOOD ENCROACHED      FLOODWAY
T3      DAVIS CREEK AT KALAMAZOO

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        4.        0.        0.  0.000000      0.00       0.0        0.   759.700     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     -1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

QT      5.000   450.000   683.000   765.000  1030.000   765.000     0.000     0.000     0.000     0.000
NC       .080      .100      .030      .100      .300     0.000     0.000     0.000     0.000     0.000

        MOUTH      (A)

X1     19.900     7.000    30.000    66.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    771.300     0.000   761.430    22.000   761.970    30.000   756.690    38.000   754.980    48.000
GR    756.450    58.000   764.360    66.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     20.000     0.000     0.000     0.000    40.000    40.000    40.000     0.000     0.000     0.000
NC       .100      .060      .030     0.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     21.000     5.000  2000.000  2038.000   700.000   700.000   700.000     0.000     0.000     0.000
GR    766.760  2000.000   757.360  2010.000   756.660  2018.000   756.960  2022.000   765.360  2038.000

X1     21.100     0.000     0.000     0.000   470.000   470.000   470.000     0.000     0.000     0.000
QT      5.000    64.000   229.000   300.000   360.000   300.000     0.000     0.000     0.000     0.000
NC       .060      .060      .025     0.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     21.700     6.000  2000.000  2041.000   200.000   200.000   200.000     0.000     0.000     0.000
GR    770.300  1670.000   767.580  2000.000   760.510  2013.000   759.990  2022.000   760.600  2032.000
GR    765.460  2041.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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X1	21.800	9.000	2013.000	2029.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.000	765.000	0.000
GR	770.300	1700.000	767.600	2000.000	766.600	2013.000	760.380	2013.000	760.080	2022.000
GR	759.720	2029.000	765.530	2029.000	766.130	2051.000	765.000	2550.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	21.900	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.000	765.000	0.000
BT	9.000	1700.000	770.300	0.000	2000.000	768.110	0.000	2013.000	768.110	0.000
BT	2013.000	768.110	765.530	2022.000	767.850	765.530	2029.000	767.730	765.530	2029.000
RT	767.730	0.000	2051.000	766.130	0.000	2550.000	765.000	0.000	0.000	0.000
NC	.070	.070	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

COMSTOCK ROAD

X1	22.000	10.000	2013.000	2029.000	42.000	42.000	42.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	768.000	765.000	0.000
BT	10.000	1700.000	770.300	0.000	2000.000	768.110	0.000	2013.000	768.110	0.000
BT	2013.000	768.110	765.360	2020.000	768.000	765.360	2027.000	767.730	765.360	2029.000
RT	767.730	765.360	2029.000	767.730	0.000	2036.000	767.730	0.000	2550.000	765.000
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	770.300	1700.000	766.590	2000.000	765.360	2013.000	760.050	2013.000	760.080	2020.000
GR	760.750	2027.000	762.630	2029.000	762.630	2029.000	766.900	2036.000	765.000	2550.000
X1	22.100	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	768.000	765.000	0.000
RT	5.000	64.000	239.000	335.000	375.000	335.000	0.000	0.000	0.000	0.000
NC	.080	.080	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

(R)

X1	22.700	8.000	2025.000	2058.000	40.000	150.000	80.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2025.000	0.000	2058.000	0.000	0.000	0.000	0.000
GR	765.900	1800.000	766.070	2000.000	764.680	2025.000	760.960	2035.000	760.440	2041.000
GR	760.740	2047.000	763.990	2058.000	765.700	2450.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	22.800	8.000	2011.000	2040.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1975.000	0.000	2105.000	0.000	764.000	764.000	0.000
GR	765.900	1800.000	763.130	2000.000	763.950	2011.000	760.850	2011.000	760.300	2018.500
GR	760.670	2026.500	764.880	2040.000	765.700	2450.000	0.000	0.000	0.000	0.000
SR	1.250	2.983	3.000	0.000	21.000	9.190	41.230	0.000	760.230	760.300

MOORE BUSINESS FORMS INC 27

BROOKFIELD ROAD (C)

X1	23.000	10.000	2032.000	2053.000	52.000	52.000	52.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	763.980	765.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1995.000	0.000	2125.000	0.000	765.000	765.000	0.000
BT	4.000	1880.000	769.000	0.000	2000.000	765.900	0.000	2100.000	765.000	0.000
BT	2200.000	769.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	765.900	1800.000	765.860	2000.000	765.640	2018.000	761.000	2032.000	760.430	2035.000
GR	760.260	2042.000	760.230	2050.500	761.000	2053.000	764.710	2064.000	765.700	2450.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	23.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1995.000	0.000	2125.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	23.700	8.000	2012.000	2035.000	230.000	230.000	230.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2010.000	0.000	2160.000	0.000	0.000	0.000	0.000
GR	770.300	1600.000	769.350	2000.000	768.850	2012.000	762.480	2023.000	761.730	2028.000
GR	762.390	2032.000	764.480	2035.000	766.200	2300.000	0.000	0.000	0.000	0.000
X1	23.800	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2010.000	0.000	2160.000	0.000	0.000	0.000	0.000
SB	1.250	3.153	3.000	0.000	18.000	5.100	42.900	0.000	762.640	762.140
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

SPRINGFIELD ROAD (D)

X1	24.000	7.000	2000.000	2042.000	60.000	60.000	60.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	765.740	768.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	2000.000	0.000	2150.000	0.000	768.300	768.300	0.000
BT	5.000	1870.000	770.000	0.000	2000.000	768.600	0.000	2042.000	768.300	0.000
BT	2175.000	768.000	0.000	2175.000	770.000	0.000	0.000	0.000	0.000	0.000
GR	770.000	1700.000	768.600	2000.000	763.450	2012.000	762.140	2018.000	762.370	2024.000
GR	766.680	2042.000	766.700	2175.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.100	.100	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	24.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2000.000	0.000	2125.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	24.700	7.000	2008.000	2031.000	475.000	475.000	475.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2003.000	0.000	2045.000	0.000	0.000	0.000	0.000
GR	772.800	1450.000	766.910	2000.000	766.570	2008.000	765.040	2013.000	764.780	2020.000
GR	763.440	2026.000	769.430	2031.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC. 27

X1	24.800	9.000	2008.000	2025.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
GR	772.800	1470.000	767.510	2000.000	767.510	2008.000	764.030	2008.000	764.800	2016.500
GR	765.450	2025.000	765.450	2025.000	765.450	2030.000	770.800	2700.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	24.900	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
BT	9.000	1470.000	772.800	0.000	2000.000	769.540	0.000	2008.000	769.500	0.000
BT	2008.000	769.500	768.460	2016.500	769.450	768.450	2025.000	769.600	768.440	2025.000
BT	769.600	0.000	2030.000	769.690	0.000	2700.000	770.800	0.000	0.000	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MARKET STREET (F)

X1	25.000	9.000	2008.000	2025.000	24.000	24.000	24.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.400	769.400	0.000
BT	9.000	1470.000	772.800	0.000	2000.000	769.540	0.000	2008.000	769.500	0.000
BT	2008.000	769.500	768.490	2016.500	769.450	768.500	2025.000	769.400	768.510	2025.000
BT	769.400	0.000	2044.000	769.410	0.000	2700.000	770.800	0.000	0.000	0.000
GR	772.800	1470.000	767.060	2000.000	762.780	2008.000	764.660	2008.000	764.660	2016.500
GR	765.290	2025.000	765.290	2025.000	766.560	2044.000	770.800	2700.000	0.000	0.000

X1	25.010	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.400	769.400	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	25.100	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1992.000	0.000	2040.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	25.200	0.000	0.000	0.000	110.000	110.000	110.000	0.000	1.300	0.000
X3	0.000	0.000	0.000	1960.000	0.000	2075.000	0.000	0.000	0.000	0.000

X1	25.300	0.000	0.000	0.000	109.000	109.000	109.000	0.000	1.200	0.000
X3	0.000	0.000	0.000	1960.000	0.000	2075.000	0.000	0.000	0.000	0.000

X1	25.700	9.000	2009.000	2034.000	219.000	219.000	219.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1995.000	0.000	2048.000	0.000	0.000	0.000	0.000
GR	775.100	1630.000	771.030	2000.000	769.610	2009.000	768.390	2014.000	767.650	2022.000
GR	767.650	2022.000	768.520	2030.000	770.650	2034.000	771.700	2500.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	25.800	10.000	2005.500	2022.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	771.000	771.000	0.000
GR	775.100	1630.000	772.230	2000.000	770.860	2005.500	768.190	2005.500	768.030	2013.500
GR	767.980	2022.000	770.830	2022.000	771.170	2033.000	771.700	2033.000	772.000	2500.000
SB	0.000	1.953	3.000	0.000	16.500	0.000	46.200	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

STEWART STREET

X1	26.000	9.000	2005.000	2021.000	22.000	22.000	22.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	770.860	772.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1983.000	0.000	2043.000	0.000	772.000	772.000	0.000
BT	9.000	1983.000	772.600	0.000	2000.000	772.580	0.000	2005.500	772.580	0.000
BT	2005.500	772.580	770.860	2013.500	772.520	770.850	2022.000	772.470	770.830	2022.000
BT	772.470	0.000	2033.000	772.470	0.000	2043.000	772.500	0.000	0.000	0.000
GR	775.100	1630.000	770.180	2000.000	769.190	2005.000	769.190	2005.000	767.930	2013.500
GR	767.480	2021.000	770.510	2021.000	770.510	2027.000	772.500	2500.000	0.000	0.000
NC	.080	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	26.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1983.000	0.000	2043.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

(F)

X1	26.200	0.000	0.000	0.000	112.000	112.000	112.000	0.000	.900	0.000
X3	0.000	0.000	0.000	1933.000	0.000	2093.000	0.000	0.000	0.000	0.000

X1	26.700	0.000	0.000	0.000	113.000	113.000	113.000	0.000	.900	0.000

X1	26.800	8.000	2004.000	2024.000	225.000	225.000	225.000	0.000	0.000	0.000
GR	775.400	1775.000	774.170	2000.000	774.170	2004.000	771.040	2004.000	771.920	2014.000
GR	771.920	2024.000	774.230	2032.000	775.000	2200.000	0.000	0.000	0.000	0.000

X1	26.900	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1970.000	0.000	2100.000	0.000	774.500	774.500	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
SF	0.000	1.635	3.000	0.000	20.000	0.000	52.000	0.000	0.000	0.000

TRAILER PARK ROAD

MOORE BUSINESS FORMS INC. 27

X1	27.000	9.000	2006.000	2026.000	14.000	14.000	14.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	774.280	775.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1970.000	0.000	2100.000	0.000	775.000	775.000	0.000
BT	9.000	1900.000	776.400	0.000	2000.000	775.080	0.000	2006.000	775.080	0.000
BT	2006.000	775.060	774.280	2016.000	775.100	774.240	2026.000	775.120	774.200	2026.000
BT	775.120	0.000	2034.000	775.120	0.000	2100.000	775.000	0.000	0.000	0.000
GR	775.400	1775.000	774.460	2000.000	774.280	2006.000	771.480	2006.000	771.690	2016.000
GR	771.820	2026.000	774.200	2026.000	775.000	2034.000	775.000	2200.000	0.000	0.000

X1	27.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1900.000	0.000	2130.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	27.200	0.000	0.000	0.000	300.000	300.000	300.000	0.000	.400	0.000
X3	0.000	0.000	0.000	1920.000	0.000	2110.000	0.000	0.000	0.000	0.000

(G)

X1	27.700	14.000	2015.000	2036.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2004.000	0.000	2047.000	0.000	0.000	0.000	0.000
GR	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000
GR	774.700	1860.000	774.320	2000.000	773.780	2015.000	772.720	2020.000	772.240	2027.000
GR	772.420	2034.000	774.270	2036.000	774.800	2100.000	776.500	2150.000	0.000	0.000

X1	27.800	9.000	2006.000	2023.500	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	777.000	777.000	0.000
GR	774.700	1430.000	774.440	2000.000	774.440	2006.000	771.970	2006.000	772.020	2014.500
GR	772.850	2023.500	774.440	2023.500	774.440	2033.000	778.200	2700.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
SB	0.000	1.870	3.000	0.000	17.500	0.000	70.000	0.000	771.600	772.000

OLMSTED ROAD (H)

X1	28.000	9.000	2006.000	2023.500	28.000	28.000	28.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	776.200	777.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	777.300	777.300	0.000
BT	9.000	1430.000	776.400	0.000	2000.000	777.280	0.000	2006.000	777.280	0.000
BT	2006.000	777.280	776.130	2014.500	777.290	776.160	2023.500	777.300	776.180	2023.500
BT	777.300	0.000	2033.000	777.300	0.000	2700.000	780.000	0.000	0.000	0.000
GR	774.700	1430.000	774.490	2000.000	774.490	2006.000	772.460	2006.000	771.550	2014.500
GR	773.520	2023.500	773.520	2023.500	775.980	2033.000	778.200	2700.000	0.000	0.000
NC	0.000	0.000	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	28.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1956.000	0.000	2076.000	0.000	0.000	0.000	0.000
FJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC. 27

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: 100-yr ~~Encroached and~~ Natural and Encroached

~~No~~

00BREAK00

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

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 19.900
MOUTH (A)

19.90	4.72	759.70	0.00	759.70	760.80	1.10	0.00	0.00	761.97
765.	0.	765.	0.	0.	91.	0.	0.	0.	764.36
0.00	0.00	8.43	0.00	.080	.030	.100	0.000	754.98	33.44
.006731	0.	0.	0.	0	0	0	0.00	27.85	61.29

*SECNO 20.000

20.00	5.26	760.24	0.00	0.00	761.05	.81	.21	.03	761.97
765.	0.	765.	0.	0.	106.	0.	0.	0.	764.36
.00	0.00	7.21	0.00	.080	.030	.100	.029	754.98	32.62
.004305	40.	40.	40.	3	0	0	0.00	29.21	61.83

*SECNO 21.000

21.00	6.22	762.88	0.00	0.00	763.50	.62	2.44	.02	766.76
765.	0.	765.	0.	0.	121.	0.	2.	0.	765.36
.03	0.00	6.33	0.00	.100	.030	.060	.030	756.66	2004.13
.002874	700.	700.	700.	3	0	0	0.00	29.15	2033.28

*SECNO 21.100

21.10	7.41	764.07	0.00	0.00	764.44	.37	.91	.03	766.76
765.	0.	765.	0.	0.	158.	0.	3.	1.	765.36
.06	0.00	4.85	0.00	.100	.030	.060	.030	756.66	2002.86
.001395	470.	470.	470.	2	0	0	0.00	32.69	2035.55

*SECNO 21.700

21.70	4.55	764.54	0.00	0.00	764.66	.11	.19	.03	767.58
300.	0.	300.	0.	0.	110.	0.	4.	1.	765.46
.08	0.00	2.72	0.00	.060	.025	.060	.029	759.99	2005.59
.000465	200.	200.	200.	2	0	0	0.00	33.71	2039.30

*SECNO 21.800

MOORE BUSINESS FORMS INC 27

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 766.00 ELREA= 765.00

21.80	4.74	764.46	0.00	0.00	764.74	.29	.04	.05	766.60
300.	0.	300.	0.	0.	70.	0.	4.	1.	765.53
.08	0.00	4.29	0.00	.060	.025	.060	.029	759.72	2013.00
.001308	49.	49.	49.	2	0	0	0.00	16.00	2029.00

CCRV= .300 CEHV= .500
*SECNO 21.400

3370 NORMAL BRIDGE,NRD= 9 MIN ELTRD= 765.00 MAX ELLC= 765.53

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 766.00 ELREA= 765.00

21.90	4.74	764.46	0.00	0.00	764.74	.29	.00	.00	766.60
300.	0.	300.	0.	0.	70.	0.	4.	1.	765.53
.08	0.00	4.29	0.00	.060	.025	.060	.029	759.72	2013.00
.001961	1.	1.	1.	0	0	0	0.00	16.00	2029.00

*SECNO 22.000

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 765.00 MAX ELLC= 765.36

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 768.00 ELREA= 765.00

COMSTOCK ROAD

22.00	4.49	764.54	0.00	0.00	764.86	.32	.10	.02	765.36
300.	0.	300.	0.	0.	66.	0.	4.	1.	762.63
.09	0.00	4.56	0.00	.070	.030	.070	.029	760.05	2013.00
.002914	42.	42.	42.	1	0	0	-2.97	16.00	2029.00

*SECNO 22.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 768.00 ELREA= 765.00

22.10	4.49	764.54	0.00	0.00	764.87	.32	.00	.00	765.36
300.	0.	300.	0.	0.	66.	0.	4.	1.	762.63
.09	0.00	4.55	0.00	.070	.030	.070	.029	760.05	2013.00
.001866	1.	1.	1.	0	0	0	0.00	16.00	2029.00

JACOBS BUSINESS FORMS, INC. 27

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

*SECNO 22.700

3470 ENCROACHMENT STATIONS= 2025.0 2058.0 TYPE= 1 TARGET= 33.000
(R)

22.70	4.43	764.67	0.00	0.00	765.05	.18	.14	.04	764.68
335.	0.	335.	0.	0.	99.	0.	4.	1.	100000.00
.09	0.00	3.39	0.00	.080	.035	.080	.029	760.44	2025.00
.001619	40.	80.	150.	2	0	0	0.00	33.00	2058.00

CCHV= .100 CEHV= .300
*SECNO 22.800

3470 ENCROACHMENT STATIONS= 1975.0 2105.0 TYPE= 1 TARGET= 130.000

22.80	4.77	765.07	0.00	0.00	765.18	.11	.12	.01	763.95
335.	49.	285.	1.	61.	101.	8.	5.	1.	764.88
.10	.80	2.81	.15	.080	.035	.080	.030	760.30	1975.00
.000971	100.	100.	100.	2	0	0	0.00	130.00	2105.00

SPECIAL BRIDGE

SB	XK	XKOR	CUFQ	RDLEN	RWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	2.98	3.00	0.00	21.00	9.19	41.23	0.00	760.23	760.30

*SECNO 23.000
3280 CROSS SECTION 23.00 EXTENDED .24 FEET
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
768.13	765.40	.23	153.	186.	41.	44.	763.98	765.00

3470 ENCROACHMENT STATIONS= 1995.0 2125.0 TYPE= 1 TARGET= 130.000
BROOKFIELD ROAD (C)

23.00	5.71	765.94	0.00	0.00	766.01	.06	.83	0.00	761.00
335.	22.	266.	47.	41.	117.	105.	5.	1.	761.00
.11	.54	2.28	.45	.080	.035	.080	.030	760.23	1995.00
.000297	52.	52.	52.	2	0	4	0.00	130.00	2125.00

MOORE BUSINESS FORMS INC 27

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

*SECNO 23.100
3280 CROSS SECTION 23.10 EXTENDED .25 FEET

3470 ENCROACHMENT STATIONS= 1995.0 2125.0 TYPE= 1 TARGET= 130.000

23.10	5.72	765.95	0.00	0.00	766.03	.07	.02	.00	761.00
335.	18.	277.	39.	41.	117.	105.	5.	2.	761.00
.12	.45	2.37	.37	.100	.035	.100	.030	760.23	1995.00
.000320	50.	50.	50.	2	0	0	0.00	130.00	2125.00

CCHV= .100 CEHV= .300
*SECNO 23.700

3470 ENCROACHMENT STATIONS= 2010.0 2160.0 TYPE= 1 TARGET= 150.000

23.70	4.31	766.04	0.00	0.00	766.22	.17	.16	.03	768.85
335.	0.	221.	114.	0.	54.	143.	6.	2.	764.48
.14	0.00	4.07	.80	.100	.035	.100	.030	761.73	2016.86
.002408	230.	230.	230.	1	0	0	0.00	143.14	2160.00

*SECNO 23.800

3470 ENCROACHMENT STATIONS= 2010.0 2160.0 TYPE= 1 TARGET= 150.000

23.80	4.46	766.19	0.00	0.00	766.33	.14	.11	.00	768.85
335.	0.	210.	125.	0.	57.	163.	7.	2.	764.48
.14	0.00	3.68	.77	.100	.035	.100	.031	761.73	2016.59
.001878	50.	50.	50.	2	0	0	0.00	143.41	2160.00

SPECIAL BRIDGE

SR	XK	XKOR	COFQ	RDLEN	BWC	HWP	BAREA	SS	ELCHU	ELCHD
	1.25	3.15	3.00	0.00	18.00	5.10	42.90	0.00	762.64	762.14

CCHV= .300 CEHV= .500
*SECNO 24.000
3280 CROSS SECTION 24.00 EXTENDED 1.66 FEET

PRESSURE AND WEIR FLOW

MOORE BUSINESS FORMS INC 27

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

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
769.18	766.54	.13	48.	288.	43.	40.	765.74	768.30

3470 ENCROACHMENT STATIONS= 2000.0 2150.0 TYPE= 1 TARGET= 150.000
SPRINGFIELD ROAD (D)

24.00	6.22	768.36	0.00	0.00	768.39	.04	2.07	0.00	768.60
335.	0.	276.	59.	0.	167.	180.	7.	3.	766.68
.16	0.00	1.65	.33	.100	.035	.100	.031	762.14	2000.57
.000249	60.	60.	60.	2	0	5	0.00	149.43	2150.00

*SECNO 24.100
3280 CROSS SECTION 24.10 EXTENDED 1.66 FEET

3470 ENCROACHMENT STATIONS= 2000.0 2125.0 TYPE= 1 TARGET= 125.000

24.10	6.22	768.36	0.00	0.00	768.41	.04	.01	.00	768.60
335.	0.	294.	41.	0.	167.	139.	7.	3.	766.68
.17	0.00	1.76	.30	.100	.030	.100	.031	762.14	2000.55
.000206	50.	50.	50.	2	0	0	0.00	124.45	2125.00

CCHV= .100 CEHV= .300
*SECNO 24.700

3470 ENCROACHMENT STATIONS= 2003.0 2045.0 TYPE= 1 TARGET= 42.000

24.70	4.96	768.40	0.00	0.00	768.71	.30	.22	.08	766.57
335.	7.	328.	0.	9.	73.	0.	10.	4.	769.43
.20	.78	4.47	0.00	.100	.030	.100	.031	763.44	2003.00
.001917	475.	475.	475.	2	0	0	0.00	27.14	2030.14

*SECNO 24.800

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

24.80	4.38	768.41	0.00	0.00	768.86	.46	.11	.05	767.51
335.	0.	335.	0.	0.	62.	0.	10.	4.	765.45
.[illegible]	0.00	5.42	0.00	.100	.030	.100	.030	764.03	2008.00
.0[illegible]	49.	49.	49.	2	0	0	0.00	17.00	2025.00

MOORE BUSINESS FORMS INC 27

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

CCHV= .300 CEHV= .500
*SECNO 24.900

3370 NORMAL BRIDGE,NRD= 9 MIN ELTRD= 769.45 MAX ELLC= 768.46

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

24.90	4.38	766.41	0.00	0.00	768.87	.46	.00	.00	767.51
335.	0.	335.	0.	0.	62.	0.	10.	4.	765.45
.20	0.00	5.41	0.00	.100	.030	.100	.030	764.03	2008.00
.004719	1.	1.	1.	0	0	0	-14.80	17.00	2025.00

*SECNO 25.000

3370 NORMAL BRIDGE,NRD= 9 MIN ELTRD= 769.40 MAX ELLC= 768.51

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.40 ELREA= 769.40

MARKET STREET (E)

25.00	5.81	768.59	0.00	0.00	769.03	.44	.16	.00	762.78
335.	0.	335.	0.	0.	63.	0.	10.	4.	765.29
.20	0.00	5.35	0.00	.100	.035	.100	.031	762.78	2008.00
.004615	24.	24.	24.	3	0	0	-51.99	17.00	2025.00

*SECNO 25.050

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.40 ELREA= 769.40

25.01	5.23	768.63	0.00	0.00	769.04	.42	.00	.01	762.78
335.	0.	335.	0.	0.	65.	0.	10.	4.	765.29
.20	0.00	5.17	0.00	.100	.035	.100	.030	762.78	2008.00
.02871	1.	1.	1.	2	0	0	0.00	17.00	2025.00

*SECNO 25.100

3470 ENCROACHMENT STATIONS= 1992.0 2040.0 TYPE= 1 TARGET= 48.000

25.10	6.30	769.08	0.00	0.00	769.21	.13	.08	.08	762.78
335.	44.	244.	47.	49.	72.	49.	10.	4.	765.29
.20	.90	3.37	.95	.100	.035	.100	.031	762.78	1992.00
.000[illegible]	49.	49.	49.	2	0	0	0.00	48.00	2040.00

```
 [illegible]NO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
 [illegible]      QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
 [illegible]      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
 SLO[illegible]   [illegible]L     XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     FNDST

CCHV=     .100 CEHV=     .300
*SECNO 25.200

3470 ENCROACHMENT STATIONS=     1960.0     2075.0  TYPE=      1  TARGET=      115.000
    25.20      5.13   769.21      0.00      0.00   769.39      .17       .17       .01    764.08
     335.       43.     217.       75.       49.      53.      77.       10.        4.    766.59
      .21       .87     4.11       .98      .100     .035     .100      .031    764.08   1960.00
 [illegible]      110.     110.      110.         2        0        0      0.00    115.00   2075.00

*SECN[illegible]

3301 HV [illegible] THAN HVINS

7185 MINIMUM SPECIFI[illegible]Y
3720 CRITICAL DEPTH A[illegible]

[illegible]7[illegible] ENCROACHMENT STATIONS=     1960.0     2075.0  TYPE=      1  TARGET=      115.000
    [illegible]      4.08   769.36   76[illegible].36      0.00   770.09      .73       .53       .17    765.28
     [illegible]       36.     265.       34.       16.      35.      24.       11.        4.    767.79
      [illegible]      [illegible].31     7.63      1.42      .100     .035     .100      .031    765.28   2000.37
 [illegible]4360      [illegible]      109.      109.         2       15        0      0.00     74.63   2075.00

[illegible] 5.700

3470 [illegible]ACHMENT STATIONS=     1995.0     2048.0  TYPE=      1  TARGET=       53.000
    25.70      3.53   771.18      0.00      0.00   771.53      .35      1.40       .04    769.61
     335.        6.     325.        4.        8.      67.       7.       11.        4.    770.65
      .23       .76     4.83       .56      .100     .035     .100      .031    767.65   1995.00
 [illegible]6[illegible]5      219.     219.      219.         4        0        0      0.00     53.00   2048.00

[illegible]
    [illegible]      3.25   771.23      0.00      0.00   771.85      .62       .24       .08    770.86
     335.        [illegible]     334.        1.        0.      52.       3.       11.        5.    770.83
      .23       [illegible]     6.36       .48      .100     .035     .100      .031    767.98   2003.99
 [illegible]0704[illegible]      50.      50.       50.         2        0        0      0.00     29.01   2033.00
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MOORE BUSINESS FORMS INC 27

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

SPECIAL BRIDGE

5070.VARIABLE ELCHU *** ELC... ON CARD SB NOT SPECIFIED

SB	XK	XKOR	COEF	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.95	3.00	0.00	16.50	0.00	46.20	0.00	767.98	767.98

CCHV= .300 CEHV= .500
*SECNO 26.000
3280 CROSS SECTION 26.00 EXTENDED .03 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
772.82	771.95	0.00	12.	321.	46.	48.	770.86	772.50

3470 ENCROACHMENT STATIONS= 1983.0 2043.0 TYPE= 1 TARGET= 60.000
STEWART STREET

26.00	5.05	772.53	0.00	0.00	772.69	.16	.84	0.00	769.19
335.	47.	253.	35.	52.	70.	44.	11.	5.	770.51
.24	.90	3.61	.80	.100	.035	.100	.031	767.48	1983.00
.001282	22.	22.	22.	2	0	2	0.00	60.00	2043.00

*SECNO 26.100
3280 CROSS SECTION 26.10 EXTENDED .12 FEET

3470 ENCROACHMENT STATIONS= 1983.0 2043.0 TYPE= 1 TARGET= 60.000

26.10	5.14	772.62	0.00	0.00	772.76	.13	.06	.01	769.19
335.	58.	242.	35.	54.	71.	46.	11.	5.	770.51
.24	1.07	3.39	.76	.080	.035	.100	.031	767.48	1983.00
.001101	50.	50.	50.	2	0	0	0.00	60.00	2043.00

CCHV= .100 CEHV= .300
*SECNO 26.200

3470 ENCROACHMENT STATIONS= 1933.0 2093.0 TYPE= 1 TARGET= 160.000

MOORE BUSINESS FORMS INC 27

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
	(F)								
26.20	4.41	772.79	0.00	0.00	772.89	.11	.14	.00	770.09
335.	80.	199.	57.	96.	60.	90.	12.	5.	771.41
.25	.83	3.33	.63	.080	.035	.100	.031	768.38	1933.00
.001351	112.	112.	112.	2	0	0	0.00	160.00	2093.00

*SECNO 26.700
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

26.70	3.53	772.81	772.81	0.00	773.32	.51	.29	.12	770.99
335.	34.	284.	17.	33.	46.	33.	12.	5.	772.31
.26	1.05	6.23	.51	.080	.035	.100	.031	769.28	1937.52
.006753	113.	113.	113.	2	12	0	0.00	208.52	2146.04

*SECNO 26.800

26.80	3.28	774.32	773.72	0.00	774.87	.55	1.54	.01	774.17
335.	1.	320.	14.	3.	52.	11.	13.	6.	771.92
.27	.32	6.10	1.29	.080	.035	.100	.032	771.04	1971.82
.006932	225.	225.	225.	2	11	0	0.00	80.71	2052.53

*SECNO 26.900

3470 ENCROACHMENT STATIONS= 1970.0 2100.0 TYPE= 1 TARGET= 130.000

26.90	3.80	774.84	0.00	0.00	775.12	.28	.22	.03	774.17
335.	15.	288.	32.	21.	63.	46.	13.	6.	771.92
.27	.73	4.57	.70	.080	.035	.100	.032	771.04	1970.00
.003057	50.	50.	50.	2	0	0	0.00	130.00	2100.00

CCHV= .300 CEHV= .500

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.64	3.00	0.00	20.00	0.00	52.00	0.00	771.04	771.04

*SECNO 27.000
3280 CROSS SECTION 27.00 EXTENDED .18 FEET

MOORE BUSINESS FORMS INC 27

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

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
775.90	775.28	0.00	78.	256.	52.	65.	774.28	775.00

3470 ENCROACHMENT STATIONS= 1970.0 2100.0 TYPE= 1 TARGET= 130.000
TRAILER PARK ROAD

27.00	3.69	775.17	0.00	0.00	775.46	.28	.33	0.00	774.28
335.	19.	311.	5.	25.	70.	17.	13.	6.	774.20
.28	.75	4.43	.33	.080	.035	.100	.032	771.48	1970.00
.002774	14.	14.	14.	2	0	2	0.00	130.00	2100.00

*SECNO 27.100
3280 CROSS SECTION 27.10 EXTENDED .45 FEET

3470 ENCROACHMENT STATIONS= 1900.0 2130.0 TYPE= 1 TARGET= 230.000

27.10	3.97	775.45	0.00	0.00	775.60	.15	.10	.04	774.28
335.	54.	263.	19.	85.	76.	50.	13.	6.	774.20
.28	.63	3.47	.37	.080	.035	.100	.032	771.48	1900.00
.001545	50.	50.	50.	2	0	0	0.00	230.00	2130.00

CCHV= .100 CEHV= .300
*SECNO 27.200
3280 CROSS SECTION 27.20 EXTENDED .51 FEET

3470 ENCROACHMENT STATIONS= 1920.0 2110.0 TYPE= 1 TARGET= 190.000

27.20	4.03	775.91	0.00	0.00	776.07	.16	.47	.00	774.68
335.	43.	274.	19.	77.	77.	46.	15.	8.	774.60
.31	.55	3.57	.40	.100	.035	.100	.032	771.88	1920.00
.001600	300.	300.	300.	2	0	0	0.00	190.00	2110.00

*SECNO 27.700

FORMS INC 27
MOORE BUSINESS

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

3470 ENCROACHMENT STATIONS= 2004.0 2047.0 TYPE= 1 TARGET= 43.000
(G)

27.70	4.10	776.34	0.00	0.00	776.54	.20	.45	.01	773.78
335.	24.	293.	19.	26.	76.	22.	16.	9.	774.27
.33	.91	3.83	.83	.100	.035	.100	.032	772.24	2004.00
.001529	290.	290.	290.	2	0	0	0.00	43.00	2047.00

*SECNO 27.800
3280 CROSS SECTION 27.80 EXTENDED 1.64 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 777.00 ELREA= 777.00

27.80	4.37	776.34	0.00	0.00	776.67	.34	.09	.04	774.44
335.	0.	335.	0.	0.	72.	0.	16.	9.	774.44
.33	0.00	4.65	0.00	.100	.035	.100	.032	771.97	2006.00
.002410	49.	49.	49.	2	0	0	0.00	17.50	2023.50

CCHV= .300 CEHV= .500

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.87	3.00	0.00	17.50	0.00	70.00	0.00	771.60	772.00

*SECNO 28.000
3280 CROSS SECTION 28.00 EXTENDED 2.01 FEET

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
777.00	776.38	0.00	0.	335.	70.	81.	776.20	777.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 777.30 ELREA= 777.30

OLMSTED ROAD (H)

MOORE BUSINESS FORMS INC 27

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
28.00	5.16	776.71	0.00	0.00	777.00	.29	.33	0.00	774.49
335.	0.	335.	0.	0.	78.	0.	16.	9.	773.52
.34	0.00	4.32	0.00	.100	.035	.100	.032	771.55	2006.00
.001670	28.	28.	28.	2	0	0	0.00	17.50	2023.50

*SECNO 28.200

3280 CROSS SECTION 28.20 EXTENDED 2.31 FEET

3470 ENCROACHMENT STATIONS= 1956.0 2076.0 TYPE= 1 TARGET= 120.000

28.20	5.46	777.01	0.00	0.00	777.10	.09	.04	.06	774.49
335.	74.	236.	25.	126.	83.	63.	16.	9.	773.52
.34	.59	2.85	.40	.100	.030	.100	.032	771.55	1956.00
.000490	50.	50.	50.	2	0	0	0.00	120.00	2076.00

MOORE BUSINESS FORMS INC 27



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: 100 YR RUN 1980



Rec'd SEP 25 1980 WATER MANAGEMENT

FIS KALAMAZOO TWP, Kalamazoo Co., MI
Davis Creek
100-Year Flood
THIS RUN EXECUTED 09/10/80

Model Hydrological fit
plus the new Rec'd 12/1/82

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED  AUG1977
  ERROR CORR =  01,02
  MODIFICATION =  50,51,52,53
**************************************************
C
T1      FIS KALAMAZOO TWP, KALAMAZOO COUNTY, MICHIGAN.
T2      100-YEAR FLOOD
T3      DAVIS-CREEK-AT-KALAMAZOO
J1  ICHECK     INQ        NINV       IDTR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.       4.         0.         0.       0.0          0.0        0.0        0.     759.700      0.0
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
   -1.000       0.0       -1.000      0.0        0.0        0.0        0.0        0.0        0.0       15.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38.000     1.000     53.000     21.000     22.000     54.000      4.000     39.000    150.000    200.000
QT      5.000   450.000   683.000   765.000  1030.000   765.000        0.0        0.0        0.0        0.0
NC      0.080     0.100     0.030     0.100     0.300      0.0          0.0        0.0        0.0        0.0

        MOUTH     (A)
X1     19.900     7.000    30.000    66.000     0.0        0.0        0.0        0.0        0.0        0.0
GR    771.300     0.0     761.430    22.000   761.970     30.000   756.690     38.000   754.980     48.000
GR    756.450    58.000   764.360    66.000     0.0        0.0        0.0        0.0        0.0        0.0

X1     20.000     0.0       0.0       0.0       40.000     40.000     40.000     0.0        0.0        0.0
NC      0.100     0.060     0.030     0.0        0.0        0.0        0.0        0.0        0.0        0.0

X1     21.000     5.000  2000.000  2038.000   700.000    700.000    700.000     0.0        0.0        0.0
GR    766.760  2000.000   757.360  2010.000   756.660   2018.000   756.960  2022.000   765.360  2038.000

X1     21.100     0.0       0.0       0.0       470.000    470.000    470.000    0.0        0.0        0.0
QT      5.000    64.000   229.000   300.000   360.000    300.000      0.0        0.0        0.0        0.0
NC      0.060     0.060     0.025     0.0        0.0        0.0        0.0        0.0        0.0        0.0

X1     21.700     6.000  2000.000  2041.000   200.000    200.000    200.000     0.0        0.0        0.0
GR    770.300  1670.000   767.580  2000.000   760.510   2013.000   759.990  2022.000   760.600  2032.000
GR    765.460  2041.000     0.0       0.0       0.0        0.0        0.0        0.0        0.0        0.0

X1     21.800     9.000  2013.000  2029.000    49.000     49.000     49.000     0.0        0.0        0.0
X3     10.000     0.0       0.0       0.0       0.0        0.0        0.0      766.000    765.000      0.0
GR    770.300  1700.000   767.600  2000.000   766.600   2013.000   760.380  2013.000   760.080  2022.000
GR    759.720  2029.000   767.530  2029.000   766.130   2051.000   765.000  2550.000     0.0        0.0
NC      0.0       0.0       0.0       0.300     0.500      0.0        0.0        0.0        0.0        0.0
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D/S Consistent

X1	21.900	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	766.000	765.000	0.0
BT	9.000	1700.000	770.300	0.0	2000.000	768.110	0.0	2013.000	768.110	0.0
BT	2013.000	768.110	765.530	2022.000	767.850	765.530	2029.000	767.730	765.530	2029.000
BT	767.730	0.0	2051.000	766.130	0.0	2550.000	765.000	0.0	0.0	0.0
NC	0.070	0.070	0.030	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMSTOCK ROAD

X1	22.000	10.000	2013.000	2029.000	42.000	42.000	42.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	768.000	765.000	0.0
BT	10.000	1700.000	770.300	0.0	2000.000	768.110	0.0	2013.000	768.110	0.0
BT	2013.000	768.110	765.360	2020.000	768.000	765.360	2027.000	767.730	765.360	2029.000
BT	767.730	765.360	2029.000	767.730	0.0	2036.000	767.730	0.0	2550.000	765.000
BT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	770.300	1700.000	766.590	2000.000	765.360	2013.000	760.050	2013.000	760.080	2020.000
GR	760.750	2027.000	762.630	2029.000	762.630	2029.000	766.900	2036.000	765.000	2550.000

X1	22.100	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	768.000	765.000	0.0
QT	5.000	64.000 ✓	239.000 ✓	335.000 ✓	375.000	335.000	0.0	0.0	0.0	0.0
NC	0.080	0.080	0.035	0.0	0.0	0.0	0.0	0.0	0.0	0.0

U/S Comstock Rd

(B)

X1	22.700	8.000	2025.000	2058.000	40.000	150.000	80.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1955.000	0.0	2130.000	0.0	0.0	0.0	0.0
GR	765.900	1800.000	766.070	2000.000	764.680	2025.000	760.960	2035.000	760.440	2041.000
GR	760.740	2047.000	763.990	2058.000	765.700	2450.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0

X1	22.800	8.000	2011.000	2040.000	100.000	100.000	100.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	764.000	764.000	0.0
GR	765.900	1800.000	763.130	2000.000	763.950	2011.000	760.850	2011.000	760.300	2018.500
GR	760.670	2026.500	764.880	2040.000	765.700	2450.000	0.0	0.0	0.0	0.0
SB	1.250	2.983	3.000	0.0	21.000	9.190	41.230	0.0	760.230	760.300

BROOKFIELD ROAD (C)

X1	23.000	10.000	2032.000	2053.000	52.000	52.000	52.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	763.980	765.000	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	1880.000	0.0	2200.000	0.0	765.000	765.000	0.0
BT	4.000	1880.000	769.000	0.0	2000.000	765.900	0.0	2100.000	765.000	0.0
BT	2200.000	769.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	765.900	1800.000	765.860	2000.000	765.640	2018.000	761.000	2032.000	760.430	2035.000
GR	760.260	2042.000	760.230	2050.500	761.000	2053.000	764.710	2064.000	765.700	2450.000
NC	0.100	0.100	0.035	0.0	0.0	0.0	0.0	0.0	0.0	0.0

X1	23.100	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1880.000	0.0	2200.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0

X1	23.700	8.000	2012.000	2035.000	230.000	230.000	230.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1890.000	0.0	2200.000	0.0	0.0	0.0	0.0
GR	770.300	1600.000	769.350	2000.000	768.850	2012.000	762.480	2023.000	761.730	2028.000
GR	762.390	2032.000	764.480	2035.000	766.200	2300.000	0.0	0.0	0.0	0.0

X1	23.800	0.0	0.0	0.0	50.000	50.000	50.00	0.0	0.0	0.0

NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0
	SPRINGFIELD ROAD (D)									
X1	24.000	7.000	2000.000	2042.000	60.000	60.000	60.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	765.740	768.300	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	1870.000	0.0	2175.000	0.0	768.300	768.300	0.0
BT	5.000	1870.000	770.000	0.0	2000.000	768.600	0.0	2042.000	768.300	0.0
BT	2175.000	768.000	0.0	2175.000	770.000	0.0	0.0	0.0	0.0	0.0
GR	770.000	1700.000	768.600	2000.000	763.450	2012.000	762.140	2018.000	762.370	2024.000
GR	766.680	2042.000	766.700	2175.000	0.0	0.0	0.0	0.0	0.0	0.0
NC	0.100	0.100	0.030	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	24.100	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1880.000	0.0	2160.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0
X1	24.700	7.000	2008.000	2031.000	475.000	475.000	475.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	2003.000	0.0	2045.000	0.0	0.0	0.0	0.0
GR	772.800	1450.000	766.910	2000.000	766.570	2008.000	765.040	2013.000	764.780	2020.000
GR	763.440	2026.000	769.430	2031.000	0.0	0.0	0.0	0.0	0.0	0.0
X1	24.800	9.000	2008.000	2025.000	49.000	49.000	49.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	769.000	769.000	0.0
GR	772.800	1470.000	767.510	2000.000	767.510	2008.000	764.030	2008.000	764.800	2016.500
GR	765.450	2025.000	765.450	2025.000	765.450	2030.000	770.800	2700.000	0.0	0.0
NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0
X1	24.900	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	769.000	769.000	0.0
BT	9.000	1470.000	772.800	0.0	2000.000	769.540	0.0	2008.000	769.500	0.0
BT	2008.000	769.500	768.460	2016.500	769.450	768.450	2025.000	769.600	768.440	2025.000
BT	769.600	0.0	2030.000	769.690	0.0	2700.000	770.800	0.0	0.0	0.0
NC	0.100	0.100	0.035	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MARKET STREET (E)									
X1	25.000	9.000	2008.000	2025.000	24.000	24.000	24.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	769.400	769.400	0.0
BT	9.000	1470.000	772.800	0.0	2000.000	769.540	0.0	2008.000	769.500	0.0
BT	2008.000	769.500	768.490	2016.500	769.450	768.500	2025.000	769.400	768.510	2025.000
BT	769.400	0.0	2044.000	769.410	0.0	2700.000	770.800	0.0	0.0	0.0
GR	772.800	1470.000	767.060	2000.000	762.780	2008.000	764.660	2008.000	764.660	2016.500
GR	765.290	2025.000	765.290	2025.000	766.560	2044.000	770.800	2700.000	0.0	0.0
NC	0.100	0.100	0.035	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	25.100	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1960.000	0.0	2075.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0
X1	25.200	0.0	0.0	0.0	110.000	110.000	110.000	0.0	1.300	0.0
X3	0.0	0.0	0.0	1960.000	0.0	2075.000	0.0	0.0	0.0	0.0
X1	25.300	0.0	0.0	0.0	109.000	109.000	109.000	0.0	1.200	0.0
X3	0.0	0.0	0.0	1960.000	0.0	2075.000	0.0	0.0	0.0	0.0

GR	77.100	1630.000	771.030	2000.000	769.610	2009.000	768.390	2014.000	767.650	202.000
GR	767.650	2022.000	768.520	2030.000	770.650	2034.000	771.700	2500.000	0.0	0.0
X1	25.800	10.000	2005.500	2022.000	50.000	50.000	50.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	771.000	771.000	0.0
GR	775.100	1630.000	772.230	2000.000	770.860	2005.500	768.190	2005.500	768.030	2013.500
GR	767.980	2022.000	770.830	2022.000	771.170	2033.000	771.700	2033.000	772.000	2500.000
SB	0.0	1.953	3.000	0.0	16.500	0.0	46.200	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0

STEWART STREET

X1	26.000	9.000	2005.000	2021.000	22.000	22.000	22.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	770.860	772.500	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	1983.000	0.0	2043.000	0.0	772.000	772.000	0.0
BT	9.000	1983.000	772.600	0.0	2000.000	772.580	0.0	2005.500	772.580	0.0
BT	2005.500	772.580	770.860	2013.500	772.520	770.850	2022.000	772.470	770.830	2022.000
BT	772.470	0.0	2033.000	772.470	0.0	2043.000	772.500	0.0	0.0	0.0
GR	775.100	1630.000	770.180	2000.000	769.190	2005.000	769.190	2005.000	767.930	2013.500
GR	767.480	2021.000	770.510	2021.000	770.510	2027.000	772.500	2500.000	0.0	0.0
NC	0.080	0.100	0.035	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	26.100	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1920.000	0.0	2080.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0

(F)

X1	26.200	0.0	0.0	0.0	112.000	112.000	112.000	0.0	0.900	0.0
X3	0.0	0.0	0.0	1870.000	0.0	2130.000	0.0	0.0	0.0	0.0
X1	26.700	0.0	0.0	0.0	113.000	113.000	113.000	0.0	0.900	0.0
X1	26.800	8.000	2004.000	2024.000	225.000	225.000	225.000	0.0	0.0	0.0
GR	775.400	1775.000	774.170	2000.000	774.170	2004.000	771.040	2004.000	771.920	2014.000
GR	771.920	2024.000	774.230	2032.000	775.000	2200.000	0.0	0.0	0.0	0.0
X1	26.900	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	1920.000	0.0	2100.000	0.0	774.500	774.500	0.0
NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0
SB	0.0	1.635	3.000	0.0	20.000	0.0	52.000	0.0	0.0	0.0

TRAILER PARK ROAD

X1	27.000	9.000	2006.000	2026.000	14.000	14.000	14.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	774.280	775.000	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	1900.000	0.0	2110.000	0.0	775.000	775.000	0.0
BT	9.000	1900.000	776.400	0.0	2000.000	775.080	0.0	2006.000	775.080	0.0
BT	2006.000	775.080	774.280	2016.000	775.100	774.240	2026.000	775.120	774.200	2026.000
BT	775.120	0.0	2034.000	775.120	0.0	2100.000	775.000	0.0	0.0	0.0
GR	775.400	1775.000	774.460	2000.000	774.280	2006.000	771.480	2006.000	771.690	2016.000
GR	771.820	2026.000	774.200	2026.000	775.000	2034.000	775.000	2200.000	0.0	0.0
X1	27.100	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1850.000	0.0	2160.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0
NC	0.1			0.0	0.0	0.0	0.0	0.0	0.0	0.0



X1	27.200	0.0	0.0	0.0	300.000	300.000	300.000	0.0	0.400	0.0

(G)

X1	27.700	14.000	2015.000	2036.000	290.000	290.000	290.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	2004.000	0.0	2047.000	0.0	0.0	0.0	0.0
GR	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000
GR	774.700	1860.000	774.320	2000.000	773.780	2015.000	772.720	2020.000	772.240	2027.000
GR	772.420	2034.000	774.270	2036.000	774.800	2100.000	776.500	2150.000	0.0	0.0
X1	27.800	9.000	2006.000	2023.500	49.000	49.000	49.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	777.000	777.000	0.0
GR	774.700	1430.000	774.440	2000.000	774.440	2006.000	771.970	2006.000	772.020	2014.500
GR	772.850	2023.500	774.440	2023.500	774.440	2033.000	778.200	2700.000	0.0	0.0
NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0
SB	0.0	2.169	3.000	0.0	17.500	0.0	70.000	0.0	771.600	772.000

OLMSTED ROAD (H)

X1	28.000	9.000	2006.000	2023.500	28.000	28.000	28.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	776.200	777.300	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	777.300	777.300	0.0
BT	9.000	1430.000	776.400	0.0	2000.000	777.280	0.0	2006.000	777.280	0.0
BT	2006.000	777.280	776.130	2014.500	777.290	776.160	2023.500	777.300	776.180	2023.500
BT	777.300	0.0	2033.000	777.300	0.0	2700.000	780.000	0.0	0.0	0.0
GR	774.700	1430.000	774.490	2000.000	774.490	2006.000	772.460	2006.000	771.550	2014.500
GR	773.520	2023.500	773.520	2023.500	775.980	2033.000	778.200	2700.000	0.0	0.0
NC	0.0	0.0	0.030	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	28.200	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1956.000	0.0	2076.000	0.0	0.0	0.0	0.0
EJ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*PROF 1

CCHV= 0.100 CEHV= 0.300

*SECNO 19.900

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMTN	STA
SLOPE	YLOBL	YLCH	YLOBR						

*PROF 1

CCHV= 0.100 CEHV= 0.300

*SECNO 19.900

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV	
Q	CLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	
	MOUTH	(A)								
19.90	4.72	759.70	0.0	759.70	760.80	1.10	0.0	0.0	761.97	
765.	0.	765.	0.	0.	91.	0.	0.	0.	764.36	
0.0	0.0	8.43	0.0	0.080	0.030	0.100	0.0	754.98	33.44	
0.006731	0.	0.	0.	0	0	0	0.0	27.85	61.29	

FLOW DISTRIBUTION FOR SECNO= 19.90 CWSEL= 759.70

STA=	33.	66.
PER Q=	100.0	
AREA=	90.7	
VEL=	8.4	

*SECNO 20.000

20.00	5.26	760.24	0.0	0.0	761.05	0.81	0.21	0.03	761.97
765.	0.	765.	0.	0.	106.	0.	0.	0.	764.36
0.00	0.0	7.21	0.0	0.080	0.030	0.100	0.029	754.98	32.62
0.004307	40.	40.	40.	3	0	0	0.0	29.21	61.83

FLOW DISTRIBUTION FOR SECNO= 20.00 CWSEL= 760.24

STA=	33.	66.
PER Q=	100.0	
AREA=	106.0	
VEL=	7.2	

*SECNO 21.000

21.00	6.22	762.88	0.0	0.0	763.50	0.62	2.44	0.02	766.76
765.	0.	765.	0.	0.	121.	0.	2.	0.	765.36
0.03	0.0	6.33	0.0	0.100	0.030	0.060	0.030	756.66	2004.13
0.002874	700.	700.	700.	3	0	0	0.0	29.15	2033.28

FLOW DISTRIBUTION FOR SECNO= 21.00 CWSEL= 762.88

STA=	2004.	2038.
PER Q=	100.0	
AREA=	120.9	
VEL=	6.3	

*SECNO 21.100

21.10	7.41	764.07	0.0	0.0	764.44	0.37	0.91	0.03	766.76
765.	0.	765.	0.	0.	158.	0.	3.	1.	765.36
0.06	0.0	4.85	0.0	0.100	0.030	0.060	0.030	756.66	2002.86
0.001394	470.	470.	470.	2	0	0	0.0	32.69	2035.55

STA= 2003. 2038.
PER Q= 100.0
AREA= 157.7
VEL= 4.9

*SECNO 21.700

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBI	XLCH	XLOBR	ITRIAL	TOC	ICONT	CORAR	TOPWID	ENDST
21.70	4.55	764.54	0.0	0.0	764.66	0.11	0.19	0.03	767.58
300.	0.	300.	0.	0.	110.	0.	4.	1.	765.46
0.08	0.0	2.72	0.0	0.060	0.025	0.060	0.029	759.99	2005.59
0.000465	200.	200.	200.	2	0	0	0.0	33.71	2039.30

FLOW DISTRIBUTION FOR SECNO= 21.70 CWSEL= 764.54

STA= 2006. 2041.
PER Q= 100.0
AREA= 110.4
VEL= 2.7

*SECNO 21.800

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 766.00 FLREA= 765.00

21.80	4.74	764.46	0.0	0.0	764.74	0.29	0.04	0.05	766.60
300.	0.	300.	0.	0.	70.	0.	4.	1.	765.53
0.08	0.0	4.29	0.0	0.060	0.025	0.060	0.029	759.72	2013.00
0.001308	49.	49.	49.	2	0	0	0.0	16.00	2029.00

FLOW DISTRIBUTION FOR SECNO= 21.80 CWSEL= 764.46

STA= 2013. 2029.
PER Q= 100.0
AREA= 69.9
VEL= 4.3

CCHV= 0.300 CEHV= 0.500
*SECNO 21.900

3370 NORMAL BRIDGE,NRD= 9 MIN ELTRD= 765.00 MAX ELLC= 765.53

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 766.00 ELREA= 765.00

21.90	4.74	764.46	0.0	0.0	764.74	0.29	0.00	0.00	766.60
300.	0.	300.	0.	0.	70.	0.	4.	1.	765.53
0.08	0.0	4.29	0.0	0.060	0.025	0.060	0.029	759.72	2013.00
0.001308	1.	1.	1.	0	0	0	0.0	16.00	2029.00

FLOW DISTRIBUTION FOR SECNO= 21.90 CWSEL= 764.46

STA= 2013. 2029.
PER Q= 100.0
AREA= 70.0
VEL= 4.3

*SECNO 22.000

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 765.00 MAX ELLC= 765.36

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 768.00 ELREA= 765.00

COMSTOCK ROAD

22.00	4.45	764.50	0.0	0.0	764.83	0.33	0.07	0.02	765.36	
300.	0.	300.	0.	0.	65.	0.	4.	1.	762.63	
0.09	0.0	4.58	0.0	0.070	0.030	0.070	0.029	760.05	2013.00	
0.001919	42.	42.	42.	0	0	0	-2.91	16.00	2029.00	

FLOW DISTRIBUTION FOR SECNO= 22.00 CWSEL= 764.50

STA=	2013.	2029.
PER Q=	100.0	
AREA=	65.5	
VEL=	4.6	

*SECNO 22.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 768.00 ELREA= 765.00

22.10	4.46	764.51	0.0	0.0	764.83	0.33	0.00	0.00	765.36	
300.	0.	300.	0.	0.	65.	0.	4.	1.	762.63	
0.09	0.0	4.59	0.0	0.070	0.030	0.070	0.029	760.05	2013.00	
0.001931	1.	1.	1.	0	0	0	0.0	16.00	2029.00	

FLOW DISTRIBUTION FOR SECNO= 22.10 CWSEL= 764.51

STA=	2013.	2029.
PER Q=	100.0	
AREA=	65.3	
VEL=	4.6	

*SECNO 22.700

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

3470 ENCROACHMENT STATIONS= 1955.0 2130.0 TYPE= 1 TARGET= 175.000

(A)

22.70	4.44	764.88	0.0	0.0	765.02	0.14	0.13	0.06	764.68	
335.	0.	306.	29.	0.	99.	53.	4.	1.	763.99	
0.09	0.14	3.09	0.54	0.080	0.035	0.080	0.029	760.44	2021.32	
0.001276	40.	80.	150.	2	0	0	0.0	108.68	2130.00	

FLOW DISTRIBUTION FOR SECNO= 22.70 CWSEL= 764.88

STA=	2021.	2025.	2058.	2130.
PER Q=	0.0	91.4	8.5	
AREA=	0.4	99.2	53.1	
VEL=	0.1	3.1	0.5	

CCHV= 0.100 CEHV= 0.300

*SECNO 22.800

22.80	4.75	765.05	0.0	0.0	765.12	0.08	0.10	0.01	763.95
335.	79.	256.	1.	148.	101.	7.	5.	2.	764.88
0.11	0.53	2.54	0.10	0.080	0.035	0.080	0.030	760.30	1.96
0.000803	100	100	100	0	0	0	0.0		

FLOW DISTRIBUTION FOR SECNO= 22.80 CWSEL= 765.05

STA=	1862.	2000.	2011.	2040.	2121.
PER Q=	20.1	3.4	76.3	0.2	
AREA=	132.0	16.5	100.6	6.5	
VEL=	0.5	0.7	2.5	0.1	

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	2.98	3.00	0.0	21.00	9.19	41.23	0.0	760.23	760.30

*SECNO 23.000
3280 CROSS SECTION 23.00 EXTENDED 0.25 FEET

PRESSURE AND WETR FLOW

EGPRS	EGLWC	H3	QWETR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
768.10	765.28	0.16	150.	188.	41.	44.	763.98	765.00

3470 ENCROACHMENT STATIONS= 1880.0 2200.0 TYPE= 1 TARGET= 320.000

BROOKFIELD ROAD (C)

23.00	5.72	765.95	0.0	0.0	766.00	0.05	0.88	0.0	761.00	
335.	21.	248.	66.	50.	117.	179.	5.	2.	761.00	
0.12	0.42	2.13	0.37	0.080	0.035	0.080	0.030	760.23	1880.00	
0.000257	52.	52.	52.	2	0	4	0.0	320.00	2200.00	

FLOW DISTRIBUTION FOR SECNO= 23.00 CWSEL= 765.95

STA=	1880.	2000.	2018.	2032.	2053.	2064.	2200.
PER Q=	0.2	0.1	6.0	74.1	6.2	13.4	
AREA=	9.5	3.6	36.8	116.8	34.1	145.1	
VEL=	0.1	0.1	0.5	2.1	0.6	0.3	

*SECNO 23.100
3280 CROSS SECTION 23.10 EXTENDED 0.27 FEET

3470 ENCROACHMENT STATIONS= 1880.0 2200.0 TYPE= 1 TARGET= 320.000

23.10	5.73	765.96	0.0	0.0	766.02	0.06	0.01	0.00	761.00	
335.	18.	261.	56.	53.	117.	182.	6.	2.	761.00	
0.12	0.34	2.23	0.31	0.100	0.035	0.100	0.030	760.23	1880.00	
0.000281	50.	50.	50.	1	0	0	0.0	320.00	2200.00	

FLOW DISTRIBUTION FOR SECNO= 23.10 CWSEL= 765.96

STA=	1880.	2000.	2018.	2032.	2053.	2064.	2200.
PER Q=	0.2	0.1	5.1	77.9	5.2	11.5	
AREA=	11.6	3.9	37.1	117.2	34.2	147.4	
VEL=	0.1	0.1	0.5	2.2	0.5	0.3	

CCHV= 0.100 CEHV= 0.300
*SECNO 23.700

3470 ENCROACHMENT STATIONS= 1880.0 2200.0 TYPE= 1 TARGET= 320.000

	335.	0.	216.	11[illegible]	0.	54.	106.	[illegible]		[illegible]
	0.15	0.0	4.00	0.72	0.100	0.035	0.100	0.030	761.73	2016.89
0.002330		230.	230.	230.	0	0	0	0.0	183.11	2200.00

FLOW DISTRIBUTION FOR SECNO= 23.70 CWSEL= 766.03

STA=	2017.	2035.	2200.
PER Q=	64.4	35.6	
AREA=	54.0	165.9	
VEL=	4.0	0.7	

*SECNO 23.800

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
23.80	4.44	766.17	0.0	0.0	766.30	0.13	0.10	0.00	768.85
335.	0.	209.	126.	0.	57.	219.	7.	4.	764.48
0.15	0.0	3.68	0.58	0.100	0.035	0.100	0.031	761.73	2016.63
0.001888	50.	50.	50.	2	0	0	0.0	278.37	2295.00

FLOW DISTRIBUTION FOR SECNO= 23.80 CWSEL= 766.17

STA=	2017.	2035.	2295.
PER Q=	62.2	37.8	
AREA=	56.7	219.4	
VEL=	3.7	0.6	

SPECIAL BRIDGE

SB	XK	XKOR	COEQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	3.15	3.00	0.0	18.00	5.10	42.90	0.0	762.64	762.14

CCHV= 0.300 CEHV= 0.500
*SECNO 24.000
3280 CROSS SECTION 24.00 EXTENDED 1.66 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZCID AREA	ELLC	ELTRD
769.15	766.52	0.12	46.	289.	43.	40.	765.74	768.30

3470 ENCROACHMENT STATIONS= 1870.0 2175.0 TYPE= 1 TARGET= 305.000

SPRINGFIELD ROAD (D)

24.00	6.22	768.36	0.0	0.0	768.39	0.03	2.09	0.0	768.60
335.	0.	265.	70.	0.	167.	222.	8.	4.	766.68
0.16	0.0	1.59	0.31	0.100	0.035	0.100	0.031	762.14	2000.57
0.000230	-60.	60.	60.	2	0	5	0.0	174.43	2175.00

FLOW DISTRIBUTION FOR SECNO= 24.00 CWSEL= 768.36

STA=	2001.	2042.	2175.
PER Q=	79.2	20.8	
AREA=	177.0	231.5	

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*SECNO 24.100
3280 CROSS SECTION      24.10 EXTENDED      1.66 FEET

3470 ENCROACHMENT STATIONS=     1880.0     2160.0  TYPE=      1  TARGET=      280.000
     24.10      6.22    768.36      0.0        0.0     768.40      0.04        0.01        0.00    768.60
       335.        0.       279.       56.        0.       167.       198.          8.          4.    766.68
      0.17       0.0       1.67       0.28     0.100      0.030      0.100       0.031     762.14   2000.55
 0.000186       50.        50.        50.         2          0          0         0.0     159.45   2160.00

FLOW DISTRIBUTION FOR SECNO=      24.10          CWSEL=     768.36

STA=     2001.     2042.     2160.
  PER Q=     83.3      16.7
   AREA=    167.3     197.6
    VEL=      1.7       0.3

CCHV=    0.100 CEHV=    0.300
*SECNO 24.700

3470 ENCROACHMENT STATIONS=     2003.0     2045.0  TYPE=      1  TARGET=       42.000
     24.70      4.94    768.38      0.0        0.0     768.69      0.31        0.21        0.08    766.57
       335.        7.       328.        0.        9.       73.          0.         11.          5.    769.43
      0.20       0.78      4.50       0.0     0.100      0.030      0.100       0.030     763.44   2003.00
-0.001960        475.       475.       475.         2          0          0         0.0      27.12   2030.12

FLOW DISTRIBUTION FOR SECNO=      24.70          CWSEL=     768.38

STA=     2003.     2008.     2031.
  PER Q=      2.0      98.0
   AREA=      8.5      73.0
    VEL=      0.8       4.5

*SECNO 24.800

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      769.00 ELREA=      769.00

     24.80      4.36    768.39      0.0        0.0     768.85      0.46        0.12        0.05    767.51
       335.        0.       335.        0.        0.       62.          0.         11.          5.    765.45
      0.21       0.0       5.44       0.0     0.100      0.030      0.100       0.030     764.03   2008.00
 0.002975        49.        49.        49.         2          0          0         0.0      17.00   2025.00

FLOW DISTRIBUTION FOR SECNO=      24.80          CWSEL=     768.39

STA=     2008.     2025.
  PER Q=    100.0
   AREA=     61.5
    VEL=      5.4

CCHV=    0.300 CEHV=    0.500
*SECNO 24.900
   SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL          OLOSS     BANK ELEV
       Q       QLOB        QCH        QROB       ALOB        ACH       AROB        VOL          TWA    LEFT/RIGHT
    TIME       VLOB        VCH        VROB        XNL       XNCH        XNR        WTN       ELMIN          SSTA
   SLOPE      XLOBL       XLCH       XLOBR     ITRIAL        IDC      ICONT      CORAR      TOPWID        ENDST

3370 NORMAL BRIDGE,NRD=  9 MIN ELTRD=   769.45 MAX ELLC=   768.46

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      769.00 ELREA=      769.00
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    24.90      4.36    760.39      0.0       0.0     768.05      0.46      0.00      0.00    767.51
     335.        0.      335.       0.        0.       62.        0.       11.        5.    765.45
     0.21       0.0      5.44      0.0     0.100     0.030     0.100     0.030    764.03   2008.00
 0.002969        1.        1.        1.         0         0         0    -14.71     17.00   2025.00

FLOW DISTRIBUTION FOR SECNO=      24.90          CWSEL=     768.39

STA=     2008.     2025.
  PER Q=     100.0
   AREA=      61.6
    VEL=       5.4

*SECNO 25.000

3370 NORMAL BRIDGE,NRD=  9 MIN ELTRD=  769.40 MAX ELLC=  768.51

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      769.40 ELREA=      769.40

        MARKET STREET      (E)

    25.00      5.71    768.49      0.0       0.0     768.94      0.45      0.08      0.00    762.78
     335.        0.      335.       0.        0.       62.        0.       11.        5.    765.29
     0.21       0.0      5.37      0.0     0.100     0.035     0.100     0.030    762.78   2008.00
 0.003729       24.       24.       24.         2         0         0    -48.71     17.00   2025.00

FLOW DISTRIBUTION FOR SECNO=      25.00          CWSEL=     768.49

STA=     2008.     2025.
  PER Q=     100.0
   AREA=      62.4
    VEL=       5.4

*SECNO 25.100

3470 ENCROACHMENT STATIONS=     1960.0     2075.0  TYPE=      1  TARGET=      115.000
    25.10      6.28    769.06      0.0       0.0     769.11      0.06      0.06      0.12    762.78
     335.       62.      181.       92.      104.       72.       134.       11.        6.    765.29
     0.22       0.59      2.51      0.69     0.100     0.035     0.100     0.031    762.78   1960.00
 0.000591       50.       50.       50.         2         0         0       0.0    115.00   2075.00

FLOW DISTRIBUTION FOR SECNO=      25.10          CWSEL=     769.06

STA=     1960.     2000.     2008.     2025.     2044.     2075.
  PER Q=      11.0       7.5      54.1      13.7      13.7
   AREA=      71.3      33.1      72.1      59.6      74.4
    VEL=       0.5       0.8       2.5       0.8       0.6

CCHV=    0.100 CEHV=    0.300
*SECNO 25.200

3470 ENCROACHMENT STATIONS=     1960.0     2075.0  TYPE=      1  TARGET=      115.000
    25.20      5.00    769.08      0.0       0.0     769.28      0.21      0.12      0.04    764.08
     335.       40.      222.       72.       43.       50.       70.       12.        6.    766.59
     0.23       0.94      4.41      1.03     0.100     0.035     0.100     0.031    764.08   1960.00
 0.002945      110.      110.      110.         2         0         0       0.0    115.00   2075.00

FLOW DISTRIBUTION FOR SECNO=      25.20          CWSEL=     769.08

STA=     1960.     2000.     2008.     2025.     2044.     2075.
  PER Q=       3.1       9.0      66.3      12.8       8.8
   AREA=      20.1      22.0      50.       35.2      3[illegible].7
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*SECNO 25.300

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV	
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	
7185 MINIMUM SPECIFIC ENERGY										
3720 CRITICAL DEPTH ASSUMED										
3470 ENCROACHMENT STATIONS=		1960.0	2075.0	TYPE=	1	TARGET=	115.000			
25.30	4.08	769.36	769.36	0.0	770.09	0.73	0.61	0.16	765.28	
335.	36.	265.	34.	16.	35.	24.	12.	6.	767.79	
0.23	2.32	7.64	1.42	0.100	0.035	0.100	0.031	765.28	2000.38	
0.014530	109.	109.	109.	2	15	0	0.0	74.62	2075.00	

FLOW DISTRIBUTION FOR SECNO= 25.30 CWSEL= 769.36

STA=	2000.	2008.	2025.	2044.	2075.
PER Q=	10.8	79.1	9.0	1.1	
AREA=	15.5	34.7	17.7	6.1	
VEL=	2.3	7.6	1.7	0.6	

*SECNO 25.700

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV	
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	
3470 ENCROACHMENT STATIONS=		1995.0	2048.0	TYPE=	1	TARGET=	53.000			
25.70	3.53	771.18	0.0	0.0	771.53	0.35	1.41	0.04	769.61	
335.	6.	325.	4.	8.	67.	7.	12.	6.	770.65	
0.24	0.76	4.82	0.56	0.100	0.035	0.100	0.031	767.65	1995.00	
0.003601	219.	219.	219.	4	0	0	0.0	53.00	2048.00	

FLOW DISTRIBUTION FOR SECNO= 25.70 CWSEL= 771.18

STA=	1995.	2000.	2009.	2034.	2048.
PER Q=	0.0	1.8	96.9	1.2	
AREA=	0.6	7.7	67.3	7.2	
VEL=	0.2	0.8	4.8	0.6	

*SECNO 25.800

25.80	3.25	771.23	0.0	0.0	771.86	0.62	0.24	0.08	770.86	
335.	0.	334.	1.	0.	53.	3.	12.	6.	770.83	
0.24	0.40	6.35	0.48	0.100	0.035	0.100	0.031	767.98	2003.97	
0.007011	50.	50.	50.	2	0	0	0.0	29.03	2033.00	

FLOW DISTRIBUTION FOR SECNO= 25.80 CWSEL= 771.23

STA=	2004.	2006.	2022.	2033.
PER Q=	0.0	99.6	0.4	
AREA=	0.3	52.6	2.6	
VEL=	0.4	6.3	0.5	

SPECIAL BRIDGE

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SB  XK        XKOR      COEQ      RDLEN     LWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.0       1.95      3.00      0.0       16.50     0.0       46.20     0.0       767.98    767.98

CCHV=   0.300 CEHV=   0.500
*SECNO 26.000
3280 CROSS SECTION      26.00 EXTENDED      0.04 FEET

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                AREA
  772.83    771.95     0.0        12.      320.       46.        48.       770.86    772.50

3470 ENCROACHMENT STATIONS=     1983.0     2043.0  TYPE=      1  TARGET=      60.000

        STEWART STREET

    26.00      5.06    772.54     0.0       0.0     772.69     0.15      0.84      0.0     769.19
     335.       47.      252.      35.       52.       70.      44.       13.       6.     770.51
     0.25      0.90      3.60     0.80     0.100     0.035    0.100     0.031    767.48   1983.00
 0.001285       22.       22.      22.         2         0        2       0.0     60.00   2043.00

FLOW DISTRIBUTION FOR SECNO=      26.00          CWSEL=     772.54

STA=     1983.     2000.     2005.     2021.     2027.     2043.
  PER Q=      9.6       4.5      75.3       3.1       7.4
   AREA=     38.2      14.3      70.1      12.2      31.9
    VEL=      0.8       1.1       3.6       0.9       0.8

*SECNO 26.100
3280 CROSS SECTION      26.10 EXTENDED      0.22 FEET

3470 ENCROACHMENT STATIONS=     1920.0     2080.0  TYPE=      1  TARGET=     160.000
    26.10      5.24    772.72     0.0       0.0     772.76     0.04      0.04      0.03    769.19
     335.      112.      160.      63.      176.       73.      125.       13.       7.     770.51
     0.26      0.64      2.19     0.51     0.080     0.035    0.100     0.031    767.48   1920.00
 0.000448       50.       50.      50.         2         0        0       0.0    160.00   2080.00

FLOW DISTRIBUTION FOR SECNO=      26.10          CWSEL=     772.72

STA=     1920.     2000.     2005.     2021.     2027.     2080.
  PER Q=     29.7       3.7      47.7       2.1      16.8
   AREA=    160.9      15.2      73.0      13.3     111.4
    VEL=      0.6       0.8       2.2       0.5       0.5

CCHV=   0.100 CEHV=   0.300
*SECNO 26.200

3470 ENCROACHMENT STATIONS=     1870.0     2130.0  TYPE=      1  TARGET=     260.000

            (F)

    26.20      4.39    772.77     0.0       0.0     772.86     0.09      0.08      0.02    770.09
     335.       74.      189.      72.      118.       59.      125.       14.       7.     771.41
     0.27      0.63      3.18     0.57     0.080     0.035    0.100     0.031    768.38   1873.23
 0.001249      112.      112.      112.         2         0        0       0.0    256.77   2130.00

FLOW DISTRIBUTION FOR SECNO=      26.20          CWSEL=     772.77
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STA=     1873.     2000.     2005.     2021.     2027.     2130.
  PER Q=    18.7       3.5      56.3       1.6      19.9
   AREA=   106.8      10.9      59.3       8.1     117.3
    VEL=     0.6       1.1       3.2       0.6       0.6

*SECNO 26.700
    SECNO      OFPTH      CWSEL      CRTWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA      LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTA        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     TDC        ICONT      CORAR      TOPWID      ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     26.70       3.53     772.81     772.81        0.0     773.32       0.51       0.28       0.13     770.99
       335.        34.        284.        17.        33.        46.        33.        14.         8.     772.31
      0.28       1.05       6.22       0.51      0.080      0.035      0.100      0.031     769.28    1937.43
 0.006777       113.       113.       113.          3         12          0        0.0     208.88    2146.31

FLOW DISTRIBUTION FOR SECNO=     26.70          CWSEL=    772.81

STA=     1937.     2000.     2005.     2021.     2027.     2146.
  PER Q=     6.6       3.6      84.7       0.7       4.4
   AREA=    26.0       6.6      45.6       3.0      29.9
    VEL=     0.9       1.8       6.2       0.8       0.5

*SECNO 26.800
     26.80       3.28     774.32     773.72        0.0     774.87       0.55       1.54       0.01     774.17
       335.          1.        320.         14.         3.         53.        11.        15.         .8     771.92
      0.29       0.32       6.09       1.28      0.080      0.035      0.100      0.032     771.04    1971.46
 0.006914        225.       225.       225.          2         11          0        0.0      81.47    2052.93

FLOW DISTRIBUTION FOR SECNO=     26.80          CWSEL=    774.32

STA=     1971.     2000.     2004.     2024.     2032.     2053.
  PER Q=     0.2       0.1      95.5       4.2       0.0
   AREA=     2.2       0.6      52.5      10.0       1.0
    VEL=     0.3       0.4       6.1       1.4       0.2

*SECNO 26.900

3470 ENCROACHMENT STATIONS=    1920.0     2100.0  TYPE=       1  TARGET=     180.000
     26.90       3.82     774.86        0.0        0.0     775.11       0.25       0.21       0.03     774.17
       335.        25.        278.        32.        41.        63.        47.        15.         .9     771.92
      0.29       0.61       4.40       0.68      0.080      0.035      0.100      0.032     771.04    1920.00
 0.002818         50.        50.        50.          3          0          0        0.0     180.00    2100.00

FLOW DISTRIBUTION FOR SECNO=     26.90          CWSEL=    774.86

STA=     1920.     2000.     2004.     2024.     2032.     2100.
  PER Q=     6.8       0.6      83.1       4.8       4.6
   AREA=    37.9       2.8      63.3      14.3      32.4
    VEL=     0.6       0.8       4.4       1.1       0.5

CCHV=    0.300 CEHV=    0.500

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.0        1.64       3.00         0.0      20.00        0.0        52.00      0.0      771.04     771.04

*SECNO 27.000
3280 CROSS SECTION      27.00 EXTENDED      0.26 FEET
```

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
775.92	775.29	0.0	80.	253.	52.	65.	774.28	775.00

3470 ENCROACHMENT STATIONS= 1900.0 2110.0 TYPE= 1 TARGET= 210.000

TRAILER PARK ROAD

27.00	3.77	775.25	0.0	0.0	775.46	0.21	0.35	0.0	774.28
335.	40.	286.	8.	64.	72.	25.	15.	9.	774.20
0.29	0.63	3.99	0.33	0.080	0.035	0.100	0.032	771.48	1900.00
0.002187	14.	14.	14.	2	0	2	0.0	210.00	2110.00

FLOW DISTRIBUTION FOR SECNO= 27.00 CWSEL= 775.25

STA=	1900.	2000.	2006.	2026.	2034.	2110.
PER Q=	10.7	1.3	85.5	0.8	1.7	
AREA=	59.0	5.3	71.8	5.3	19.7	
VEL=	0.6	0.8	4.0	0.5	0.3	

*SECNO 27.100
3280 CROSS SECTION 27.10 EXTENDED 0.44 FEET

3470 ENCROACHMENT STATIONS= 1850.0 2160.0 TYPE= 1 TARGET= 310.000

27.10	3.96	775.44	0.0	0.0	775.58	0.13	0.09	0.02	774.28
335.	59.	254.	22.	107.	75.	62.	15.	9.	774.20
0.30	0.55	3.37	0.35	0.080	0.035	0.100	0.032	771.48	1850.00
0.001459	50.	50.	50.	2	0	0	0.0	310.00	2160.00

FLOW DISTRIBUTION FOR SECNO= 27.10 CWSEL= 775.44

STA=	1850.	2000.	2006.	2026.	2034.	2160.
PER Q=	16.2	1.4	75.9	1.0	5.5	
AREA=	100.3	6.4	75.4	6.7	55.7	
VEL=	0.5	0.7	3.4	0.5	0.3	

CCHV= 0.100 CEHV= 0.300
*SECNO 27.200
3280 CROSS SECTION 27.20 EXTENDED 0.48 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
27.20	4.00	775.87	0.0	0.0	776.01	0.13	0.43	0.00	774.68
335.	50.	255.	31.	130.	76.	86.	17.	12.	774.60
0.33	0.39	3.34	0.35	0.100	-0.035	0.100	0.032	771.88	1775.00
0.001419	300.	300.	300.	2	0	0	0.0	425.00	2200.00

FLOW DISTRIBUTION FOR SECNO= 27.20 CWSEL= 775.87

STA=	1775.	2000.	2006.	2026.	2034.	2200.
PER Q=	13.7	1.2	76.0	1.1	8.0	

VEL=	0.4	0.6	3.3	0.5	0.3

*SECNO 27.700

3470 ENCROACHMENT STATIONS= 2004.0 2047.0 TYPE= 1 TARGET= 43.000

(G)

27.70	4.02	776.26	0.0	0.0	776.47	0.21	0.44	0.02	773.78
335.	23.	293.	18.	25.	75.	21.	18.	13.	774.27
0.35	0.93	3.92	0.85	0.100	0.035	0.100	0.032	772.24	2004.00
0.001647	260.	290.	290.	2	0	0	0.0	43.00	2047.00

FLOW DISTRIBUTION FOR SECNO= 27.70 CWSEL= 776.26

STA=	2004.	2015.	2036.	2047.
PER Q=	7.0	87.6	5.4	
AREA=	25.1	74.9	21.4	
VEL=	0.9	3.9	0.8	

*SECNO 27.800

3280 CROSS SECTION 27.80 EXTENDED 1.57 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 777.00 ELREA= 777.00

27.80	4.30	776.27	0.0	0.0	776.62	0.35	0.10	0.04	774.44
335.	0.	335.	0.	0.	71.	0.	18.	13.	774.44
0.36	0.0	4.73	0.0	0.100	0.035	0.100	0.032	771.97	2006.00
0.002832	49.	49.	49.	2	0	0	0.0	17.50	2023.50

FLOW DISTRIBUTION FOR SECNO= 27.80 CWSEL= 776.27

STA=	2006.	2024.
PER Q=	100.0	
AREA=	70.9	
VEL=	4.7	

CCHV= 0.300 CEHV= 0.500

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.0	2.17	3.00	0.0	17.50	0.0	70.00	0.0	771.60	772.00

*SECNO 28.000

3280 CROSS SECTION 28.00 EXTENDED 2.06 FEET

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
777.04	776.33	0.0	0.	335.	70.	80.	776.20	777.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 777.30 ELREA= 777.30

OLMSTED ROAD (H)

28.00	5.21	776.76	0.0	0.0	777.04	0.28	0.02	0.0	774.48

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     0.36      0.0       4.27      0.0      0.100     0.035     0.100     0.032    771.55   2006.00
 0.001874      28.       28.       28.         2         0         0       0.0     17.50   2023.50

FLOW DISTRIBUTION FOR SECNO=      28.00          CWSEL=     776.76

STA=     2006.     2024.
  PER Q=     100.0
   AREA=      78.5
    VEL=       4.3

*SECNO 28.200
3280 CROSS SECTION      28.20 EXTENDED       2.36 FEET


3470 ENCROACHMENT STATIONS=     1956.0     2076.0  TYPE=      1  TARGET=      120.000
    28.20      5.51    777.06      0.0       0.0     777.14      0.09      0.04      0.06    774.49
     335.       75.      234.       26.      128.       84.       65.       19.       13.    773.52
     0.36      0.58      2.80      0.40     0.100     0.030     0.100     0.032    771.55   1956.00
 0.000471       50.       50.       50.         2         0         0       0.0    120.00   2076.00

FLOW DISTRIBUTION FOR SECNO=      28.20          CWSEL=     777.06

STA=     1956.     2000.     2006.     2024.     2033.     2076.
  PER Q=      19.5       2.8      69.9       3.6       4.1
   AREA=     112.6      15.4      83.6      21.9      43.3
    VEL=       0.6       0.6       2.8       0.6       0.3
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THIS RUN EXECUTED 09/10/80

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED  AUG1977
  ERROR CORR -  01,02
  MODIFICATION -  50,51,52,53
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

DAVIS-CREEK AT KALAMAZOO

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
A	19.900	759.70	33.44	30.00	66.00	61.29	27.85	0.0
	20.000	760.24	32.62	30.00	66.00	61.83	29.21	40.00
	21.000	762.88	2004.13	2000.00	2038.00	2033.28	29.15	700.00
	21.100	764.07	2002.86	2000.00	2038.00	2035.55	32.69	470.00
	21.700	764.54	2005.59	2000.00	2041.00	2039.30	33.71	200.00
	21.800	764.46	2013.00	2013.00	2029.00	2029.00	16.00	49.00
	21.900	764.46	2013.00	2013.00	2029.00	2029.00	16.00	1.00
	22.000	764.50	2013.00	2013.00	2029.00	2029.00	16.00	42.00
	22.100	764.51	2013.00	2013.00	2029.00	2029.00	16.00	1.00
B	22.700	764.88	2021.32	2025.00	2058.00	2130.00	108.68	80.00
	22.800	765.05	1861.96	2011.00	2040.00	2120.93	258.97	100.00
C	23.000	765.95	1880.00	2032.00	2053.00	2200.00	320.00	52.00
	23.100	765.96	1880.00	2032.00	2053.00	2200.00	320.00	50.00
	23.700	766.03	2016.89	2012.00	2035.00	2200.00	183.11	230.00
	23.800	766.17	2016.63	2012.00	2035.00	2295.00	278.37	50.00
D	24.000	768.36	2000.57	2000.00	2042.00	2175.00	174.43	60.00
	24.100	768.36	2000.55	2000.00	2042.00	2160.00	159.45	50.00
	24.700	768.38	2003.00	2008.00	2031.00	2030.12	27.12	475.00
	24.800	768.39	2008.00	2008.00	2025.00	2025.00	17.00	49.00
	24.900	768.39	2008.00	2008.00	2025.00	2025.00	17.00	1.00

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
E	25.000	768.49	2008.00	2008.00	2025.00	2025.00	17.00	24.00
	25.100	769.06	1960.00	2008.00	2025.00	2075.00	115.00	50.00
	25.200	769.08	1960.00	2008.00	2025.00	2075.00	115.00	110.00
*	25.300	769.36	2000.38	2008.00	2025.00	2075.00	74.62	109.00
	25.700	771.18	1995.00	2009.00	2034.00	2048.00	53.00	219.00
	25.800	771.23	2003.97	2005.50	2022.00	2033.00	29.03	50.00
	26.000	772.54	1983.00	2005.00	2021.00	2043.00	60.00	22.00
	26.100	772.72	1920.00	2005.00	2021.00	2080.00	160.00	50.00
F	26.200	772.77	1873.23	2005.00	2021.00	2130.00	256.77	112.00
*	26.700	772.81	1937.43	2005.00	2021.00	2146.31	208.88	113.00
	26.800	774.32	1971.46	2004.00	2024.00	2052.93	81.47	225.00
	26.900	774.86	1920.00	2004.00	2024.00	2100.00	180.00	50.00
	27.000	775.25	1900.00	2006.00	2026.00	2110.00	210.00	14.00
	27.100	775.44	1850.00	2006.00	2026.00	2160.00	310.00	50.00
	27.200	775.87	1775.00	2006.00	2026.00	2200.00	425.00	300.00
G	27.700	776.26	2004.00	2015.00	2036.00	2047.00	43.00	290.00
	27.800	776.27	2006.00	2006.00	2023.50	2023.50	17.50	49.00
H	28.000	776.76	2006.00	2006.00	2023.50	2023.50	17.50	28.00
	28.200	777.06	1956.00	2006.00	2023.50	2076.00	120.00	50.00

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
19.900	0.0	0.0	0.0	754.98	765.00	759.70	0.0	760.80	67.31	8.43	90.70	93.25
20.000	40.00	0.0	0.0	754.98	765.00	760.24	0.0	761.05	43.07	7.21	106.05	116.57
21.000	700.00	0.0	0.0	756.66	765.00	762.88	0.0	763.50	28.74	6.33	120.85	142.69
21.100	470.00	0.0	0.0	756.66	765.00	764.07	0.0	764.44	13.94	4.85	157.72	204.86
21.700	200.00	0.0	0.0	759.99	300.00	764.54	0.0	764.66	4.65	2.72	110.41	139.14
21.800	49.00	0.0	0.0	759.72	300.00	764.46	0.0	764.74	13.08	4.29	69.95	82.94
21.900	1.00	765.00	765.53	759.72	300.00	764.46	0.0	764.74	13.08	4.29	69.96	82.95
22.000	42.00	765.00	765.36	760.05	300.00	764.50	0.0	764.83	19.19	4.58	65.47	68.48
22.100	1.00	0.0	0.0	760.05	300.00	764.51	0.0	764.83	19.31	4.59	65.35	68.27
22.700	80.00	0.0	0.0	760.44	335.00	764.88	0.0	765.02	12.76	3.09	152.72	93.79
22.800	100.00	0.0	0.0	760.30	335.00	765.05	0.0	765.12	8.03	2.54	255.58	118.19
23.000	52.00	765.00	763.98	760.23	335.00	765.95	0.0	766.00	2.57	2.13	345.95	208.98
23.100	50.00	0.0	0.0	760.23	335.00	765.96	0.0	766.02	2.81	2.23	351.38	199.86
23.700	230.00	0.0	0.0	761.73	335.00	766.03	0.0	766.19	23.30	4.00	219.89	69.40
23.800	50.00	0.0	0.0	761.73	335.00	766.17	0.0	766.30	18.88	3.68	276.07	77.11
24.000	60.00	768.30	765.74	762.14	335.00	768.36	0.0	768.39	2.30	1.59	388.50	220.75
24.100	50.00	0.0	0.0	762.14	335.00	768.36	0.0	768.40	1.86	1.67	364.91	245.64
24.700	475.00	0.0	0.0	763.44	335.00	768.38	0.0	768.69	19.60	4.50	81.48	75.68
24.800	49.00	0.0	0.0	764.03	335.00	768.39	0.0	768.85	29.75	5.44	61.54	61.42
24.900	1.00	769.45	768.46	764.03	335.00	768.39	0.0	768.85	29.69	5.44	61.58	61.48
25.000	24.00	769.40	768.51	762.78	335.00	768.49	0.0	768.94	37.29	5.37	62.41	54.86
25.100	50.00	0.0	0.0	762.78	335.00	769.06	0.0	769.11	5.91	2.51	310.46	137.78
25.200	110.00	0.0	0.0	764.08	335.00	769.08	0.0	769.28	29.45	4.41	163.33	61.73
25.300	109.00	0.0	0.0	765.28	335.00	769.36	769.36	770.09	145.30	7.64	74.03	27.79
25.700	219.00	0.0	0.0	767.65	335.00	771.18	0.0	771.53	36.01	4.82	82.89	55.83
25.800	50.00	0.0	0.0	767.98	335.00	771.23	0.0	771.86	70.11	6.35	55.49	40.01
26.000	22.00	772.50	770.86	767.48	335.00	772.54	0.0	772.69	12.85	3.60	166.55	93.45

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRTWS	EG	10K*S	VCH	AREA	.01K
	26.100	50.00	0.0	0.0	767.48	335.00	772.72	0.0	772.76	4.48	2.19	373.83	158.21
	26.200	112.00	0.0	0.0	768.38	335.00	772.77	0.0	772.86	12.49	3.18	302.50	94.78
*	26.700	113.00	0.0	0.0	769.28	335.00	772.81	772.81	773.32	67.77	6.22	111.27	40.69
	26.800	225.00	0.0	0.0	771.04	335.00	774.32	773.72	774.87	69.14	6.09	66.38	40.29
	26.900	50.00	0.0	0.0	771.04	335.00	774.86	0.0	775.11	28.18	4.40	150.65	63.11
	27.000	14.00	775.00	774.28	771.48	335.00	775.25	0.0	775.46	21.87	3.99	161.02	71.63
	27.100	50.00	0.0	0.0	771.48	335.00	775.44	0.0	775.58	14.59	3.37	244.54	87.70
	27.200	300.00	0.0	0.0	771.88	335.00	775.87	0.0	776.01	14.19	3.34	291.72	88.93
	27.700	290.00	0.0	0.0	772.24	335.00	776.26	0.0	776.47	16.47	3.92	121.47	82.54
	27.800	49.00	0.0	0.0	771.97	335.00	776.27	0.0	776.62	28.32	4.73	70.88	62.95
	28.000	28.00	777.30	776.20	771.55	335.00	776.76	0.0	777.04	18.74	4.27	78.46	77.39
	28.200	50.00	0.0	0.0	771.55	335.00	777.06	0.0	777.14	4.71	2.80	276.84	154.33

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
19.900	765.00	759.70	0.0	0.0	0.0	27.85	0.0
20.000	765.00	760.24	0.0	0.54	0.0	29.21	40.00
21.000	765.00	762.88	0.0	2.64	0.0	29.15	700.00
21.100	765.00	764.07	0.0	1.19	0.0	32.69	470.00
21.700	300.00	764.54	0.0	0.47	0.0	33.71	200.00
21.800	300.00	764.46	0.0	-0.08	0.0	16.00	49.00
21.900	300.00	764.46	0.0	0.00	0.0	16.00	1.00
22.000	300.00	764.50	0.0	0.05	0.0	16.00	42.00
22.100	300.00	764.51	0.0	0.00	0.0	16.00	1.00
22.700	335.00	764.88	0.0	0.38	0.0	108.68	80.00
22.800	335.00	765.05	0.0	0.16	0.0	258.97	100.00
23.000	335.00	765.95	0.0	0.91	0.0	320.00	52.00
23.100	335.00	765.96	0.0	0.01	0.0	320.00	50.00
23.700	335.00	766.03	0.0	0.07	0.0	183.11	230.00
23.800	335.00	766.17	0.0	0.14	0.0	278.37	50.00
24.000	335.00	768.36	0.0	2.19	0.0	174.43	60.00
24.100	335.00	768.36	0.0	0.01	0.0	159.45	50.00
24.700	335.00	768.38	0.0	0.02	0.0	27.12	475.00
24.800	335.00	768.39	0.0	0.01	0.0	17.00	49.00
24.900	335.00	768.39	0.0	0.00	0.0	17.00	1.00
25.000	335.00	768.49	0.0	0.10	0.0	17.00	24.00
25.100	335.00	769.06	0.0	0.57	0.0	115.00	50.00
25.200	335.00	769.08	0.0	0.02	0.0	115.00	110.00
* 25.300	335.00	769.36	0.0	0.28	0.0	74.62	109.00
25.700	335.00	771.18	0.0	1.82	0.0	53.00	219.00
25.800	335.00	771.23	0.0	0.05	0.0	29.03	50.00
26.000	335.00	772.54	0.0	1.30	0.0	60.00	22.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	26.100	335.00	772.72	0.0	0.19	0.0	160.00	50.00
	26.200	335.00	772.77	0.0	0.04	0.0	256.77	112.00
*	26.700	335.00	772.81	0.0	0.05	0.0	208.88	113.00
	26.800	335.00	774.32	0.0	1.51	0.0	81.47	225.00
	26.900	335.00	774.86	0.0	0.54	0.0	180.00	50.00
	27.000	335.00	775.25	0.0	0.39	0.0	210.00	14.00
	27.100	335.00	775.44	0.0	0.19	0.0	310.00	50.00
	27.200	335.00	775.87	0.0	0.43	0.0	425.00	300.00
	27.700	335.00	776.26	0.0	0.39	0.0	43.00	290.00
	27.800	335.00	776.27	0.0	0.01	0.0	17.50	49.00
	28.000	335.00	776.76	0.0	0.49	0.0	17.50	28.00
	28.200	335.00	777.06	0.0	0.30	0.0	120.00	50.00

SUMMARY OF ERRORS

```
CAUTION   SECNO=    25.300   PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION   SECNO=    25.300   PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION   SECNO=    26.700   PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION   SECNO=    26.700   PROFILE= 1  MINIMUM SPECIFIC ENERGY
```

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: 100-yr SUMMARY

00BREAK00

****
HEC2 FILE DATED NOV 76 UPDATED APRT 1980
ERROR CORR - 01,02,03,04
MODIFICATION - 50,51,52,53,54
****

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

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT TABLE 150

SECNO	XLOB	ELTRD	ELLOB	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
19.600	0.00	0.00	0.00	754.98	765.00	759.70	0.00	760.80	67.31	8.43	90.71	93.25
20.000	40.00	0.00	0.00	754.98	765.00	760.24	0.00	761.05	43.05	7.21	106.06	116.60
21.000	700.00	0.00	0.00	756.66	765.00	762.88	0.00	763.50	28.74	6.33	120.85	142.69
21.100	470.00	0.00	0.00	756.66	765.00	764.07	0.00	764.44	13.95	4.85	157.71	204.85
21.700	200.00	0.00	0.00	759.99	300.00	764.54	0.00	764.66	4.65	2.72	110.42	139.15
21.800	49.00	0.00	0.00	759.72	300.00	764.46	0.00	764.74	13.08	4.29	69.96	82.95
21.900	1.00	765.00	765.53	759.72	300.00	764.46	0.00	764.74	19.61	4.29	69.97	67.75
22.000	42.00	765.00	765.36	760.05	300.00	764.54	0.00	764.86	29.14	4.56	65.80	55.58
22.100	1.00	0.00	0.00	760.05	300.00	764.54	0.00	764.87	18.66	4.55	65.94	69.45
22.700	80.00	0.00	0.00	760.44	335.00	764.87	0.00	765.05	16.19	3.39	98.69	83.26
22.800	100.00	0.00	0.00	760.30	335.00	765.07	0.00	765.18	9.71	2.81	170.70	107.51
23.000	52.00	765.00	763.98	760.23	335.00	765.94	0.00	766.01	2.97	2.28	261.83	194.47
23.100	50.00	0.00	0.00	760.23	335.00	765.95	0.00	766.03	3.20	2.37	263.12	187.24
23.700	230.00	0.00	0.00	761.73	335.00	766.04	0.00	766.22	24.08	4.07	197.69	68.27
23.800	50.00	0.00	0.00	761.73	335.00	766.19	0.00	766.33	18.78	3.68	220.18	77.31
24.000	60.00	768.30	765.74	762.14	335.00	768.36	0.00	768.39	2.49	1.65	347.10	212.16
24.100	50.00	0.00	0.00	762.14	335.00	768.36	0.00	769.41	2.06	1.76	306.55	233.47

MOORE BUSINESS FORMS INC 27

	SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	24.700	475.00	0.00	0.00	763.44	335.00	768.40	0.00	768.71	19.17	4.47	82.10	76.51
	24.800	49.00	0.00	0.00	764.03	335.00	768.41	0.00	768.86	27.50	5.42	61.85	63.88
	24.900	1.00	769.45	768.46	764.03	335.00	768.41	0.00	768.87	47.19	5.41	61.89	48.77
	25.000	24.00	769.40	768.51	762.78	335.00	768.59	0.00	769.03	100.15	5.35	62.60	33.47
	25.010	1.00	0.00	0.00	762.78	335.00	768.63	0.00	769.04	28.71	5.17	64.78	62.52
	25.100	49.00	0.00	0.00	762.78	335.00	769.08	0.00	769.21	10.53	3.37	170.70	103.22
	25.200	110.00	0.00	0.00	764.08	335.00	769.21	0.00	769.39	23.95	4.11	178.76	68.45
	25.300	109.00	0.00	0.00	765.28	335.00	769.36	769.36	770.09	143.60	7.63	74.27	27.94
	25.700	219.00	0.00	0.00	767.65	335.00	771.18	0.00	771.53	36.05	4.83	82.65	55.80
	25.800	50.00	0.00	0.00	767.98	335.00	771.23	0.00	771.85	70.42	6.36	55.37	39.02
	26.000	22.00	772.50	770.86	767.48	335.00	772.53	0.00	772.69	12.82	3.61	166.38	93.58
	26.100	50.00	0.00	0.00	767.48	335.00	772.62	0.00	772.76	11.01	3.39	171.67	100.94
	26.200	112.00	0.00	0.00	768.38	335.00	772.79	0.00	772.89	13.51	3.33	245.46	91.14
*	26.700	113.00	0.00	0.00	769.28	335.00	772.81	772.81	773.32	67.53	6.23	111.02	40.77
	26.800	225.00	0.00	0.00	771.04	335.00	774.32	773.72	774.87	69.32	6.10	66.23	40.23
	26.900	50.00	0.00	0.00	771.04	335.00	774.84	0.00	775.12	30.57	4.57	129.25	60.59
	27.000	14.00	775.00	774.28	771.48	335.00	775.17	0.00	775.46	27.74	4.43	111.32	63.66
	27.100	50.00	0.00	0.00	771.48	335.00	775.45	0.00	775.60	15.45	3.47	210.96	85.23
	27.200	300.00	0.00	0.00	771.88	335.00	775.91	0.00	776.07	16.00	3.57	199.70	83.75
	27.700	290.00	0.00	0.00	772.24	335.00	776.34	0.00	776.54	15.29	3.83	124.70	85.67
	27.800	49.00	0.00	0.00	771.97	335.00	776.34	0.00	776.67	24.10	4.65	72.01	68.23
	28.000	28.00	777.30	776.20	771.55	335.00	776.71	0.00	777.00	16.70	4.32	77.63	81.98
	28.200	50.00	0.00	0.00	771.55	335.00	777.01	0.00	777.10	4.90	2.85	271.50	151.41

MOORE BUSINESS FORMS INC 27

DAVIS CREEK AT K-L[illegible]-720

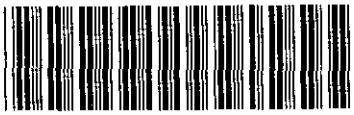
SUMMARY [illegible]-INLET TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
19.900	765.00	759.70	0.00	0.00	0.00	27.85	0.00
20.000	765.00	760.24	0.00	.54	0.00	29.21	40.00
21.000	765.00	762.88	0.00	2.64	0.00	29.15	700.00
21.100	765.00	764.07	0.00	1.19	0.00	32.69	470.00
21.700	300.00	764.54	0.00	.47	0.00	33.71	200.00
21.800	300.00	764.46	0.00	-.08	0.00	16.00	49.00
21.900	300.00	764.46	0.00	.00	0.00	16.00	1.00
22.000	300.00	764.54	0.00	.08	0.00	16.00	42.00
22.100	300.00	764.54	0.00	.00	0.00	16.00	1.00
22.700	335.00	764.87	0.00	.32	0.00	33.00	80.00
22.800	335.00	765.07	0.00	.20	0.00	130.00	100.00
23.000	335.00	765.94	0.00	.87	0.00	130.00	52.00
23.100	335.00	765.95	0.00	.01	0.00	130.00	50.00
23.700	335.00	766.04	0.00	.09	0.00	143.14	230.00
23.800	335.00	766.19	0.00	.15	0.00	143.41	50.00
24.000	335.00	768.36	0.00	2.17	0.00	149.43	60.00
24.100	335.00	768.36	0.00	.01	0.00	124.45	50.00
24.700	335.00	768.40	0.00	.04	0.00	27.14	475.00
24.800	335.00	768.41	0.00	.01	0.00	17.00	49.00
24.900	335.00	768.41	0.00	.00	0.00	17.00	1.00
25.000	335.00	768.59	0.00	.17	0.00	17.00	24.00
25.010	335.00	768.63	0.00	.04	0.00	17.00	1.00
25.100	335.00	769.08	0.00	.45	0.00	48.00	49.00
25.200	335.00	769.21	0.00	.14	0.00	115.00	110.00

MOORE BUSINESS FORMS INC 27

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	25.300	335.00	769.36	0.00	.15	0.00	74.63	109.00
	25.700	335.00	771.18	0.00	1.82	0.00	53.00	219.00
	25.800	335.00	771.23	0.00	.05	0.00	29.01	50.00
	26.000	335.00	772.53	0.00	1.31	0.00	60.00	22.00
	26.100	335.00	772.62	0.00	.09	0.00	60.00	50.00
	26.200	335.00	772.79	0.00	.17	0.00	160.00	112.00
*	26.700	335.00	772.81	0.00	.02	0.00	208.52	113.00
	26.800	335.00	774.32	0.00	1.51	0.00	80.71	225.00
	26.900	335.00	774.84	0.00	.52	0.00	130.00	50.00
	27.000	335.00	775.17	0.00	.33	0.00	130.00	14.00
	27.100	335.00	775.45	0.00	.28	0.00	230.00	50.00
	27.200	335.00	775.91	0.00	.46	0.00	190.00	300.00
	27.700	335.00	776.34	0.00	.43	0.00	43.00	290.00
	27.800	335.00	776.34	0.00	-.00	0.00	17.50	49.00
	28.000	335.00	776.71	0.00	.38	0.00	17.50	28.00
	28.200	335.00	777.01	0.00	.30	0.00	120.00	50.00

MOORE BUSINESS FORMS INC 27



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: MULTI-PROFILE RUN



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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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C
T1      FIS KALAMAZOO TWP, KALAMAZOO COUNTY, MICHIGAN.
T2       10-YEAR FLOOD
T3      DAVIS CREEK AT KALAMAZOO
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.000000	0.00	0.0	0.	759.700	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38.000	1.000	53.000	21.000	22.000	54.000	4.000	39.000	150.000	202.000
16.000	46.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

-10.000	-10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
QT 5.000	450.000	683.000	765.000	1030.000	765.000	0.000	0.000	0.000	0.000	0.000
NC .080	.100	.030	.100	.300	0.000	0.000	0.000	0.000	0.000	0.000

MOUTH (A)

X1	19.900	7.000	30.000	66.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	771.300	0.000	761.430	22.000	761.970	30.000	756.690	38.000	754.980	48.000
GR	756.450	58.000	764.360	66.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	20.000	0.000	0.000	0.000	40.000	40.000	40.000	0.000	0.000	0.000
NC	.100	.060	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	21.000	5.000	2000.000	2038.000	700.000	700.000	700.000	0.000	0.000	0.000
GR	766.760	2000.000	757.360	2010.000	756.660	2018.000	756.960	2022.000	765.360	2038.000

MOORE BUSINESS FORMS INC 27

X1	21.100	0.000	0.000	0.000	470.000	470.000	470.000	0.000	0.000	0.000
QT	5.000	64.000	229.000	300.000	360.000	300.000	0.000	0.000	0.000	0.000
NC	.060	.060	.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	21.700	6.000	2000.000	2041.000	200.000	200.000	200.000	0.000	0.000	0.000
GR	770.300	1670.000	767.580	2000.000	760.510	2013.000	759.990	2022.000	760.600	2032.000
GR	765.460	2041.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	21.600	9.000	2013.000	2029.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.000	765.000	0.000
GR	770.300	1700.000	767.600	2000.000	766.600	2013.000	760.380	2013.000	760.080	2022.000
GR	759.720	2029.000	765.530	2029.000	766.130	2051.000	765.000	2550.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	21.900	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	766.000	765.000	0.000
BT	9.000	1700.000	770.300	0.000	2000.000	768.110	0.000	2013.000	768.110	0.000
BT	2013.000	768.110	765.530	2022.000	767.850	765.530	2029.000	767.730	765.530	2029.000
BT	767.730	0.000	2051.000	766.130	0.000	2550.000	765.000	0.000	0.000	0.000
NC	.070	.070	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

COMSTOCK ROAD

X1	22.000	10.000	2013.000	2029.000	42.000	42.000	42.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	768.000	765.000	0.000
BT	10.000	1700.000	770.300	0.000	2000.000	768.110	0.000	2013.000	768.110	0.000
BT	2013.000	768.110	765.360	2020.000	768.000	765.360	2027.000	767.730	765.360	2029.000
BT	767.730	765.360	2029.000	767.730	0.000	2036.000	767.730	0.000	2550.000	765.000
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	770.300	1700.000	766.590	2000.000	765.360	2013.000	760.050	2013.000	760.080	2020.000
GR	760.750	2027.000	762.630	2029.000	762.630	2029.000	766.900	2036.000	765.000	2550.000
X1	22.100	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	768.000	765.000	0.000
QT	5.000	64.000	239.000	335.000	375.000	335.000	0.000	0.000	0.000	0.000
NC	.080	.080	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

(B)

X1	22.700	8.000	2025.000	2058.000	40.000	150.000	80.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1955.000	0.000	2130.000	0.000	0.000	0.000	0.000
GR	765.900	1800.000	766.070	2000.000	764.680	2025.000	760.960	2035.000	760.440	2041.000
GR	760.740	2047.000	763.990	2058.000	765.700	2450.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	22.800	8.000	2011.000	2040.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	764.000	764.000	764.000	0.000
GR	765.900	1800.000	763.130	2000.000	763.950	2011.000	760.850	2011.000	760.300	2018.500
GR	760.670	2026.500	764.880	2040.000	765.700	2450.000	0.000	0.000	0.000	0.000
SB	1.250	2.983	3.000	0.000	21.000	9.190	41.230	0.000	760.230	760.300

BROOKFIELD ROAD (C)

X1	23.000	10.000	2032.000	2053.000	52.000	52.000	52.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	763.980	765.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1880.000	0.000	2200.000	0.000	765.000	765.000	0.000
BT	4.000	1880.000	769.000	0.000	2000.000	765.900	0.000	2100.000	765.000	0.000
BT	2200.000	769.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	765.900	1800.000	765.860	2000.000	765.640	2018.000	761.000	2032.000	760.430	2035.000
GR	760.260	2042.000	760.230	2050.500	761.000	2053.000	764.710	2064.000	765.700	2450.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	23.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1880.000	0.000	2200.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	23.700	8.000	2012.000	2035.000	230.000	230.000	230.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1890.000	0.000	2200.000	0.000	0.000	0.000	0.000
GR	770.300	1600.000	769.350	2000.000	768.850	2012.000	762.480	2023.000	761.730	2028.000
GR	762.390	2032.000	764.480	2035.000	766.200	2300.000	0.000	0.000	0.000	0.000

X1	23.800	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
SB	1.250	3.153	3.000	0.000	18.000	5.100	42.900	0.000	762.640	762.140
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

SPRINGFIELD ROAD (D)

X1	24.000	7.000	2000.000	2042.000	60.000	60.000	60.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	765.740	768.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1870.000	0.000	2175.000	0.000	768.300	768.300	0.000
BT	5.000	1870.000	770.000	0.000	2000.000	768.600	0.000	2042.000	768.300	0.000
BT	2175.000	768.000	0.000	2175.000	770.000	0.000	0.000	0.000	0.000	0.000
GR	770.000	1700.000	768.600	2000.000	763.450	2012.000	762.140	2018.000	762.370	2024.000
GR	766.680	2042.000	766.700	2175.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.100	.100	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	24.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1880.000	0.000	2160.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	24.700	7.000	2008.000	2031.000	475.000	475.000	475.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2003.000	0.000	2045.000	0.000	0.000	0.000	0.000
GR	772.800	1450.000	766.910	2000.000	766.570	2008.000	765.040	2013.000	764.780	2020.000
GR	763.440	2026.000	769.430	2031.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	24.800	9.000	2008.000	2025.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
GR	772.800	1470.000	767.510	2000.000	767.510	2008.000	764.030	2008.000	764.800	2016.500
GR	765.450	2025.000	765.450	2025.000	765.450	2030.000	770.800	2700.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	24.900	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
BT	9.000	1470.000	772.800	0.000	2000.000	769.540	0.000	2008.000	769.500	0.000
BT	2008.000	769.500	768.460	2016.500	769.450	768.450	2025.000	769.600	768.440	2025.000
BT	769.600	0.000	2030.000	769.690	0.000	2700.000	770.800	0.000	0.000	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MARKET STREET (E)

X1	25.000	9.000	2008.000	2025.000	24.000	24.000	24.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.400	769.400	0.000
BT	9.000	1470.000	772.800	0.000	2000.000	769.540	0.000	2008.000	769.500	0.000
BT	2008.000	769.500	768.490	2016.500	769.450	768.500	2025.000	769.400	768.510	2025.000
BT	769.400	0.000	2044.000	769.410	0.000	2700.000	770.800	0.000	0.000	0.000
GR	772.800	1470.000	767.060	2000.000	762.780	2008.000	764.660	2008.000	764.660	2016.500
GR	765.290	2025.000	765.290	2025.000	766.560	2044.000	770.800	2700.000	0.000	0.000
X1	25.010	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.400	769.400	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.100	0.000	0.000	0.000	49.000	49.000	49.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1960.000	0.000	2075.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	25.200	0.000	0.000	0.000	110.000	110.000	110.000	0.000	1.300	0.000
X3	0.000	0.000	0.000	1960.000	0.000	2075.000	0.000	0.000	0.000	0.000
X1	25.300	0.000	0.000	0.000	109.000	109.000	109.000	0.000	1.200	0.000
X3	0.000	0.000	0.000	1960.000	0.000	2075.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	25.700	9.000	2009.000	2034.000	219.000	219.000	219.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1995.000	0.000	2048.000	0.000	0.000	0.000	0.000
GR	775.100	1630.000	771.030	2000.000	769.610	2009.000	768.390	2014.000	767.650	2022.000
GR	767.650	2022.000	768.520	2030.000	770.650	2034.000	771.700	2500.000	0.000	0.000
X1	25.800	10.000	2005.500	2022.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	771.000	771.000	0.000
GR	775.100	1630.000	772.230	2000.000	770.860	2005.500	768.190	2005.500	768.030	2013.500
GR	767.980	2022.000	770.830	2022.000	771.170	2033.000	771.700	2033.000	772.000	2500.000
SB	0.000	1.953	3.000	0.000	16.500	0.000	46.200	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

STEWART STREET

X1	26.000	9.000	2005.000	2021.000	22.000	22.000	22.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	770.860	772.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1983.000	0.000	2043.000	0.000	772.000	772.000	0.000
BT	9.000	1983.000	772.600	0.000	2000.000	772.580	0.000	2005.500	772.580	0.000
BT	2005.500	772.580	770.860	2013.500	772.520	770.850	2022.000	772.470	770.830	2022.000
BT	772.470	0.000	2033.000	772.470	0.000	2043.000	772.500	0.000	0.000	0.000
GR	775.100	1630.000	770.180	2000.000	769.190	2005.000	769.190	2005.000	767.930	2013.500
GR	767.480	2021.000	770.510	2021.000	770.510	2027.000	772.500	2500.000	0.000	0.000
NC	.080	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	26.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1920.000	0.000	2080.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

(F)

X1	26.200	0.000	0.000	0.000	112.000	112.000	112.000	0.000	.900	0.000
X3	0.000	0.000	0.000	1870.000	0.000	2130.000	0.000	0.000	0.000	0.000
X1	26.700	0.000	0.000	0.000	113.000	113.000	113.000	0.000	.900	0.000

X1	26.800	8.000	2004.000	2024.000	225.000	225.000	225.000	0.000	0.000	0.000
GR	775.400	1775.000	774.170	2000.000	774.170	2004.000	771.040	2004.000	771.920	2014.000
GR	771.920	2024.000	774.230	2032.000	775.000	2200.000	0.000	0.000	0.000	0.000

X1	26.900	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1920.000	0.000	2100.000	0.000	774.500	774.500	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
SB	0.000	1.635	3.000	0.000	20.000	0.000	52.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

TRAILER PARK ROAD

X1	27.000	9.000	2006.000	2026.000	14.000	14.000	14.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	774.280	775.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	1900.000	0.000	2110.000	0.000	775.000	775.000	0.000
BT	9.000	1900.000	776.400	0.000	2000.000	775.080	0.000	2006.000	775.080	0.000
BT	2006.000	775.080	774.280	2016.000	775.100	774.240	2026.000	775.120	774.200	2026.000
BT	775.120	0.000	2034.000	775.120	0.000	2100.000	775.000	0.000	0.000	0.000
GR	775.400	1775.000	774.460	2000.000	774.280	2006.000	771.480	2006.000	771.690	2016.000
GR	771.820	2026.000	774.200	2026.000	775.000	2034.000	775.000	2200.000	0.000	0.000

X1	27.100	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1850.000	0.000	2160.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
NC	.100	.100	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	27.200	0.000	0.000	0.000	300.000	300.000	300.000	0.000	.400	0.000

(G)

X1	27.700	14.000	2015.000	2036.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2004.000	0.000	2047.000	0.000	0.000	0.000	0.000
GR	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000	777.200	1860.000
GR	774.700	1860.000	774.320	2000.000	773.780	2015.000	772.720	2020.000	772.240	2027.000
GR	772.420	2034.000	774.270	2036.000	774.800	2100.000	776.500	2150.000	0.000	0.000

X1	27.800	9.000	2006.000	2023.500	49.000	49.000	49.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	777.000	777.000	0.000
GR	774.700	1430.000	774.440	2000.000	774.440	2006.000	771.970	2006.000	772.020	2014.500
GR	772.850	2023.500	774.440	2023.500	774.440	2033.000	778.200	2700.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
SB	0.000	1.870	3.000	0.000	17.500	0.000	70.000	0.000	771.600	772.000

OLMSTED ROAD (H)

X1	28.000	9.000	2006.000	2023.500	28.000	28.000	28.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	776.200	777.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	777.300	777.300	0.000
BT	9.000	1430.000	776.400	0.000	2000.000	777.280	0.000	2006.000	777.280	0.000
BT	2006.000	777.280	776.130	2014.500	777.290	776.160	2023.500	777.300	776.180	2023.500
BT	777.300	0.000	2033.000	777.300	0.000	2700.000	780.000	0.000	0.000	0.000
GR	774.700	1430.000	774.490	2000.000	774.490	2006.000	772.460	2006.000	771.550	2014.500
GR	773.520	2023.500	773.520	2023.500	775.980	2033.000	778.200	2700.000	0.000	0.000
NC	0.000	0.000	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

X1	28.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1956.000	0.000	2076.000	0.000	0.000	0.000	0.000
FJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01.02.03.04
  MODIFICATION -  50,51,52,53,54
**************************************************

T1      FIS KALAMAZOO TWP, KALAMAZOO COUNTY, MICHIGAN.
T2       50-YEAR FLOOD
T3      DAVIS CREEK AT KALAMAZOO

J1  ICHECK     INQ       NINV      IDIR      STPT      METRIC    HVINS     Q         WSFL      FQ
      -10.       3.        0.        0.  0.000000      0.00      0.0       0.   759.700     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 27

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**********************************************************

T1      FIS KALAMAZOO TWP. KALAMAZOO COUNTY. MICHIGAN.
T2      100-YEAR FLOOD
T3      DAVIS CREEK AT KALAMAZOO

J1   ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSFL       FQ
       -10.       4.         0.         0.   0.000000       0.00       0.0          0.     759.700    0.000
J2   NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
      3.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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MOORE BUSINESS FORMS INC 27

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**********************************************************

T1      FIS KALAMAZOO TWP, KALAMAZOO COUNTY, MICHIGAN.
T2      500-YEAR FLOOD
T3      DAVIS CREEK AT KALAMAZOO

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.       5.        0.        0.  0.000000      0.00      0.0       0.    759.700     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

MOORE BUSINESS FORMS INC 27

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	19.900	759.70	33.44	30.00	66.00	61.29	27.85	0.00
	19.900	759.70	33.44	30.00	66.00	61.29	27.85	0.00
	19.900	759.70	33.44	30.00	66.00	61.29	27.85	0.00
*	19.900	759.93	33.09	30.00	66.00	61.52	28.43	0.00
	20.000	759.82	33.26	30.00	66.00	61.41	28.14	40.00
	20.000	760.08	32.87	30.00	66.00	61.67	28.81	40.00
	20.000	760.24	32.62	30.00	66.00	61.83	29.21	40.00
	20.000	761.03	31.43	30.00	66.00	62.63	31.20	40.00
	21.000	761.45	2005.65	2000.00	2038.00	2030.55	24.90	700.00
	21.000	762.54	2004.50	2000.00	2038.00	2032.61	28.12	700.00
	21.000	762.88	2004.13	2000.00	2038.00	2033.28	29.15	700.00
	21.000	763.79	2003.16	2000.00	2038.00	2035.01	31.85	700.00
	21.100	762.54	2004.49	2000.00	2038.00	2032.62	28.12	470.00
	21.100	763.72	2003.24	2000.00	2038.00	2034.87	31.64	470.00
	21.100	764.07	2002.86	2000.00	2038.00	2035.55	32.69	470.00
	21.100	765.08	2001.79	2000.00	2038.00	2037.46	35.67	470.00
	21.700	762.95	2008.52	2000.00	2041.00	2036.35	27.83	200.00
	21.700	764.18	2006.25	2000.00	2041.00	2038.63	32.38	200.00
	21.700	764.54	2005.59	2000.00	2041.00	2039.30	33.71	200.00
	21.700	765.64	2003.58	2000.00	2041.00	2041.00	37.42	200.00
	21.800	762.95	2013.00	2013.00	2029.00	2029.00	16.00	49.00
	21.800	764.13	2013.00	2013.00	2029.00	2029.00	16.00	49.00
	21.800	764.46	2013.00	2013.00	2029.00	2029.00	16.00	49.00
	21.800	765.57	2013.00	2013.00	2029.00	2550.00	269.39	49.00
	21.900	762.95	2013.00	2013.00	2029.00	2029.00	16.00	1.00
	21.900	764.13	2013.00	2013.00	2029.00	2029.00	16.00	1.00
	21.900	764.46	2013.00	2013.00	2029.00	2029.00	16.00	1.00
	21.900	765.61	2013.00	2013.00	2029.00	2550.00	289.09	1.00

MOORE BUSINESS FORMS INC 27

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
22.000	762.96	2013.00	2013.00	2029.00	2029.00	16.00	42.00
22.000	764.19	2013.00	2013.00	2029.00	2029.00	16.00	42.00
22.000	764.54	2013.00	2013.00	2029.00	2029.00	16.00	42.00
22.000	765.69	2013.00	2013.00	2029.00	2550.00	205.09	42.00
22.100	762.96	2013.00	2013.00	2029.00	2029.00	16.00	1.00
22.100	764.19	2013.00	2013.00	2029.00	2029.00	16.00	1.00
22.100	764.54	2013.00	2013.00	2029.00	2029.00	16.00	1.00
22.100	765.75	2013.00	2013.00	2029.00	2550.00	224.47	1.00
22.700	763.00	2029.52	2025.00	2058.00	2054.64	25.12	80.00
22.700	764.44	2025.64	2025.00	2058.00	2130.00	104.35	80.00
22.700	764.91	2020.76	2025.00	2058.00	2130.00	109.24	80.00
22.700	766.00	2001.26	2025.00	2058.00	2130.00	128.73	80.00
22.800	763.06	2011.00	2011.00	2040.00	2034.14	23.14	100.00
22.800	764.58	1895.41	2011.00	2040.00	2039.03	143.62	100.00
22.800	765.07	1860.04	2011.00	2040.00	2134.24	274.20	100.00
22.800	766.07	1800.00	2011.00	2040.00	2450.00	650.00	100.00
23.000	763.11	2032.00	2032.00	2053.00	2053.00	21.00	52.00
23.000	765.58	2018.17	2032.00	2053.00	2200.00	181.83	52.00
23.000	765.96	1880.00	2032.00	2053.00	2200.00	320.00	52.00
23.000	766.28	1880.00	2032.00	2053.00	2200.00	320.00	52.00
23.100	763.12	2025.58	2032.00	2053.00	2059.31	33.73	50.00
23.100	765.59	2018.13	2032.00	2053.00	2200.00	181.87	50.00
23.100	765.97	1880.00	2032.00	2053.00	2200.00	320.00	50.00
23.100	766.28	1880.00	2032.00	2053.00	2200.00	320.00	50.00
23.700	763.23	2021.71	2012.00	2035.00	2033.20	11.49	230.00
23.700	765.60	2017.62	2012.00	2035.00	2200.00	182.38	230.00
23.700	766.04	2016.88	2012.00	2035.00	2200.00	183.12	230.00
23.700	766.36	2016.30	2012.00	2035.00	2200.00	183.70	230.00
23.800	763.96	2020.45	2012.00	2035.00	2034.25	13.79	50.00
23.800	765.77	2017.31	2012.00	2035.00	2234.47	217.16	50.00
23.800	766.17	2016.62	2012.00	2035.00	2295.77	279.15	50.00
23.800	766.46	2016.13	2012.00	2035.00	2300.00	283.87	50.00
24.000	764.17	2010.32	2000.00	2042.00	2031.53	21.21	60.00
24.000	767.23	2003.19	2000.00	2042.00	2042.00	38.81	60.00
24.000	768.36	2000.57	2000.00	2042.00	2175.00	174.43	60.00
24.000	768.50	2000.24	2000.00	2042.00	2175.00	174.76	60.00
24.100	764.28	2010.08	2000.00	2042.00	2031.96	21.88	50.00
24.100	767.26	2003.11	2000.00	2042.00	2160.00	156.89	50.00
24.100	768.36	2000.55	2000.00	2042.00	2160.00	159.45	50.00
24.100	768.50	2000.22	2000.00	2042.00	2160.00	159.78	50.00

MOORE BUSINESS FORMS INC. 27

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
24.700	765.49	2011.53	2008.00	2031.00	2027.71	16.19	475.00
24.700	767.41	2003.00	2008.00	2031.00	2029.32	26.32	475.00
24.700	768.38	2003.00	2008.00	2031.00	2030.12	27.12	475.00
24.700	768.51	2003.00	2008.00	2031.00	2030.23	27.23	475.00
24.800	765.95	2008.00	2008.00	2025.00	2025.00	17.00	49.00
24.800	767.51	2008.00	2008.00	2025.00	2025.00	17.00	49.00
24.800	768.39	2008.00	2008.00	2025.00	2025.00	17.00	49.00
24.800	768.51	2008.00	2008.00	2025.00	2025.00	17.00	49.00
24.900	765.95	2008.00	2008.00	2025.00	2025.00	17.00	1.00
24.900	767.52	2008.00	2008.00	2025.00	2025.00	17.00	1.00
24.900	768.39	2008.00	2008.00	2025.00	2025.00	17.00	1.00
24.900	768.51	2008.00	2008.00	2025.00	2025.00	17.00	1.00
25.000	766.09	2008.00	2008.00	2025.00	2025.00	17.00	24.00
25.000	767.70	2008.00	2008.00	2025.00	2025.00	17.00	24.00
25.000	768.57	2008.00	2008.00	2025.00	2025.00	17.00	24.00
25.000	768.78	2008.00	2008.00	2025.00	2025.00	17.00	24.00
25.010	766.09	2008.00	2008.00	2025.00	2025.00	17.00	1.00
25.010	767.70	2008.00	2008.00	2025.00	2025.00	17.00	1.00
25.010	768.61	2008.00	2008.00	2025.00	2025.00	17.00	1.00
25.010	768.93	2008.00	2008.00	2025.00	2025.00	17.00	1.00
25.100	766.32	2001.41	2008.00	2025.00	2040.23	38.83	49.00
25.100	768.17	1960.00	2008.00	2025.00	2075.00	115.00	49.00
25.100	769.14	1960.00	2008.00	2025.00	2075.00	115.00	49.00
25.100	769.49	1960.00	2008.00	2025.00	2075.00	115.00	49.00
* 25.200	766.61	2003.26	2008.00	2025.00	2025.37	22.10	110.00
25.200	768.17	2000.34	2008.00	2025.00	2075.00	74.66	110.00
25.200	769.16	1960.00	2008.00	2025.00	2075.00	115.00	110.00
25.200	769.51	1960.00	2008.00	2025.00	2075.00	115.00	110.00
25.300	768.32	2002.30	2008.00	2025.00	2033.04	30.74	109.00
25.300	769.06	2000.94	2008.00	2025.00	2043.97	43.03	109.00
* 25.300	769.36	2000.38	2008.00	2025.00	2075.00	74.62	109.00
25.300	769.59	1996.76	2008.00	2025.00	2075.00	78.24	109.00
25.700	769.36	2010.03	2009.00	2034.00	2031.57	21.54	219.00
25.700	770.73	2001.92	2009.00	2034.00	2048.00	46.08	219.00
25.700	771.18	1995.00	2009.00	2034.00	2048.00	53.00	219.00
25.700	771.26	1995.00	2009.00	2034.00	2048.00	53.00	219.00
25.800	769.53	2005.50	2005.50	2022.00	2022.00	16.50	50.00
25.800	770.84	2005.50	2005.50	2022.00	2022.00	16.50	50.00
25.800	771.23	2003.98	2005.50	2022.00	2033.00	29.02	50.00
25.800	771.30	2003.68	2005.50	2022.00	2033.00	29.32	50.00

MOORE BUSINESS FORMS INC 27

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
*	26.000	769.59	2005.00	2005.00	2021.00	2021.00	16.00	22.00
	26.000	771.31	2005.00	2005.00	2021.00	2021.00	16.00	22.00
	26.000	772.53	1983.00	2005.00	2021.00	2043.00	60.00	22.00
	26.000	772.73	1983.00	2005.00	2021.00	2043.00	60.00	22.00
	26.100	769.75	2002.19	2005.00	2021.00	2021.00	18.81	50.00
	26.100	771.75	1920.00	2005.00	2021.00	2080.00	160.00	50.00
	26.100	772.72	1920.00	2005.00	2021.00	2080.00	160.00	50.00
	26.100	772.94	1920.00	2005.00	2021.00	2080.00	160.00	50.00
	26.200	770.11	2004.89	2005.00	2021.00	2021.00	16.11	112.00
	26.200	771.74	1949.47	2005.00	2021.00	2108.28	158.81	112.00
	26.200	772.76	1873.40	2005.00	2021.00	2130.00	256.60	112.00
	26.200	772.98	1870.00	2005.00	2021.00	2130.00	260.00	112.00
	26.700	771.05	2004.70	2005.00	2021.00	2021.00	16.30	113.00
	26.700	772.29	1976.37	2005.00	2021.00	2021.00	44.63	113.00
*	26.700	772.81	1937.47	2005.00	2021.00	2146.19	208.72	113.00
*	26.700	772.95	1926.85	2005.00	2021.00	2179.77	252.92	113.00
	26.800	772.69	2004.00	2004.00	2024.00	2026.66	22.66	225.00
	26.800	774.03	2004.00	2004.00	2024.00	2031.29	27.29	225.00
	26.800	774.32	1971.93	2004.00	2024.00	2052.39	80.47	225.00
	26.800	774.41	1956.15	2004.00	2024.00	2071.21	115.05	225.00
	26.900	772.96	2004.00	2004.00	2024.00	2024.00	20.00	50.00
	26.900	774.30	2004.00	2004.00	2024.00	2024.00	20.00	50.00
	26.900	774.86	1920.00	2004.00	2024.00	2100.00	180.00	50.00
	26.900	775.06	1920.00	2004.00	2024.00	2100.00	180.00	50.00
	27.000	773.02	2006.00	2006.00	2026.00	2026.00	20.00	14.00
	27.000	774.58	2006.00	2006.00	2026.00	2026.00	20.00	14.00
	27.000	775.25	1900.00	2006.00	2026.00	2110.00	210.00	14.00
	27.000	775.40	1900.00	2006.00	2026.00	2110.00	210.00	14.00
	27.100	773.15	2006.00	2006.00	2026.00	2026.00	20.00	50.00
	27.100	774.77	1928.66	2006.00	2026.00	2031.58	102.92	50.00
	27.100	775.44	1850.00	2006.00	2026.00	2160.00	310.00	50.00
	27.100	775.59	1850.00	2006.00	2026.00	2160.00	310.00	50.00
	27.200	773.66	2006.00	2006.00	2026.00	2026.00	20.00	300.00
	27.200	775.43	1863.76	2006.00	2026.00	2200.00	336.24	300.00
	27.200	775.88	1775.00	2006.00	2026.00	2200.00	425.00	300.00
	27.200	776.00	1775.00	2006.00	2026.00	2200.00	425.00	300.00
	27.700	774.11	2005.86	2015.00	2036.00	2035.83	29.97	290.00
	27.700	775.88	2004.00	2015.00	2036.00	2047.00	43.00	290.00
	27.700	776.26	2004.00	2015.00	2036.00	2047.00	43.00	290.00
	27.700	776.37	2004.00	2015.00	2036.00	2047.00	43.00	290.00

MOOPE BUSINESS FORMS INC 27

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
27.800	774.19	2006.00	2006.00	2023.50	2023.50	17.50	49.00
27.800	775.90	2006.00	2006.00	2023.50	2023.50	17.50	49.00
27.800	776.27	2006.00	2006.00	2023.50	2023.50	17.50	49.00
27.800	776.37	2006.00	2006.00	2023.50	2023.50	17.50	49.00
28.000	774.22	2006.00	2006.00	2023.50	2023.50	17.50	28.00
28.000	775.96	2006.00	2006.00	2023.50	2023.50	17.50	28.00
28.000	776.63	2006.00	2006.00	2023.50	2023.50	17.50	28.00
28.000	776.86	2006.00	2006.00	2023.50	2023.50	17.50	28.00
28.200	774.27	2006.00	2006.00	2023.50	2026.41	20.41	50.00
28.200	776.16	1956.00	2006.00	2023.50	2076.00	120.00	50.00
28.200	776.94	1956.00	2006.00	2023.50	2076.00	120.00	50.00
28.200	777.22	1956.00	2006.00	2023.50	2076.00	120.00	50.00

MOORE BUSINESS FORMS INC 27

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	19.900	0.00	0.00	0.00	754.98	450.00	759.70	0.00	760.08	23.29	4.96	90.71	93.25
	19.900	0.00	0.00	0.00	754.98	683.00	759.70	0.00	760.58	53.65	7.53	90.71	93.25
	19.900	0.00	0.00	0.00	754.98	765.00	759.70	0.00	760.80	67.31	8.43	90.71	93.25
*	19.900	0.00	0.00	0.00	754.98	1030.00	759.93	759.93	761.67	99.95	10.59	97.25	103.03
	20.000	40.00	0.00	0.00	754.98	450.00	759.82	0.00	760.17	21.03	4.79	93.99	98.13
	20.000	40.00	0.00	0.00	754.98	683.00	760.08	0.00	760.78	38.96	6.73	101.44	109.42
	20.000	40.00	0.00	0.00	754.98	765.00	760.24	0.00	761.05	43.05	7.21	106.06	116.60
	20.000	40.00	0.00	0.00	754.98	1030.00	761.03	0.00	762.01	43.95	7.93	129.93	155.37
	21.000	700.00	0.00	0.00	756.66	450.00	761.45	0.00	761.91	28.66	5.48	82.14	84.05
	21.000	700.00	0.00	0.00	756.66	683.00	762.54	0.00	763.13	28.99	6.16	110.86	126.85
	21.000	700.00	0.00	0.00	756.66	765.00	762.88	0.00	763.50	28.74	6.33	120.85	142.69
	21.000	700.00	0.00	0.00	756.66	1030.00	763.79	0.00	764.53	29.73	6.93	148.56	188.90
	21.100	470.00	0.00	0.00	756.66	450.00	762.54	0.00	762.79	12.56	4.06	110.95	126.98
	21.100	470.00	0.00	0.00	756.66	683.00	763.72	0.00	764.06	13.63	4.67	146.31	185.03
	21.100	470.00	0.00	0.00	756.66	765.00	764.07	0.00	764.44	13.95	4.85	157.71	204.85
	21.100	470.00	0.00	0.00	756.66	1030.00	765.08	0.00	765.52	14.84	5.36	192.08	267.36
	21.700	200.00	0.00	0.00	759.99	64.00	762.95	0.00	762.97	1.14	1.04	61.36	60.01
	21.700	200.00	0.00	0.00	759.99	229.00	764.18	0.00	764.26	3.74	2.33	98.47	118.35
	21.700	200.00	0.00	0.00	759.99	300.00	764.54	0.00	764.66	4.65	2.72	110.42	139.15
	21.700	200.00	0.00	0.00	759.99	360.00	765.64	0.00	765.73	2.85	2.41	149.47	213.37
	21.800	49.00	0.00	0.00	759.72	64.00	762.95	0.00	762.98	2.06	1.40	45.78	44.61
	21.800	49.00	0.00	0.00	759.72	229.00	764.13	0.00	764.32	9.53	3.54	64.72	74.17
	21.800	49.00	0.00	0.00	759.72	300.00	764.46	0.00	764.74	13.08	4.29	69.96	82.95
	21.800	49.00	0.00	0.00	759.72	360.00	765.57	0.00	765.79	8.69	3.84	159.64	122.12
	21.900	1.00	765.00	765.53	759.72	64.00	762.95	0.00	762.98	2.82	1.40	45.78	38.13
	21.900	1.00	765.00	765.53	759.72	229.00	764.13	0.00	764.33	14.04	3.54	64.73	61.11
	21.900	1.00	765.00	765.53	759.72	300.00	764.46	0.00	764.74	19.61	4.29	69.97	67.75
	21.900	1.00	765.00	765.53	759.72	360.00	765.61	0.00	765.80	19.97	3.66	169.71	80.55
	22.000	42.00	765.00	765.36	760.05	64.00	762.96	0.00	763.00	4.83	1.58	40.57	29.13
	22.000	42.00	765.00	765.36	760.05	229.00	764.19	0.00	764.41	21.45	3.81	60.16	49.45
	22.000	42.00	765.00	765.36	760.05	300.00	764.54	0.00	764.86	29.14	4.56	65.80	55.58
	22.000	42.00	765.00	765.36	760.05	360.00	765.69	0.00	765.94	37.97	4.21	122.61	58.43
	22.100	1.00	0.00	0.00	760.05	64.00	762.96	0.00	763.00	3.86	1.58	40.59	32.58
	22.100	1.00	0.00	0.00	760.05	229.00	764.19	0.00	764.42	14.32	3.80	60.30	60.51
	22.100	1.00	0.00	0.00	760.05	300.00	764.54	0.00	764.87	18.66	4.55	65.94	69.45
	22.100	1.00	0.00	0.00	760.05	360.00	765.75	0.00	765.96	9.89	3.83	169.71	114.47

MOORE BUSINESS FORMS INC 27

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	22.700	80.00	0.00	0.00	760.44	64.00	763.00	0.00	763.04	6.51	1.51	42.43	25.08
	22.700	80.00	0.00	0.00	760.44	239.00	764.44	0.00	764.55	12.20	2.75	105.78	68.44
	22.700	80.00	0.00	0.00	760.44	335.00	764.91	0.00	765.05	12.22	3.04	156.09	95.84
	22.700	80.00	0.00	0.00	760.44	375.00	766.00	0.00	766.06	4.15	2.17	285.09	184.09
	22.800	100.00	0.00	0.00	760.30	64.00	763.06	0.00	763.09	4.22	1.33	48.26	31.15
	22.800	100.00	0.00	0.00	760.30	239.00	764.58	0.00	764.65	7.69	2.31	174.44	86.21
	22.800	100.00	0.00	0.00	760.30	335.00	765.07	0.00	765.15	7.73	2.51	262.68	120.47
	22.800	100.00	0.00	0.00	760.30	375.00	766.07	0.00	766.09	1.84	1.45	788.94	276.34
	23.000	52.00	765.00	763.98	760.23	64.00	763.11	0.00	763.13	1.85	1.12	57.20	47.11
	23.000	52.00	765.00	763.98	760.23	239.00	765.58	0.00	765.62	1.92	1.76	265.74	172.35
	23.000	52.00	765.00	763.98	760.23	335.00	765.96	0.00	766.01	2.55	2.12	347.85	209.66
	23.000	52.00	765.00	763.98	760.23	375.00	766.28	0.00	766.32	2.24	2.06	449.67	250.34
	23.100	50.00	0.00	0.00	760.23	64.00	763.12	0.00	763.14	1.67	1.07	71.07	49.57
	23.100	50.00	0.00	0.00	760.23	239.00	765.59	0.00	765.63	2.05	1.82	268.57	166.76
	23.100	50.00	0.00	0.00	760.23	335.00	765.97	0.00	766.03	2.79	2.22	353.27	200.46
	23.100	50.00	0.00	0.00	760.23	375.00	766.28	0.00	766.34	2.53	2.19	452.93	235.54
*	23.700	230.00	0.00	0.00	761.73	64.00	763.23	763.23	763.73	196.02	5.68	11.27	4.57
	23.700	230.00	0.00	0.00	761.73	239.00	765.60	0.00	765.80	27.19	4.02	142.64	45.84
	23.700	230.00	0.00	0.00	761.73	335.00	766.04	0.00	766.20	23.05	3.98	220.96	69.77
	23.700	230.00	0.00	0.00	761.73	375.00	766.36	0.00	766.47	16.43	3.53	282.12	92.51
	23.800	50.00	0.00	0.00	761.73	64.00	763.96	0.00	764.11	35.18	3.13	20.47	10.79
	23.800	50.00	0.00	0.00	761.73	239.00	765.77	0.00	765.92	19.73	3.53	178.72	53.81
	23.800	50.00	0.00	0.00	761.73	335.00	766.17	0.00	766.30	18.71	3.67	277.46	77.45
	23.800	50.00	0.00	0.00	761.73	375.00	766.46	0.00	766.55	13.39	3.23	359.18	102.49
	24.000	60.00	768.30	765.74	762.14	64.00	764.17	0.00	764.26	22.84	2.36	27.17	13.39
	24.000	60.00	768.30	765.74	762.14	239.00	767.23	0.00	767.29	4.87	1.96	121.90	108.35
	24.000	60.00	768.30	765.74	762.14	335.00	768.36	0.00	768.39	2.30	1.59	388.68	220.87
	24.000	60.00	768.30	765.74	762.14	375.00	768.50	0.00	768.53	2.51	1.69	413.06	236.67
	24.100	50.00	0.00	0.00	762.14	64.00	764.28	0.00	764.35	13.49	2.18	29.38	17.43
	24.100	50.00	0.00	0.00	762.14	239.00	767.26	0.00	767.31	3.12	1.84	191.07	135.35
	24.100	50.00	0.00	0.00	762.14	335.00	768.36	0.00	768.40	1.86	1.67	365.08	245.77
	24.100	50.00	0.00	0.00	762.14	375.00	768.50	0.00	768.55	2.04	1.78	387.44	262.46
	24.700	475.00	0.00	0.00	763.44	64.00	765.49	0.00	765.80	102.39	4.43	14.44	6.32
	24.700	475.00	0.00	0.00	763.44	239.00	767.41	0.00	767.73	29.44	4.56	55.66	44.05
	24.700	475.00	0.00	0.00	763.44	335.00	768.38	0.00	768.69	19.58	4.50	81.51	75.71
	24.700	475.00	0.00	0.00	763.44	375.00	768.51	0.00	768.87	21.70	4.84	85.06	80.50
	24.800	49.00	0.00	0.00	764.03	64.00	765.95	0.00	766.11	39.10	3.20	19.97	10.24
	24.800	49.00	0.00	0.00	764.03	239.00	767.51	0.00	767.92	36.41	5.15	46.42	39.61
	24.800	49.00	0.00	0.00	764.03	335.00	768.39	0.00	768.85	28.02	5.45	61.50	63.29
	24.800	49.00	0.00	0.00	764.03	375.00	768.51	0.00	769.05	31.45	5.90	63.56	66.87

MOORE BUSINESS FORMS INC 27

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	24.900	1.00	769.45	768.46	764.03	64.00	765.95	0.00	766.11	46.28	3.18	20.11	9.41
	24.900	1.00	769.45	768.46	764.03	239.00	767.52	0.00	767.93	54.69	5.13	46.61	32.32
	24.900	1.00	769.45	768.46	764.03	335.00	768.39	0.00	768.85	47.95	5.44	61.54	48.38
	24.900	1.00	769.45	768.46	764.03	375.00	768.51	0.00	769.06	102.72	5.99	62.56	37.00
	25.000	24.00	769.40	768.51	762.78	64.00	766.09	0.00	766.22	44.00	2.96	21.61	9.65
	25.000	24.00	769.40	768.51	762.78	239.00	767.70	0.00	768.07	53.58	4.88	48.96	32.65
	25.000	24.00	769.40	768.51	762.78	335.00	768.57	0.00	769.02	100.15	5.35	62.60	33.47
	25.000	24.00	769.40	768.51	762.78	375.00	768.78	0.00	769.34	125.50	5.99	62.60	33.47
	25.010	1.00	0.00	0.00	762.78	64.00	766.09	0.00	766.23	40.22	2.95	21.69	10.09
	25.010	1.00	0.00	0.00	762.78	239.00	767.70	0.00	768.07	36.95	4.87	49.05	39.32
	25.010	1.00	0.00	0.00	762.78	335.00	768.61	0.00	769.03	29.14	5.19	64.50	62.06
	25.010	1.00	0.00	0.00	762.78	375.00	768.93	0.00	769.37	27.96	5.37	69.87	70.92
	25.100	49.00	0.00	0.00	762.78	64.00	766.32	0.00	766.37	16.38	2.09	44.73	15.81
	25.100	49.00	0.00	0.00	762.78	239.00	768.17	0.00	768.24	8.45	2.58	208.69	82.23
	25.100	49.00	0.00	0.00	762.78	335.00	769.14	0.00	769.19	5.43	2.45	319.69	143.73
	25.100	49.00	0.00	0.00	762.78	375.00	769.49	0.00	769.54	4.89	2.44	359.88	169.63
*	25.200	110.00	0.00	0.00	764.08	64.00	766.61	766.61	766.99	492.78	5.51	14.46	2.88
	25.200	110.00	0.00	0.00	764.08	239.00	768.17	0.00	768.53	70.44	5.38	75.69	28.48
	25.200	110.00	0.00	0.00	764.08	335.00	769.16	0.00	769.34	25.97	4.23	172.49	65.73
	25.200	110.00	0.00	0.00	764.08	375.00	769.51	0.00	769.67	19.75	3.97	213.11	84.37
	25.300	109.00	0.00	0.00	765.28	64.00	768.32	0.00	768.45	59.52	3.07	28.01	8.30
	25.300	109.00	0.00	0.00	765.28	239.00	769.06	0.00	769.63	133.71	6.62	54.95	20.67
*	25.300	109.00	0.00	0.00	765.28	335.00	769.36	769.36	770.09	144.16	7.64	74.12	27.90
	25.300	109.00	0.00	0.00	765.28	375.00	769.59	769.51	770.25	115.86	7.37	91.89	34.84
	25.700	219.00	0.00	0.00	767.65	64.00	769.36	0.00	769.47	37.70	2.73	23.47	10.42
	25.700	219.00	0.00	0.00	767.65	239.00	770.73	0.00	771.00	35.18	4.23	60.78	40.29
	25.700	219.00	0.00	0.00	767.65	335.00	771.18	0.00	771.53	35.99	4.83	82.71	55.84
	25.700	219.00	0.00	0.00	767.65	375.00	771.26	0.00	771.67	40.30	5.22	87.16	59.08
	25.800	50.00	0.00	0.00	767.98	64.00	769.53	0.00	769.64	28.48	2.63	24.30	11.99
	25.800	50.00	0.00	0.00	767.98	239.00	770.84	0.00	771.26	55.85	5.19	46.05	31.98
	25.800	50.00	0.00	0.00	767.98	335.00	771.23	0.00	771.85	70.35	6.36	55.40	39.84
	25.800	50.00	0.00	0.00	767.98	375.00	771.30	0.00	772.05	81.26	6.94	57.58	41.60
*	26.000	22.00	772.50	770.86	767.48	64.00	769.59	0.00	769.71	32.11	2.80	22.86	11.29
	26.000	22.00	772.50	770.86	767.48	239.00	771.31	0.00	771.66	34.15	4.74	50.47	40.90
	26.000	22.00	772.50	770.86	767.48	335.00	772.53	0.00	772.69	12.81	3.61	166.41	93.60
	26.000	22.00	772.50	770.86	767.48	375.00	772.73	0.00	772.90	13.43	3.80	178.20	102.34
	26.100	50.00	0.00	0.00	767.48	64.00	769.75	0.00	769.85	22.67	2.51	26.18	13.44
	26.100	50.00	0.00	0.00	767.48	239.00	771.75	0.00	771.82	8.82	2.63	218.31	80.47
	26.100	50.00	0.00	0.00	767.48	335.00	772.72	0.00	772.76	4.48	2.19	373.58	158.33
	26.100	50.00	0.00	0.00	767.48	375.00	772.94	0.00	772.98	4.40	2.24	408.07	178.85

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	SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	FG	10K*S	VCH	AREA	.01K
	26.200	112.00	0.00	0.00	768.38	64.00	770.11	0.00	770.33	86.68	3.80	16.83	6.87
	26.200	112.00	0.00	0.00	768.38	239.00	771.74	770.96	772.09	46.85	4.98	81.85	34.92
	26.200	112.00	0.00	0.00	768.38	335.00	772.76	0.00	772.85	12.49	3.19	301.92	94.78
	26.200	112.00	0.00	0.00	768.38	375.00	772.98	0.00	773.06	10.49	3.04	359.28	115.77
	26.700	113.00	0.00	0.00	769.28	64.00	771.05	0.00	771.26	77.00	3.67	17.46	7.29
	26.700	113.00	0.00	0.00	769.28	239.00	772.29	771.86	772.87	86.90	6.19	45.12	25.64
*	26.700	113.00	0.00	0.00	769.28	335.00	772.81	772.81	773.32	67.44	6.22	111.16	40.79
*	26.700	113.00	0.00	0.00	769.28	375.00	772.95	772.95	773.43	63.22	6.22	143.76	47.16
	26.800	225.00	0.00	0.00	771.04	64.00	772.69	0.00	772.84	64.39	3.20	20.80	7.98
	26.800	225.00	0.00	0.00	771.04	239.00	774.03	0.00	774.40	53.37	4.96	54.20	32.71
	26.800	225.00	0.00	0.00	771.04	335.00	774.32	773.72	774.87	69.38	6.10	66.18	40.22
	26.800	225.00	0.00	0.00	771.04	375.00	774.41	773.88	775.04	76.66	6.55	74.61	42.83
	26.900	50.00	0.00	0.00	771.04	64.00	772.96	0.00	773.06	29.76	2.54	25.21	11.73
	26.900	50.00	0.00	0.00	771.04	239.00	774.30	0.00	774.63	39.80	4.59	52.03	37.88
	26.900	50.00	0.00	0.00	771.04	335.00	774.86	0.00	775.12	28.13	4.40	150.80	63.16
	26.900	50.00	0.00	0.00	771.04	375.00	775.06	0.00	775.29	25.09	4.32	185.54	74.87
	27.000	14.00	775.00	774.28	771.48	64.00	773.02	0.00	773.11	28.96	2.37	26.97	11.89
	27.000	14.00	775.00	774.28	771.48	239.00	774.58	0.00	774.84	30.67	4.11	58.17	43.15
	27.000	14.00	775.00	774.28	771.48	335.00	775.25	0.00	775.46	21.82	3.99	161.30	71.72
	27.000	14.00	775.00	774.28	771.48	375.00	775.40	0.00	775.61	21.27	4.05	192.41	81.31
	27.100	50.00	0.00	0.00	771.48	64.00	773.15	0.00	773.22	18.21	2.15	29.77	15.00
	27.100	50.00	0.00	0.00	771.48	239.00	774.77	0.00	774.99	24.21	3.80	76.28	48.57
	27.100	50.00	0.00	0.00	771.48	335.00	775.44	0.00	775.58	14.56	3.37	244.90	87.80
	27.100	50.00	0.00	0.00	771.48	375.00	775.59	0.00	775.72	13.55	3.34	292.37	101.86
	27.200	300.00	0.00	0.00	771.88	64.00	773.66	0.00	773.72	15.00	2.02	31.65	16.53
	27.200	300.00	0.00	0.00	771.88	239.00	775.43	0.00	775.59	16.88	3.36	118.19	58.17
	27.200	300.00	0.00	0.00	771.88	335.00	775.88	0.00	776.01	14.19	3.34	291.77	88.94
	27.200	300.00	0.00	0.00	771.88	375.00	776.00	0.00	776.12	13.62	3.35	345.30	101.61
	27.700	290.00	0.00	0.00	772.24	64.00	774.11	0.00	774.18	16.73	2.15	31.20	15.65
	27.700	290.00	0.00	0.00	772.24	239.00	775.88	0.00	776.02	12.65	3.18	104.85	67.20
	27.700	290.00	0.00	0.00	772.24	335.00	776.26	0.00	776.47	16.47	3.92	121.48	82.56
	27.700	290.00	0.00	0.00	772.24	375.00	776.37	0.00	776.62	18.51	4.24	126.23	87.16
	27.800	49.00	0.00	0.00	771.97	64.00	774.19	0.00	774.24	10.00	1.86	34.40	20.23
	27.800	49.00	0.00	0.00	771.97	239.00	775.90	0.00	776.11	17.85	3.71	64.35	56.56
	27.800	49.00	0.00	0.00	771.97	335.00	776.27	0.00	776.61	25.52	4.73	70.79	66.32
	27.800	49.00	0.00	0.00	771.97	375.00	776.37	0.00	776.78	29.43	5.17	72.57	69.13
	28.000	28.00	777.30	776.20	771.55	64.00	774.22	0.00	774.27	11.43	1.88	34.02	18.93
	28.000	28.00	777.30	776.20	771.55	239.00	775.96	0.00	776.17	25.31	3.71	64.44	47.50
	28.000	28.00	777.30	776.20	771.55	335.00	776.63	0.00	776.93	17.74	4.39	76.23	79.53
	28.000	28.00	777.30	776.20	771.55	375.00	776.86	0.00	777.20	18.71	4.67	80.29	86.70

MOORE BUSINESS FORMS 27

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
28.200	50.00	0.00	0.00	771.55	64.00	774.27	0.00	774.32	6.28	1.83	36.03	25.54
28.200	50.00	0.00	0.00	771.55	239.00	776.16	0.00	776.26	6.15	2.80	169.66	96.40
28.200	50.00	0.00	0.00	771.55	335.00	776.94	0.00	777.04	5.24	2.92	263.05	146.28
28.200	50.00	0.00	0.00	771.55	375.00	777.22	0.00	777.32	5.02	2.97	296.82	167.30

MOORE BUSINESS FORMS INC 27

DAVIS CREEK AT KALAMAZOO

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	19.900	450.00	759.70	0.00	0.00	0.00	27.85	0.00
	19.900	683.00	759.70	0.00	0.00	0.00	27.85	0.00
	19.900	765.00	759.70	0.00	0.00	0.00	27.85	0.00
*	19.900	1030.00	759.93	.23	0.00	.23	28.43	0.00
	20.000	450.00	759.82	0.00	.12	0.00	28.14	40.00
	20.000	683.00	760.08	.26	.38	0.00	28.81	40.00
	20.000	765.00	760.24	.16	.54	0.00	29.21	40.00
	20.000	1030.00	761.03	.79	1.10	0.00	31.20	40.00
	21.000	450.00	761.45	0.00	1.63	0.00	24.90	700.00
	21.000	683.00	762.54	1.09	2.47	0.00	28.12	700.00
	21.000	765.00	762.88	.34	2.64	0.00	29.15	700.00
	21.000	1030.00	763.79	.91	2.76	0.00	31.85	700.00
	21.100	450.00	762.54	0.00	1.09	0.00	28.12	470.00
	21.100	683.00	763.72	1.18	1.18	0.00	31.64	470.00
	21.100	765.00	764.07	.35	1.19	0.00	32.69	470.00
	21.100	1030.00	765.08	1.00	1.29	0.00	35.67	470.00
	21.700	64.00	762.95	0.00	.41	0.00	27.83	200.00
	21.700	229.00	764.18	1.23	.46	0.00	32.38	200.00
	21.700	300.00	764.54	.36	.47	0.00	33.71	200.00
	21.700	360.00	765.64	1.09	.56	0.00	37.42	200.00
	21.800	64.00	762.95	0.00	-.00	0.00	16.00	49.00
	21.800	229.00	764.13	1.18	-.05	0.00	16.00	49.00
	21.800	300.00	764.46	.33	-.08	0.00	16.00	49.00
	21.800	360.00	765.57	1.11	-.06	0.00	269.39	49.00
	21.900	64.00	762.95	0.00	.00	0.00	16.00	1.00
	21.900	229.00	764.13	1.18	.00	0.00	16.00	1.00
	21.900	300.00	764.46	.33	.00	0.00	16.00	1.00
	21.900	360.00	765.61	1.15	.04	0.00	289.09	1.00
	22.000	64.00	762.96	0.00	.01	0.00	16.00	42.00
	22.000	229.00	764.19	1.23	.06	0.00	16.00	42.00
	22.000	300.00	764.54	.35	.08	0.00	16.00	42.00
	22.000	360.00	765.69	1.15	.08	0.00	205.09	42.00
	22.100	64.00	762.96	0.00	.00	0.00	16.00	1.00
	22.100	229.00	764.19	1.23	.00	0.00	16.00	1.00
	22.100	300.00	764.54	.35	.00	0.00	16.00	1.00
	22.100	360.00	765.75	1.21	.06	0.00	224.47	1.00

MOORE BUSINESS FORMS INC 27

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
22.700	64.00	763.00	0.00	.04	0.00	25.12	80.00
22.700	239.00	764.44	1.44	.25	0.00	104.35	80.00
22.700	335.00	764.91	.47	.37	0.00	109.24	80.00
22.700	375.00	766.00	1.09	.25	0.00	128.73	80.00
22.800	64.00	763.06	0.00	.06	0.00	23.14	100.00
22.800	239.00	764.58	1.52	.14	0.00	143.62	100.00
22.800	335.00	765.07	.49	.16	0.00	274.20	100.00
22.800	375.00	766.07	1.00	.07	0.00	650.00	100.00
23.000	64.00	763.11	0.00	.05	0.00	21.00	52.00
23.000	239.00	765.58	2.47	1.00	0.00	181.83	52.00
23.000	335.00	765.96	.37	.89	0.00	320.00	52.00
23.000	375.00	766.28	.32	.20	0.00	320.00	52.00
23.100	64.00	763.12	0.00	.01	0.00	33.73	50.00
23.100	239.00	765.59	2.47	.01	0.00	181.87	50.00
23.100	335.00	765.97	.38	.01	0.00	320.00	50.00
23.100	375.00	766.28	.32	.01	0.00	320.00	50.00
* 23.700	64.00	763.23	0.00	.10	0.00	11.49	230.00
23.700	239.00	765.60	2.37	.01	0.00	182.38	230.00
23.700	335.00	766.04	.44	.07	0.00	183.12	230.00
23.700	375.00	766.36	.32	.08	0.00	183.70	230.00
23.800	64.00	763.96	0.00	.73	0.00	13.79	50.00
23.800	239.00	765.77	1.81	.17	0.00	217.16	50.00
23.800	335.00	766.17	.40	.14	0.00	279.15	50.00
23.800	375.00	766.46	.29	.10	0.00	283.87	50.00
24.000	64.00	764.17	0.00	.21	0.00	21.21	60.00
24.000	239.00	767.23	3.06	1.46	0.00	38.81	60.00
24.000	335.00	768.36	1.12	2.19	0.00	174.43	60.00
24.000	375.00	768.50	.14	2.04	0.00	174.76	60.00
24.100	64.00	764.28	0.00	.10	0.00	21.88	50.00
24.100	239.00	767.26	2.99	.03	0.00	156.89	50.00
24.100	335.00	768.36	1.10	.01	0.00	159.45	50.00
24.100	375.00	768.50	.14	.01	0.00	159.78	50.00
24.700	64.00	765.49	0.00	1.22	0.00	16.19	475.00
24.700	239.00	767.41	1.92	.15	0.00	26.32	475.00
24.700	335.00	768.38	.97	.02	0.00	27.12	475.00
24.700	375.00	768.51	.13	.01	0.00	27.23	475.00
24.800	64.00	765.95	0.00	.45	0.00	17.00	49.00
24.800	239.00	767.51	1.56	.10	0.00	17.00	49.00
24.800	335.00	768.39	.88	.01	0.00	17.00	49.00
24.800	375.00	768.51	.12	-.00	0.00	17.00	49.00

MOORE BUSINESS FORMS INC 27

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
24.900	64.00	765.95	0.00	.01	0.00	17.00	1.00
24.900	239.00	767.52	1.56	.01	0.00	17.00	1.00
24.900	335.00	768.39	.87	.00	0.00	17.00	1.00
24.900	375.00	768.51	.11	-.00	0.00	17.00	1.00
25.000	64.00	766.09	0.00	.14	0.00	17.00	24.00
25.000	239.00	767.70	1.61	.18	0.00	17.00	24.00
25.000	335.00	768.57	.88	.18	0.00	17.00	24.00
25.000	375.00	768.78	.21	.27	0.00	17.00	24.00
25.010	64.00	766.09	0.00	.01	0.00	17.00	1.00
25.010	239.00	767.70	1.61	.01	0.00	17.00	1.00
25.010	335.00	768.61	.91	.04	0.00	17.00	1.00
25.010	375.00	768.93	.32	.15	0.00	17.00	1.00
25.100	64.00	766.32	0.00	.22	0.00	38.83	49.00
25.100	239.00	768.17	1.86	.47	0.00	115.00	49.00
25.100	335.00	769.14	.97	.53	0.00	115.00	49.00
25.100	375.00	769.49	.35	.56	0.00	115.00	49.00
* 25.200	64.00	766.61	0.00	.30	0.00	22.10	110.00
25.200	239.00	768.17	1.56	-.00	0.00	74.66	110.00
25.200	335.00	769.16	.99	.02	0.00	115.00	110.00
25.200	375.00	769.51	.35	.02	0.00	115.00	110.00
25.300	64.00	768.32	0.00	1.71	0.00	30.74	109.00
25.300	239.00	769.06	.74	.89	0.00	43.03	109.00
* 25.300	335.00	769.36	.30	.20	0.00	74.62	109.00
25.300	375.00	769.59	.24	.08	0.00	78.24	109.00
25.700	64.00	769.36	0.00	1.03	0.00	21.54	219.00
25.700	239.00	770.73	1.37	1.67	0.00	46.08	219.00
25.700	335.00	771.18	.45	1.82	0.00	53.00	219.00
25.700	375.00	771.26	.09	1.67	0.00	53.00	219.00
25.800	64.00	769.53	0.00	.17	0.00	16.50	50.00
25.800	239.00	770.84	1.32	.12	0.00	16.50	50.00
25.800	335.00	771.23	.39	.05	0.00	29.02	50.00
25.800	375.00	771.30	.07	.04	0.00	29.32	50.00
* 26.000	64.00	769.59	0.00	.06	0.00	16.00	22.00
26.000	239.00	771.31	1.72	.46	0.00	16.00	22.00
26.000	335.00	772.53	1.23	1.30	0.00	60.00	22.00
26.000	375.00	772.73	.20	1.43	0.00	60.00	22.00
26.100	64.00	769.75	0.00	.17	0.00	18.81	50.00
26.100	239.00	771.75	1.99	.44	0.00	160.00	50.00
26.100	335.00	772.72	.97	.19	0.00	160.00	50.00
26.100	375.00	772.94	.22	.21	0.00	160.00	50.00

MOORE BUSINESS FORMS INC 27

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	26.200	64.00	770.11	0.00	-.36	0.00	16.11	112.00
	26.200	239.00	771.74	1.63	-.00	0.00	158.81	112.00
	26.200	335.00	772.76	1.02	.04	0.00	256.60	112.00
	26.200	375.00	772.98	.22	.05	0.00	260.00	112.00
	26.700	64.00	771.05	0.00	.94	0.00	16.30	113.00
	26.700	239.00	772.29	1.24	.55	0.00	44.63	113.00
*	26.700	335.00	772.81	.52	.05	0.00	208.72	113.00
*	26.700	375.00	772.95	.14	-.03	0.00	252.92	113.00
	26.800	64.00	772.69	0.00	1.64	0.00	22.66	225.00
	26.800	239.00	774.03	1.34	1.74	0.00	27.29	225.00
	26.800	335.00	774.32	.30	1.51	0.00	80.47	225.00
	26.800	375.00	774.41	.09	1.46	0.00	115.05	225.00
	26.900	64.00	772.96	0.00	.27	0.00	20.00	50.00
	26.900	239.00	774.30	1.34	.27	0.00	20.00	50.00
	26.900	335.00	774.86	.56	.54	0.00	180.00	50.00
	26.900	375.00	775.06	.19	.65	0.00	180.00	50.00
	27.000	64.00	773.02	0.00	.06	0.00	20.00	14.00
	27.000	239.00	774.58	1.56	.27	0.00	20.00	14.00
	27.000	335.00	775.25	.68	.39	0.00	210.00	14.00
	27.000	375.00	775.40	.15	.34	0.00	210.00	14.00
	27.100	64.00	773.15	0.00	.13	0.00	20.00	50.00
	27.100	239.00	774.77	1.61	.19	0.00	102.92	50.00
	27.100	335.00	775.44	.68	.19	0.00	310.00	50.00
	27.100	375.00	775.59	.15	.19	0.00	310.00	50.00
	27.200	64.00	773.66	0.00	.50	0.00	20.00	300.00
	27.200	239.00	775.43	1.77	.66	0.00	336.24	300.00
	27.200	335.00	775.88	.45	.43	0.00	425.00	300.00
	27.200	375.00	776.00	.13	.41	0.00	425.00	300.00
	27.700	64.00	774.11	0.00	.45	0.00	29.97	290.00
	27.700	239.00	775.88	1.77	.45	0.00	43.00	290.00
	27.700	335.00	776.26	.39	.39	0.00	43.00	290.00
	27.700	375.00	776.37	.11	.37	0.00	43.00	290.00
	27.800	64.00	774.19	0.00	.08	0.00	17.50	49.00
	27.800	239.00	775.90	1.71	.02	0.00	17.50	49.00
	27.800	335.00	776.27	.37	.00	0.00	17.50	49.00
	27.800	375.00	776.37	.10	-.01	0.00	17.50	49.00
	28.000	64.00	774.22	0.00	.03	0.00	17.50	28.00
	28.000	239.00	775.96	1.74	.06	0.00	17.50	28.00
	28.000	335.00	776.63	.67	.37	0.00	17.50	28.00
	28.000	375.00	776.86	.23.	.49	0.00	17.50	28.00

MOORE BUSINESS FORMS INC 27

SECNO	Q	CWSEL	DIFWSP	DIFWSx	DIFKWS	TOPWID	XLCH
28.200	64.00	774.27	0.00	.05	0.00	20.41	50.00
28.200	239.00	776.16	1.90	.21	0.00	120.00	50.00
28.200	335.00	776.94	.78	.31	0.00	120.00	50.00
28.200	375.00	777.22	.28	.36	0.00	120.00	50.00

MOORE BUSINESS FORMS INC 27

SUMMARY OF ERRORS

CAUTION	SECNO=	19.900	PROFILE= 4	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	23.700	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	23.700	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	23.700	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	25.200	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	25.200	PROFILE= 1	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	25.300	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	25.300	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	26.000	PROFILE= 1	BRIDGE DECK DEFINITION ERROR
CAUTION	SECNO=	26.700	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	26.700	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	26.700	PROFILE= 4	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	26.700	PROFILE= 4	MINIMUM SPECIFIC ENERGY

MOORE BUSINESS FORMS INC 27

FLOOD INSURANCE ZONE DATA FOR DAVIS CREEK AT KALAMAZOO

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND 10	2	0.2
19.900	0.	0.00	0.00	.23
20.000	40.	-.42	-.16	.79
21.000	740.	-1.43	-.34	.91
21.100	1210.	-1.54	-.35	1.00
21.700	1410.	-1.59	-.36	1.09
21.800	1459.	-1.51	-.33	1.11
21.900	1460.	-1.51	-.33	1.15
22.000	1502.	-1.58	-.35	1.15
22.100	1503.	-1.59	-.35	1.21
22.700	1583.	-1.91	-.47	1.09
22.800	1683.	-2.01	-.49	1.00
23.000	1735.	-2.84	-.37	.32
23.100	1785.	-2.84	-.38	.32
23.700	2015.	-2.81	-.44	.32
23.800	2065.	-2.21	-.40	.29
24.000	2125.	-4.18	-1.12	.14
24.100	2175.	-4.09	-1.10	.14
24.700	2650.	-2.89	-.97	.13
24.800	2699.	-2.44	-.88	.12
24.900	2700.	-2.44	-.87	.11
25.000	2724.	-2.48	-.88	.21
25.010	2725.	-2.52	-.91	.32
25.100	2774.	-2.82	-.97	.35
25.200	2884.	-2.54	-.99	.35
25.300	2993.	-1.04	-.30	.24
25.700	3212.	-1.82	-.45	.09
25.800	3262.	-1.70	-.39	.07
26.000	3284.	-2.95	-1.23	.20
26.100	3334.	-2.97	-.97	.22
26.200	3446.	-2.65	-1.02	.22
26.700	3559.	-1.76	-.52	.14
26.800	3784.	-1.64	-.30	.09
26.900	3834.	-1.90	-.56	.19
27.000	3848.	-2.23	-.68	.15
27.100	3898.	-2.29	-.68	.15
27.200	4198.	-2.22	-.45	.13
27.700	4488.	-2.15	-.39	.11
27.800	4537.	-2.08	-.37	.10
28.000	4565.	-2.41	-.67	.23
28.200	4615.	-2.68	-.78	.28

MOORE BUSINESS FORMS INC 27

WEIGHTED AVG FOR REACH -2.05 -.53 .46

FHF FOR THE REACH = 020 WITH 71.3 PERCENT OF THE REACH WITHIN 1.0 FEET
ZONE FOR THE REACH = A 4

CONTINUOUS FLOOD HAZARD FACTORS BY EVEN INCREMENTS

INC NO.	TOTAL LENGTH	AVG ELEVATION DATA 10	1	DIFF.	WTD. AVG.	FHF	PERCENT WITHIN
	0.				SEC.		19.900
	40.				SEC.		20.000
1	100.	759.83	760.08	-.25	-.25	005	100.
2	200.	760.07	760.65	-.58	-.42	005	100.
3	300.	760.31	761.03	-.72	-.52	005	100.
4	400.	760.54	761.41	-.87	-.61	005	100.
5	500.	760.77	761.79	-1.02	-.69	005	100.
6	600.	761.01	762.16	-1.15	-.77	010	83.
7	700.	761.24	762.54	-1.30	-.84	010	86.
	740.				SEC.		21.000
8	800.	761.47	762.88	-1.41	-.91	010	88.
9	900.	761.70	763.16	-1.46	-.97	010	89.
10	1000.	761.93	763.41	-1.48	-1.02	010	90.
11	1100.	762.17	763.67	-1.50	-1.07	010	91.
12	1200.	762.40	763.92	-1.52	-1.10	010	83.
	1210.				SEC.		21.100
13	1300.	762.62	764.17	-1.55	-1.14	010	85.
14	1400.	762.62	764.40	-1.58	-1.17	010	86.
	1410.				SEC.		21.700
	1459.				SEC.		21.800
	1460.				SEC.		21.900
15	1500.	762.94	764.53	-1.59	-1.20	010	87.
	1502.				SEC.		22.000
	1503.				SEC.		22.100
	1583.				SEC.		22.700
16	1600.	762.98	764.74	-1.76	-1.23	010	75.
	1683.				SEC.		22.800

Backwater

	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND 10	2	0.2
WEIGHTED AVG FOR REACH	-1.23	-.30	.92

FHF FOR REACH 1 = 010 WITH 75. PERCENT OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 2

17	1700.	763.05	765.15	-2.10	-2.10	020	100.

MOORE BUSINESS FORMS INC 27

	1735.				SEC.	23.000	
	1785.				SEC.	23.100	
18	1800.	763.11	765.67	-2.56	-2.33	025	100.
19	1900.	763.15	765.99	-2.84	-2.50	025	100.
20	2000.	763.20	766.02	-2.82	-2.58	025	100.
	2015.				SEC.	23.700	
	2065.				SEC.	23.800	
21	2100.	763.65	766.74	-3.09	-2.68	025	100.
	2125.				SEC.	24.000	
	2175.				SEC.	24.100	
22	2200.	764.21	767.91	-3.70	-2.85	030	100.
23	2300.	764.47	768.37	-3.90	-3.00	030	100.
24	2400.	764.72	768.37	-3.65	-3.08	030	100.
25	2500.	764.98	768.37	-3.39	-3.12	030	89.
26	2600.	765.24	768.38	-3.14	-3.12	030	90.
	2650.				SEC.	24.700	
	2699.				SEC.	24.800	
27	2700.	765.66	768.39	-2.73	-3.08	030	100.
	2700.				SEC.	24.900	
	2724.				SEC.	25.000	
	2725.				SEC.	25.010	
	2774.				SEC.	25.100	
28	2800.	766.17	768.77	-2.60	-3.04	030	100.
	2884.				SEC.	25.200	
29	2900.	766.63	769.17	-2.54	-3.00	030	100.
	2993.				SEC.	25.300	
30	3000.	767.61	769.30	-1.69	-2.91	030	93.
31	3100.	768.59	769.83	-1.24	-2.80	030	80.
32	3200.	769.06	770.66	-1.60	-2.72	025	75.
	3212.				SEC.	25.700	
	3262.				SEC.	25.800	
	3284.				SEC.	26.000	
33	3300.	769.47	771.84	-2.37	-2.70	025	76.
	3334.				SEC.	26.100	
34	3400.	769.80	772.67	-2.87	-2.71	025	78.
	3446.				SEC.	26.200	
35	3500.	770.26	772.77	-2.51	-2.70	025	79.
	3559.				SEC.	26.700	
36	3600.	770.95	772.94	-1.99	-2.67	025	80.
37	3700.	771.71	773.42	-1.71	-2.62	025	76.
	3784.				SEC.	26.800	
38	3800.	772.42	774.13	-1.71	-2.58	025	82.
	3834.				SEC.	26.900	
	3848.				SEC.	27.000	
	3898.				SEC.	27.100	
39	3900.	772.96	774.97	-2.01	-2.55	025	83.
40	4000.	773.24	775.52	-2.28	-2.54	025	83.
41	4100.	773.41	775.66	-2.25	-2.53	025	84.
	4198.				SEC.	27.200	
42	4200.	773.57	775.81	-2.24	-2.52	025	85.
43	4300.	773.74	775.94	-2.20	-2.51	025	85.
44	4400.	773.89	776.08	-2.19	-2.50	025	86.
	4488.				SEC.	27.700	
45	4500.	774.05	776.20	-2.15	-2.49	025	86.

MOORE BUSINESS FORMS INC 27

	4537.					SEC.	27.800	
	4565.					SEC.	28.000	
46	4600.	774.19	776.56	-2.37	-2.48	025		87.
	4615.					SEC.	28.200	

ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND

	10	2	0.2
WEIGHTED AVG FOR REACH	-2.48	-.66	.21

FHF FOR REACH 2 = 025 WITH 87. PERCENT OF THE REACH WITHIN 1.0 FEET
ZONE FOR THE REACH = A 5

MOORE BUSINESS FORMS INC 27

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK ~~KALAMAZOO~~

4) DOCUMENT TYPE: REPORT

00BREAK00

39

HYDRAULIC ANALYSIS REPORT

DAVIS CREEK AT KALAMAZOO TOWNSHIP

KALAMAZOO COUNTY, MICHIGAN

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 EAST WASHINGTON AVENUE
JACKSON, MICHIGAN 49201

SEPTEMBER, 1980

INTRODUCTION

Hydraulic calculations were performed for Davis Creek from the Kalamazoo River to Olmsted Road. Field cross section data were surveyed by Commonwealth survey crews in February, 1979. In this study, the surveyors surveyed the channel cross sections. The overbanks were measured from a topographic map prepared by Wilkins & Wheaton Engineering Company (Davis-Olmsted Drainage District Flood Control Program, Contract 77-1, Sheet 1, 3/2/77). The flood flows for 10-, 50-, 100-, and 500-year recurrence intervals were approved by the Michigan DNR. A 5-foot contour map of Davis Creek, prepared by Abrams Aerial Survey, was used along with the Wilkins & Wheaton Engineering Company map to model Davis Creek. However, the final floodway and flood plain data were plotted in an enlarged 7-1/2' U.S.G.S. map to a scale of 1 inch = 1,000 feet since the other maps did not cover the full width up to the township line. This study was performed by Commonwealth Associates Inc., Jackson, Michigan, and the Project Manager was V. Danushkodi, P.E.

METHOD OF ANALYSIS

The HEC-2 computer program was utilized in the entire hydraulic analysis.

VARIABLES AND COEFFICIENTS

Manning's Roughness Coefficient

For channel	0.025-0.035
For overbanks	0.060-0.100

Coefficients for floodway

Contraction	0.10
Expansion	0.30

Coefficients for Bridges

Contraction	0.30
Expansion	0.50

Ratios

Contraction	1:1
Expansion	1:4

HIGH-WATER MARKS

According to the Olmsted-Davis Creek Drainage Basin Study (Reference 1, page 21), many of the structures carried greater volumes with a submerged entrance and backwater condition during the August, 1975 flood. However, no attempt was made to compare the high-water elevations with the HEC-2 model since the enclosed diversion pipes were installed after that flood.

STARTING CONDITIONS

The Davis Creek watershed is very small when compared to the catchment area of the Kalamazoo River. Therefore, a mean annual flood level of 759.7, computed from the flood levels of the Kalamazoo River at Davis Creek (Figure 1) was used as the starting condition for the hydraulic analyses.

SPECIAL PROBLEMS

None

REFERENCES

1. Olmsted-Davis Creek Drainage Basin Study prepared for the Kalamazoo County Drain Commissioner by Wilkins & Wheaton Engineering Company, Kalamazoo, Michigan, March, 1976.

K+E PROBABILITY X 90 DIVISIONS 46 8003 MADE IN U.S.A.
KEUFFEL & ESSER CO

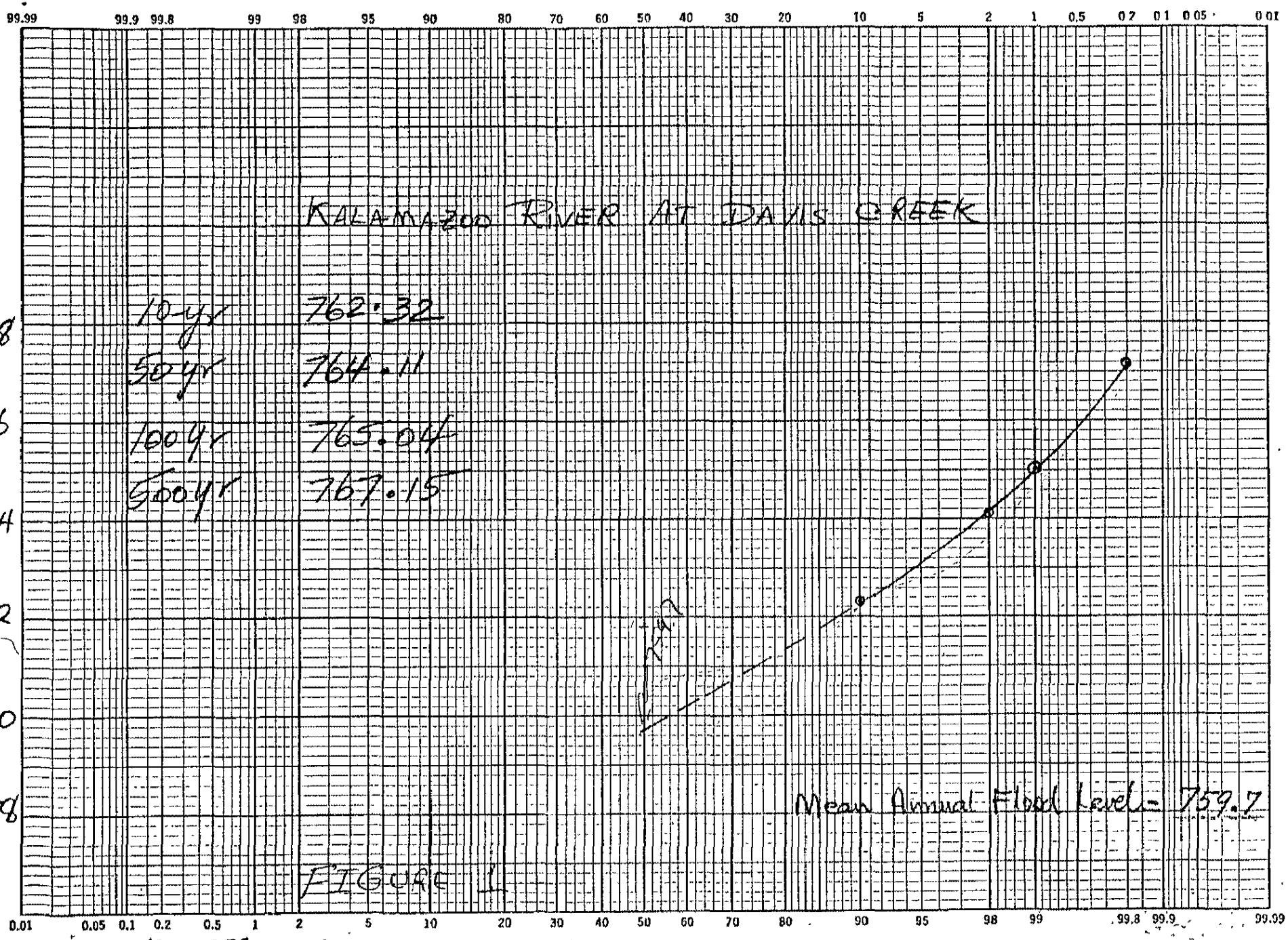


FIGURE 1

Invert at M = 754

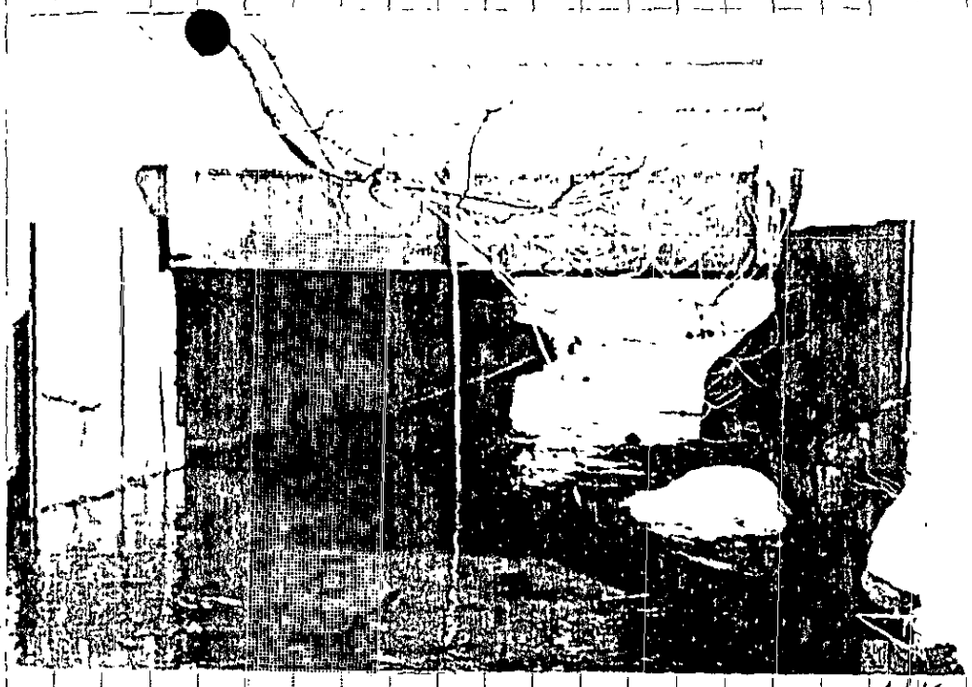
CROSS SECTION REFERENCE

Cross Section ID in Profile/Table	Sec. No. in HEC-2 Program	Description
A	19.9	Repeated Valley Section at mouth. Same as Cross Section 20.0
-	20.0	Surveyed Valley Section
-	21.0	Surveyed Valley Section
-	21.1	Repeated Valley Section. Same as Cross Section 21.0
-	21.7	Surveyed Valley Section
-	21.8	Surveyed Bridge Sections at Lake Street
-	21.9	
-	22.0	
-	22.1	
B	22.7	Surveyed Valley Section
-	22.8	Surveyed Bridge Sections at Brookfield Road
C	23.0	
-	23.1	
-	23.7	Surveyed Valley Section
-	23.8	Surveyed Bridge Sections at Springfield Road
D	24.0	
-	24.1	
-	24.8	Surveyed Bridge Sections at Market Street
-	24.9	
E	25.0	
-	25.1	
-	25.2	Repaeated Valley Section Same as 25.0 raised by 1.3 feet
-	25.3	Repeated Valley Section. Same as 25.0 raised by 2.5 feet

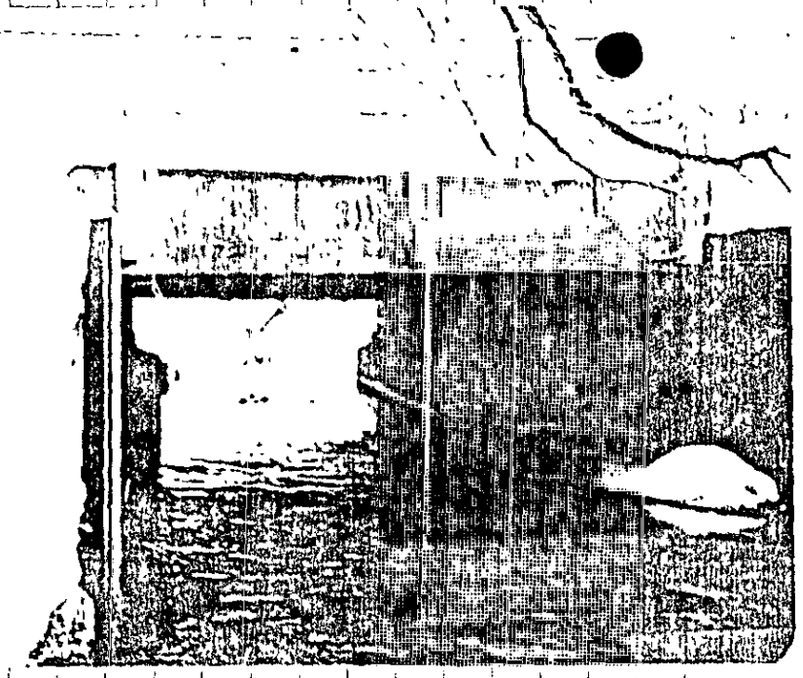
CROSS SECTION REFERENCE (Continued)

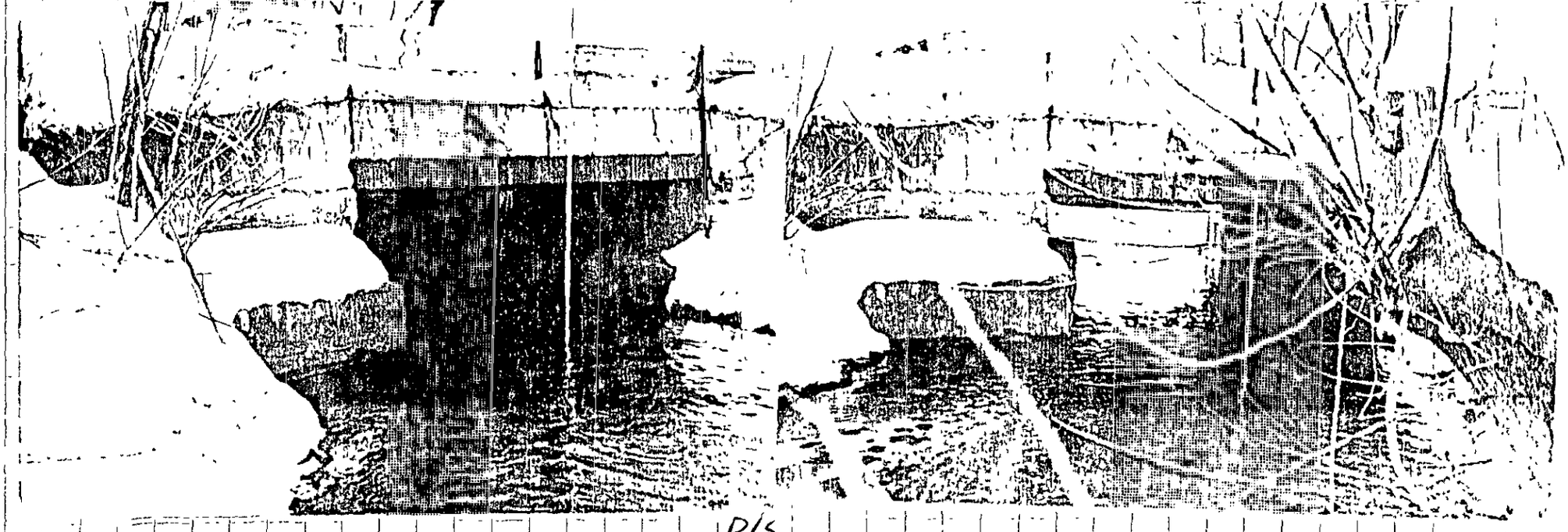
Cross Section ID in Profile/Table	Sec. No. in HEC-2 Program	Description
-	25.7	Surveyed Valley Section
-	25.8	Surveyed Bridge Sections at Stewart Street
-	26.0	
-	26.1	
F	26.2	Repeated Valley Section. Same as 26.0 raised by 0.9 foot
-	26.7	Repeated Valley Section. Same as 26.0 raised by 1.8 feet
-	26.8	Surveyed Valley Section
-	26.9	Surveyed Bridge Sections at Trailer Park Road
-	27.0	
-	27.1	
-	27.2	Repeated Valley Section. Same as 27.0 riased by 0.4 foot
G	27.7	Surveyed Valley Section
-	27.8	Surveyed Bridge Sections at Olmsted Road
H	28.0	
-	28.2	

BRIDGE NOTES AND SKETCHES



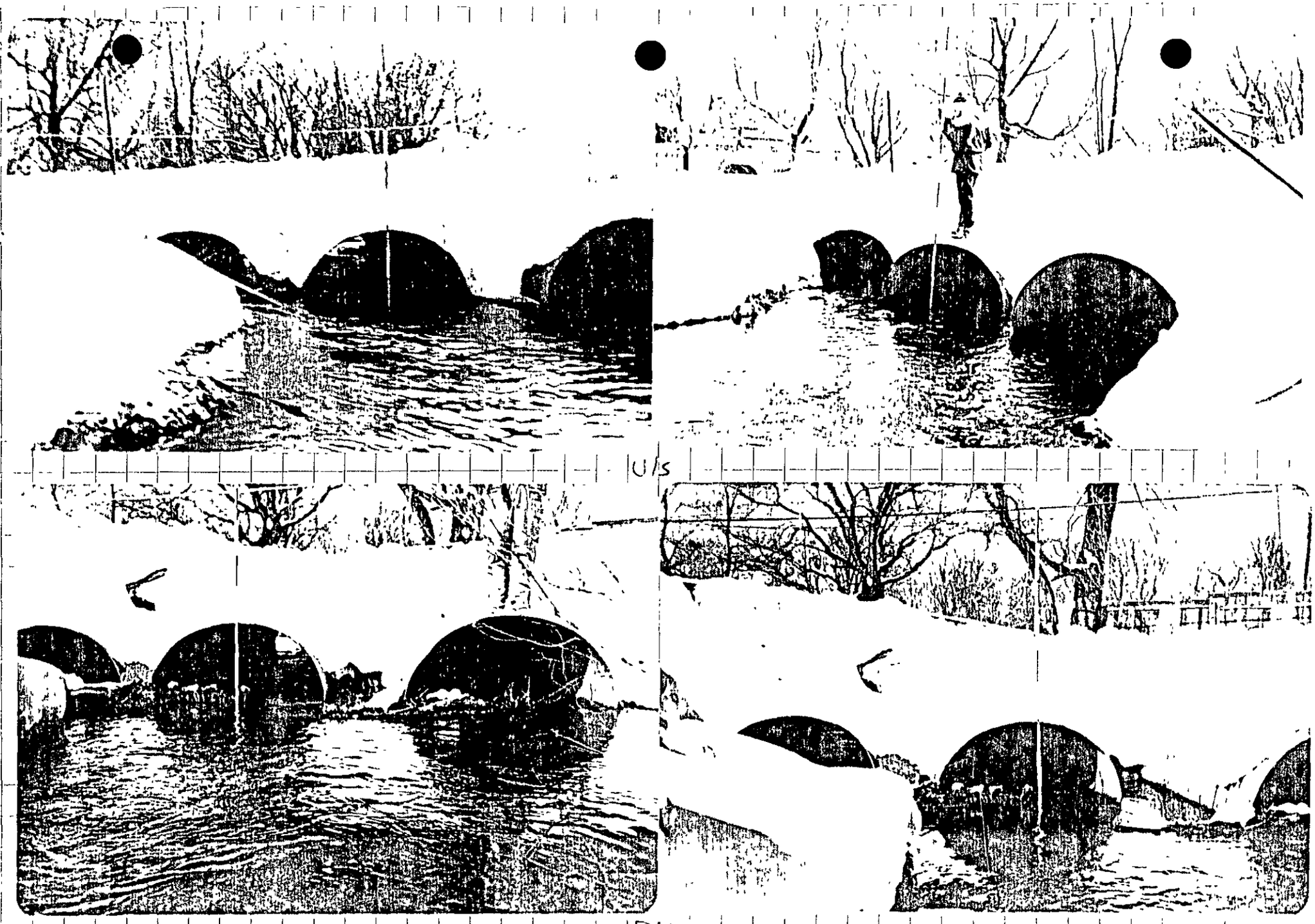
U/S





D/S

SECTION 22. Lake Street Bridge. (Treated as Normal Bridge) 16' X 5.5' Box

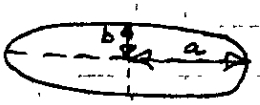


SECTION 23 BROOKFIELD ST - 3 ELLIPTICAL 5'X3'6" C.M.P.'S SPECIAL BR.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE 8-15-79 (SIGNATURE) DVD	SUBJECT Davis Creek.	SHEET OF
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

XSec 23 Brookfield St Culverts

3 Nos. 5' x 3'6" elliptical CMP's



Perimeter $= 2\pi \sqrt{\frac{a^2+b^2}{2}}$

Area $= \pi ab$

Data for Special Bridge

Area of 3 Pipes $= 3 \times \left(\pi \times \frac{5}{2} \times \frac{3.5}{2}\right) = 41.23\ ft^2$

Equivalent Trapezoidal Section

Max Low chord Elev : 763.79
Invert Elev : 760.3
3.49

Side Slope : 0
Bottom Width : 41.23/3.49 = 11.81 ft

Total Width : 21 ft
Pier Width : 9.19 ft

Gilbert/Commonwealth
209 E Washington Avenue Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET OF
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

XSEC 23 Brookfield St Culverts

Three Elliptical CMPs 52 ft long

Area of three Pipes $= 41.23\ ft^2$

Wetted Perimeter $= \cancel{3 \times \pi \times \frac{5}{2} \times \frac{3.5}{2}}$

$= 3 \times 2\pi \sqrt{\frac{a^2+b^2}{2}}$ $a = 2.5$, $b = 1.75$

$= 40.674\ ft$

Hyd Radius $= 1.0137\ ft$

XKOR

$K_f = \frac{29.1\, n^2 L}{R^{4/3}}$ $n = 0.027$, $L = 52\ ft$

$= 1.083$

$K_e = 0.9$ CMP Projecting

$XKOR = 1.083 + 0.9 + 1.0 = \underline{2.983}$

Pier Coefficient 1.25 Sq. nose & Tail

Coefficient for Weir Flow: Paved
$C = 3.0$

FORM CAI/DCP 112 (9/78)

COMMISSIONERS
JAMES D BOBB JR CHAIRMAN
DUANE F BURNHAM VICE-CHAIRMAN
LAWRENCE MC GOWAN

HERBERT O LARKIN ENGINEER MANAGER

Board of County Road Commissioners
of Kalamazoo County

3801 EAST KILGORE ROAD
P O BOX 2127
KALAMAZOO, MICHIGAN 49003
PHONE (616) 381-3171

August 20, 1979

RECEIVED
AUG 21 1979
COMMONWEALTH ASSOC. INC.
ENGINEERING SERVICES DEPT.

Mr. Zimbelman
Commonwealth Associates
209 E. Washington
Jackson, Michigan 49201

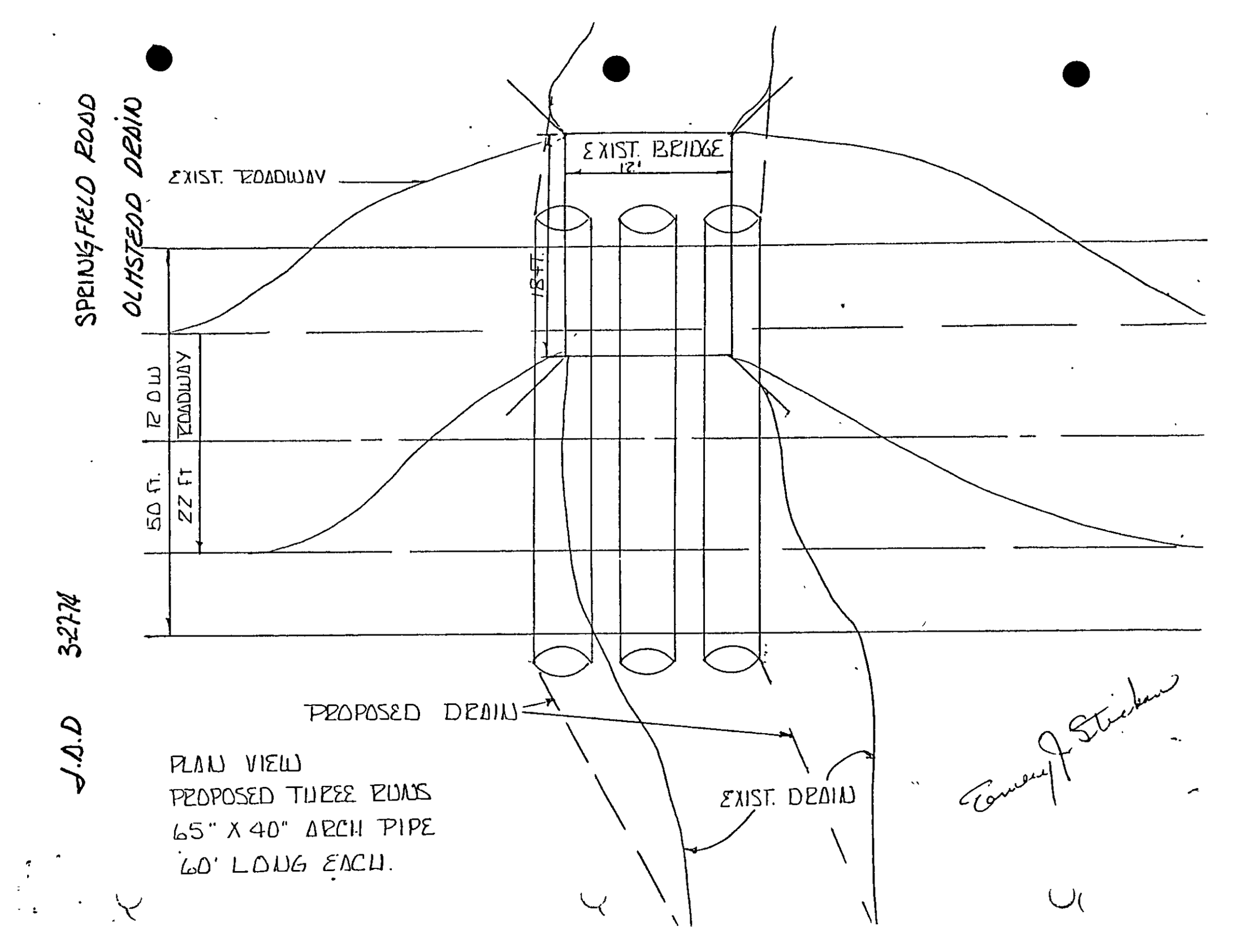
Dear Mr. Zimbelman:

Attached are two sheets showing size alignment and grade of tubes being placed in Olmstead Drain at Springfield Street, Kalamazoo Township.

Sincerely,

John Kester
R.L.S.

hr
enc. 2

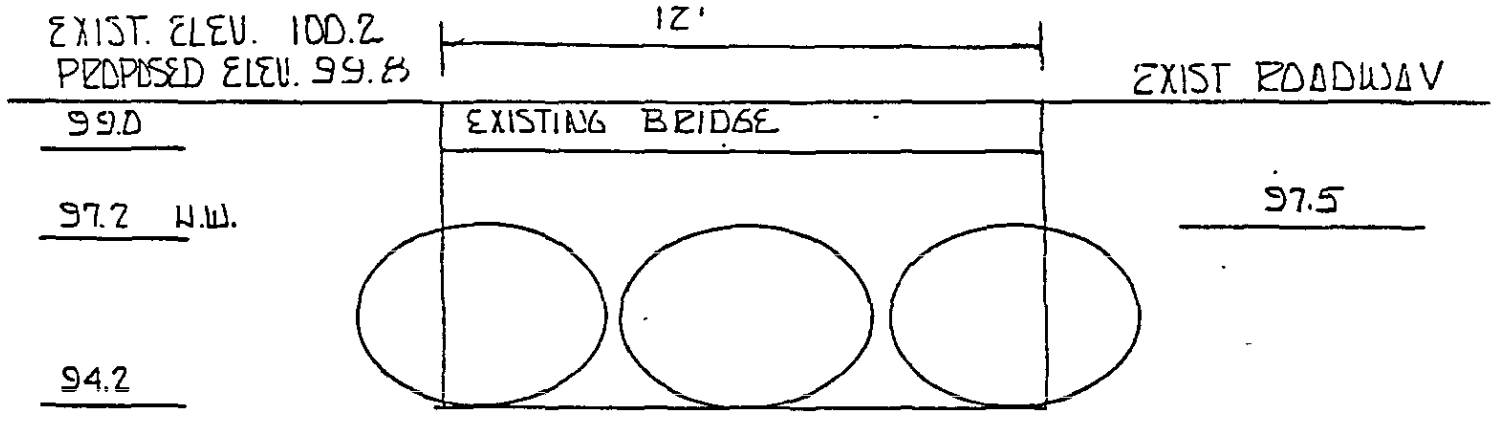

SPRINGFIELD ROAD
OLMSTEAD DRAIN
EXIST. ROADWAY
EXIST. BRIDGE
12'
18 FT.
50 ft.
12 ROW
ROADWAY
22 ft
PROPOSED DRAIN
EXIST. DRAIN
PLAN VIEW
PROPOSED THREE RUNS
65" X 40" ARCH PIPE
60' LONG EACH.
J.S.D 3-27-14

J.A.D. 3-27-74

SPRINGFIELD ROAD

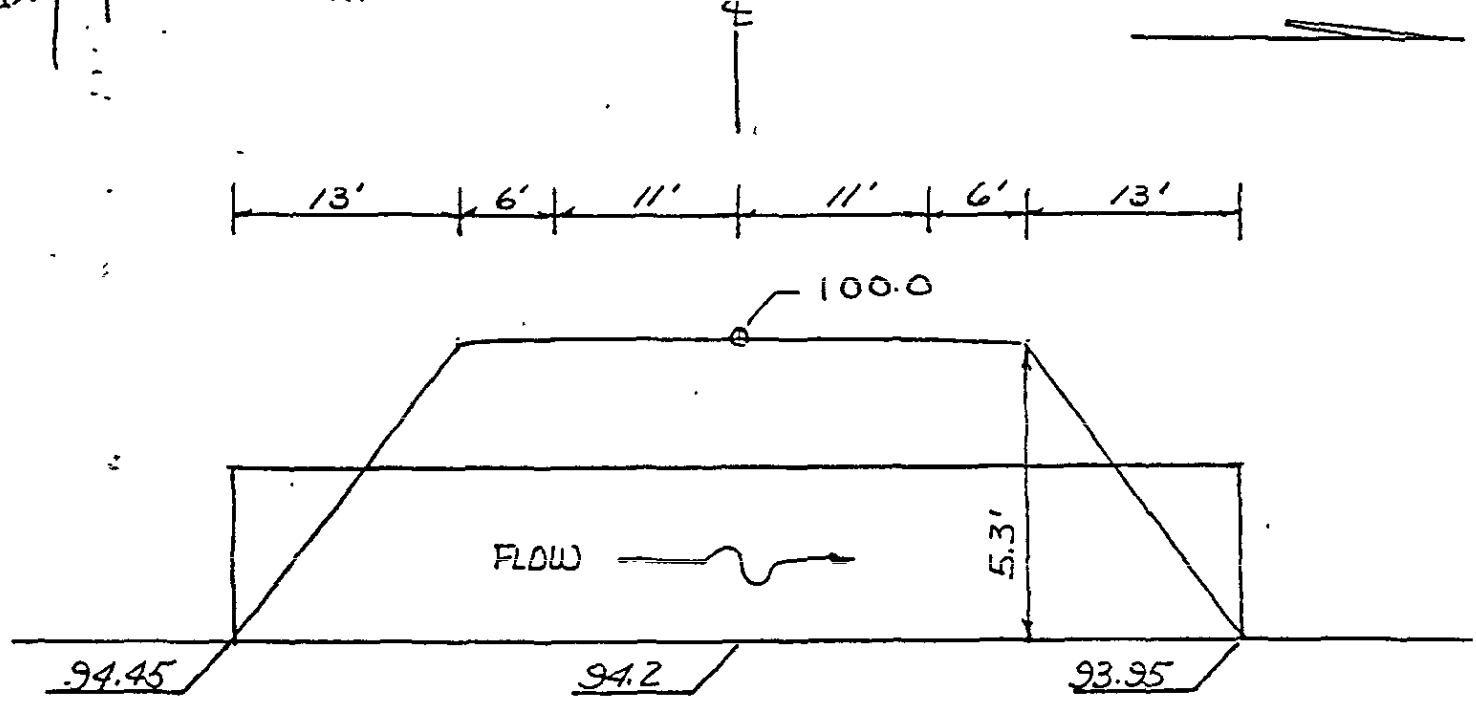
OLMSTEAD DRAIN

EXISTING WATERWAY OPENING	62 S.F.
BELOW H.W.	37 S.F.
PROPOSED WATERWAY OPENING	43 S.F.
BELOW H.W.	38 S.F.



Emery J. Stickan

END VIEW



CLIENT/OWNER		FILING CODE / JOB NO.
CALC BY/DATE (SIGNATURE): DVD 10.1.79	SUBJECT: Davis Creek	SHEET / OF
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Springfield Road — New Culverts
Section 24.0
Ref: County Drain Commission Drawings dt. 3.27.74

Three 65"X40" Arch Pipes 60' long each

Area of each Pipe = 14.3 ft²
Hyd. Radius = 1.012 ft
Total area of flow = 42.9 ft²

Equivalent width of a rectangular channel $= \frac{42.9}{3.333} = 12.9$ ft

Total width = 18 ft
Pier Width = 5.1 ft

XKOR

$k_f = \frac{29.1\, n^2 L}{R^{4/3}}$ $n = 0.027$

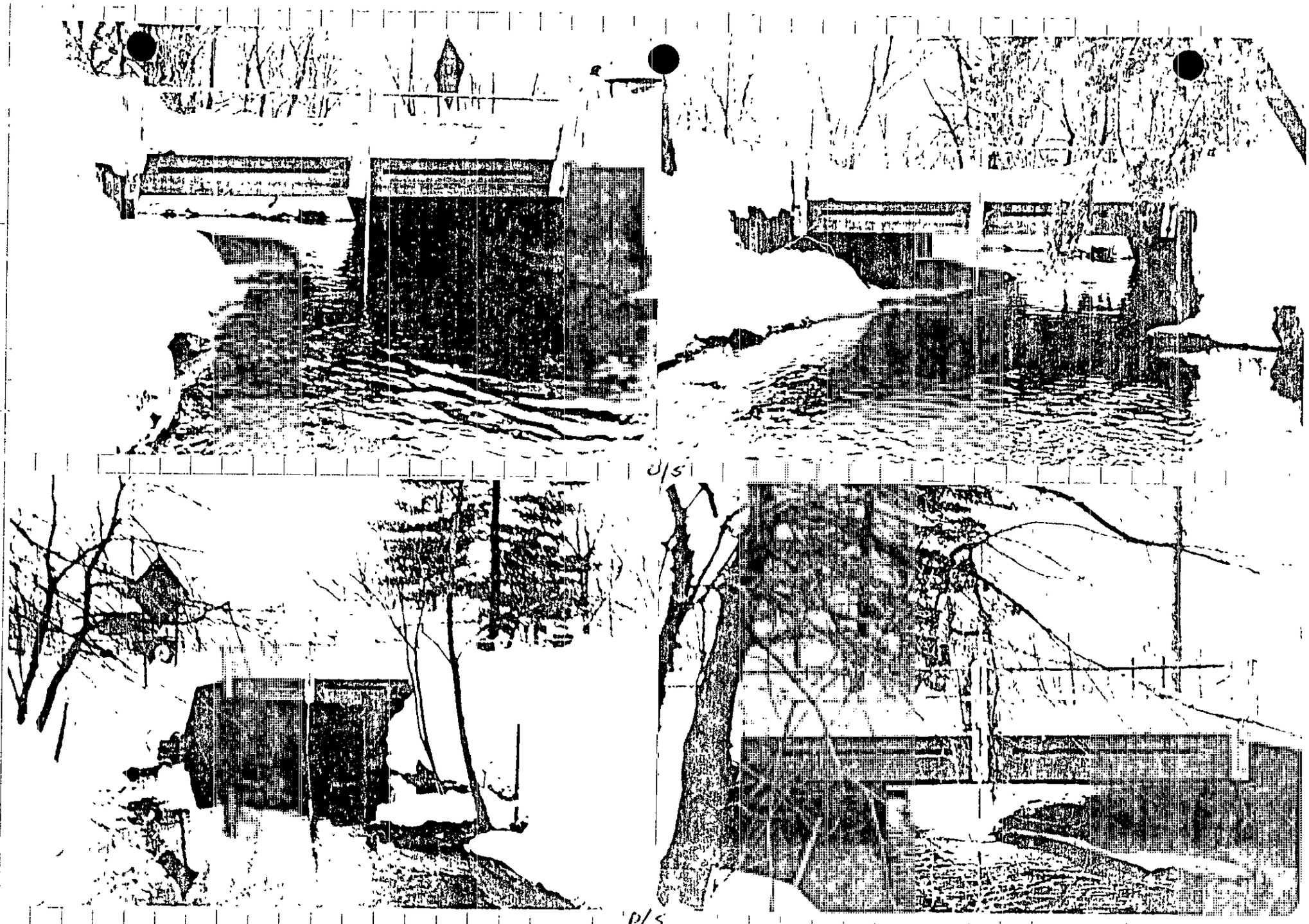
$= 1.253$

Arch Pipe Projecting $k'_e = 0.9$

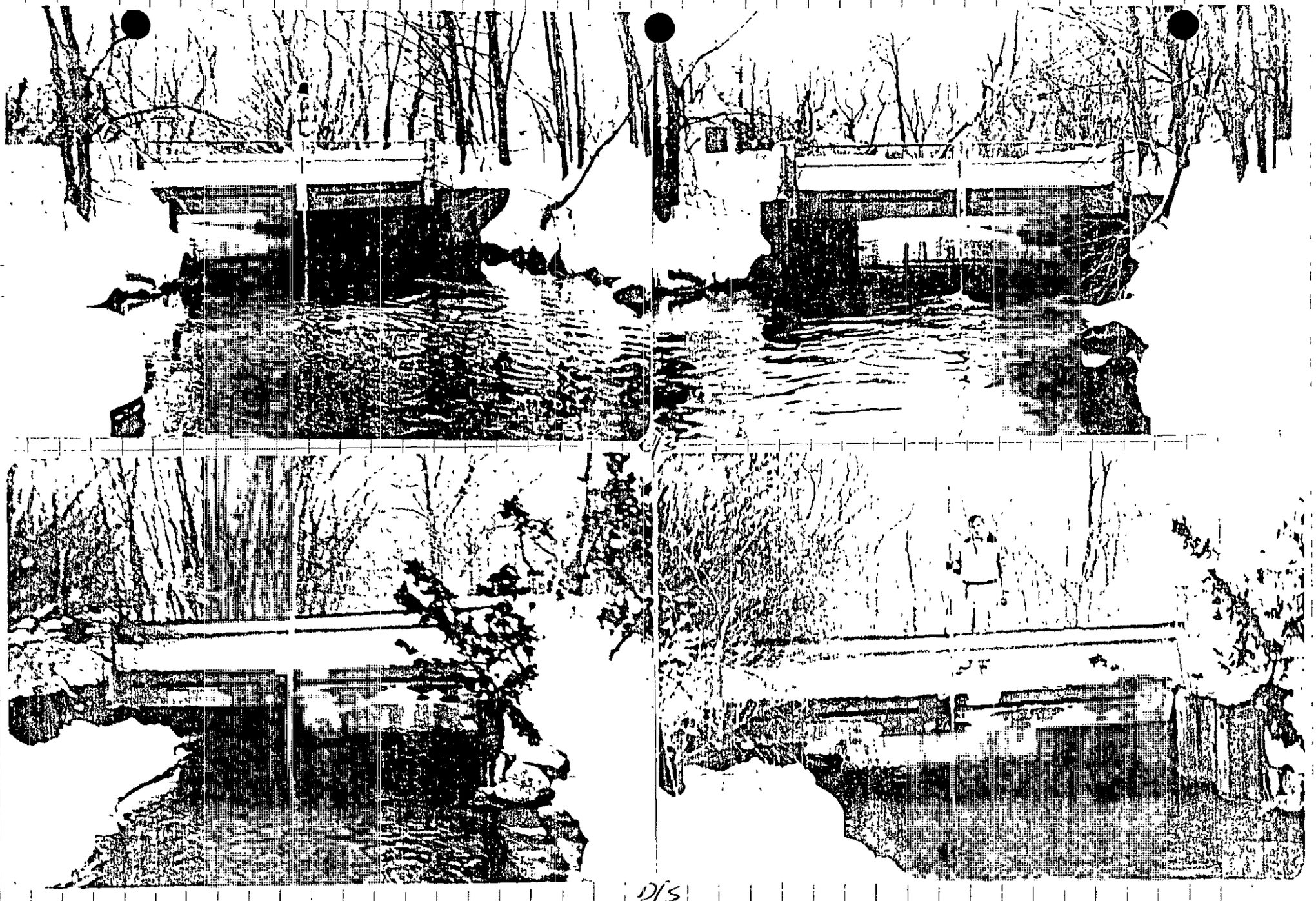
XKOR $= 1.253 + 0.9 + 1.0 = 3.153$

Pier Coeff = 1.25 Square nosed Tail

Coefficient of Weir flow $C = 3.0$ Paved Road Surface



SECTION 25 MARKET ST. 17' X 3-5' BOX NORMAL BRIDGE



D/S

SECTION 26. STEWART ST. 16'5"X8' BOX SPECIAL BRIDGE

Gilbert/Commonwealth
209 E Washington Avenue Jackson MI 49201

CALCULATION SHEET REV.

CLIENT/OWNER		FILING CODE / JOB NO.
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Bridge Section 26.0

Bridge with Sheet Pile sides
16.5' x 2.8', 22' long

XKOR Calculations

Sheet Pile sides and earth bottom $n \approx 0.03$

$L = 22'$

$R = 1.197$

$$K_f = \frac{29.1 \times n^2 \times L}{R^{4/3}} = 0.453$$

$K_e = 0.5$

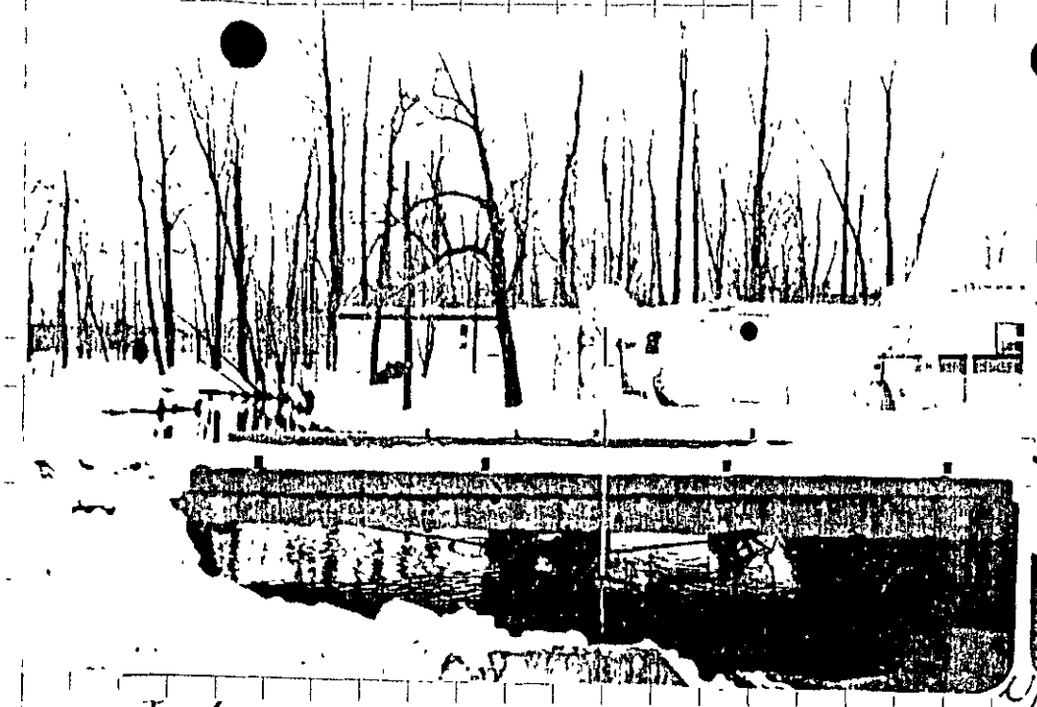
$K_{exit} = 1.0$

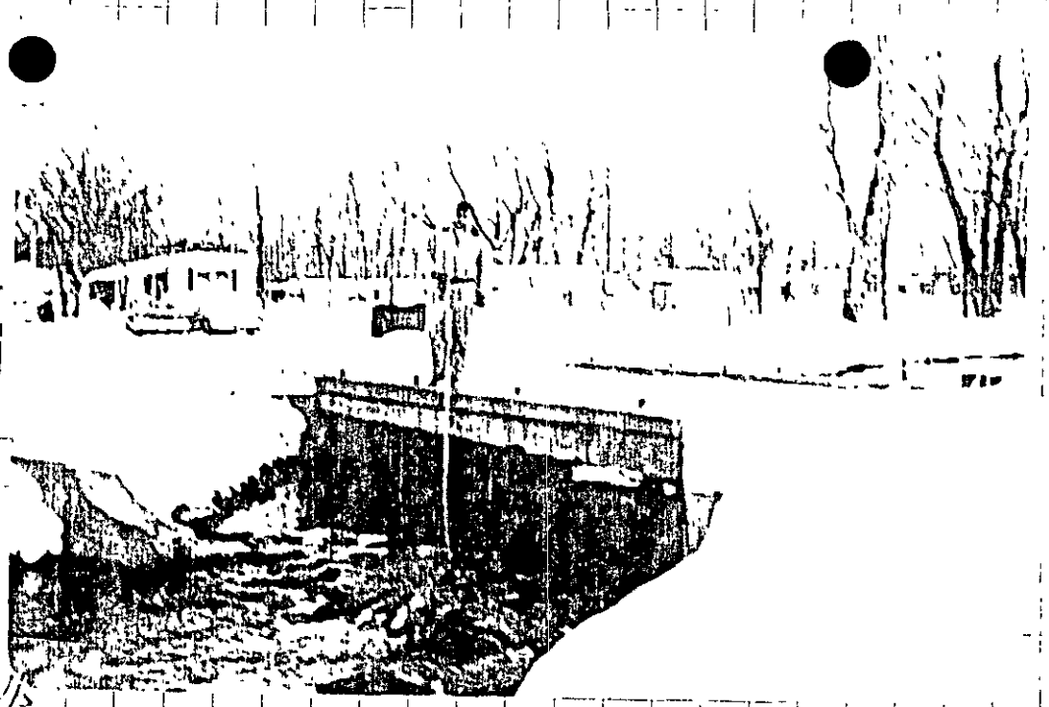
$XKOR = 1.953$

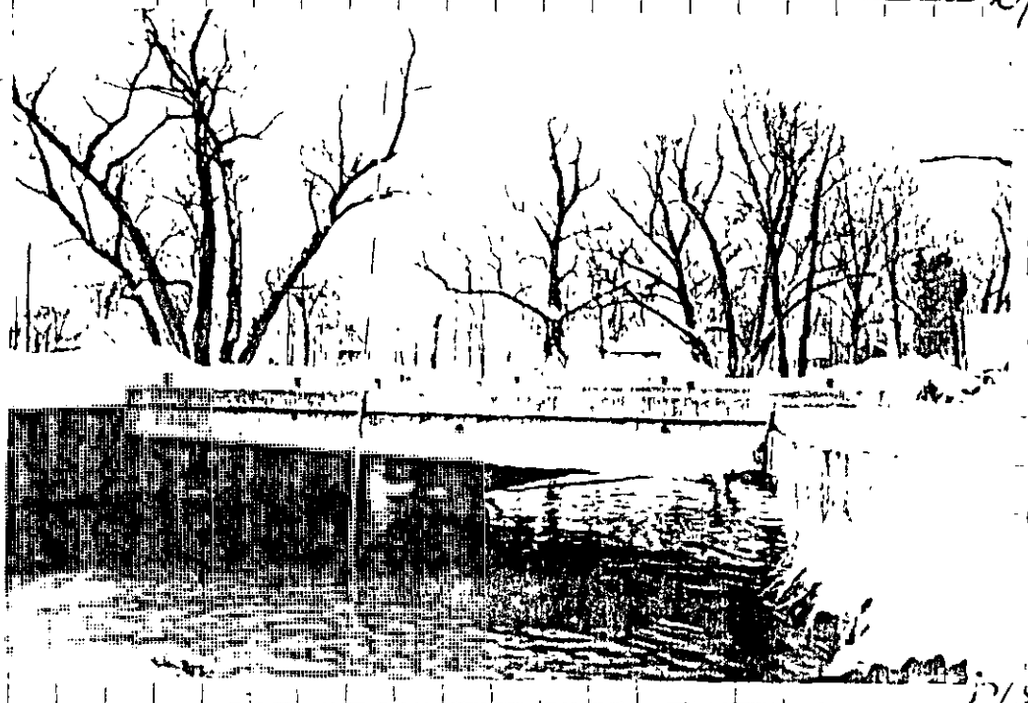
$BWC = 16.5$

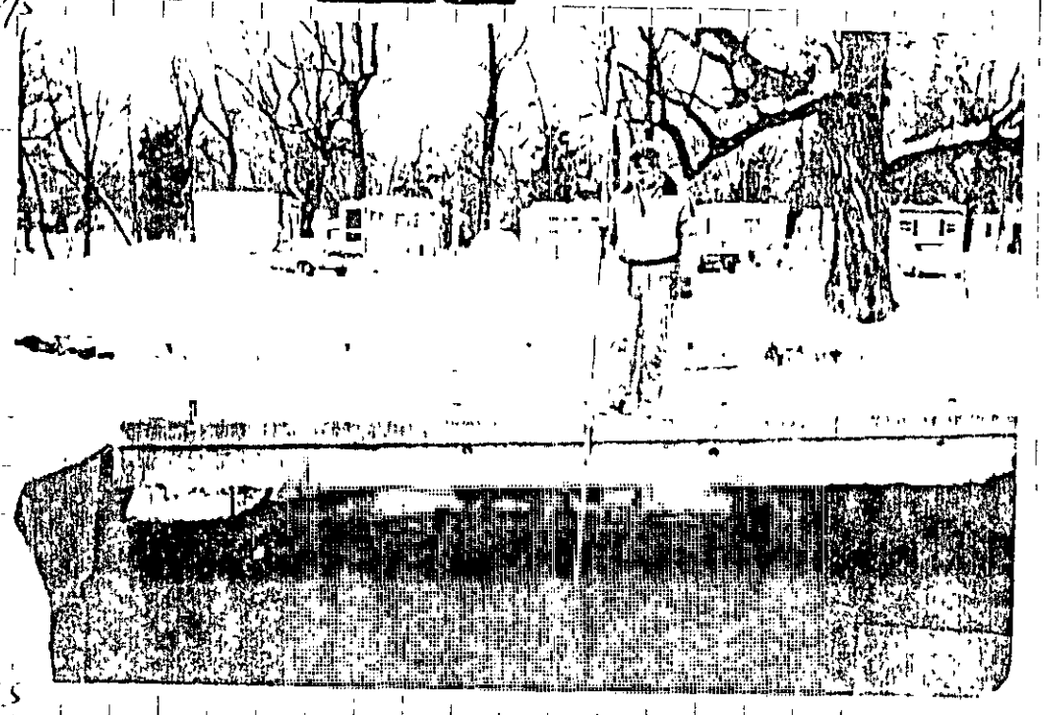
$A = 16.5 \times 2.8 = 46.2\ ft^2$

$C = 3.0$ (Paved Road)









SECTION 27. TRAILOR PARK ROAD. 20' X 32' Box. SPECIAL BRIDGE

Bridge Section 27

20' x 2.6' Concrete Bridge 14' long

XKOR calculations

Rough Bottom · $n = 0.02$

$L = 14$

$R = 1.150$

$$K_f = \frac{29.1\, n^2 L}{R^{4/3}}$$

$= 0.135$

$K_{ent} = 0.5$

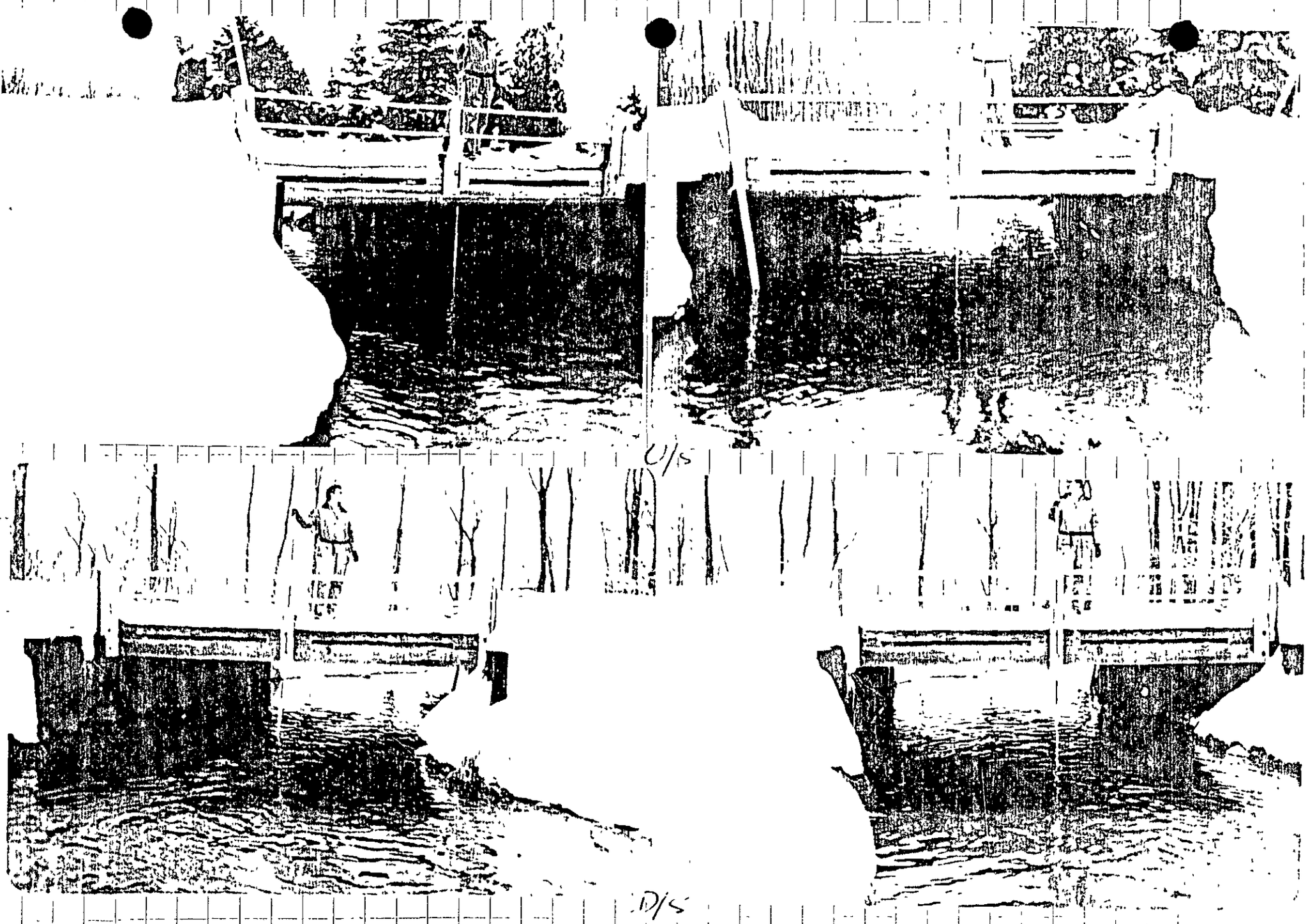
$K_{exit} = 1.0$

$XKOR = 1.635$

$C = 3.0$

$BWC = 20$

$A = 52$



SECTION 28 - OLMSTED ROAD - 17.5' X 4' BOX SPECIAL BRIDGE

Gilbert/Commonwealth
209 E. Washington Avenue Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET OF
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Olmstead Road Bridge (Section 28.0)

17.5' x 4'0" wood bridge with asphalt surface 27' long

Rough surface $n \approx 0.03$

$A = 70\ ft^2$

$R = \frac{70}{43} = 1.63'$

$K_f = \frac{29.1\, n^2 L}{R^{4/3}} = 0.369$

$XKOR = 1.0 + 0.5 + 0.369 = 2.169$

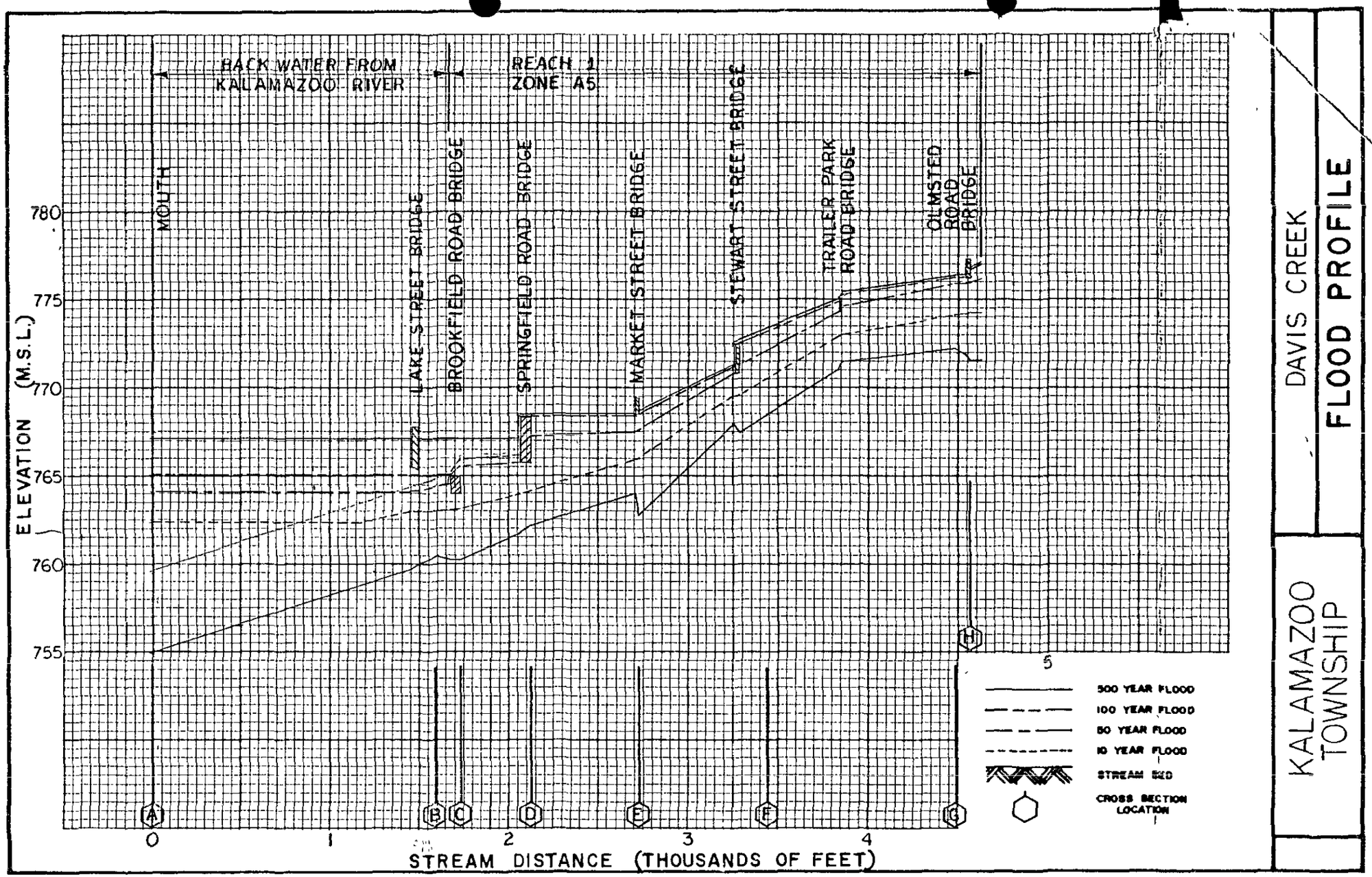
1.86

Paved Surface $C \approx 3.0$

$B = 17.5'$

Elev. U/S 771.6
D/S 772.0

FORM CAI/DCP 112 (9/78)


BACK WATER FROM KALAMAZOO RIVER
REACH 1 ZONE A5
MOUTH
LAKE STREET BRIDGE
BROOKFIELD ROAD BRIDGE
SPRINGFIELD ROAD BRIDGE
MARKET STREET BRIDGE
STEWART STREET BRIDGE
TRAILER PARK ROAD BRIDGE
OLMSTED ROAD BRIDGE
ELEVATION (M.S.L.)
780
775
770
765
760
755
A
B
C
D
E
F
G
H
0
1
2
3
4
5
STREAM DISTANCE (THOUSANDS OF FEET)
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
KALAMAZOO TOWNSHIP
DAVIS CREEK
FLOOD PROFILE

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 1947 Flood Profile
Reconstructed
- downstream

RECEIVED
SEP 08 1980
WATER MANAGEMENT

FIS Kalamazoo Twp.
Kalamazoo Co., Michigan
Kalamazoo River Downstream Portion
Reconstituted 1947 Flood Profile.
9-2-80

THIS RUN EXECUTED 09/02/80

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED  AUG1977
  ERROR CORR -  01,02
  MODIFICATION -  50,51,52,53
*****************************************************

C
T1      FIS  KALAMAZOO TWP  DOWNSTREAM STUDY
T2      1947 FLOOD PROFILE
T3      KALAMAZOO RIVER
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        8.        0.        0.   0.0          0.0       0.0       0.   755.310     0.0
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     -1.000     0.0      -1.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0
NC      0.070     0.070     0.035     0.100     0.300     0.0       0.0       0.0       0.0       0.0
QT      7.000  4970.000  6680.000  7420.000  9220.000  7420.000  5646.000  7000.000     0.0       0.0
ET      0.0       9.100     9.100     9.100     9.100     1.400     9.100     9.100   622.000  2634.000
```

			2129.000	825.000	905.000	760.000	0.0	0.0	0.0	
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			760.800	896.000	767.800	822.000	765.800	820.000	764.600	926.000
		1135.100	762.700	1130.000	760.700	1196.000	761.100	1298.000	760.900	1394.000
		1532.000	760.000	1596.000	759.200	1658.000	752.700	1728.000	751.000	2000.000
		2121.000	747.700	2180.000	747.800	2224.000	747.000	2280.000	746.500	2310.000
		2314.000	747.700	2380.000	749.800	2429.000	751.800	2433.000	753.400	2488.000
		2531.000	748.100	2634.000	746.700	2720.000	763.100	2926.000	765.000	2998.000
		3154.000	753.700	3259.000	766.700	3332.000	767.000	3704.000	756.200	3794.000
		3986.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.100	0.100	0.100	0.100	1.400	0.100	0.100	1128.000	3346.000

VALLEY SECTION (B)

1	2.000	37.000	2005.000	2520.000	1270.000	800.000	850.000	0.0	0.0	0.0
2	0.0	755.550	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R	763.400	452.000	763.400	618.000	763.400	784.000	763.400	936.000	764.600	1128.000
R	760.700	1228.000	755.900	1338.000	757.200	1392.000	754.300	1456.000	753.600	1526.000
R	753.600	1624.000	753.400	1760.000	751.400	1848.000	752.300	2000.000	750.400	2005.000
R	748.100	2026.000	746.900	2050.000	748.800	2078.000	750.300	2098.000	751.800	2104.000
R	751.800	2230.000	752.400	2284.000	750.700	2352.000	747.800	2416.000	748.300	2470.000
R	749.000	2506.000	750.300	2520.000	752.000	2526.000	750.300	2668.000	757.500	2948.000
R	761.200	3184.000	762.300	3346.000	757.900	3540.000	757.400	3690.000	756.300	3836.000
R	759.200	3934.000	757.600	4028.000	0.0	0.0	0.0	0.0	0.0	0.0
T	0.0	9.100	9.100	9.100	9.100	9.100	9.100	9.100	1916.000	3050.000
C	0.080	0.080	0.040	0.0	0.0	0.0	0.0	0.0	0.0	0.0

VALLEY SECTION (C)

1	3.000	12.000	2006.000	2182.000	1290.000	2010.000	2010.000	0.0	0.0	0.0
2	0.0	756.250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R	760.000	1650.000	752.400	2000.000	751.400	2006.000	747.700	2024.000	745.800	2068.000
R	746.800	2116.000	747.300	2146.000	747.800	2168.000	751.100	2182.000	752.800	2190.000
R	755.000	2300.000	760.000	3050.000	0.0	0.0	0.0	0.0	0.0	0.0
T	0.0	9.100	9.100	9.100	9.100	9.100	9.100	9.100	2016.000	2500.000
1	3.700	13.000	2036.000	2324.000	700.000	410.000	580.000	0.0	0.0	0.0
2	0.0	756.500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R	760.000	1200.000	754.000	2000.000	751.800	2036.000	748.400	2070.000	749.400	2120.000
R	749.200	2176.000	749.800	2230.000	750.300	2270.000	749.900	2308.000	751.800	2324.000
R	756.200	2340.000	755.600	2350.000	760.000	2500.000	0.0	0.0	0.0	0.0
T	0.0	9.100	9.100	9.100	9.100	1.400	9.100	9.100	1995.000	2365.000
1	3.900	0.0	0.0	0.0	1300.000	490.000	900.000	0.0	0.0	0.0
2	0.0	757.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	3.910	29.000	2030.000	2334.000	50.000	50.000	50.000	0.0	0.0	0.0
2	0.0	757.020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R	760.500	2000.000	759.500	2000.000	751.800	2030.000	751.800	2030.000	751.800	2030.000
R	749.400	2046.000	750.000	2062.000	750.000	2074.000	749.500	2090.000	749.400	2106.000
R	748.500	2122.000	748.900	2138.000	748.600	2154.000	747.000	2170.000	748.500	2186.000
R	748.000	2202.000	748.600	2218.000	748.300	2219.000	748.800	2235.000	749.000	2251.000
R	749.000	2267.000	749.300	2283.000	750.400	2299.000	751.000	2315.000	750.600	2331.000
R	751.800	2334.000	759.200	2362.000	759.200	2362.000	764.800	2362.000	0.0	0.0

RAILROAD BRIDGE SECTION (D)

1	4.000	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0	0.0

SB	0.950	1.500	3.000	0.0	500.000	30.000	4224.000	2.540	752.000	752.000
X1	4.100	0.0	0.0	0.0	10.000	10.000	10.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	762.100	764.800	0.0	0.0	0.0	0.0	0.0
X2	0.0	757.130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X5	-7.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.0
BT	4.000	2000.000	-764.800	0.0	-2000.000	764.800	762.100	2362.000	764.800	762.000
BT	2362.000	764.800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	4.200	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X2	0.0	757.130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	4.500	11.000	2120.000	2246.000	500.000	1000.000	1000.000	0.0	0.0	0.0
X2	0.0	757.660	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	760.000	1350.000	750.000	2110.000	750.000	2110.000	750.000	2110.000	748.900	2120.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
GR	761.800	2276.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	4.900	11.000	2070.000	2246.000	1735.000	1735.000	1735.000	0.0	0.0	0.0
X2	0.0	758.700	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	760.000	1400.000	754.300	2000.000	753.800	2068.000	751.600	2070.000	748.500	2096.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
GR	761.800	2276.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	4.910	11.000	2038.000	2280.000	50.000	50.000	50.000	0.0	0.0	0.0
X2	0.0	758.740	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	760.000	1925.000	762.500	2000.000	757.100	2000.000	752.600	2038.000	747.500	2078.000
GR	747.760	2140.000	747.400	2204.000	750.100	2250.000	752.500	2280.000	757.200	2298.000
GR	762.400	2298.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RAILROAD BRIDGE SECTION (E)

X1	5.000	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X2	0.0	758.750	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SB	0.950	1.500	3.000	0.0	175.000	30.000	2790.000	5.790	747.200	747.200
X1	5.100	0.0	0.0	0.0	10.000	10.000	10.000	0.0	0.0	0.0
X2	0.0	758.850	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X2	0.0	0.0	1.000	759.100	762.400	0.0	0.0	0.0	0.0	0.0
X5	-7.000	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.0
BT	4.000	2000.000	-762.500	0.0	2000.000	762.500	759.100	2298.000	762.400	758.800
BT	2298.000	762.400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	5.200	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X2	0.0	758.850	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ET	0.0	9.100	9.100	9.100	9.100	1.000	9.100	9.100	1980.000	2200.000
X1	5.200	10.000	2006.000	2198.000	760.000	1040.000	935.000	0.0	0.0	0.0
X2	0.0	759.160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	760.000	1485.000	755.200	2000.000	752.300	2006.000	747.700	2050.000	748.000	2084.000
GR	749.700	2123.000	750.100	2150.000	751.100	2189.000	752.500	2198.000	763.900	2220.000
X1	5.900	15.000	2000.000	2207.000	65.000	65.000	65.000	0.0	0.0	0.0
X2	0.0	759.210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	763.200	763.200	0.0
GR	765.000	2000.000	754.900	2000.000	752.600	2014.000	747.800	2057.000	747.800	2057.100
GR	747.800	2060.000	747.800	2060.100	748.000	2104.000	750.300	2146.000	750.300	214 .100

BT	7.000	9990.000	2551.000	739.701	2547.000					
NC	0.0	0.0	0.0	0.300	0.500	0.0	0.0	0.0	0.0	0.0

ROAD BRIDGE SECTION (F) AT MOSEL AVENUE

X1	6.000	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X2	0.0	759.220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	763.200	763.200	0.0
BT	12.000	2000.000	765.000	0.0	2000.000	765.000	761.000	2057.000	765.000	761.400
BT	2057.100	765.000	747.830	2060.000	765.000	747.800	2060.100	765.000	761.400	2146.000
BT	764.900	761.500	2106.100	764.900	750.300	2149.000	764.900	750.600	2149.100	764.900
BT	761.500	2207.000	764.900	761.500	2207.000	764.900	0.0	0.0	0.0	0.0
X1	6.100	20.000	2000.000	2207.000	35.000	35.000	35.000	0.0	0.0	0.0
X2	0.0	759.230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	765.100	765.100	0.0
BT	12.000	2000.000	765.000	0.0	2000.000	765.000	761.400	2057.000	765.000	761.400
BT	2057.100	765.000	748.900	2060.000	765.000	748.900	2060.100	765.000	761.400	2146.000
BT	765.100	761.300	2106.100	765.100	748.600	2149.000	765.100	748.600	2149.100	765.100
BT	761.300	2207.000	765.100	761.300	2207.000	765.100	0.0	0.0	0.0	0.0
GR	765.000	2000.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	765.100	2207.000
X1	6.200	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X2	0.0	759.240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	765.100	765.100	0.0
NC	0.050	0.050	0.025	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	6.300	20.000	2000.000	2207.000	100.000	100.000	100.000	0.0	0.0	0.0
X2	0.0	759.250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X3	0.0	0.0	0.0	1900.000	0.0	2307.000	0.0	0.0	0.0	0.0
GR	760.000	1500.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	760.000	2550.000
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

X1	7.000	12.000	2016.000	2158.000	2775.000	2625.000	2555.000	0.0	0.0	0.0
X2	0.0	759.760	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	765.000	1050.000	762.000	1100.000	758.300	2000.000	754.100	2016.000	747.900	2062.000
GR	747.600	2098.000	750.000	2134.000	754.000	2158.000	756.500	2168.000	756.100	2174.000
GR	760.000	2550.000	765.000	2600.000	0.0	0.0	0.0	0.0	0.0	0.0
EJ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 1.000

SECNO	DEPTH	CWSEL	CPTWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
0	RLOB	OCH	ORQB	ALOB	ACH	ARQB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	ALOBL	XLCH	XLOBR	ITRIAL	TDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 622.0 2634.0 TYPE= 1 TARGET= 2012.000

VALLEY SECTION (A) AT DOWNSTREAM STUDY LIMITS -- I.E. G AVENUE

1.00	8.81	755.31	0.0	755.31	755.39	0.08	0.0	0.0	749.70
7000.	1252.	5634.	109.	1573.	2312.	175.	0.	0.	749.80
.1	0.80	2.44	0.62	0.070	0.035	0.070	0.0	746.50	1699.89
0.009226	825.	760.	905.	0	0	0	0.0	796.90	2496.79

*SECNO 2.000

3470 ENCROACHMENT STATIONS= 1128.0 3346.0 TYPE= 1 TARGET= 2218.000

VALLEY SECTION (B)

7000.	900.	5202.	858.	1453.	2752.	1183.	106.	26.	750.30	
0.16	0.02	1.90	0.73	0.070	0.035	0.070	0.033	746.90	1428.68	
0.000216	1270.	950.	800.	1	0	0	0.0	1443.03	2871.70	

*SECNO 3.000

3470 ENCROACHMENT STATIONS= 1916.0 3050.0 TYPE= 1 TARGET= 1134.000

VALLEY SECTION (C)

3.00	10.36	750.10	0.0	750.25	756.35	0.25	0.69	0.06	751.40
7000.	235.	6674.	271.	259.	1552.	365.	266.	67.	751.10
0.30	0.99	4.17	0.74	0.080	0.040	0.080	0.038	745.80	1916.00
0.000697	1290.	2010.	2010.	2	0	0	0.0	548.46	2464.46

*SECNO 3.700

3470 ENCROACHMENT STATIONS= 2016.0 2500.0 TYPE= 1 TARGET= 484.000

3.70	8.16	750.56	0.0	756.56	756.75	0.18	0.39	0.01	751.80
7000.	92.	6866.	43.	83.	1989.	64.	285.	72.	751.80
0.34	1.10	3.45	0.67	0.080	0.040	0.080	0.039	748.40	2016.00
0.000657	700.	580.	410.	2	0	0	0.0	366.86	2382.86

*SECNO 3.900

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
W	WLOB	OCH	CROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
ITNE	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 1995.0 2365.0 TYPE= 1 TARGET= 370.000

3.90	8.71	757.11	0.0	757.00	757.26	0.15	0.51	0.00	751.80
7000.	173.	6769.	58.	167.	2147.	81.	342.	80.	751.80
0.43	1.04	3.15	0.71	0.080	0.040	0.080	0.039	748.40	1995.00
0.000495	1300.	900.	490.	2	0	0	0.0	370.00	2365.00

*SECNO 3.910

3.91	10.16	757.16	0.0	757.02	757.29	0.13	0.02	0.00	751.80
7000.	38.	6925.	37.	56.	2404.	54.	345.	80.	751.80
0.43	0.69	2.88	0.68	0.080	0.040	0.080	0.039	747.00	2009.16
0.000383	50.	50.	50.	1	0	0	0.0	345.09	2354.24

*SECNO 3.000

RAILROAD BRIDGE SECTION (D)

4.00	10.16	757.16	0.0	757.03	757.29	0.13	0.00	0.00	751.80
7000.	38.	6925.	37.	56.	2407.	54.	345.	80.	751.80
0.43	0.69	2.88	0.68	0.080	0.040	0.080	0.039	747.00	2009.12
0.000371	1.	0.	1.	0	0	0	0.0	345.15	2354.28

SPECIAL BRIDGE

SB	XR	XKFP	CLFO	RDIEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.45	1.50	3.00	0.0	300.00	36.00	4224.00	2.34	752.00	752.00

*SECNO 3.100

WATER EL=X5 CARD= 757.409

0.43	0.67	2.79	0.67	0.080	0.040	0.080	0.039	747.00	2008.15
0.000343	10.	10.	10.	0	0	0	0.0	347.08	2355.22

*SECNO 4.200

4.20	10.41	757.41	0.0	757.14	757.53	0.12	0.00	0.00	751.80
7000.	41.	6919.	40.	61.	2483.	60.	345.	80.	751.80
0.43	0.67	2.79	0.67	0.080	0.040	0.080	0.039	747.00	2008.15
0.000343	1.	1.	1.	0	0	0	0.0	347.08	2355.22

*SECNO 4.500

SECNO	DEPTH	CHSEL	CRIWS	WSELK	FG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
ITRE	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBI	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	IOPWID	ENDST
4.50	9.39	757.79	0.0	757.66	757.94	0.14	0.40	0.01	748.90
7000.	2755.	4153.	91.	2391.	1087.	82.	402.	89.	752.50
0.53	1.15	3.85	1.11	0.080	0.040	0.080	0.040	748.40	1517.74
0.000600	500.	1000.	1000.	2	0	0	0.0	751.39	2269.13

*SECNO 4.900

4.90	10.32	758.72	0.0	758.70	758.93	0.21	0.97	0.02	751.60
7000.	513.	6365.	122.	501.	1672.	104.	518.	111.	752.50
0.66	1.02	3.81	1.17	0.080	0.040	0.080	0.040	748.40	1922.47
0.000523	1735.	1735.	1735.	2	0	0	0.0	348.25	2270.72

*SECNO 4.910

4.91	11.43	758.83	0.0	758.74	758.95	0.12	0.02	0.01	752.60
7000.	139.	6841.	49.	151.	2460.	72.	521.	112.	752.50
0.66	0.72	2.78	0.69	0.080	0.040	0.080	0.040	747.40	2000.00
0.000255	50.	50.	50.	2	0	0	0.0	298.00	2298.00

*SECNO-5.000

RAILROAD BRIDGE SECTION (F)

5.00	11.43	758.83	0.0	758.75	758.95	0.12	0.00	0.00	752.60
7000.	139.	6841.	49.	151.	2460.	72.	521.	112.	752.50
0.66	0.72	2.78	0.69	0.080	0.040	0.080	0.040	747.40	2000.00
0.000255	1.	1.	1.	0	0	0	0.0	298.00	2298.00

SPECIAL BRIDGE

SB	XF	XKOR	CCFO	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.95	1.50	3.00	0.0	175.00	30.00	2790.00	5.79	747.20	747.20

*SECNO 5.100
WATER ELEVS CARD= 758.930

5.10	11.53	758.93	0.0	758.85	759.05	0.12	0.00	0.00	752.60
7000.	112.	6833.	51.	155.	2484.	74.	522.	112.	752.50
0.66	0.72	2.75	0.69	0.080	0.040	0.080	0.040	747.40	2000.00
0.000247	10.	10.	10.	0	0	0	0.0	298.00	2298.00

*SECNO 5.200

SECNO	DEPTH	CHSEL	CRIWS	WSELK	FG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
ITRE	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

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     5.20      11.53     759.93       0.0     758.86     759.05       0.12      0.00       0.00     752.60
    7000.       112.      6838.       51.       155.      2484.        74.      522.       112.     752.50
     0.66       0.72       2.75      0.69      0.080      0.040      0.080     0.040     747.40    2000.00
 0.000247         1.         1.        1.          0          0          0       0.0     298.00    2298.00

*SECNO 5.800

3470 ENCROACHMENT STATIONS=      1980.0      2200.0   TYPE=       1   TARGET=       220.000
     5.80      11.08     759.18       0.0     759.16     759.40       0.21      0.32       0.03     752.30
    7000.       110.      6583.        7.       111.      1844.        12.      572.       117.     752.50
     0.74       0.99       3.73      0.56      0.080      0.040      0.080     0.040     747.70    1980.00
 0.000496       760.       935.     1040.          2          0          0       0.0     220.00    2200.00

*SECNO 5.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       763.20 ELREA=       763.20

     5.90      11.41     759.21       0.0     759.21     759.43       0.23      0.04       0.00     765.00
    7000.         0.      7000.        0.         0.      1835.         0.      575.       118.     764.90
     0.74       0.0        3.82      0.0      0.080      0.040      0.080     0.040     747.80    2000.00
 0.000606        65.        65.       65.          0          0          0       0.0     207.00    2207.00

CCHV=    0.300 CEHV=    0.500
*SECNO 6.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  764.90 MAX ELLC=  761.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       763.20 ELREA=       763.20

          ROAD BRIDGE SECTION (F) AT MUSEL AVENUE

     6.00      11.40     759.20       0.0     759.22     759.44       0.24      0.00       0.01     765.00
    7000.         0.      7000.        0.         0.      1775.         0.      575.       118.     764.90
     0.74       0.0        3.94      0.0      0.080      0.040      0.080     0.040     747.80    2000.00
 0.000676         1.         1.        1.          0          0          0    -60.50     207.00    2207.00

*SECNO 6.100

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  765.00 MAX ELLC=  761.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       765.10 ELREA=       765.10

     6.10      12.25     759.25       0.0     759.23     759.47       0.22      0.02       0.01     765.00
    7000.         0.      7000.        0.         0.      1857.         0.      576.       118.     765.10
     0.74       0.0        3.77      0.0      0.080      0.040      0.080     0.040     747.00    2000.00
 0.000584        35.        35.       35.          2          0          0    -63.00     207.00    2207.00

*SECNO 6.200
   SECNO      DEPTH      CWSEL      CRTWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   0          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA      LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLCBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       765.10 ELREA=       765.10
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0.000521	1.	1.	1.	1	0	0	0.0	207.00	2207.00	

*SECNO 6.300

3470 ENCROACHMENT STATIONS=	1900.0	2307.0	TYPE=	1	TARGET=	407.000				
6.30	12.36	759.36	0.0	759.25	759.52	0.15	0.03	0.02	755.00	
7000.	385.	6000.	250.	386.	1943.	321.	581.	118.	755.50	
.75	0.09	3.20	0.79	0.050	0.025	0.050	0.040	747.00	1900.00	
0.000150	100.	100.	100.	2	0	0	0.0	407.00	2307.00	

CONV= .100 CELV= 0.500
*SECNO 7.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

7.00	12.19	759.79	0.0	759.76	760.05	0.26	0.50	0.03	754.10	
7000.	289.	6168.	544.	645.	1420.	723.	744.	172.	754.00	
0.93	0.05	4.34	0.75	0.050	0.025	0.050	0.036	747.60	1210.95	
0.000249	2775.	2555.	2625.	2	0	0	0.0	1318.85	2529.80	

THIS RUN EXECUTED 09/02/80

****
HEC2 RELEASE DATED NOV 76 UPDATED AUG1977
ERROR CORR = 01,02
MODIFICATION = 50,51,52,53
****

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

KAL/KAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLOC	ELMIN	Q	CWSEL	CRIWS	EG	IOK*S	VCH	AREA	.01K
1.000	760.00	0.0	0.0	746.50	7000.00	755.31	0.0	755.39	2.26	2.44	4060.19	4660.37
2.000	850.00	0.0	0.0	746.90	7000.00	755.55	0.0	755.59	2.16	1.90	5387.76	4765.59
3.000	2010.00	0.0	0.0	745.80	7000.00	756.10	0.0	756.35	6.97	4.17	2175.77	2652.36

3.900	900.00	0.0	0.0	748.40	7000.00	757.11	0.0	757.26	4.95	3.15	2395.37	3145.40
3.910	50.00	0.0	0.0	747.00	7000.00	757.16	0.0	757.29	3.83	2.88	2514.18	3577.60
4.000	1.00	0.0	0.0	747.00	7000.00	757.16	0.0	757.29	3.81	2.88	2517.26	3584.42
4.100	10.00	100000.00	100000.00	747.00	7000.00	757.41	0.0	757.53	3.43	2.79	2603.87	3778.16
4.200	1.00	0.0	0.0	747.00	7000.00	757.41	0.0	757.53	3.43	2.79	2603.96	3778.35
4.500	1000.00	0.0	0.0	748.40	7000.00	757.79	0.0	757.98	6.00	3.82	3560.04	2857.92
4.900	1755.00	0.0	0.0	748.40	7000.00	758.72	0.0	758.93	5.23	3.81	2277.68	3060.83
4.910	50.00	0.0	0.0	747.40	7000.00	758.83	0.0	758.95	2.55	2.78	2682.96	4381.82
5.000	1.00	0.0	0.0	747.40	7000.00	758.83	0.0	758.95	2.55	2.78	2683.17	4382.35
5.100	10.00	100000.00	100000.00	747.40	7000.00	758.93	0.0	759.05	2.47	2.75	2712.93	4456.66
5.200	1.00	0.0	0.0	747.40	7000.00	758.93	0.0	759.05	2.47	2.75	2713.00	4456.84
5.800	935.00	0.0	0.0	747.70	7000.00	759.18	0.0	759.40	4.96	3.73	1966.85	3143.62
5.900	65.00	0.0	0.0	747.80	7000.00	759.21	0.0	759.43	6.06	3.82	1834.82	2844.54
6.000	1.00	764.90	761.50	747.80	7000.00	759.20	0.0	759.44	6.76	3.94	1774.92	2691.41
6.100	35.00	765.00	761.40	747.00	7000.00	759.25	0.0	759.47	5.84	3.77	1857.40	2896.33
6.200	1.00	0.0	0.0	747.00	7000.00	759.27	0.0	759.48	5.21	3.64	1922.41	3067.05

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRTWS	EG	10K*S	VCH	AREA	.01K
6.300	100.00	0.0	0.0	747.00	7000.00	759.36	0.0	759.52	1.56	3.29	2650.18	5604.77
7.000	2555.00	0.0	0.0	747.60	7000.00	759.79	0.0	760.05	2.49	4.34	2788.75	4431.76

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.000	7000.00	755.31	0.0	0.0	0.0	796.90	760.00
2.000	7000.00	755.55	0.0	0.24	-0.00	1443.03	850.00
3.000	7000.00	756.10	0.0	0.55	-0.15	548.46	2010.00
3.730	7000.00	756.56	0.0	0.47	0.00	366.86	580.00
3.900	7000.00	757.11	0.0	0.55	0.11	370.00	900.00
3.910	7000.00	757.16	0.0	0.05	0.14	345.09	50.00
4.000	7000.00	757.16	0.0	0.00	0.13	345.15	1.00
4.100	7000.00	757.41	0.0	0.25	0.28	347.08	10.00
4.200	7000.00	757.41	0.0	0.0	0.27	347.08	1.00
4.500	7000.00	757.79	0.0	0.38	0.13	751.39	1000.00

4.910	7000.00	758.83	0.0	0.11	0.09	298.00	50.00
5.000	7000.00	758.83	0.0	0.00	0.08	298.00	1.00
5.100	7000.00	758.93	0.0	0.10	0.08	298.00	10.00
5.200	7000.00	758.93	0.0	0.0	0.07	298.00	1.00
5.900	7000.00	759.18	0.0	0.25	0.02	220.00	935.00
5.990	7000.00	759.21	0.0	0.03	-0.00	207.00	65.00
6.000	7000.00	759.20	0.0	-0.01	-0.02	207.00	1.00
6.100	7000.00	759.25	0.0	0.05	0.02	207.00	35.00
6.200	7000.00	759.27	0.0	0.02	0.03	207.00	1.00
6.300	7000.00	759.36	0.0	0.09	0.11	407.00	100.00
7.000	7000.00	759.79	0.0	0.43	0.03	1318.85	2555.00

UMMARY OF ERRORS

TE SECNO= 4.100 PROFILE= 1 WSEL BASED ON XS CARD

TE SECNO= 5.100 PROFILE= 1 WSEL BASED ON XS CARD

THIS RUN EXECUTED 09/02/80

****
HEC2 RELEASE DATED NOV 76 UPDATED AUG1977
ERROR CORR - 01,02
MODIFICATION - 50,51,52,53
****

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: DAVIS CREEK

4) DOCUMENT TYPE: WEIR FLOW CALCULATIONS

Weir Flow Calculations

```
*****************************************************************************
  BRIDGE SECTION 23  BROOKFIELD ROAD  100 YR MODEL
*****************************************************************************

  NUMBER OF POINTS=    4
STATION  ELEVATION
   1880.00   769.00
   2000.00   765.90
   2100.00   765.00
   2200.00   769.00
  WIDTH OF ROADWAY=    52.00
  DELY=        0.10
  WSMAX=     767.00
  QMAX=      400.00

  ROAD SURFACE:PAVED
```

Reviewed
9/23/8

****

BRIDGE SECTION 23 BROCKFIELD ROAD 100 YR MODEL

****

ELEVATION FEET	FLOW CFS	CAV	TOP WIDTH FEET	AREA SFT
765.00	0.0	0.0	0.	0.0
765.10	0.50	2.894	14.	0.68
765.20	2.86	2.923	27.	2.72
765.30	7.94	2.941	41.	6.11
765.40	16.40	2.957	54.	10.87
765.50	28.78	2.968	68.	16.98
765.60	45.52	2.976	82.	24.44
765.70	67.05	2.984	95.	33.27
765.80	93.77	2.990	109.	43.44
765.90	126.02	2.995	122.	54.98
766.00	163.92	3.005	129.	67.52
766.10	207.06	3.011	135.	80.70
766.20	255.25	3.015	142.	94.52
766.30	308.41	3.018	148.	108.97
766.40	366.54	3.021	154.	124.05
766.50	429.66	3.022	161.	139.76

MOORE BUSINESS FORM, INC 23

```
**********************************************************************************
  BRIDGE SECTION 24  SPRINGFIELD ROAD  100 YR MODEL
**********************************************************************************

  NUMBER OF POINTS=    5
STATION   ELEVATION
   1870.00   770.00
   2000.00   768.60
   2042.00   768.30
   2175.00   768.00
   2175.00   770.00
  WIDTH OF ROADWAY=    60.00
  DELY=          0.10
  WSMAX=       768.00
  QMAX=        400.00

  ROAD SURFACE:PAVED
```

MOORE BUSINESS FORMS INC 22

****
BRIDGE SECTION 24 SPRINGFIELD ROAD 100 YR MODEL
****

ELEVATION FEET	FLOW CFS	CAV.	TOP WIDTH FEET	AREA SFT
768.00	0.0	0.0	0.	0.0
768.10	1.60	2.895	44.	2.19
768.20	9.44	2.923	89.	8.94
768.30	25.94	2.942	133.	19.95
768.40	52.37	2.969	147.	33.92
768.50	87.46	2.985	161.	49.31
768.60	130.77	2.995	175.	66.10
768.70	181.45	3.005	184.	83.82
768.80	239.49	3.011	193.	102.45
768.90	307.24	3.015	203.	122.84
769.00	379.95	3.018	212.	143.30

****
BRIDGE SECTION 26 STEWART STREET 100 YR MODEL
****

NUMBER OF POINTS= 9

STATION	ELEVATION
1983.00	775.00
1983.00	772.60
2000.00	772.58
2005.50	772.58
2013.50	772.52
2022.00	772.47
2033.00	772.47
2043.00	772.50
2043.00	775.00

WIDTH OF ROADWAY= 22.00
DELY= 0.10
WSMAX= 774.00
QMAX= 400.00

ROAD SURFACE:PAVED

****

BRIDGE SECTION 26 STEWART STREET 100 YR MODEL

****

ELEVATION FEET	FLOW CFS	CAV	TOP WIDTH FEET	AREA SFT
772.47	0.0	0.0	0.	0.0
772.57	2.34	2.913	36.	2.74
772.67	9.66	2.944	60.	8.34
772.77	21.23	2.976	60.	14.33
772.87	35.79	2.998	60.	20.33
772.97	52.80	3.013	60.	26.32
773.07	71.88	3.022	60.	32.31
773.17	92.85	3.027	60.	38.30
773.27	115.53	3.031	60.	44.29
773.37	139.81	3.033	60.	50.28
773.47	165.67	3.037	60.	56.27
773.57	192.93	3.039	60.	62.26
773.67	221.45	3.040	60.	68.25
773.77	251.23	3.040	60.	74.25
773.87	282.22	3.040	60.	80.24
773.97	314.39	3.040	60.	86.23

MOORE BUSINESS FORMS INC 23

****
BRIDGE SECTION 27 TRAILOR PARK ROAD 100 YR MODEL
****

NUMBER OF POINTS= 9

STATION	ELEVATION
1900.00	778.00
1900.00	776.40
2000.00	775.08
2006.00	775.08
2016.00	775.10
2026.00	775.12
2034.00	775.12
2100.00	775.00
2100.00	778.00

WIDTH OF ROADWAY= 14.00
DELY= 0.10
WSMAX= 777.00
QMAX= 400.00

ROAD SURFACE:PAVED

ROCKE BUSINESS FORMS INC 29

****
BRIDGE SECTION 27 TRAILOR PARK ROAD 100 YR MODEL
****

ELEVATION FEET	FLOW CFS	CAV	TOP WIDTH FEET	AREA SFT
775.00	0.0	0.0	0.	0.0
775.10	2.16	2.889	102.	3.04
775.20	13.96	2.936	109.	13.12
775.30	34.41	2.968	117.	24.51
775.40	60.96	2.985	124.	36.35
775.50	94.38	2.999	132.	49.33
775.60	132.42	3.007	139.	62.55
775.70	177.45	3.011	147.	77.11
775.80	226.29	3.014	154.	91.72
775.90	282.81	3.017	162.	107.86
776.00	345.48	3.019	170.	124.85
776.10	410.79	3.022	177.	141.59

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN

00BREAK00

```
*****************************************************
HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
ERROR CORR -  01
MODIFICATION -  50,51,52
*****************************************************

T1CITY OF KALAMAZOO FIS       HUD 202707
T2ENCRIACHMENT RUN          2/25/80
T3       KALAMAZOO R. KALAMAZOO

J1  ICHECK    [illegible]    [illegible]    [illegible]    STRT    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]

      0.        5.        0.        0.  0.000000     0.00      0.0        0.   760.050     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    [illegible]    [illegible]**********    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
```

FORM 1411-GB-PRINTED BY ROTARY MANIFOLD FORMS. PRINTED IN U.S.A.

*PROF 2

CCHV= 0.100 CEHV= 0.300

*SECNO 7.236

7500 NAT 01= 4721.01 WSEL= 755.95 E G 01= 3726.9' WSEL= 7 0.1) RATIO= 0.3003

AT HIP 30.00 VELOCITIES (CHNL,LOB,ROB= 0.0145 0.0172 0.0179 WSEL= 760.0.

SECNO	DELTA	CHSEL	CHLS	LOSEL	LOB	ROB	HL	LOSS	QMAX ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TYA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XSL	XSCH	XSR	MIN	ELMIN	SSTA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100[illegible]	[illegible]	[illegible]	[illegible]

3470 ENCROACHMENT STATIONS= 7743.5 8350.9 TYPE= 4 TARGET= 0.025

VALLEY SECTION 300 FT. U/S OF TENTATIVE POINT OF DISPOSAL PLANT

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7590.	245.	6725.	424.	452.	1457.	505.	0.	0.	754.00
0.00	0.54	7.61	0.93	0.079	0.037	0.079	0.000	757.60	1740.50
0.000332	3.	3.	3.	3	3	3	0.00	560.30	2350.89

[illegible]

*SECNO 7.000

3265 DIVIDED FLOW

[illegible]

VALLEY SECTION APPROX. 1500 FT. U/S OF CITY BOUNDARY AT PLANT DISPOSAL

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.000324	1303.	7001.	1003.	2	3	4	0.00	765.20	1490.00

CCHV= 00 CEHV= 1.300

*SECNO [illegible]

7500 NAT 01= [illegible] E G 01= 3726.9 WSEL= [illegible] VEL= [illegible]

NAT 01= 4527. RATIOS LOB,CH,ROB= 0.0184 0.9759 0.0057 WSEL= 760.94

3470 ENCROACHMENT STATIONS= 1630.0 1640.0 TYPE= 4 TARGET= 0.015

VALLEY SECTION APPROX. 1500 FT. U/S OF CITY BOUNDARY AT PLANT DISPOSAL

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.10	16.44	760.94	0.02	760.96	761.12	1.10	0.20	0.32	760.60
7590.	17.	7325.	0.	173.	2112.	0.	141.	21.	754.00
0.20	0.05	3.47	0.01	0.100	0.336	0.329	0.32	746.50	1630.00
[illegible]	1.00	1.00	1.00			2	0.00	[illegible]	1630.00

*SECNO 6.207

3260 NAT 01= 5277.68 WSEL= 760.12 CRC E= 5752.20 WSEL= 761.62 RATIO= -0.0147

NAT 01= 5.62. RATIOS LOB,CH,ROB= 0.0300 1.0000 0.3003 WSEL= 761.32

3470 ENCROACHMENT STATIONS= 1502.0 [illegible] TYPE= 4 TARGET= 0.005

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,WSEL= 760.32 ELTRK= 774.0.

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D/S FACE OF PATTERSON RD. BRIDGE

7.20	5.33	767.03	0.00	760.92	761.15	0.15	0.31	0.02	769.23
7390.	0.	7390.	0.	0.	2592.	0.	145.	23.	766.10
0.0	0.0	1.3	3.0	0.00	0.31	1.29	1.032	769.20	1613.13
0.000030	0	0	0.	0	0	0	0.20	251.43	1866.55

*SECNO 9.300

2872 WAT 01= 6716.59 PSEL= 761.27 ENC 01= 7684.32 ASEL= 761.01 RATIO= 40.0480

[illegible]									
								TIDE	GATE LIFT
								TYP	LEFT/RIGHT
TIME	WLC3	VCS	JACO	KOIL	KMCP	KNR	P G	EL IP	SSTA
SLOPE	YLOOIL	XLCH	XLCOOR	STRCTL	CH2	CCONST	CCONJR	TCPUID	AMCST

[illegible]

3470 ENCROACHMENT STATIONS= 1632.0 1876.0 TYPE= 2 TARGET= 1.000

[illegible]

[illegible] D/S FACE PATTERSON RD. BRIDGE

[illegible]									
0.29	0.30	7.14	0.00	1.130	0.055	0.677	1.032	769.20	1613.13
0.000030	1.	1.	1.	0	0	0	-0.20	251.43	1866.55

[illegible]

3370 NORMAL DEPTH= 1. WSEL= 769.50 INV ELEV= 757.50

3470 [illegible] 1632.0 [illegible] 1876.0 [illegible] 2 [illegible] 0.000

3475 OVERBANK AREA ASSUMED NON-EFFECTIVE XR ELEV= 769.00 EL LOB= 774.30

[illegible]

[illegible]									
7390.	0.	7390.	0.	0.	2592.	0.	145.	23.	766.10
0.29	0.30	7.14	0.00	1.130	0.055	0.677	1.032	769.20	1613.13
0.000030	43.	43.	43.	0	0	0	-0.52	250.49	1866.55

[illegible]

[illegible]

2500 WAT 01= 3617.30 PSEL= 762.49 ENC 01= 763.20 ASEL= 761.02 RATIO= -0.3154

WAT 01= 5165. RATIOS LOB/CH/ROB= 2.0000 1.0000 2.0000 WSEL= 761.69

[illegible]

[illegible]

D/S FACE OF PATTERSON RD. FIELD

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FORM 1411-OB PRINTED BY ROTARY MANIFOLD FORMS.

9.50	16.34	761.04	0.00	760.93	761.17	0.15	0.03	3.05	763.20
7390.	0.	7390.	0.	0.	2665.	0.	946.	24.	768.11
0.21	0.00	2.85	0.00	0.100	0.035	0.079	0.032	744.70	1610.06
.000205	1.	1.	1.	1	0	0	0.0	351.52	1960.56

*SECNO 9.500
2000 NAT 01= 5039.33 HEC_n 760.95 ENC 01= 5173.04 .3CL= 761.00 .RATIO= -0.0146
NAT 01= 5174. RATIOS LOSSCLSRCD= 0.3000 1.0300 0.0000 .WSEL= 761.00

VALLEY SECT. APPROX. 50 FT. D/S OF PATTERSON RD. BRIDGE

9.50	16.35	761.05	0.30	760.95	761.10	0.13	3.04	0.00	763.20
7390.	0.	7390.	0.	0.	2665.	0.	946.	24.	768.11
0.21	0.00	2.85	0.30	0.100	0.035	0.079	0.032	744.70	1610.06
0.000205	1.	1.	1.	1	0	0	0.0	351.52	1960.56

CCHV= 0.100 CEHV= 0.300

VALLEY SECT. APPROX.

.00	[illegible]	[illegible]	9.63	[illegible]	[illegible]	[illegible]	6.19	1.01	[illegible]
7. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.03	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1.61	[illegible]	[illegible]	0.10	0.03	745.71	[illegible]
0.000213	303.	30.	300.	1		1	0.00	406.52	1472.30

[illegible]

11.10	[illegible]	[illegible]	1.03	[illegible]	[illegible]	[illegible]	[illegible]	5.07	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	91.	291.	[illegible]
5.74	1.35	6.52	1.72	0.001	0.035	0.107	0.035	741.56	1761.30
0.000210	1253.	75.	300.	0	1	1	0.02	217.47	1372.95

[illegible]
NAT 0.= 3233. RATIOS LOSSCRSRCD= 0.3000 1.0300 0.0000 WSEL= 761.03

3470 ENCROACHMENT STATIONS= 1155.5 1337.3 TYPE= 6 TARGET= 0.000

[illegible]

D/S FACE OF BULL ST. BRIDGE

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PRINTED IN U.S.A.

```
   11.20    11.95   761.45     0.00   761.36   761.72     0.27     0.03     0.01   757.50
   7390.       0.    7390.       0.       0.    1769.       0.     246.      36.   754.70
    0.34     0.00     4.16     0.00    0.080    0.035    0.130    0.035   749.50  1196.50
0.000543      50.      50.      50.        2        0        0     0.00   191.00  1367.50

*SECNO [illegible]
 2800 MAT 01=   2131.47  USEL=    761.41  ENC 01=   2227.11  USEL=    761.41  RATIO= -0.0149
 MAT 01=   2221.  RATIOS LOF,CH,ROB=  0.0000  1.0000  0.0000  USEL=    761.41

3370 [illegible]

3470 ENCROACHMENT STATIONS=    1196.5    1337.5  TYPE=     4  TARGET=       0.000

3695 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEN=      767.40 ELTEN=      766.00

        [illegible] GULL ST. BRIDGE

   11.30    11.90   761.70     0.00   761.31   761.77     0.27     0.03     0.05   757.50
   7390.       0.    7390.       0.       0.    1519.       0.     246.      36.   754.70
    [illegible]     0.30     [illegible]     0.30     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]
0.00[illegible]

*SECNO 11.400
 2800 MAT 01=   2431.80  USEL=    761.41  ENC 01=   2464.74  USEL=    761.51  RATIO= -0.0139
 [illegible]

3370 [illegible]

3470 ENCROACHMENT STATIONS=    1196.5    1337.5  TYPE=     4  TARGET=       0.000

[illegible]

        1 FT. INSIDE U/S FACE GULL ST. BRIDGE

   11.40    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
   7390.       0.    [illegible]       0.       0.    1519.       0.     246.      36.   [illegible]
    [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]     [illegible]
0.000529      41.      41.      41.        2        [illegible]        [illegible]   -261.29   191.00  1367.50

*SECNO 11.[illegible]
 [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]
 [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]

3470 ENCROACHMENT STATIONS=    1196.5    1337.5  TYPE=     4  TARGET=       0.000

[illegible]

        U/S FACE OF GULL ST. BRIDGE

   11.50    12.92   761.62     0.00   761.53   761.85     0.23     0.00     0.05   757.00
   7390.       0.    7390.       0.       0.    1519.       0.     246.      36.   754.70
    0.[illegible]     0.[illegible]     0.00     0.[illegible]     0.[illegible]     0.[illegible]     [illegible]     [illegible]     [illegible]     [illegible]
0.000[illegible]       1.       1.       1        [illegible]        [illegible]        [illegible]     [illegible]     [illegible]     [illegible]

*SECNO 11.[illegible]
```

SECNO	DEPTH	CHSEL	CRIMS	HSELK	EG	NV	AL	CLOSS	BANK ELEV
Q	Q_OB	PCH	QTOB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VTOB	XNL	XNCH	ANR	STN	ELMIN	SSTA
SLOPE	XLOBL	XLCF	XLOBR	ITRIAL	IHS	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 1148.0 1640.0 TYPE= 1 TARGET= 754.000

VALLEY SECT. APPROX. 30 FT. D/S OF GULL ST.

11.00	11.00	7.17	3.53	53.00	7.17	0.00	0.0	0.0	750.00
7390.	0.	7203.	1.	11.	1.00	0.	250.	22.	750.00
0.35	3.52	3.47	3.22	0.000	0.355	0.000	0.355	745.70	1147.72
0.000396	30.	50.	50.	1	1	0	0.00	197.33	1351.03

3470 ENCROACHMENT STATIONS= 1089.0 1625.0 TYPE= 1 TARGET= 754.000

VALLEY SECT. APPROX. 30 FT. D/S OF GULL ST.

11.00	11.00	7.17	3.53	53.00	7.17	0.00	0.0	0.0	750.00
7393.	250.	7193.	41.	433.	2050.	71.	274.	35.	750.00
0.39	3.47	3.47	3.55	0.000	0.350	0.000	0.353	745.57	1049.0
0.000137	250.	500.	550.	0	0	0	0.00	327.24	1406.24

3470 ENCROACHMENT STATIONS= 377.0 1156.0 TYPE= 1 TARGET= 779.030

11.00	11.	7.17	3.53	53.00	7.17	0.00	0.0	0.0	755.00
7390.	41.	7203.	101.	433.	2060.	68.	250.	45.	755.00
7.44	7.55	5.49	0.41	0.130	0.033	0.137	0.033	747.66	1006.71
0.000432	307.	601.	601.	2	1	2	0.00	244.10	1351.03

3470 ENCROACHMENT STATIONS= 87.0 1243.0 TYPE= 1 TARGET= 1156.000

12.00	14.36	761.08	0.00	761.08	762.10	0.10	0.21	0.01	755.33
7390.	41.	7203.	0.	0.	2050.	0.	0.	0.	750.00
0.13	0.00	0.	0.07	0.00	0.000	0.00	0.00	747.00	1051.0
1.000033	0.	50.	50.	0	0	0	0.00	252.50	1303.5

TOTAL REACH

1.05	1.50	2.60	0.25	100.0	29.01	715.0	0.25	751.30	755.01

SECNO 12.0

PRESSURE FLOW

EGPRS	EGL.C	HS	CJEIR	BPR	BAREA	TRAPEZOID	ELLC	ELTRD
762.52	762.57	0.82	2.	2240.	17.8.	1217.	762.70	762.81

DATA ENCROACHMENT STATION.S= 87.0 1259.0 TYPE= 1 TARGET= 1150.000

U/S FACE OF R.R. BRIDGE N.O.F MICHIGAN AVE.

2.50	0.	762.1	0.01	762.2	762.5	0.28	0.00	0.00	762.70
0.0		7.0			13.2	0.	2.6.	96.	762.70
0.56	0.00	3.77	0.00	0.150	0.250	0.150	0.032	791.30	893.00
0.000376	21.	21.	21.	2			0.00	252.00	1149.00

SECNO	DEPTH	CASE	CRITS	WSEL	EG	HL	AL	CLOSS	DARK ELEV
C	FLOW	PCH	CROF	FLOD	ACT	UPCO	VOL	TIK	LE T/RIGHT
TRIE	WLOW	WCH	CHOK	[illegible]	XI CH	KK.E	CTW	CURV	SSTA
[illegible]			[illegible]						

3670 ENCROACHMENT STATIONS= 355.0 1147.0 TYPE= 4 TARGET= 0.000

7395.	0.	7390.	0.	0.	7392.	0.	0.0	44.	753.90
0.15	0.00	3.79	0.00	0.150	0.250	0.150	0.032	791.30	893.00
0.000379	50.	30.	30.	0	0	0	0.00	454.00	1147.00

[illegible]

ASECNO 13.100

3470 ENCROACHMENT STATIONS= 730.0 926.0 TYPE= 1 TARGET= 195.000

[illegible] 50 FT. U/S OF R.R. BRIDGE

13.10	13.42	762.32	0.01	762.23	762.52	0.11	0.00	0.01	753.90
7390.	4.	7364.	8.	15.	7360.	0.	2.0.	90.	751.00
0.47	3.29	3.42	3.33	0.150	0.000	0.000	0.032	740.90	740.29
7.00	302.	0..	302.	3			0.01	0.27	0.0.

ASECNO 13.200

PROV WSEL= 5713.79 WSEL= 762.24 EG EL= 3509.77 KS.L= 762.34 RATIO= -0.0156

RATIO= 5579. RATIOS LO.CP.PCO= 0.300 0.500 0.0021 WSEL= 762.56

[illegible]

3695 OVERBANK AREA ASSUMED NON-EFFECTIVE/BLOCKED= 767.30 E.REQ= 767.33

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D/S FACE OF MICHIGAN AVE. BRIDGE

13.20	13.43	762.33	0.00	762.24	762.51	0.10	0.01	0.30	754.90
7390.	0.	7390.	0.	0.	2162.	0.	331.	46.	756.20
0.40	0.11	3.42	1.00	0.100	0.032	0.060	0.032	740.90	744.30
0.000197	0.	41.	30.	3		0	0.30	180.70	925.00

*SECNO 13.300
2000 NAT Q1= 1600.00 WSEL= 762.15 ENC Q1= 1695.47 WSEL= 762.15 RATIO= -0.0092

[illegible]

3370 NORMAL BRIDGE [illegible] MAX [illegible]= 755.30

3470 ENCROACHMENT STATIONS= 746.3 925.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELEA= [illegible] ELEA= 767.30

1 FT. INSIDE D/S FACE MICHIGAN AVE. BRIDGE (SKEWED 40 DEGREES)

[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.10	[illegible]	0.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.001955	1.	1.	1.	2	0	0	-695.45	180.70	925.00

[illegible]

3370 NORMAL BRIDGE, WKD= 17 MIN [illegible]= 756.20 MAX [illegible]= 755.30

[illegible]

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELEA= [illegible] ELEA= 767.30

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	[illegible]
7390.	0.	7390.	0.	0.	1239.	0.	332.	46.	756.20
0.40	1.00	3.96	1.00	0.100	0.032	0.060	0.032	741.90	744.30
0.001733	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]	-906.00	180.70	925.00

*SECNO [illegible]
2800 NAT Q1= 5520.[illegible] WSEL= 762.56 ENC Q1= 5594.[illegible] WSEL= [illegible] RATIO= -0.0131
NAT Q1= 5695. RATIOS LOW, CHANGE= 1.0000 1.0000 0.0000 WSEL= 762.70

SECNO	DEPTH	CUSE	CRIMS	WSEL	ES	HW	HL	DLOSS	BANK ELEV
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

3470 ENCROACHMENT STATIONS= 746.3 925.0 TYPE= [illegible] TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELEA= [illegible] ELEA= 767.30

[illegible]

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13.55	13.84	762.74	0.00	762.66	762.91	0.17	0.05	0.11	754.90	
7390.	0.	7390.	0.	0.	2237.	0.	332.	46.	756.20	
0.58	0.00	3.30	0.00	0.100	0.330	0.080	0.032	748.92	744.30	
0.000177		1.	1.	2	0	1	0.03	748.92	735.00	

*SECNO 13.000
2000 NAT Q1= 3252.80 WSEL= 762.74 ENC Q1= 3295.07 XCL= 762.74 XRATIO= -0.0080
NAT Q1= 5319. RATIOE LOB,CH,ROB= 0.0031 0.2955 0.0013 WSE= 762.74

VALLEY SECT. 30' D/S OF MICHIGAN AVE (U.S. 12) (STORES 90 DEGREES)

13.03	16.02	762.72	0.00	762.64	762.89	0.25	0.07	0.03	755.10
7390.	0.	7390.	0.	0.	2237.	0.	332.	46.	757.20
0.53	0.00	3.30	0.00	0.100	0.330	0.080	0.032	748.92	744.30
0.000177		1.	1.	2	0	1	0.03	748.92	735.00

CCHV= 0.300 CEL= 0.500
SELECTED Q 13.000

VALLEY SECT. APPROX. 50 FT. W/S OF MILL ST.

11.20	14.45	761.71	0.30	762.10	762.26	0.18	0.01	0.06	753.80
7390.	0.	7390.	0.	0.	2237.	0.	332.	46.	756.20
0.53	0.00	3.30	0.00	0.100	0.330	0.080	0.032	748.92	744.30
0.000177		1.	1.	2	0	1	0.03	748.92	735.00

3470 ENCROACHMENT STATIONS= 1204.0 2204.0 TYPE= 4 INCREMENT 0.200

D/S FACE OF MILL ST. BRIDGE

11.20	14.45	761.71	0.30	762.10	762.26	0.18	0.01	0.06	753.80
7390.	0.	7390.	0.	0.	2237.	0.	332.	46.	756.20
0.53	0.00	3.30	0.00	0.100	0.330	0.080	0.032	748.92	744.30
0.000177		1.	1.	2	0	1	0.03	748.92	735.00

*SECNO 14.300
2000 NAT Q1= 3252.80 WSEL= 762.74 ENC Q1= 3295.07 XCL= 762.74 XRATIO= -0.0080
NAT Q1= 5319. RATIOE LOB,CH,ROB= 0.0031 0.2955 0.0013 WSE= 762.74

3370 HORIZ BRIDGE,NRD= 25. IC ELTRD= 765.00 MAX FLOC= 765.00

3470 ENCROACHMENT STATIONS= 1204.0 2204.0 TYPE= 4 INCREMENT 0.200

D/S FACE OF MILL ST. BRIDGE

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14.30	14.10	732.90	0.00	762.68	763.31	0.54	0.00	0.00	755.00
5910.	3.	5910.	0.	0.	1484.	0.	395.	51.	731.30
3.59	0.00	1.66	3.03	0.060	0.032	0.120	0.232	740.80	1284.00
0.001159			1.	2		L	-524.52	750.0	1284.01

*SECTO 14.403

2430 NAT GT= 2080.19 WSEL= 762.91 ENC GT= 2090.32 MSEL= 763.01 KNTIC= -3.0349

NAT GT= 2331. PRIOR LOB,CH,ROB= 2.0300 1.0000 0.2000 TWSEL= 763.11

SLOPE	XLOBL	XLCH	XLOBR	STRICKL	INF	CBCH	CBRAT	TCPMIN	EDDY

3470 ENCROACHMENT STATIONS= 1234.0 1464.0 TYPE= 4 TRADL?= 0.003

14.40 13.41 762.11 0.30 762.91 763.30 0.53 0.51 0.00 755.10

0.000									

*SECNO 15.500

3470 ENCROACHMENT STATIONS= 1234.0 1464.0 TYPE= 4 TRADL?= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.WSEL= 766.30 ELREA= 756.40

14.50 13.43 763.03 3.03 763.13 763.4 0.18 0.01 0.03 755.10

6510.	2.	2917.	0.	0.	2335.	0.	396.	51.	737.42
2.79	1.51	1.59	3.03	0.063	0.032	0.121	0.232	740.80	1284.00
0.000			1.	2	1		0.00	0.00	1284.00

*SECNO 16.000

14.60 13.46 763.24 0.30 763.16 763.42 0.53 0.51 0.00 753.10

6910.	25.	6191.	5.	35.	2042.	17.	399.	52.	737.40
0.75	0.45	0.97	0.29	0.260	0.030	0.120	0.231	740.80	1284.52
0.000	0	30	30.	2	0	0	0.00	1282.32	1289.16

CCHV= 0.100 CENV= 0.300

*SECNO 16.500

3670 ENCROACHMENT STATIONS= 1225.0 1750.0 TYPE= 1 TARGET= 525.000

VALLEY SECT. APPROX. 1450 FT. U/S OF MILLS ST. BRIDGE

[illegible]	12.00	761.57	1.00	761.41	760.61	0.71	0.13	.00	761.80
67.	51.	130.	76.	733.	427.	34.	461.	68.	[illegible]
0.73	0.60	2.72	0.28	0.050	0.130	0.120	.032	743.76	1225.00
0.000697	1150.	1400.	1450.	0	0	0	0.20	565.00	1750.00

[illegible]

3670 ENCROACHMENT STATIONS= 1530.0 1702.0 TYPE= 1 TARGET= 202.000

[illegible] 1450 FT. U/S OF MILLS STREET

[illegible]	6.37	760.13	1.00	759.93	759.72	0.10	0.11	.00	760.03
6910.	37.	859.	23.	101.	2621.	65.	377.	72.	756.03
0.39	0.66	2.02	0.24	0.050	0.130	0.120	0.051	742.62	1500.00
0.000078	900.	1325.	1450.	2	0	0	0.20	202.00	1702.00

[illegible]

SEC.NO	DCPT1	CRSEL	CRL.S	WSPEL	EG	FV	TL	OLOSS	ENRG ELEV
Q	ELOT	ICH	30C:	WLOS	WSI	WTOT	WSL	T A	LEFT/RIGHT
TYPE	VLO	JCH	WSEL	K.IL	KNC:	K.H	:TH	LLEIR	SST:
[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

3670 ENCROACHMENT STATIONS= 1530.0 2367.0 TYPE= 1 TARGET= 1924.000

[illegible]

U/S FACE OF T.R.UNIDEN

18.20	25.62	783.42	0.00	783.93	783.23	0.17	.00	0.00	783.40
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.80	1.03	1.32	0.20	0.050	0.130	0.120	.026	783.42	1916.00
[illegible]	[illegible]	[illegible]	[illegible]	1	0	0	[illegible]	1702.00	1924.00

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.25	1.55	2.10	0.10	161.03	37.40	[illegible]	0.000	783.30	783.42

ASECAO 13.600

[illegible]

[illegible] [illegible] CALCULATED CRITICAL FLOW [illegible]

EGPRS	EGLOC	HH	QLEIR	SPR	BAREA	TWAP/CLW	ELLC	ELTRD
						AREA		
0.00	[illegible]	[illegible]	[illegible]	3970.	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

3675 OVERBANK AREA ASSUMED NON-EFFECT.OF CLOSING= 765.62 ELBLA= 765.62

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U/S FACE OF R.R.BRIDGE

16.40	20.10	763.68	0.00	763.59	763.73	0.10	0.05	0.00	753.40
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.70	0.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	763.50	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0.00	177.10	[illegible]

*SECTION 16.300

3470 [illegible] TYPE= [illegible] TARGET= [illegible]

VALLEY SECT. APPROX. 30 FT. OF R.R. BRIDGE

16.50	17.77	763.67	0.00	763.53	763.83	0.10	0.00	0.02	756.20
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	0.00	[illegible]	[illegible]

CCRV= 0.100 CERV= [illegible]

*SECTION 17.[illegible]

[illegible]

3470 ENCROACHMENT STATIONS= [illegible] 95.1 TYPE= 4 TARGET= 0.012

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.97	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	747.30	2.10
[illegible]	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	0.00	[illegible]	[illegible]

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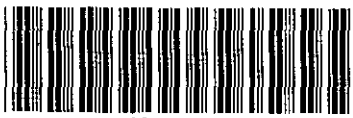

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR ENCROACHED RUN - downstream



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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************
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T1      KALAMAZOO TOWNSHIP
T2      ENCROACHMENT RUN
T3      KALAMAZOO RIVER
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	-10.	6.	0.	0.	0.000000	0.00	0.0	0.	755.390	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*PROF 2

CCHV= .100 CEHV= .300

*SECNO .000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV	
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	
3470 ENCROACHMENT STATIONS=			1915.0	2293.0	TYPE=	1	TARGET=	378.000		
0.00	11.09	755.39	0.00	755.29	755.60	.21	0.00	0.00	749.60	
7420.	482.	6343.	595.	397.	1626.	489.	0.	0.	749.60	
0.00	1.21	3.90	1.22	.070	.035	.070	0.000	744.30	1915.00	
.000456	0.	0.	0.	0	0	0	0.00	378.00	2293.00	

*SECNO 1.000

3470 ENCROACHMENT STATIONS= 1767.0 2444.0 TYPE= 1 TARGET= 677.000

VALLEY SECTION (A) AT DOWNSTREAM STUDY LIMITS -- I.E. G AVENUE

1.00	9.25	755.75	0.00	755.31	755.83	.08	.23	.01	749.70
7420.	1346.	6031.	43.	1584.	2447.	61.	55.	9.	749.80
.10	.85	2.47	.69	.070	.035	.070	.035	746.50	1767.00
.000214	625.	760.	905.	1	0	0	0.00	677.00	2444.00

*SECNO 2.000

3470 ENCROACHMENT STATIONS= 1560.0 2732.0 TYPE= 1 TARGET= 1172.000

VALLEY SECTION (B)

2.00	9.08	755.98	0.00	755.55	756.02	.04	.18	.00	750.40
7420.	963.	5610.	847.	1454.	2978.	1025.	163.	30.	750.30

MOORE BUSINESS FORMS, INC. 23

MOORE BUSINESS FORMS, INC 23

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      .25       .66      1.88       .83      .070      .035      .070      .034    746.90   1560.00
  .000190   1270.      850.      800.         2         0         0      0.00   1172.00   2732.00

*SECNO 3.000

3470 ENCROACHMENT STATIONS=     1916.0     2515.0  TYPE=       1  TARGET=      599.000

          VALLEY SECTION (C)

     3.00     10.66    756.46      0.00    756.25    756.71       .25       .63       .06    751.40
     7420.      303.     6756.      362.      292.     1616.      478.      329.       67.    751.10
      .39      1.04      4.18       .76      .080      .040      .080      .038    745.80   1916.00
  .000662   1290.      2010.     2010.         2         0         0      0.00    599.00   2515.00

*SECNO 3.700
     SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL     QLOSS   BANK ELEV
         Q      QLOB       QCH      QROB      ALOB       ACH      AROB       VOL       TWA  LEFT/RIGHT
      TIME      VLOB       VCH      VROB       XNL      XNCH       XNR       WTN    ELMIN       SSTA
     SLOPE     XLOBL      XLCH     XLOBR    ITRIAL       IDC    ICONT     CORAR    TOPWID      ENDST

3470 ENCROACHMENT STATIONS=     2016.0     2391.0  TYPE=       1  TARGET=      375.000
      3.70      8.50    756.90      0.00    756.56    757.09       .18       .37       .01    751.80
     7420.      101.     7261.       58.       90.     2087.       85.      360.       73.    751.80
      .44      1.12      3.48       .68      .080      .040      .080      .038    748.40   2016.00
  .000626   700.      580.      410.         2         0         0      0.00    375.00   2391.00

*SECNO 3.900

3470 ENCROACHMENT STATIONS=     2019.0     2324.0  TYPE=       1  TARGET=      305.000
      3.90      9.04    757.44      0.00    757.00    757.60       .16       .51       .00    751.80
     7420.       93.     7327.         0.       87.     2241.         0.      407.       80.  100000.00
       .52      1.07      3.27       0.00      .080      .040      .080      .038    748.40   2019.00
  .000516   1300.      900.      490.         2         0         0      0.00    305.00   2324.00

*SECNO 3.910

3470 ENCROACHMENT STATIONS=     2030.0     2334.0  TYPE=       1  TARGET=      304.000
      3.91     10.49    757.49      0.00    757.02    757.63       .14       .02       .00    751.80
     7420.         0.     7420.         0.         0.     2509.         0.      410.       80.  100000.00
       .52      0.00      2.96       0.00      .080      .040      .080      .038    747.00   2030.00
  .000400     50.       50.       50.         2         0         0      0.00    304.00   2334.00

*SECNO 4.000

3470 ENCROACHMENT STATIONS=     2030.0     2334.0  TYPE=       1  TARGET=      304.000

          RAILROAD BRIDGE SECTION (D)

     4.00     10.49    757.49      0.00    757.03    757.63       .14      0.00       .00    751.80
     7420.         0.     7420.         0.         0.     2509.         0.      410.       80.  100000.00
       .52      0.00      2.96       0.00      .080      .040      .080      .038    747.00   2030.00
  .000400      1.        0.        1.         0         0         0      0.00    304.00   2334.00
```

SPECIAL BRIDGE

SB	XK	XKOR	CUFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.95	1.50	3.00	0.00	300.00	36.00	4224.00	2.34	752.00	752.00

*SECNO 4.100
WATER EL=X5 CARD= 757.743

3470 ENCROACHMENT STATIONS=			2030.0	2334.0	TYPE=	1	TARGET=	304.000		
	4.10	10.74	757.74	0.00	757.13	757.87	.13	.00	.00	751.80
	7420.	0.	7420.	0.	0.	2585.	0.	411.	80.	100000.00
	.52	0.00	2.87	0.00	.080	.040	.080	.038	747.00	2030.00
	.000363	10.	10.	10.	0	0	0	0.00	304.00	2334.00

*SECNO 4.200

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

3470 ENCROACHMENT STATIONS=			2030.0	2334.0	TYPE=	1	TARGET=	304.000		
	4.20	10.74	757.74	0.00	757.14	757.87	.13	.00	.00	751.80
	7420.	0.	7420.	0.	0.	2585.	0.	411.	80.	100000.00
	.52	0.00	2.87	0.00	.080	.040	.080	.038	747.00	2030.00
	.000363	1.	1.	1.	0	0	0	0.00	304.00	2334.00

*SECNO 4.500

4.50	9.74	758.14	0.00	757.76	758.28	.14	.40	.00	748.90
7420.	3002.	4316.	102.	2604.	1130.	90.	469.	89.	752.50
.62	1.15	3.82	1.13	.080	.040	.080	.039	748.40	1491.48
.000568	500.	1000.	1000.	2	0	0	0.00	778.25	2269.72

*SECNO 4.900

3470 ENCROACHMENT STATIONS=			1991.0	2254.0	TYPE=	1	TARGET=	263.000		
	4.90	10.64	759.04	0.00	758.70	759.27	.23	.97	.03	751.60
	7420.	483.	6889.	49.	393.	1729.	48.	589.	110.	752.50
	.74	1.23	3.98	1.01	.080	.040	.080	.039	748.40	1991.00
	.000548	1735.	1735.	1735.	2	0	0	0.00	263.00	2254.00

*SECNO 4.910

3470 ENCROACHMENT STATIONS=			2032.0	2280.0	TYPE=	1	TARGET=	248.000		
	4.91	11.77	759.17	0.00	758.74	759.30	.13	.02	.01	752.60
	7420.	25.	7395.	0.	37.	2542.	0.	592.	110.	100000.00
	.75	.66	2.91	0.00	.080	.040	.080	.039	747.40	2032.00
	.000277	50.	50.	50.	2	0	0	0.00	248.00	2280.00

*SECNO 5.000

3470 ENCROACHMENT STATIONS=	2023.0	2282.0	TYPE=	1	TARGET=	259.000

MOORE BUSINESS FORMS, INC. 23

RAILROAD BRIDGE SECTION (E)

5.00	11.77	759.17	0.00	758.75	759.30	.13	.00	.00	752.60
7420.	68.	7347.	5.	85.	2542.	13.	592.	110.	752.50
.75	.80	2.89	.41	.080	.040	.080	.039	747.40	2023.00
.000264	1.	1.	1.	0	0	0	0.00	259.00	2282.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.95	1.50	3.00	0.00	175.00	30.00	2790.00	5.79	747.20	747.20

*SECNO 5.100
WATER EL=X5 CARD= 759.274

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

3470 ENCROACHMENT STATIONS= 2023.0 2282.0 TYPE= 1 TARGET= 259.000

5.10	11.87	759.27	0.00	758.85	759.40	.13	.00	.00	752.60
7420.	69.	7346.	5.	87.	2566.	13.	592.	110.	752.50
.75	.79	2.86	.40	.080	.040	.080	.039	747.40	2023.00
.000255	10.	10.	10.	0	0	0	0.00	259.00	2282.00

*SECNO 5.200

3470 ENCROACHMENT STATIONS= 2031.0 2280.0 TYPE= 1 TARGET= 249.000

5.20	11.87	759.27	0.00	758.86	759.40	.13	.00	.00	752.60
7420.	30.	7390.	0.	44.	2567.	0.	592.	110.	100000.00
.75	.69	2.88	0.00	.080	.040	.080	.039	747.40	2031.00
.000268	1.	1.	1.	0	0	0	0.00	249.00	2280.00

*SECNO 5.800

3470 ENCROACHMENT STATIONS= 2006.0 2198.0 TYPE= 1 TARGET= 192.000

5.80	11.85	759.55	0.00	759.16	759.78	.23	.35	.03	752.30
7420.	0.	7420.	0.	0.	1915.	0.	641.	115.	100000.00
.82	0.00	3.88	0.00	.080	.040	.080	.040	747.70	2006.00
.000559	760.	935.	1040.	2	0	0	0.00	192.00	2198.00

*SECNO 5.900

3470 ENCROACHMENT STATIONS= 2000.0 2207.0 TYPE= 1 TARGET= 207.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 763.20 ELREA= 763.20

5.90	11.79	759.59	0.00	759.21	759.82	.23	.04	.00	765.00
7420.	0.	7420.	0.	0.	1913.	0.	644.	115.	100000.00
.82	0.00	3.88	0.00	.080	.040	.080	.040	747.80	2000.00
.000595	65.	65.	65.	1	0	0	0.00	207.00	2207.00

MOORE BUSINESS FORMS, INC 23

CCHV= .300 CEHV= .500
*SECNO 6.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 764.90 MAX ELLC= 761.50

3470 ENCROACHMENT STATIONS= 2000.0 2207.0 TYPE= 1 TARGET= 207.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 763.20 ELREA= 763.20

ROAD BRIDGE SECTION (F) AT MOSEL AVENUE

6.00	11.78	759.58	0.00	759.22	759.83	.25	.00	.01	765.00
7390.	0.	7390.	0.	0.	1851.	0.	644.	115.	100000.00
.82	0.00	3.99	0.00	.080	.040	.080	.040	747.80	2000.00
.000829	1.	1.	1.	0	0	0	-62.46	207.00	2207.00

*SECNO 6.100

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

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 765.00 MAX ELLC= 761.40

3470 ENCROACHMENT STATIONS= 2000.0 2207.0 TYPE= 1 TARGET= 207.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 765.10 ELREA= 765.10

6.10	12.63	759.63	0.00	759.23	759.86	.23	.03	.01	765.00
7390.	0.	7390.	0.	0.	1935.	0.	645.	115.	100000.00
.82	0.00	3.82	0.00	.080	.040	.080	.039	747.00	2000.00
.000724	35.	35.	35.	2	0	0	-65.01	207.00	2207.00

*SECNO 6.200

3470 ENCROACHMENT STATIONS= 2000.0 2207.0 TYPE= 1 TARGET= 207.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 765.10 ELREA= 765.10

6.20	12.65	759.65	0.00	759.24	759.87	.21	.00	.00	765.00
7390.	0.	7390.	0.	0.	2002.	0.	645.	115.	100000.00
.82	0.00	3.69	0.00	.080	.040	.080	.039	747.00	2000.00
.000509	1.	1.	1.	1	0	0	0.00	207.00	2207.00

*SECNO 6.300

3470 ENCROACHMENT STATIONS= 1900.0 2307.0 TYPE= 1 TARGET= 407.000

6.30	12.75	759.75	0.00	759.25	759.91	.15	.03	.02	755.00
7390.	395.	6694.	300.	425.	2025.	360.	651.	116.	755.50
.83	.93	3.31	.84	.050	.025	.050	.039	747.00	1900.00
.000149	100.	100.	100.	2	0	0	0.00	407.00	2307.00

MOORE BUSINESS FORMS, INC. 23

CCHV= .100 CEHV= .300
*SECNO 7.000,

3470 ENCROACHMENT STATIONS= 1707.0 2317.0 TYPE= 1 TARGET= 610.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

7.00	12.56	760.16	0.00	759.76	760.42	.26	.48	.03	754.10
7390.	362.	6455.	573.	527.	1473.	547.	811.	147.	754.00
1.01	.69	4.38	1.05	.050	.025	.050	.036	747.60	1707.00
.000242	2775.	2555.	2625.	2	0	0	0.00	610.00	2317.00

MOORE BUSINESS FORMS, INC. 73

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100 YR ENCROACHED
- upstream

00BREAK00

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02,03
  MODIFICATION -  50,51,52,53
**************************************************

T1      KALAMAZOO TOWNSHIP
T2      ENCROACHMENT RUN
T3      KALAMAZOO RIVER

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
     -10.       5.         0.         0.  0.000000       0.00       0.0        0.     763.680      0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    15.000     0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

*PROF 2

CCHV=    .100 CEHV=    .300
*SECNO 8.000
 2800 NAT Q1=    3463.37  WSEL=     763.58  ENC Q1=    3463.37  WSEL=     763.68  RATIO=  0.0000
 NAT Q1=    3505.  RATIOS LOB,CH,ROB=    .0089    .9786    .0125  WSEL=     763.68
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS      BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA   LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

3470 ENCROACHMENT STATIONS=       4.7       97.5  TYPE=      4  TARGET=         .012
        VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY (H)

      8.00      16.68     763.68       0.00     763.58     764.18       .50       0.00       0.00     754.50
      6910.      20.       6849.       41.       29.       1197.      48.         0.         0.       753.30
       0.00       .68       5.72       .86       .080       .030       .080     0.000     747.00       4.69
   .000399     1650.     1400.      700.          0          0          0       0.00      92.80      97.49

CCHV=    .300 CEHV=    .500
*SECNO 8.900
 2800 NAT Q1=    4607.01  WSEL=     764.31  ENC Q1=    4607.01  WSEL=     764.41  RATIO=  0.0000
 NAT Q1=    4671.  RATIOS LOB,CH,ROB=    .0211    .9692    .0097  WSEL=     764.41

3470 ENCROACHMENT STATIONS=       6.1      161.2  TYPE=      4  TARGET=         .014
        VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE (I)

      8.90      15.02     764.42       0.00     764.31     764.66       .24        .40        .08     754.90
      6900.      102.      6783.       14.       118.      1713.      28.        49.         4.       754.60
       .10        .87       3.96       .50       .080       .030       .080       .030     749.40       6.09
   .000224     1300.     1350.      1400.          2          0          0       0.00     155.08     161.17
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*SECNO 9.000
2800 NAT Q1= 5392.75 WSEL= 764.43 ENC Q1= 5466.54 WSEL= 764.53 RATIO= -.0137
NAT Q1= 5467. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 764.53

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

D/S FACE OF KING HWY. BRIDGE (J)

9.00	15.35	764.55	0.00	764.43	764.70	.15	.01	.03	769.00
6900.	0.	6900.	0.	0.	2235.	0.	51.	4.	768.80
.10	0.00	3.09	0.00	.080	.030	.080	.030	749.20	0.00
.000159	50.	50.	50.	2	0	0	0.00	190.00	190.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	3.00	0.00	159.00	6.00	1975.00	0.00	751.30	749.20

*SECNO 9.100
2800 NAT Q1= 5305.12 WSEL= 764.56 ENC Q1= 5378.31 WSEL= 764.66 RATIO= -.0138
NAT Q1= 5378. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 764.66
WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

U/S FACE OF KING HWY. BRIDGE

9.10	13.38	764.68	0.00	764.56	764.83	.15	.01	.00	769.00
6900.	0.	6900.	0.	0.	2218.	0.	54.	4.	768.80
.11	0.00	3.11	0.00	.080	.030	.080	.030	751.30	0.00
.000164	56.	56.	56.	0	0	0	0.00	190.00	190.00

CCHV= .100 CEHV= .300
*SECNO 9.200
2800 NAT Q1= 5311.17 WSEL= 764.57 ENC Q1= 5384.69 WSEL= 764.67 RATIO= -.0138
NAT Q1= 5385. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 764.67

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

VALLEY SECTION 50 FT. U/S OF KING HWY. BRIDGE (K)

9.20	13.39	764.69	0.00	764.57	764.84	.15	.01	.00	769.00
6900.	0.	6900.	0.	0.	2220.	0.	56.	4.	768.80
.11	0.00	3.11	0.00	.080	.030	.080	.030	751.30	0.00
.000163	50.	50.	50.	0	0	0	0.00	190.00	190.00

*SECNO 9.500

3470 ENCROACHMENT STATIONS= 1800.0 2300.0 TYPE= 1 TARGET= 500.000

9.50	13.43	764.93	0.00	764.82	764.99	.07	.15	.01	755.50

MOORE BUSINESS FORMS INC 27

6900.	1396.	5086.	417.	1866.	2166.	713.	158.	15.	754.70
.29	.75	2.35	.59	.080	.030	.080	.030	751.50	1800.00
.000088	1225.	1275.	1325.	2	0	0	0.00	500.00	2300.00

*SECNO 10.000

3470 ENCROACHMENT STATIONS= 2002.4 2500.0 TYPE= 1 TARGET= 497.600

VALLEY SECT. JUST D/S OF WESTERLY OXBOW (L)

10.00	13.38	764.98	0.00	764.87	765.08	.10	.08	.01	755.40
6900.	17.	5519.	1364.	32.	1950.	1952.	232.	23.	754.60
.38	.52	2.83	.70	.080	.030	.080	.030	751.60	2002.40
.000129	800.	750.	700.	2	0	0	0.00	497.60	2500.00

*SECNO 11.000
2800 NAT Q1= 5816.45 WSEL= 765.04 ENC Q1= 5816.45 WSEL= 765.14 RATIO= 0.0000
NAT Q1= 5936. RATIOS LOB,CH,ROB= .0132 .7680 .2188 WSEL= 765.14

3470 ENCROACHMENT STATIONS= 2037.5 2602.8 TYPE= 4 TARGET= .020

VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP. (M)

11.00	11.15	765.15	0.00	765.04	765.25	.09	.16	.00	756.70
6900.	21.	5401.	1478.	43.	1972.	2101.	343.	38.	756.70
.53	.49	2.74	.70	.080	.030	.080	.030	754.00	2037.45
.000140	1200.	1200.	1200.	1	0	0	0.00	565.35	2602.80

*SECNO 11.200

3470 ENCROACHMENT STATIONS= 1970.0 2875.0 TYPE= 1 TARGET= 905.000

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW X (N)

11.20	11.31	765.31	0.00	765.19	765.36	.05	.11	.00	758.90
6900.	1347.	4173.	1381.	2368.	1884.	1655.	444.	53.	758.90
.67	.57	2.21	.83	.080	.030	.080	.030	754.00	1970.00
.000116	1300.	850.	650.	2	0	0	0.00	905.00	2875.00

*SECNO 12.000
2800 NAT Q1= 7180.18 WSEL= 765.24 ENC Q1= 7180.18 WSEL= 765.34 RATIO= 0.0000
NAT Q1= 8058. RATIOS LOB,CH,ROB= .2646 .7246 .0108 WSEL= 765.34

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

3470 ENCROACHMENT STATIONS= 2360.1 2944.0 TYPE= 4 TARGET= .109

VALLEY SECT. JUST U/S OF D/S OXBOW (O)

12.00	15.35	765.35	0.00	765.24	765.43	.08	.06	.01	757.30
6900.	1325.	5575.	0.	2288.	2250.	0.	501.	60.	756.80
.75	.58	2.48	0.00	.080	.030	.080	.030	750.00	2360.09

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.000096 100. 680. 1000. 1 0 0 0.00 583.91 2944.00

CCHV= .300 CEHV= .500
*SECNO 12.800
2800 NAT Q1= 4186.69 WSEL= 765.43 ENC Q1= 4223.91 WSEL= 765.53 RATIO= -.0089
NAT Q1= 4273. RATIOS LOB,CH,ROB= .0070 .9886 .0044 WSEL= 765.53

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= .011

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD. (P)

12.80	11.35	765.55	0.00	765.43	765.72	.17	.25	.04	757.50
6900.	0.	6900.	0.	0.	2102.	0.	623.	75.	758.00
.89	0.00	3.28	0.00	.080	.030	.080	.030	754.20	17.00
.000286	1600.	1600.	1600.	2	0	0	0.00	252.00	269.00

*SECNO 12.900
2800 NAT Q1= 4154.89 WSEL= 765.45 ENC Q1= 4245.03 WSEL= 765.55 RATIO= -.0217
NAT Q1= 4245. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 765.55

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

D/S FACE OF SPRINKLE RD. BRIDGE (Q)

12.90	11.38	765.58	0.00	765.45	765.75	.17	.03	.00	757.50
6900.	0.	6900.	0.	0.	2109.	0.	628.	76.	758.00
.90	0.00	3.27	0.00	.080	.030	.080	.030	754.20	17.00
.000271	100.	100.	100.	0	0	0	0.00	252.00	269.00

*SECNO 13.000
2800 NAT Q1= 3462.05 WSEL= 765.45 ENC Q1= 3523.43 WSEL= 765.55 RATIO= -.0177
NAT Q1= 3523. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 765.55

3370 NORMAL BRIDGE,NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.60

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 174.0 174.1

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

1' INSIDE D/S FACE OF SPRINKLE RD. BRIDGE

13.00	11.38	765.58	0.00	765.45	765.76	.18	.00	.01	757.50
6900.	0.	6900.	0.	0.	2042.	0.	628.	76.	758.00
.90	0.00	3.38	0.00	.080	.030	.080	.030	754.20	17.00
.000391	1.	1.	1.	0	0	0	-67.75	252.00	269.00

*SECNO 13.100
2800 NAT Q1= 3471.96 WSEL= 765.47 ENC Q1= 3540.02 WSEL= 765.57 RATIO= -.0196
NAT Q1= 3540. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 765.57

MOORE BUSINESS FORMS INC. 27

3370 NORMAL BRIDGE,NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.60

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 174.0 174.1

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

1' INSIDE SPRINKLE ROAD BRIDGE U/S

13.10	11.40	765.60	0.00	765.47	765.78	.18	.02	.00	757.50
6900.	0.	6900.	0.	0.	2047.	0.	631.	76.	758.00
.90	0.00	3.37	0.00	.080	.030	.080	.030	754.20	17.00
.000388	62.	62.	62.	0	0	0	-67.90	252.00	269.00

*SECNO 13.200

2800 NAT Q1= 4184.22 WSEL= 765.49 ENC Q1= 4275.70 WSEL= 765.59 RATIO= -.0219

NAT Q1= 4276. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 765.59

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

3470 ENCROACHMENT STATIONS= 17.0 269.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 770.30 ELREA= 777.20

U/S FACE SPRINKLE ROAD BRIDGE

13.20	11.42	765.62	0.00	765.49	765.78	.17	.00	.00	757.50
6900.	0.	6900.	0.	0.	2117.	0.	631.	76.	758.00
.90	0.00	3.26	0.00	.080	.030	.080	.030	754.20	17.00
.000268	1.	1.	1.	1	0	0	0.00	252.00	269.00

#SECNO 14.000

3470 ENCROACHMENT STATIONS= 2672.0 3024.0 TYPE= 1 TARGET= 352.000

VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.

14.00	11.59	765.69	0.00	765.56	765.81	.12	.01	.01	763.70
6900.	15.	6816.	69.	44.	2463.	109.	633.	76.	759.40
.91	.35	2.77	.63	.080	.030	.080	.030	754.10	2672.00
.000193	50.	50.	50.	2	0	0	0.00	352.00	3024.00

BUSINESS FORMS INC 27 MOORE



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR INPUT DATA



Subject to review & approval of G & C d/s study of Kalamazoo Twp.

[illegible] 76 [illegible] 1977
[illegible] CO[illegible]
MODIFICATION [illegible]

T1 [illegible] AR[illegible] OF
T2 [illegible] FROM [illegible]ALAMAZOO TWP. STUDY
T3 KALAMAZOO R. KALAMAZOO

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	G	WSEL*	FQ
	0.	[illegible]	[illegible]	[illegible]	0.000000	0.00	0.0	0.	759.950	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

[illegible] VARIABLE CO[illegible] FOR SUMMARY PRINTOUT

	150.000	200.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Q1	5.000	4950.000	6650.000	7390.000	7390.000	9180.000	0.000	0.000	0.000	0.000
[illegible]	0.0[illegible]	0.[illegible]	[illegible].030	[illegible].100	0.300	0.000	0.000	0.000	0.000	0.000
[illegible]	0.0[illegible]	0.[illegible]	[illegible].000	[illegible].000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- D/S DISPOSAL PLANT

[illegible]	7.[illegible]	[illegible]12.[illegible]	2[illegible].000	21[illegible].000	0.000	0.000	0.000	0.000	0.000	0.000
[illegible]	[illegible]65.[illegible]	[illegible]	[illegible].000	1[illegible].000	758.300	2000.000	754.100	2016.000	747.900	2062.000
[illegible]	[illegible]47.[illegible]	[illegible]	[illegible].000	21[illegible].000	754.000	2158.000	756.500	2168.000	756.100	2174.000
GR	760.000	2550.000	765.000	2600.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.100	0.079	0.030	0.100	0.300	0.000	0.000	0.000	0.000	0.000
Q1	5.000	4940.000	6640.000	7390.000	7390.000	9180.000	0.000	0.000	0.000	0.000
[illegible]	0.[illegible]	7.[illegible]	7.10[illegible]	7.100	9.100	7.100	760.000	1729.000	998.000	1490.000

VALLEY SECTION APPROX. 1600 FT. U/S OF CITY BOUNDARY AT SEWAGE DISPOSAL

X1	[illegible].000	[illegible]8.000	1325.000	1455.000	1600.000	1600.000	1600.000	0.000	0.000	0.000
[illegible]	777.[illegible]00	[illegible]346.0[illegible]	[illegible]1.600	370.000	756.400	416.000	761.400	628.000	762.600	760.000
[illegible]	761.[illegible]00	[illegible]080.0[illegible]	[illegible]7.400	1094.000	757.500	1100.000	761.300	1108.000	762.000	1131.000
[illegible]	762.[illegible]00	[illegible]132.0[illegible]	[illegible]0.400	11[illegible].000	758.200	1252.000	757.600	1304.000	755.100	1325.000
GR	752.000	1345.000	750.000	1350.000	746.300	1370.000	743.200	1390.000	741.800	1400.000
GR	741.600	1420.000	746.900	1440.000	752.000	1445.000	757.400	1455.000	757.000	1462.000
GR	759.000	1498.000	760.600	1676.000	762.300	1730.000	0.000	0.000	0.000	0.000
[illegible]	0.[illegible]00	0.0[illegible]	0.0[illegible]	0.300	0.500	0.000	0.000	0.000	0.000	0.000
[illegible]	0.[illegible]00	0.0[illegible]	0.000	0.000	1.400	9.100	0.000	0.000	1605.000	1885.000

VALLEY SECT. APPROX. 50 FT. D/S OF PATTERSON RD. BRIDGE

[illegible]	9.[illegible]00	2[illegible].0[illegible]	[illegible]50.000	1840.000	1100.000	1100.000	1100.000	0.000	0.000	0.000
[illegible]	764.[illegible]00	[illegible]	[illegible]62.200	5[illegible].000	761.100	766.000	762.200	1160.000	766.400	1352.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	756.200	[illegible]	[illegible]	[illegible]
GR	750.[illegible]00	[illegible]673.0[illegible]	750.000	1690.000	747.700	1720.000	745.500	1740.000	744.500	1760.000
[illegible]	749.[illegible]00	[illegible]	[illegible]51.[illegible]	[illegible]	753.700	1805.000	754.100	1840.000	772.500	1890.000
[illegible]	77[illegible].[illegible]00	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF PATTERSON RD. - J 1

X1	9.200	28.000	1602.000	1878.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000
GR	763.100	446.000	761.400	732.000	761.900	948.000	764.200	1270.000	767.000	1452.000
GR	769.400	[illegible]	769.500	1539.000	763.200	[illegible]	763.200	[illegible]	754.800	1633.000
GR	753.000	[illegible]	755.000	1668.300	751.300	[illegible]	751.300	[illegible]	745.700	1736.800
GR	745.700	1738.900	745.700	1741.100	745.700	[illegible]	[illegible]	[illegible]	748.900	1809.400
GR	748.900	1809.500	752.000	1811.700	752.000	1811.800	754.400	1844.300	768.100	1877.900
GR	768.100	1878.000	774.800	1891.700	774.600	[illegible]	0.000	0.000	0.000	0.000

1 FT. INSIDE D/S FACE OF PATTERSON RD. BRIDGE

X1	9.300	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000
BT	18.000	1589.000	769.500	0.000	1602.000	769.800	0.000	1602.100	769.800	765.300
BT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000	[illegible]
BT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000
BT	1811.700	773.500	0.000	1811.800	773.500	769.000	1677.900	774.800	770.300	1878.000
BT	774.800	0.000	1891.700	774.800	0.000	0.000	0.000	0.000	0.000	0.000

1 FT. INSIDE D/S FACE PATTERSON RD. BRIDGE

X1	9.400	0.000	0.000	0.000	43.000	43.000	43.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000

D/S FACE OF PATTERSON RD. BRIDGE

X1	9.500	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.500	774.800	0.000
ET	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1552.000	1968.000

VALLEY SECT. APPROX. 50 FT. U/S OF PATTERSON RD. BRIDGE

X1	9.600	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
NC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ET	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VALLEY SECT. APPROX.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	763.600	940.000	761.200	1066.000	759.800	1124.000	760.700	1150.000	758.100	1179.000
GR	754.300	1209.000	752.500	1214.000	747.000	1229.000	746.000	1249.000	747.700	1269.000
GR	747.000	1279.000	746.000	1289.000	745.900	1309.000	746.800	1329.000	749.600	1344.000
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000
NC	0.000	0.000	[illegible]	0.300	[illegible]	[illegible]	0.300	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	1150.000	1390.000	0.000	0.000

VALLEY SECT. APPROX. 50 FT. D/S OF GULL ST. BRIDGE

X1	11.100	30.000	1208.000	1358.000	1250.000	300.000	750.000	0.000	0.000	0.000

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GR	764.600	764.000	764.400	416.000	765.600	651.000	765.300	834.000	762.700	874.000
GR	764.300	1334.000	756.300	1120.000	764.200	1150.000	761.300	1163.000	756.400	1169.100
GR	754.700	1208.000	751.300	1210.000	749.700	1253.000	748.300	1273.000	749.300	1263.000
GR	730.600	1300.000	751.900	1320.000	754.330	1368.000	754.500	1358.000	763.700	1378.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

B/S FACE OF GULL ST. BRIDGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	760.700	90.000	764.600	165.000	764.100	312.000	765.600	476.000	762.300	622.000
GR	763.300	962.000	766.400	1129.000	767.200	1186.000	757.500	1196.500	757.500	1195.600
GR	753.700	1211.000	753.900	1225.000	754.500	1243.000	755.100	1255.500	755.100	1255.600
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	752.500	1510.000	763.400	1752.000	767.500	2414.000	0.000	0.000	0.000	0.000

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
XS	15.000	0.000	0.000	0.000	0.000	0.000	0.000	767.400	[illegible]	0.000
DT	23.000	1136.700	767.200	0.000	1196.500	767.400	0.000	1196.500	771.900	767.900
BT	1211.000	772.200	767.000	1226.000	772.400	767.700	1243.000	772.700	762.000	1255.500
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DT	773.200	759.200	1341.000	772.800	762.000	1358.000	772.400	764.700	1374.000	772.100
DT	762.000	387.400	771.900	767.700	1367.500	767.400	0.000	1390.000	766.800	0.000

[illegible]

X1	11.600	45.000	1195.500	1387.500	71.000	11.500	[illegible]	[illegible]	[illegible]	[illegible]
XS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	767.400	766.300	0.000
DT	23.000	1136.300	767.200	0.000	1196.500	767.400	0.000	1196.600	771.900	767.900
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	1321.500	773.200	759.000	1321.600	773.700	0.000	1336.400	773.200	0.000	1323.500
BT	773.200	759.000	1347.000	772.800	762.000	1358.000	772.400	764.700	1374.000	772.100
DT	762.000	1367.600	771.500	767.700	367.500	767.400	0.000	367.000	766.800	0.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	752.500	1262.000	752.500	1252.500	750.500	1275.000	748.700	1252.000	748.700	1330.000
GR	748.200	1321.500	748.300	1321.600	748.200	1322.000	748.300	1323.500	749.600	1341.000
GR	750.000	1338.000	751.500	1374.000	752.400	1367.000	756.100	1367.500	766.600	1390.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

B/S FACE OF GULL ST. BRIDGE

X1	11.500	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
XS	15.000	0.000	0.000	0.000	0.000	0.000	0.000	[illegible]	[illegible]	[illegible]
DT	0.000	0.000	0.000	0.000	0.000	0.000	1[illegible].000	[illegible]	0.000	0.000

VALLEY SECT. APPROX. 50 FT. B/S OF GULL ST.

PRINTED IN U.S.A.
FORM 1411-CB-PRINTED BY ROTARY MANIFOLD FORMS.

FORM 1411-OD PRINTED BY ROTARY MANIFOLD FORMS.

PRINTED IN U.S.A.

X1	12.500	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
NC	0.100	0.050	0.030	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	730.000	926.000	0.000	0.000

[illegible]

X1	13.100	22.000	744.300	925.000	500.000	500.000	300.000	0.000	0.000	0.000
GR	766.300	600.000	767.300	737.600	754.900	744.500	754.900	744.400	755.000	758.900
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	760.400	1306.300	767.000	1307.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

[illegible]

X1	13.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

[illegible]

X1	13.300	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000
BT	17.000	737.600	767.300	0.000	744.300	767.300	0.000	744.400	767.300	755.500
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	[illegible]	767.300	755.300	[illegible]	757.200	[illegible]	[illegible]	[illegible]	0.000	[illegible]
BT	766.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[illegible]

X1	13.400	0.000	0.000	0.000	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

[illegible]

X1	13.500	1.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.300	767.300	0.000

[illegible]

X1	13.600	20.000	1341.000	1446.000	50.000	50.000	50.000	[illegible]	0.000	0.000
GR	757.200	1142.000	766.600	1564.000	766.600	1192.000	752.000	[illegible]	755.100	1341.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NC	0.000	0.120	0.030	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	1271.300	1277.000	0.000	0.000
CT	5.000	4620.000	6210.000	6910.000	6910.000	6930.000	0.000	0.000	0.000	0.000

[illegible]

X1	14.100	35.000	254.000	1764.000	650.000	850.000	1250.000	0.000	0.000	0.000
[illegible]	764.500	[illegible]	763.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

GR	765.200	1275.000	755.300	1284.000	755.030	1284.100	753.500	1293.000	752.100	1312.200
GR	752.500	1326.000	753.300	1340.500	753.000	1342.600	754.900	1347.400	754.900	1367.500
GR	750.200	1360.000	750.900	1374.000	750.600	1387.000	752.700	1430.500	752.700	1400.600
GR	753.400	1407.400	753.400	1407.500	751.100	1420.000	746.800	1436.200	750.000	1450.000
GR	751.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	762.7[illegible]	[illegible]	748.500	2053.000	[illegible]	2[illegible]	0.300	[illegible]	[illegible]	0.000
GR	0.[illegible]	0.[illegible]	[illegible]	[illegible]	[illegible]	0.00	0.300	[illegible]	[illegible]	0.00

D/S FACE OF MILL ST. BRIDGE

GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GR	[illegible]	[illegible]	[illegible]	[illegible]	0.300	0.300	[illegible]	[illegible]	[illegible]	[illegible]

1 FT. INSIDE D/S FACE MILL ST. BRIDGE

GR	[illegible]	[illegible]	0.300	0.300	[illegible]	[illegible]	[illegible]	0.000	[illegible]	[illegible]
GR	10.00[illegible]	[illegible]	0.300	0.300	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	25.000	1275.000	750.300	0.300	1284.000	767.430	0.000	1284.100	767.400	750.700
BT	1298.000	767.700	750.200	1312.200	767.530	768.600	1320.000	750.300	768.000	1341.500
BT	768.600	750.000	1340.300	768.600	0.000	1347.400	768.600	0.300	1347.500	768.600
BT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BT	760.200	1460.000	767.400	755.700	1384.000	767.300	0.300	1473.000	768.400	0.000

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	XT	15.000	16.000	1472.000	1644.000	1150.000	1651.000	1400.000	0.000	0.000	0.000
	GR	770.000	1090.000	755.000	1146.000	762.600	1190.000	750.700	1416.000	757.400	1472.000
	GR	756.300	1481.000	752.300	1494.000	749.900	1524.000	748.300	1554.000	747.800	1536.000
	GR	745.700	1514.000	751.100	1634.000	758.100	1644.000	762.000	1714.000	762.100	1804.000
	ST	765.[illegible]	[illegible]	0.300	0.000	[illegible]	[illegible]	0.000	0.000	0.000	0.000
	ST	0.[illegible]	0.000	0.300	0.300	[illegible]	[illegible]	0.300	0.000	0.000	0.000
	ST	0.[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	1510.300	[illegible]	0.000	0.000

VALLEY SECT. 10 FT. D/S OF R.R. BRIDGE

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	GR	765.000	1020.300	764.000	1069.000	759.000	1372.000	750.000	214.000	750.000	1402.300
	GR	767.200	1436.000	765.400	1474.000	753.400	1512.400	755.400	1512.500	754.500	1515.300
	GR	751.000	1510.700	751.000	1518.600	751.000	1529.300	751.000	1529.400	749.100	1535.200
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	GR	747.200	1623.500	747.200	1675.700	747.400	1629.500	747.400	1329.000	750.000	1643.700
	GR	751.200	1657.900	751.200	1658.000	751.500	1661.300	751.300	1661.900	750.900	1672.700
	GR	756.000	1639.400	756.000	1639.300	757.400	1638.300	760.200	1392.000	760.300	1638.200
	ST	777.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	ST	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

D/S FACE OF R.R. BRIDGE

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	XT	22.000	1.300	0.000	1.000	0.300	0.300	0.000	762.[illegible]	750.000	0.000
	ST	91.300	1674.300	706.700	0.000	1512.400	750.300	0.000	1512.500	750.300	749.600
	ST	1511.700	746.300	763.000	1511.600	768.[illegible]	0.000	1529.300	765.[illegible]	0.000	1529.400
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	ST	764.700	0.300	1556.400	763.700	0.000	1590.300	750.700	763.500	1625.000	750.700
	ST	763.500	1631.700	763.700	0.000	1629.500	750.700	0.300	1629.600	746.700	763.500
	ST	1657.900	746.300	763.500	1639.000	765.600	0.000	1631.300	765.600	0.000	1631.200
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	GR	765.300	1020.300	765.000	1069.000	759.000	1372.000	750.300	1214.000	750.000	1402.300
	GR	767.200	1436.300	765.470	1474.000	753.470	1512.400	750.400	1512.500	747.600	1515.200
	GR	749.300	1510.700	747.600	1519.800	749.600	1529.300	749.900	1529.400	747.600	1535.200
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	GT	745.300	1525.600	746.300	1625.700	742.700	1629.500	725.700	1629.500	737.900	1543.700
	GR	752.000	1657.900	752.300	1650.300	752.600	1661.600	752.000	1661.900	753.100	1675.700
	GR	750.000	1639.000	750.000	1639.500	757.400	1638.600	764.200	1692.300	760.500	2055.000
	ST	[illegible]	[illegible]	0.300	0.300	0.000	[illegible]	[illegible]	0.300	[illegible]	[illegible]
	ST	0.[illegible]	[illegible]	0.00	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VALLEY SECT. APPROX. 50 FT. OF D.S. OF BRIDGE

PRINTED IN U.S.A.
FORM 1411-GB-PRINTED BY ROTARY MANIFOLD FORMS.

XT	15.500	73.000	1519.000	1684.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	764.000	142.000	761.800	234.000	765.400	340.000	761.100	572.000	764.500	834.000
GR	765.000	1020.000	784.000	1058.000	759.600	1072.000	756.000	1214.000	758.000	1404.000
GR	767.200	1456.000	765.400	1474.000	756.200	1519.000	752.700	1520.000	747.100	1549.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.100	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GI	765.000	0.000	756.500	0.100	754.500	0.000	751.900	20.000	[illegible]	[illegible]
GI	767.000	76.000	753.300	92.000	763.300	108.000	765.000	109.100	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PRINTED IN U.S.A.
FORM 1311-GB PRINTED BY ROTARY MANIFOLD FORMS.

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100 YR INPUT DATA - DOWNSTREAM

00BREAK00

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**********************************************************
*  HEC2 WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED JULY 1979                                     *
*  ERROR CORR - 01,02,03                                 *
*  MODIFICATION - 50,51,52,53                            *
*                                                        *
*  RUN DATE  80/09/03. TIME  11.56.23.                   *
**********************************************************
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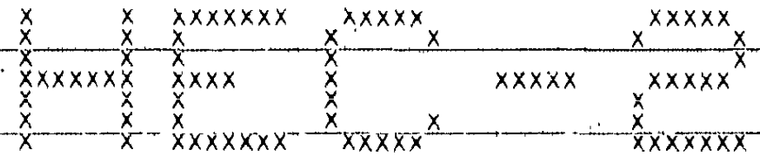
FIS Kalamazoo Twp Kalamazoo Co., MI
Kalamazoo River D/S Portion
Floodway Revision 1 9/4/80

RECEIVED
SEP 08 1980
WATER MANAGEMENT



MOORE BUSINESS FORMS, INC. 223

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

C
T1      KALAMAZOO TOWNSHIP
T2      100 YEAR LEVEL
T3      KALAMAZOO RIVER

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.        4.         0.         0.   0.000000       0.00       0.0         0.     755.290    0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    110.000    200.000    38.000     1.000      53.000     21.000     22.000     54.000     4.000      39.000

NC      .070       .070       .035       .100       .300      0.000      0.000      0.000      0.000      0.000
QT     7.000   4970.000   6680.000   7420.000   9220.000   7420.000   5646.000   7000.000      0.000      0.000
ET     0.000      9.100      9.100      9.100      9.100      7.100   1915.000   2293.000   1858.000   2396.000

X1     0.000     27.000   2004.000   2186.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   771.100   996.000    769.000   1078.000    766.700   1172.000    764.100   1290.000    762.200   1456.000
GR   760.400  1544.000    759.000   1634.000    758.700   1648.000    754.000   1730.000    753.300   1810.000
GR   760.200  1858.000    751.200   1918.000    750.700   2000.000    749.600   2004.000    746.600   2040.000
GR   746.800  2072.000    744.300   2116.000    745.400   2154.000    749.600   2186.000    751.600   2200.000
GR   750.200  2278.000    753.900   2342.000    760.200   2396.000    759.000   2458.000    759.600   2534.000
GR   762.200  2554.000    773.600   2600.000      0.000      0.000      0.000      0.000      0.000      0.000
ET     0.000      9.100      9.100      9.100      9.100      7.100   1767.000   2444.000    622.000   2634.000

        VALLEY SECTION (A) AT DOWNSTREAM STUDY LIMITS -- I.E. G AVENUE

X1     1.000     36.000   2120.000   2429.000    625.000    905.000    760.000      0.000      0.000      0.000
X2     0.000    755.310      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   771.900   386.000    769.900    496.000    767.800    622.000    765.800    824.000    764.600    926.000
GR   763.800  1026.000    762.700   1130.000    760.700   1196.000    761.100   1298.000    760.900   1394.000
GR   760.300  1502.000    760.000   1596.000    759.200   1658.000    752.700   1728.000    751.000   2000.000
GR   749.700  2120.000    747.700   2180.000    747.800   2224.000    747.000   2280.000    746.500   2310.000
GR   747.400  2340.000    747.700   2380.000    749.800   2429.000    751.800   2433.000    753.400   2488.000
GR   763.400  2534.000    768.100   2634.000    766.700   2720.000    763.100   2926.000    763.000   2998.000
GR   762.800  3084.000    753.700   3250.000    766.700   3332.000    767.000   3704.000    756.200   3794.000
GR   763.600  3986.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET     0.000      9.100      9.100      9.100      9.100      7.100   1560.000   2732.000   1128.000   3346.000

        VALLEY SECTION (B)

X1     2.000     37.000   2005.000   2520.000   1270.000    800.000    850.000      0.000      0.000      0.000
```

MOORE BUSINESS FORMS, INC 23

X2	0.000	755.550	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	763.400	452.000	763.400	618.000	763.400	784.000	763.400	936.000	764.600	1128.000
GR	760.700	1228.000	755.900	1338.000	757.200	1392.000	754.300	1456.000	753.600	1526.000
GR	753.600	1624.000	753.400	1760.000	751.400	1848.000	752.300	2000.000	750.400	2005.000
GR	748.100	2026.000	746.900	2050.000	748.800	2078.000	750.300	2098.000	751.800	2104.000
GR	751.800	2230.000	752.400	2284.000	750.700	2352.000	747.800	2416.000	748.300	2470.000
GR	749.000	2506.000	750.300	2520.000	752.000	2526.000	750.300	2668.000	757.500	2948.000
GR	761.200	3184.000	762.300	3346.000	757.900	3540.000	757.400	3690.000	756.300	3836.000
GR	759.200	3934.000	757.600	4028.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.080	.080	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	7.100	1916.000	2515.000	1916.000	3050.000

VALLEY SECTION (C)

X1	3.000	12.000	2006.000	2182.000	1290.000	2010.000	2010.000	0.000	0.000	0.000
X2	0.000	756.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1650.000	752.400	2000.000	751.400	2006.000	747.700	2024.000	745.800	2068.000
GR	746.800	2116.000	747.300	2146.000	747.800	2168.000	751.100	2182.000	752.800	2190.000
GR	755.000	2300.000	760.000	3050.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	7.100	2016.000	2391.000	2016.000	2500.000

X1	3.700	13.000	2036.000	2324.000	700.000	410.000	580.000	0.000	0.000	0.000
X2	0.000	756.560	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1200.000	754.000	2000.000	751.800	2036.000	748.400	2070.000	749.400	2120.000
GR	749.200	2176.000	749.800	2230.000	750.300	2270.000	749.900	2308.000	751.800	2324.000
GR	756.200	2340.000	755.600	2350.000	760.000	2500.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	7.100	2019.000	2324.000	1995.000	2365.000

X1	3.900	0.000	0.000	0.000	1300.000	490.000	900.000	0.000	0.000	0.000
X2	0.000	757.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2030.000	2334.000	0.000	0.000

X1	3.910	29.000	2030.000	2334.000	50.000	50.000	50.000	0.000	0.000	0.000
X2	0.000	757.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	764.800	2000.000	759.500	2000.000	751.800	2030.000	751.800	2030.000	751.800	2030.000
GR	749.900	2046.000	750.000	2062.000	750.000	2074.000	749.500	2090.000	749.400	2106.000
GR	748.500	2122.000	748.900	2138.000	748.600	2154.000	747.000	2170.000	748.500	2186.000
GR	748.000	2202.000	748.600	2218.000	748.300	2219.000	748.800	2235.000	749.000	2251.000
GR	749.000	2267.000	749.300	2283.000	750.400	2299.000	751.000	2315.000	750.600	2331.000
GR	751.800	2334.000	759.200	2362.000	759.200	2362.000	764.800	2362.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2030.000	2334.000	0.000	0.000

RAILROAD BRIDGE SECTION (D)

X1	4.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
X2	0.000	757.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.500	3.000	0.000	300.000	36.000	4224.000	2.340	752.000	752.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2030.000	2334.000	0.000	0.000

X1	4.100	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
x2	0.000	0.000	1.000	762.100	764.800	0.000	0.000	0.000	0.000	0.000
X2	0.000	757.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X5	-7.000	.250	.250	.250	.250	.250	.250	.250	.250	0.000
BT	4.000	2000.000	764.800	0.000	2000.000	764.800	762.100	2362.000	764.800	762.000

MOORE BUSINESS FORMS, INC 23

RAILROAD BRIDGE SECTION (E)

X1	5.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000	0.000
X2	0.000	758.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.500	3.000	175.000	30.000	2790.000	2023.000	5.790	747.200	747.200
ET	0.000	0.000	0.000	0.000	7.100	0.000	0.000	2282.000	0.000	0.000
X1	5.100	0.000	0.000	10.000	10.000	0.000	0.000	0.000	0.000	0.000
X2	0.000	758.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X5	-7.000	.100	1.000	759.100	762.400	0.000	0.000	0.000	0.000	0.000
BT	4.000	2000.000	762.500	0.000	762.500	759.100	2298.000	762.400	762.400	758.800
ET	0.000	0.000	0.000	0.000	0.000	7.100	2031.000	0.000	0.000	0.000
X1	5.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	758.860	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	7.100	2006.000	2198.000	1980.000	2200.000
X1	5.800	10.000	2006.000	2198.000	760.000	1040.000	935.000	0.000	0.000	0.000
X2	0.000	759.160	0.000	0.000	0.000	0.000	0.000	0.000	748.000	2084.000
GR	760.000	1445.000	755.200	2000.000	752.300	2005.000	747.700	2050.000	763.900	2220.000
ET	0.000	2123.000	750.100	215O.000	751.100	2189.000	752.500	2198.000	0.000	0.000
	749.700	0.000	0.000	0.000	0.000	7.100	2000.000	2207.000	0.000	0.000

BT	2362.000	764.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	7.100	2030.000	2334.000	0.000	0.000	0.000
X1	4.200	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000	0.000
X2	0.000	757.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000
X1	4.500	11.000	2120.000	1000.000	1000.000	2246.000	500.000	0.000	0.000	0.000
X2	0.000	757.660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GG	760.000	1350.000	750.000	2110.000	750.000	2110.000	211O.000	748.900	2120.000	0.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
ET	761.800	2276.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	7.100	1991.000	2254.000	0.000	0.000
X1	4.900	11.000	2070.000	2246.000	1735.000	1735.000	1735.000	0.000	0.000	0.000
X2	0.000	758.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GG	760.000	1900.000	754.300	2000.000	753.800	2068.000	751.600	2070.000	748.500	2096.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
ET	761.800	2276.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	7.100	2032.000	2280.000	0.000	0.000
X1	4.910	11.000	2038.000	2280.000	50.000	50.000	50.000	0.000	0.000	0.000
X2	0.000	758.740	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1925.000	762.500	2000.000	757.100	2000.000	752.600	2038.000	747.500	2078.000
GT	747.700	2140.000	747.400	2204.000	750.100	2250.000	752.500	2280.000	757.200	2298.000
	762.400	2298.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	7.100	2023.000	2282.000	0.000	0.000

MOORE BUSINESS FORMS, INC. 23

X1	5.900	15.000	2000.000	2207.000	65.000	65.000	65.000	0.000	0.000	0.000
X2	0.000	759.210	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000	
GR	765.000	2000.000	754.900	2000.000	752.600	2014.000	747.800	2057.000	747.800	2057.100
GR	747.800	2060.000	747.800	2060.100	748.000	2104.000	750.300	2146.000	750.300	2146.100
GR	750.600	2149.000	750.600	2149.100	752.600	2189.000	756.200	2207.000	764.900	2207.000
QT	7.000	4950.000	6650.000	7390.000	9180.000	7390.000	5623.000	7000.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2000.000	2207.000	0.000	0.000

ROAD BRIDGE SECTION (F) AT MOSEL AVENUE

X1	6.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	759.220	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
BT	12.000	2000.000	765.000	0.000	2000.000	765.000	761.400	2057.000	765.000	761.400
BT	2057.100	765.000	747.800	2060.000	765.000	747.800	2060.100	765.000	761.400	2146.000
BT	764.900	761.500	2146.100	764.900	750.300	2149.000	764.900	750.600	2149.100	764.900
BT	761.500	2207.000	764.900	761.500	2207.000	764.900	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2000.000	2207.000	0.000	0.000

X1	6.100	20.000	2000.000	2207.000	35.000	35.000	35.000	0.000	0.000	0.000
X2	0.000	759.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	765.100	765.100	0.000
BT	12.000	2000.000	765.000	0.000	2000.000	765.000	761.400	2057.000	765.000	761.400
BT	2057.100	765.000	748.900	2060.000	765.000	748.900	2060.100	765.000	761.400	2146.000
BT	765.100	761.300	2146.100	765.100	748.600	2149.000	765.100	748.600	2149.100	765.100
BT	761.300	2207.000	765.100	761.300	2207.000	765.100	0.000	0.000	0.000	0.000
GR	765.000	2000.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	765.100	2207.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	2000.000	2207.000	0.000	0.000

X1	6.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	759.240	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	765.100	765.100	0.000
NC	.050	.050	.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	1900.000	2307.000	0.000	0.000

X1	6.300	20.000	2000.000	2207.000	100.000	100.000	100.000	0.000	0.000	0.000
X2	0.000	759.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1900.000	0.000	2307.000	0.000	0.000	0.000	0.000
GR	760.000	1500.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	760.000	2550.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	1707.000	2317.000	0.000	0.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

X1	7.000	12.000	2016.000	2158.000	2775.000	2625.000	2555.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

X2	0.000	759.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	765.000	1050.000	760.000	1100.000	758.300	2000.000	754.100	2016.000	747.900	2062.000
GR	747.600	2098.000	750.000	2134.000	754.000	2158.000	756.500	2168.000	756.100	2174.000
GR	760.000	2550.000	765.000	2600.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC. 23

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-yr INPUT DATA
- upstream

00BREAK00

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*****************************************************
*  HEC2 WATER SURFACE PROFILES                      *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED JULY 1979                                *
*  ERROR CORR - 01,02,03                            *
*  MODIFICATION - 50,51,52,53                       *
*                                                   *
*  RUN DATE  80/06/17. TIME  10.32.17.              *
*****************************************************
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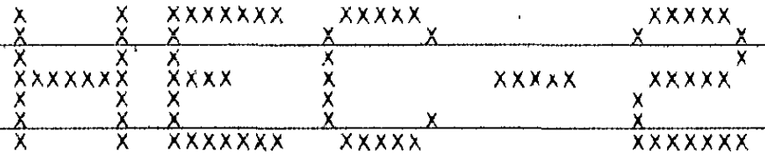
RECEIVED
JUN 20 1980
WATER MANAGEMENT



Encroached

Upstream (Sec 8-14)

MOORE BUSINESS FORMS INC 27

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50.51.52,53
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C
T1      KALAMAZOO TOWNSHIP
T2      100 YEAR LEVEL
T3      KALAMAZOO RIVER
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.000000	0.00	0.0	0.	763.580	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

110.000	200.000	38.000	1.000	53.000	21.000	22.000	54.000	4.000	39.000

QT	5.000	4620.000	6210.000	6910.000	6910.000	8580.000	0.000	0.000	0.000	0.000
NC	.080	.080	.030	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY (H)

X1	8.000	9.000	8.000	92.000	1650.000	700.000	1400.000	0.000	0.000	0.000
GR	765.000	0.000	756.600	.100	754.500	8.000	751.900	20.000	747.600	48.000
GR	747.000	78.000	753.300	92.000	763.300	108.000	765.000	109.100	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
QT	5.000	4620.000	6210.000	6900.000	6900.000	8570.000	0.000	0.000	0.000	0.000

VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE (I)

X1	8.900	11.000	20.000	158.000	1300.000	1400.000	1350.000	0.000	0.000	0.000
GR	767.000	0.000	757.800	.100	754.900	20.000	751.600	42.000	749.400	78.000
GR	753.400	110.000	752.000	136.000	754.600	158.000	763.600	174.000	763.000	182.000
GR	767.000	182.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF KING HWY. BRIDGE (J)

X1	9.000	21.000	0.000	190.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
GR	769.000	0.000	758.600	0.000	754.900	10.000	751.300	32.000	749.200	42.000
GR	750.600	58.500	750.600	58.600	750.600	61.500	750.600	61.600	751.800	74.000
GR	751.000	96.000	752.300	114.000	753.200	128.500	753.200	128.600	753.300	131.500
GR	753.300	131.600	752.400	146.000	753.800	166.000	754.800	170.000	759.700	190.000
GR	768.800	190.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.500	3.000	0.000	159.000	6.000	1975.000	0.000	751.300	749.200

MOORE BUSINESS FORMS INC 27

U/S FACE OF KING HWY. BRIDGE

X1	9.100	21.000	0.000	190.000	56.000	56.000	56.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	764.200	768.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
BT	12.000	0.000	769.000	0.000	0.000	769.000	764.200	58.500	769.000	764.200
BT	58.600	769.000	751.500	61.500	769.000	751.500	61.600	769.000	764.200	128.500
BT	768.900	764.200	128.600	768.900	752.500	131.500	768.900	752.500	131.600	768.900
BT	764.200	190.000	768.800	764.200	190.000	768.800	0.000	0.000	0.000	0.000
GR	769.000	0.000	758.000	0.000	754.800	12.000	752.800	32.000	751.700	42.000
GR	751.500	58.500	751.500	58.600	751.500	61.500	751.500	61.600	751.300	74.000
GR	751.900	96.000	751.800	114.000	752.500	128.500	752.500	128.600	752.500	131.500
GR	752.500	131.600	753.500	146.000	753.600	166.000	755.100	182.000	758.900	190.000
GR	768.800	190.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 50 FT. U/S OF KING HWY. BRIDGE (K)

X1	9.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	7.100	9.100	1800.000	2300.000	1800.000	2400.000

X1	9.500	14.000	2000.000	2190.000	1225.000	1325.000	1275.000	0.000	0.000	0.000
GR	767.700	600.000	761.200	1000.000	758.200	1500.000	755.700	1800.000	755.500	2000.000
GR	754.100	2050.000	753.900	2070.000	753.400	2100.000	752.500	2130.000	751.500	2160.000
GR	754.700	2190.000	758.200	2200.000	760.000	2400.000	765.700	2430.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	7.100	9.100	2002.400	2500.000	2000.000	2570.000

VALLEY SECT. JUST D/S OF WESTERLY OXBOW (L)

X1	10.000	17.000	2008.000	2180.000	800.000	700.000	750.000	0.000	0.000	0.000
GR	769.800	650.000	762.500	1050.000	763.200	1300.000	758.000	1600.000	774.500	1700.000
GR	770.000	2000.000	758.900	2005.000	755.400	2008.000	754.400	2046.000	754.200	2068.000
GR	753.700	2096.000	752.800	2126.000	751.600	2158.000	754.600	2180.000	758.200	2198.000
GR	760.000	2525.000	765.500	2570.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	1.400	9.100	0.000	0.000	2000.000	2692.000

VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP. (M)

X1	11.000	17.000	2043.000	2238.000	1200.000	1200.000	1200.000	0.000	0.000	0.000
GR	770.300	400.000	766.700	800.000	765.000	1100.000	764.500	1200.000	771.300	1300.000
GR	771.300	2000.000	759.600	2030.000	756.700	2043.000	754.100	2082.000	754.300	2114.000
GR	755.500	2144.000	755.400	2178.000	754.000	2204.000	756.700	2238.000	758.800	2242.000
GR	760.000	2600.000	767.500	2692.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	7.100	9.100	1970.000	2875.000	1970.000	2900.000

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW X (N)

X1	11.200	15.000	2468.000	2690.000	1300.000	650.000	850.000	0.000	0.000	0.000
GR	765.700	1100.000	762.000	1500.000	761.500	2100.000	758.900	2468.000	756.300	2507.000
GR	756.500	2539.000	757.700	2569.000	757.600	2603.000	754.000	2629.000	756.600	2663.000
GR	758.900	2690.000	756.100	2725.000	756.100	2900.000	760.000	2925.000	766.000	2970.000
ET	0.000	9.100	9.100	9.100	1.400	9.100	0.000	0.000	2350.000	3050.000

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VALLEY SECT. JUST U/S OF D/S OXBOW (O)

X1	12.000	15.000	2758.000	2944.000	100.000	1000.000	680.000	0.000	0.000	0.000
GR	765.800	1300.000	761.900	1700.000	763.800	2300.000	760.000	2350.000	758.000	2375.000
GR	761.400	2700.000	757.300	2758.000	753.100	2800.000	750.000	2820.000	750.700	2860.000
GR	754.600	2900.000	755.300	2926.000	756.800	2944.000	761.100	2956.000	767.500	3050.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD. (P)

X1	12.800	30.000	17.000	269.000	1600.000	1600.000	1600.000	0.000	0.000	0.000
GR	770.300	0.000	765.500	0.000	757.500	17.000	755.000	37.000	756.600	55.000
GR	756.600	55.100	756.600	57.000	756.600	57.100	756.500	79.000	757.900	89.000
GR	761.200	94.000	761.400	114.000	761.400	114.100	761.400	116.000	761.400	116.100
GR	761.000	159.000	758.100	165.000	755.200	174.000	755.700	174.100	755.200	176.000
GR	755.200	176.100	754.400	217.000	754.200	236.000	754.200	236.100	754.200	238.000
GR	754.200	238.100	755.000	257.000	758.000	269.000	772.700	293.000	777.200	293.000

D/S FACE OF SPRINKLE RD. BRIDGE (Q)

X1	12.900	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000

1' INSIDE D/S FACE OF SPRINKLE RD. BRIDGE

X1	13.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000
BT	20.000	0.000	770.300	0.000	0.000	770.300	767.700	55.000	771.500	768.900
BT	55.100	771.500	756.600	57.000	771.500	756.600	57.100	771.500	768.900	114.000
BT	773.000	770.400	114.100	773.000	761.400	116.000	773.000	761.400	116.100	773.000
BT	770.400	174.000	774.400	771.800	174.100	774.400	755.200	176.000	774.400	755.200
BT	176.100	774.400	771.800	236.000	775.900	773.300	236.100	775.900	754.200	238.000
BT	775.900	754.200	238.100	775.900	773.300	293.000	777.200	774.600	293.000	777.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1' INSIDE SPRINKLE ROAD BRIDGE U/S

X1	13.100	0.000	0.000	0.000	62.000	62.000	62.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000

U/S FACE SPRINKLE ROAD BRIDGE

X1	13.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	2672.000	3024.000	0.000	0.000

VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.

X1	14.000	44.000	2698.000	2998.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	770.200	0.000	768.000	74.000	769.000	358.000	768.200	556.000	777.600	650.000
GR	773.000	664.000	766.200	686.000	767.800	718.000	765.600	792.000	766.900	1008.000

MOORE BUSINESS FORMS INC 27

GR	765.800	1086.000	767.600	1130.000	766.200	1230.000	764.200	1380.000	768.600	1474.000
GR	766.700	1532.000	770.100	1808.000	769.000	1912.000	770.400	1988.000	765.600	2142.000
GR	765.400	2460.000	765.000	2644.000	763.700	2698.000	758.200	2707.000	754.900	2723.000
GR	755.300	2743.000	755.200	2760.000	756.100	2780.000	763.000	2788.000	763.100	2824.000
GR	759.100	2873.000	756.900	2879.000	754.100	2902.000	755.100	2942.000	754.100	2980.000
GR	756.700	2992.000	759.400	2998.000	765.200	3034.000	769.000	3214.000	766.100	3260.000
GR	796.700	3608.000	779.200	3702.000	783.000	3744.000	800.100	3812.000	0.000	0.000
FJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-Y/2 NATURAL RUN

00BREAK00

*PROF 1

CCHV= 0.100 CEHV= 0.300

TIES	VLOD	VCH	VROD	XNL	XLCH	KWR	STN	ELMIN	SSTA	
SLOPE	VLOSL	XLCH	XLOBR	ITRIAL	IP2	ICONT	COPAR	TOPWID	ENDST	
7.00	12.35	759.75	7.01	758.55	760.24	0.69	0.00	0.00	754.16	
7130.	359.	6621.	400.	701.	1463.	733.	0.	0.	756.30	
0.	1.	1.	1.	0.973	1.042	0.915	0.000	757.60	1e+15	
0.000	0.	0.	0.	1	0.	0.	0.00	1e+15	1e+15	

Very close to marginal c/f stream of 1647 Elev of elev 750. ≈ 260 cfs d/s

FLOW DISTRIBUTION FOR SECNO= 7.00 C.SEL= 759.55

LT.=	1.	2.	3.	4.	5.	6.	7.
LEF.=	0.0	0.0	0.	0.	0.	0.	0.
RT.=	1.00	0.0	0.	0.	0.	0.	0.
VEL=	0.3	0.7	3.5	1.5	0.5	0.6	

CCHV= 0.100 CEHV= 0.300

1.50	12.65	761.49	0.00	0.00	760.72	0.26	0.47	0.00	755.14	
7393.	139.	7167.	66.	330.	1751.	231.	57.	35.	757.40	
0.91	0.47	5.23	1.37	0.100	0.023	0.079	0.350	761.60	1e+15	
0.000	0.	0.	1001.	1	1.	0.	0.00	1e+15	1e+15	

FLOW DISTRIBUTION FOR SECNO= 1.00 C.SEL= 760.50

SEC.=	1.00	1324.	1130.	1170.	1252.	1324.	1529.	1559.	1402.	1490.	1661.
LEF.=	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CH.=	1.0	1.0	1.	0.0	100.2	100.0	100.0	100.0	100.0	0.0	0.
RT.=	0.	0.0	0.	0.0	0.	0.0	0.	1.	0.	0.0	0.

CCHV= 0.30 CEHV= 0.500

*SECNO 0.100

9.12	10.45	761.67	3.03	3.03	760.02	1.18	0.22	0.02	759.0.	
7590.	138.	7219.	41.	197.	2094.	34.	150.	44.	757.10	
0.25	0.57	5.45	0.67	0.100	0.035	0.079	0.332	764.50	1e+15	
0.000275	0.	0.	1100.	1	0.	0.	0.0	1e+15	1e+15	

FLOW DISTRIBUTION FOR SECNO= 7.1. C.SEL= 760.1.

SEC.=	1645.	1512.	1 5..	18 ..	1.8.	

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PER Q= 0.1 1.7 97.6 6.6
AREA= 25.3 172.8 2093.3 61.7
VEL= 0.6 0.7 3.4 0.7

*SECNO 9.00

**** OVER [illegible] ADJUSTED FOR EFFECTIVE FLOW= 739.50 ELEV= 772.10

D/S FACE OF PATTERSON RD. BRIDGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2564.	[illegible]	15.	45.	[illegible]
0.21	3.0	2.93	0.63	0.100	0.035	0.379	0.032	744.70	769.50
0.000212	50.	50.	50.	2	1	0	0.30	249.73	1000.20

[illegible] = 0.0 [illegible] = 769.50

STA= 1311. 1079.
PER Q= 100.0
AREA= 2564.5
VEL= [illegible]

*SECNO 9.00

SECNO	DEPTH	CHSEL	CRENS	WSELK	EG	HV	FL	QLOSS	BANK ELEV
Q	SLOD	PCI	QROB	ALOB	ACH	AOCH	WOL	TAR	LEFT/RIGHT
TIME	WLOD	VCH	VROB	KPL	XICI	KBH	WTM	ELMIN	SSTA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SSTA NORMAL CHANGE/ZERO= 16 MIN ELTRD= 769.50 MAX ELLC= 770.50

[illegible] 769.50 [illegible] 770.50

1 FT. INSIDE D/S FACE PATTERSON RD. BRIDGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1.	[illegible]	0.	0.	[illegible]	[illegible]	[illegible]	5.	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.000235	1.	1.	1.	0	1	0	-30.1	249.73	[illegible]

F.P. [illegible] [illegible] = [illegible] [illegible] = [illegible]

[illegible] = 1.50, [illegible],
PER Q= 100.0
AREA= 2564.5
VEL= 3.3

[illegible] 00

SSTA NORMAL BRIDGE/ZERO= 16 MIN ELTRD= 769.50 MAX ELLC= 770.50

[illegible] 739.50 [illegible] 770.50

1 FT. INSIDE U/S FACE PATTERSON RD. BRIDGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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7390.	0.	7390.	0.	0.	2486.	0.	162.	45.	765.10
0.21	0.00	2.97	0.00	0.110	0.035	0.029	1.032	744.70	1610.46
0.000235	43.	43.	43.	3	0	0	-80.13	249.81	1360.30

FLO. DISTRIBUTION FOR SECNO= 9.10 CHSLL= 764.9

STA= 1610. 1873.
PER Q= 100.0
ASLI= 2465.3

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE/ELLEN= 769.30 ELMEA= 774.30

9.50	16.25	760.45	0.00	0.00	750.00	0.15	0.00	0.00	765.20
7390.	1.	7392.	0.	1.	2486.	0.	162.	45.	765.10
0.21	0.00	2.98	0.00	0.110	0.035	0.029	1.032	744.70	1610.46
0.000235	43.	43.	43.	3	0	0	-80.13	249.81	1360.30

FLOW DISTRIBUTION FOR SECNO= 9.05 CHSLL= 750.93

STA= 1610. 1870.

*SECNO 9.050

7390.	0.	7390.	0.	0.	2472.	0.	165.	45.	765.10
3.42	0.00	3.17	0.00	0.100	0.035	0.029	0.032	744.70	1610.30
0.000210	53.	53.	53.	3	0	0	0.00	249.95	1360.35

FLOW DISTRIBUTION FOR SECNO= 9.05 CHSLL= 750.93

STA= 1610. 1870.
PER Q= 100.0
ASLI= 2465.3
WSLO= 765.9

CCHV= 0.700 CEHV= 0.300
*SECNO 10.000

10.00	19.21	761.11	0.00	0.00	751.20	0.15	0.15	0.01	754.30
7390.	147.	7063.	182.	24.	2121.	364.	216.	51.	754.90
0.35	0.37	3.67	0.33	3.230	0.032	0.103	0.033	765.02	1610.42
0.000211	110.	430.	150.	0	0	0	0.00	249.95	1360.35

FLOW DISTRIBUTION FOR SECNO= 10.00 CHSLL= 741.11

STA= 1370. 1174. 1158. 1179. 1209. 1352. 1405. 1472.
PER Q= 0.1 0.1 0.2 1.5 95.6 1.0 1.4
AREA= 35.4 29.1 35.3 147.2 2130.3 125.7 218.1
VEL= 0.2 0.2 0.4 0.3 3.3 0.6 0.5

CCHV= 1.000 CEXP= 0.300
VFACTOR 1.100

SECNO	DEPTH	CHSEL	CRI-S	-SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	RLOB	ALP	ABOD	VOL	TH	LEFT/RIGHT
TIME	VLOB	VCH	VROB	KOL	KOLD	ALP	CTR	ELMIN	SSTA
SLOPE	DEPTH	SLOB	SROB	TOTAL	IC	TOPW	DFAC	DP/DX	DP/T

3470 ENCROACHMENT STATIONS= 1150.0 1390.0 TYPE= 1 OFFSET= 640.000

S	VALLEY SLOPE, AFPROACH V	B/A	SL	L ST, OBTUSE					
			0.30	0.50	761.30			0.07	
	7590.	351.	7039.	30.	250.	1535.	51.	250.	57.	754.30
	0.34	1.58	4.57	0.72	0.300	0.035	0.103	0.035	748.30	1151.87
	0.000529	1230.	750.	300.	0	0		0.00	210.86	1372.73

FLOW [illegible] 761.30 CHSEL= 761.30

STA= 1152. 1203. 1338. 1375.
PER Q= 4.8 94.3 0.5
[illegible]

SECNO 11.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 767.40 ELREA= 766.00

[illegible]

11.20	11.30	761.36	0.00	0.30	761.63	0.28	0.00	0.01	757.5.
7590.	0.	7595.	0.	3.	1759.	0.	600.	56.	757.70
	0.10								
0.30	21.	41					2.00		

FLOW DISTRIBUTION FOR SECNO= 11.20 CHSEL= 761.36

[illegible]
VEL= 4.2

SECNO 11.300

STA [illegible] ELLEA= 766.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 767.40 ELREA= 766.00

[illegible]

11.30	11.61	761.41	0.00	0.00	761.62	0.27	0.00	0.05	757.30
7590.	0.	7590.	0.	0.	1536.	0.	200.	56.	754.70
0.34	2.02	4.99	0.00	0.300	0.035	0.100	0.01	749.53	1146.30

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0.001140 1. 1. 1. 2 0 0 +240.30 191.00 1367.50

FLOW DISTRIBUTION FOR SECNO= 11.30 CWSEL= 761.31

STA= 1197. 1.00.
PER [illegible]
AREA= 2336.2
VEL= 4.9

[illegible] 11.400

[illegible] ELLO= [illegible]

3695 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 767.40 ELREA= 766.80

[illegible] CULL ST. BRIDGE 1997 ≈ 760.8

11.40	12.71	761.41	0.00	0.00	761.74	0.00	0.04	0.01	757.00
7390.	0.	7390.	0.	0.	1606.	0.	202.	55.	756.10
[illegible]	[illegible]	[illegible]	[illegible]	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FLOW DISTRIBUTION FOR SECNO= 11.40 CWSEL= 76[illegible].41

STA= 1197
[illegible]
[illegible]
VEL= [illegible]

*SECNO 11.500

[illegible]

U/S FACE OF CULL ST. BRIDGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.000[illegible]	1.	1.	1.	2	0	0	0.00	191.00	1367.50

[illegible] CWSEL= [illegible]

[illegible]
PER [illegible]
AREA= [illegible]
VEL= [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Q	QLOC	QCH	QROC	QLOF	QCH	QROD	VOL	TYP	LEFT/RIGHT
TIME	VLOC	VCH	VROC	XNL	XNCH	XNR	MTH	ELMIN	USTA
SLOPE	XLOCL	XLOCR	XLOCR	XTRIAL	ZNL	ZCORT	CSNLR	TORMID	ENDST

3470 ENCROACHMENT STATIONS= 1146.0 1460.0 TYPE= 1 TARGET= 294.000

VALLEY SECT. [illegible] 50 [illegible] U/S [illegible]

11.60	12.35	761.55	0.00	0.00	761.79	0.24	0.02	0.00	737.00	
7390.	0.	7386.	0.	0.	1060.	3.	284.	98.	756.10	
0.35	0.52	3.41	0.22	0.010	0.035	0.120	0.033	746.70	1191.61	
0.000076	90.	90.	90.	1	0	0	0.02	96.96	1190.77	

FLOW DISTRIBUTION FOR SECNO= 11.60 CWSEL= 761.55

STA= 1192. 1197. 1330. 1349.

0.0	0	90.0	0.0
3.7	29.7	1350.1	0.3
1.3	0.1	7.8	0.2

CCHV= 0.300 CEHV= 0.500
#SECNO 11.700

[illegible] 1191.5 1199.0 [illegible] 1 YTOP= 500.000

VALLEY SECT. APPROX.300 FT. W/E OF GULL ST.

11.70	16.24	761.74	0.00	0.00	761.92	0.18	0.12	0.02	753.90
7390.	0.	7386.	0.	0.	1060.	3.	284.	98.	756.10
0.35	0.52	3.41	0.22	0.010	0.035	0.120	0.033	746.70	1191.61
0.000076	90.	90.	90.	1	0	0	0.02	96.96	1190.77

FLOW DISTRIBUTION FOR SECNO= 11.70 CWSEL= 761.74

CHAN	LOB	CH	ROB				
AREA=	121.1	13.1	342.7	1.7	2045.2	78.3	0.3
VEL=	0.2	0.3	0.6	0.7	0.5	0.0	0.2

[illegible]

[illegible] 1191.5 1199.0 [illegible] 1 YTOP= 500.000

VALLEY SECT. APPROX. 50 FT. E/O OF R.R. BRIDGE & 37 ICE. AVE.

1.00	0.0	761.8	0.30	0.00	762.04	0.2	0.1	0.02	752.00
73.	0.	73.	1.	194.	2642.	153.	322.	35.	751.00
0.55	0.0	0.0	0.04	1.100	0.136	0.000	0.155	747.65	1191.93
0.000576	530.	530.	530.	2	1	0	0.00	240.45	1191.64

[illegible] 215 LB 76.4

[illegible]					
PLR =*	0.1	0.2	67.6	1.2	0.2
AREA=	23.9	119.3	2047.2	127.5	35.3
VEL=	0.2	0.4	0.5	0.7	0.4

[illegible]

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE/CLLCH= 783.20 ELBKA= 729.70

AT FACE OF R. [illegible] OF SECTION NO.

12.00	16.41	762.14	2.05	2.01	762.04	2.16	0.31	0.1	743.20
7390.	0.	7390.	0.	0.	2270.	0.	324.	65.	756.50
0.24	3.03	3.26	3.03	0.003	0.034	0.100	0.153	747.60	1190.30
.000036	10.	30.	30.	2	1	0	0.00	23.20	1190.30

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FORM 1811 SUBMITTED BY ROTARY DARIFOLD FORMS.

FLOW DISTRIBUTION FOR SECNO= 12.10 CWSEL= 751.83

STA= 395. 1149.
Q= 1100.0
AREA= 171.7
VEL= 5.2

SPEC= 0.1717

SECNO	CHNL	OVBK	TOTAL	Q/Q	E.G.	CWSEL	%Q	EGLOB	EGLOB
12.10	0.52	1.50	0.00	100.00	21.02	775.02	5.02	751.83	742.81

*SECNO 12.400
PRESSURE FLOW.

EGPRS	EGLOB	Q	VEL H	OPT	BARCH	TRAPEZOID AREA	ELLOB	ELEXIT
742.31	762.15	0.52	3.	7390.	1715.	1717.	762.10	761.20

3695 OVERBANK AREA ASSUMED NON-EFFECTIVE ELLOB= 762.22 ELTEA= 765.71

7390.	0.	7390.	0.	0.	1964.	0.	526.	85.	751.83
0.45	0.00	0.75	0.00	0.100	0.050	1.10	1.003	751.83	395.00
0.000273	23.	2.	23.	2	0	0	0.00	250.03	1149.01

STA= 395. 1149.
PER AR= 171.7
WSEL=
VEL=

*SECNO 12.500

SECNO	DEPTH	CHNEL	CRIPS	LSELS	CD	HV	HL	OLOSS	BANK SELV
0.	0.00	0.00	0.00	0.00	0.00	0.00	0.	0.00	0.
12.1	4.1	751.8	0.00	0.00	751.8	0.00	0.00	0.00	751.8

VALLEY SECT. APPROX. 50 FT. D/S OF 3.1. BRIDGE NO. 01 010... BSL.

12.1	4.1	751.8	0.00	0.00	751.8	0.00	0.00	0.00	751.8
7390.	0.	7390.	0.	0.	1964.	0.	526.	85.	751.83
0.45	1.42	3.76	2.42	0.100	0.050	0.700	0.992	751.83	273.83
0.000577	50.	57.	50.	3	3	0	0.00	265.73	1157.53

FLOW DISTRIBUTION FOR SECNO= 12.1 CWSEL= 751.1

STA= 674. 395. 1149. 1157.
PER AR= 0.2 35.7 0.1
WSEL= 35.2 751.0 35.4

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VEL= 0.4 3.7 0.4

CCSV= 0.300 CENV= 0.300
*SECNO 13.190

5470 CHANNEL ALIGNMENT STATION= 790.3 724.0 TYPE= 1 ANGLE= 90.000

VALLEY SECT. APPROX. 50 FT. D/S OF MICHIGAN AVE.

13.19	13.33	762.25	0.00	0.00	762.42	0.43	0.43	5.09	754.92
7.00	2.	7.00	1.	9.	7195.	0.	0.	0.	72.
0.04	5.1	7.34	6.20	3.10	44.50	1.050	2.00	754.92	756.34
1.000.19	1.0	7.0	350.	0	0	0	3.43	185.60	925.00

FLOW DISTRIBUTION FOR SECNO= 13.19 CHSEL= 762.25

	0.	15.	0.3	
AREA=	14.3	2944.0	3.6	
VEL=	0.5	3.4	0.3	

D/S FACE OF MICHIGAN AVE. BRIDGE

0.43	3.07	7.46	5.07	0.103	0.045	0.382	0.92	730.90	754.30
0.000193	90.	92.	90.	3		0	1.01	920.70	925.30

5370 NATURAL BRIDGE,NBD= 17 MIN ELTRD= 766.20 MAX ELCD= 763.30

1 PT. INSIDE D/S FACE MICHIGAN AVE. BRIDGE (SKEW= 90 DEGREES)

0.43	0.	15.	0.	0.	7347.	0.	2944.	14.	754.30
0.	3.05	5.0	4.07	0.103	0.045	0.382	1.01	730.90	754.30
0.001933	1.	1.	1.	2		0	-805.01	920.70	925.30

PER Q= 100.0
AREA= 2957.6
VEL= 3.6

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*SECNO 13.400

5370 NORMAL BRIDGE, IOP= 17 MIN ELTRD= 765.20 MAX ELEV= 763.51

5405 SUPERCRITICAL FLOW ENCOUNTERED ELEV= 767.50 ELEV= 767.30

1 FT. INSIDE D/S FACE MICHIGAN AVE. BRIDGE

3.48	3.00	5.99	3.65	0.100	0.027	0.002	0.232	740.90	765.33	
0.001699	49.	61.	49.	2	3	0	-910.31	190.70	925.00	

STA= 764. 925.
PER CM= 100.0
AREA= 1234.0

SEC ID	DEPTH	CNSCL	CRWS	VELCR	FR	HV	HL	BLOCS	BANK ELEV
C	OLSH	WCI	WRSB	ALTB	AOA	ARCH	WOL	T.A	LEFT/RIGHT
TIME	WLCI	WCH	WBCH	SM	XRCH	XRB	ATM	LLRS	BST

5495 OVERBANK AREA ASSUMED NON-EFFECTIVE ELEV= 767.50 ELEV= 770.40

11.50	13.76	752.56	0.50	0.50	7.1.35	0.17	0.01	1.12	750.70	
7592.	0.	7757.	0.	0.	2222.	0.	470.	37.	7.2.7	
0.45	0.00	5.55	0.10	3.100	1.150	0.000	0.052	752.92	744.50	
0						0	0			

FLOW DISTRIBUTION FOR SECNO= 13.50 CWSEL= 762.66

STA= 764. 925.
TIE O= 100.0
AREA= 1234.0
PER O= 1.0

*SECNO 13.600

7.40	7.13	772.55	1.61	.03	4.1.17	2.2.	0.01	0.05	1.2.1	
7590.	22.	7759.	10.	5.	1001.	11.	349.	21.	7.7.70	
2.41	0.41	5.87	0.55	0.100	0.050	0.003	0.052	746.70	1.70.5?	
0.003199	50.	51.	50.	2	0	0	1.01	781.93	1550.64	

FLOW DISTRIBUTION FOR SECNO= 11.1 CWSEL= 1550.64

STA= 1371. 1130. 940. 1540. 1550.
PER O= 0.1 0.5 99.5 0.

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```
AREA=      8.7      45.8    1900.2      17.6
 VEL=      0.1       0.5       3.9       0.6

CCHV=   0.300 CCHV=   0.500
*SECTO 16.  0

3475 [illegible] STATIONS    1271.0    1472.0  [illegible]=     1  [illegible]=     200.000

        VALLEY SECT. APPROX.  50 FT. D/S OF MILL ST.

    [illegible]    [illegible]    [illegible]    0.00    0.00    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    [illegible]    [illegible]    [illegible]    0.39    0.000    [illegible]    0.140    [illegible]    [illegible]    [illegible]
 0.000196    1250.    1230.    150.      2       0       0    [illegible]    192.96    1470.96

FLOW [illegible] [illegible]=    [illegible]          CUSEL=    [illegible]

STA=    [illegible]    [illegible]    [illegible]    [illegible]
 PER Q=      0.3      99.5       0.2
  AREA=     27.9    2303.1      40.4
   VEL=      0.7       3.[illegible]       0.4

[illegible]

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE ELEV=      765.00 FLAREA=      766.40

        [illegible]

    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    0.39    0.00    [illegible]    0.00    0.000    0.030    0.120    [illegible]    [illegible]    1264.00
 0.000[illegible]    30.    30.    50.      0       0       0    [illegible]    180.00    1464.00

[illegible]          CUSEL=    [illegible]

STA=    1234.    1464.
 PER Q=    1[illegible].0
  [illegible]
   [illegible]

*SECTO 16.303

3370 NORMAL [illegible] ELEV=  765.00  AS ELEV=  764.9[illegible]

[illegible]    [illegible]    [illegible]

        1 FT. INSIDE D/S FACE MILL ST. BRIDGE

    [illegible]    [illegible]    [illegible]    0.00    0.00    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    0.39    0.00    4.67    0.00    0.060    0.030    0.120    [illegible]    [illegible]    1264.00
 0.001112      1.      1.      1.      2       0       0  -550.[illegible]    180.00    1464.00

FLOW DISTRIBUTION [illegible]=    [illegible]          CUSEL=    [illegible]

STA=    1234.    1464.
 PER Q=    1[illegible].0
  AREA=    [illegible]
```

VEL= 4.7

*SECNO 14.400

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HW	HL	OLOSS	BANK ELEV
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE*ELLEA= 766.00 E.HEA= 766.40

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6910.	0.	6910.	0.	0.	1220.	0.	610.	74.	757.40
0.33	0.00	4.73	0.00	0.060	0.030	0.120	0.032	749.83	1264.00
0.001103	33.	33.	33.	1	0	0	-536.4[illegible]	1[illegible].00	1464.00

[illegible]

STA= [illegible] 1566.
PER U= 100.0

[illegible]

*SECNO 14.500

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE*ELLEA= 766.30 ELEA= 766.40

[illegible]

14.50	13.33	753.[illegible]	0.30	0.00	753.3[illegible]	0.10	[illegible]	0.00	75[illegible]
6910.	0.	6910.	0.	0.	2021.	0.	410.	74.	757.[illegible]
[illegible]	0.30	[illegible]	0.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FLOW DISTRIBUTION FOR SECNO= [illegible] CWSEL= 763.10

STA= [illegible] 1566
PER U= 100.0
[illegible]
VEL= 3.4

*SECNO 14.600

[illegible]

VALLEY DEPT. 50 FT. L/S OF [illegible] ST.

14.60	13.36	763.[illegible]	0.30	0.00	763.32	0.10	0.01	0.00	75[illegible].10
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.47	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	[illegible]	[illegible]	[illegible]

FLOW DISTRIBUTION FOR SECNO= [illegible] CWSEL= 763.14

STA= 1272. 1284. 1464. 1470.
PER Q= 0.6 99.6 0.3
AREA= 55.3 2025.6 16.5
V.L= 0.7 3.2 0.3

CCH= .100 0.0 0.00

*SECNO 15.000

VALLEY SECT. UPSTRM. 1430 FT. U/S OF ELLIS ST. BRIDGE

0.75	0.36	2.74	0.21	0.063	0.030	0.120	0.052	765.70	1777.86
0.000039	1150.	1431.	1452.	0	0	3	3.02	725.05	1903.35

STA= 1178. 1478. 1472. 1644. 1756. 1766. 1904.
PER Q= 6.1 5.3 11.2 0.9 0.4 0.2
AREA= 203.4 299.9 2330.7 231.6 208.4 21.2
V.L= 1.1 0. 3.7 0.2 0.1 0.1

CCH= 0.100 0.0 2.000

*SECNO 16.100

3472 ENCROACHMENT STATIONS= 1500.0 1702.0 TYPE= TARGET= 262.030

1.10	21.73	755.55	0.00	0.00	755.62	0.11	0.02	0.06	755.68
6610.	66.	3078.	25.	107.	2605.	64.	297.	131.	756.00
0.59	0.37	2.42	0.29	0.050	0.030	0.120	0.052	765.00	1900.00
0.000039	1150.	1431.	1452.	0	0	3	3.02	725.05	1903.35

FLOW DISTRIBUTION FOR SECNO= 16.1 CHSEL= 765.55

STA= 1500. 1512. 1590. 1702.
PER Q= 0.1 0.7 0.2
AREA= 10.3 100.1 19.7
V.L= 0.6 0.7 0.3

*SECNO 15.200

SECNO	DEPTH	CHSEL	CRWS	ESLOP	SL	AV	QC	CHSEL	GRND ELEV
0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	LEFT/RIGHT	
1100.	0.0	0.	0.0	0.00	0.00	0.0	0.0	0.0	0.0
1500.	11.0	1500.	0.0	111.11	1.00	1500.	0.0	11.0	11.0

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1.20	21.73	755.55	0.00	0.00	755.62	0.11	0.02	0.06	755.68
6610.	66.	3078.	25.	107.	2605.	64.	297.	131.	756.00
0.59	0.37	2.42	0.29	0.050	0.030	0.120	0.052	765.00	1900.00
0.000039	1150.	1431.	1452.	0	0	3	3.02	725.05	1903.35

FLOW DISTRIBUTION FOR SECNO= 15.2 CHSEL= 765.55

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STA= 1512. 1590.
PER Q= 100.0
AREA= 2605.9
VEL= 2.7

SPECIAL BRIDGE

SO	XK	HRAD	COEN	ROLES	BMC	BW=	DAM-W	SS	ELGAL	ELGND
	1.2	1.5	.05	1.0	1511.11	57.71	1515.01	1.00	755.5.	755.82

--ECHO IS--
CLASS A LOW FLOW

3420 BRIDGE H.S.= 757.77 BRIDGE VELOCITY= 3.23 CALCULATED CHANNEL AREA= 2105.

ROPT	LOWCF	WPRO	PIERS	PAREA	SKEW	ABUTMENT(S)	ELTRD	ELLC
							WSPRO	
0	0.00	753.59	1.37	0.	6410.	2095.	4110.	755.50	756.40

3/8 FACE OF B.F.BRIDGE

0.000672	1.	51.	1.	0	0	3.23	177.13	809.22

--ECHO IS--
--ECHO IS--
STA= 1
PER Q= 100.0
AREA= 2767.5
VEL= 2.5

--ECHO IS--
3470 ENCROACHMENT STATIONS= 1502.0 1747.0 TYPE= 1 TARGET= 270.00

WSPRO TEST. APPROX. 30 FT. OF .0. ELEV

	16.30	2.15	1.00	1.21	.00	1.21	1.01	1.00	1.02	755.20
	0.11		1.21	1.0	.05	.035	.005	.02	1.0	1.0
	0.90	0.30	2.40	1.31	[illegible]	[illegible]	[illegible]	0.0001	745.72	1500.70
	0.000104	51.	50.	50.	1	1	1	1.02	253.60	1240.01

[illegible]

STA= 1500. 1515. 1530. 1740.
PER Q= 1.0 97.7 1.2
AREA= 120.6 2325.2 219.5
VEL= 0.0 2.1 0.3

[illegible]
*SEC.J 17.000

VALLEY SECT. AT CITY OF KALA[illegible]/GOLSHA20G T R. 20E . 00 3.00

sect.
S

17.00	15.58	763.58	0.00	0.00	764.07	0.49	0.23	0.11	754.50
6910.	74.	6768.	68.	64.	1138.	84.	664.	107.	753.30
0.97	1.16	5.70	0.01	0.100	0.030	0.100	0.031	747.00	0.02
0.000799	1230.	1400.	700.	2	0	0	[illegible]	[illegible]	[illegible]

FLOW DISTRIBUTION FOR SECNO= 17.00 CWSEL= 763.58

STA= 0. [illegible] 90. 100.

[illegible]

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FORM 1411-GB PRINTED BY ROTARY MANIFOLD FORMS.

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100 YR NATURAL RUN - Downstream

00BREAK00

MOORE BUSINESS FORMS, INC 23

```
*PROF 1
CCHV=     .100 CEHV=     .300
*SECNO .000
     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

3470 ENCROACHMENT STATIONS=     1858.0     2396.0  TYPE=     1  TARGET=     538.000
        0.00      10.99     755.29       0.00       0.00     755.49        .20       0.00       0.00     749.60
      7420.        496.       6217.        707.       432.       1608.        624.         0.          0.     749.60
        0.00       1.15       3.87       1.13        .070        .035        .070      0.000     744.30    1890.73
     .000455         0.         0.          0.          0           0           0       0.00     463.18    2353.91

*SECNO 1.000
3470 ENCROACHMENT STATIONS=      622.0      2634.0  TYPE=     1  TARGET=    2012.000
          VALLEY SECTION (A) AT DOWNSTREAM STUDY LIMITS -- I.E. G AVENUE
       1.00       9.15     755.65       0.00     755.31     755.73        .08        .23        .01     749.70
     7420.       1395.       5896.        129.      1714.      2415.        198.         59.         11.     749.80
        .10         .81       2.44         .65        .070        .035        .070        .035     746.50    1696.30
     .000213        625.       760.        905.          1           0           0       0.00     802.03    2498.32

*SECNO 2.000
3470 ENCROACHMENT STATIONS=     1128.0      3346.0  TYPE=     1  TARGET=    2218.000
          VALLEY SECTION (B)
       2.00       8.97     755.87       0.00     755.55     755.91        .04        .18        .00     750.40
     7420.       1027.       5464.        929.      1647.      2924.       1303.        174.         37.     750.30
        .26         .62       1.87         .71        .070        .035        .070        .034     746.90    1421.31
     .000192       1270.       850.        800.          2           0           0       0.00    1463.39    2884.69

*SECNO 3.000
3470 ENCROACHMENT STATIONS=     1916.0      3050.0  TYPE=     1  TARGET=    1134.000
          VALLEY SECTION (C)
       3.00      10.56     756.36       0.00     756.25     756.62        .26        .64        .06     751.40
     7420.        294.       6786.        340.       283.       1599.        445.        347.         79.     751.10
        .40        1.04       4.25         .76        .080        .040        .080        .038     745.80    1916.00
     .000693       1290.       2010.       2010.          2           0           0       0.00     588.31    2504.31

*SECNO 3.700
     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST
```

3470 ENCROACHMENT STATIONS= 2016.0 2500.0 TYPE= 1 TARGET= 484.000

3.70	8.43	756.83	0.00	756.56	757.01	.19	.39	.01	751.80
7420.	100.	7265.	55.	88.	2064.	80.	377.	85.	751.80
.45	1.13	3.52	.68	.080	.040	.080	.038	748.40	2016.00
.000650	700.	580.	410.	2	0	0	0.00	375.78	2391.78

*SECNO 3.900

3470 ENCROACHMENT STATIONS= 1995.0 2365.0 TYPE= 1 TARGET= 370.000

3.90	8.97	757.37	0.00	757.00	757.53	.16	.51	.00	751.80
7420.	191.	7160.	69.	178.	2221.	92.	426.	92.	751.80
.53	1.08	3.22	.75	.080	.040	.080	.038	748.40	1995.00
.000494	1300.	900.	490.	2	0	0	0.00	370.00	2365.00

*SECNO 3.910

3.91	10.42	757.42	0.00	757.02	757.55	.13	.02	.00	751.80
7420.	44.	7334.	42.	61.	2483.	60.	429.	93.	751.80
.53	.71	2.95	.71	.080	.040	.080	.038	747.00	2008.15
.000385	50.	50.	50.	1	0	0	0.00	347.08	2355.22

*SECNO 4.000

RAILROAD BRIDGE SECTION (D)

4.00	10.42	757.42	0.00	757.03	757.55	.13	.00	.00	751.80
7420.	44.	7334.	42.	61.	2486.	60.	429.	93.	751.80
.53	.71	2.95	.71	.080	.040	.080	.038	747.00	2008.11
.000384	1.	0.	1.	0	0	0	0.00	347.15	2355.26

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.95	1.50	3.00	0.00	300.00	36.00	4224.00	2.34	752.00	752.00

*SECNO 4.100

WATER EL=X5 CARD= 757.668

4.10	10.67	757.67	0.00	757.13	757.79	.13	.00	.00	751.80
7420.	47.	7328.	45.	67.	2562.	65.	430.	93.	751.80
.53	.69	2.86	.69	.080	.040	.080	.038	747.00	2007.14
.000347	10.	10.	10.	0	0	0	0.00	349.07	2356.20

*SECNO 4.200

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
4.20	10.67	757.67	0.00	757.14	757.79	.13	.00	.00	751.80
7420.	47.	7328.	45.	67.	2562.	65.	430.	93.	751.80
.53	.69	2.86	.69	.080	.040	.080	.038	747.00	2007.13

MOORE BUSINESS FORMS, INC. 23

.000347	1.	1.	1.	0	0	0	0.00	349.07	2356.21

*SECNO 4.500

4.50	9.65	758.05	0.00	757.66	758.20	.14	.40	.01	748.90
7420.	2983.	4336.	101.	2551.	1120.	88.	489.	102.	752.50
.62	1.17	3.87	1.14	.080	.040	.080	.039	748.40	1497.85
.000592	500.	1000.	1000.	2	0	0	0.00	771.73	2269.58

*SECNO 4.900

4.90	10.58	758.98	0.00	758.70	759.19	.22	.97	.02	751.60
7420.	574.	6712.	134.	540.	1718.	111.	611.	124.	752.50
.75	1.06	3.91	1.21	.080	.040	.080	.039	748.40	1917.94
.000532	1735.	1735.	1735.	2	0	0	0.00	353.22	2271.16

*SECNO 4.910

4.91	11.70	759.10	0.00	758.74	759.22	.13	.02	.01	752.60
7420.	123.	7242.	55.	161.	2523.	76.	614.	125.	752.50
.76	.76	2.87	.72	.080	.040	.080	.039	747.40	2000.00
.000263	50.	50.	50.	2	0	0	0.00	298.00	2298.00

*SECNO 5.000

RAILROAD BRIDGE SECTION (E)

5.00	11.70	759.10	0.00	758.75	759.22	.13	.00	.00	752.60
7420.	123.	7242.	55.	161.	2523.	76.	614.	125.	752.50
.76	.76	2.87	.72	.080	.040	.080	.039	747.40	2000.00
.000263	1.	1.	1.	0	0	0	0.00	298.00	2298.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.95	1.50	3.00	0.00	175.00	30.00	2790.00	5.79	747.20	747.20

*SECNO 5.100

WATER EL=XS CARD= 759.196

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA/
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
5.10	11.80	759.20	0.00	758.85	759.32	.12	.00	.00	752.60
7420.	125.	7238.	56.	165.	2548.	78.	615.	125.	752.50
.76	.76	2.84	.72	.080	.040	.080	.039	747.40	2000.00
.000254	10.	10.	10.	0	0	0	0.00	298.00	2298.00

*SECNO 5.200

5.20	11.80	759.20	0.00	758.86	759.32	.12	.00	.00	752.60
7420.	125.	7238.	56.	165.	2548.	78.	615.	125.	752.50
.76	.76	2.84	.72	.080	.040	.080	.039	747.40	2000.00
.000254	1.	1.	1.	0	0	0	0.00	298.00	2298.00

MOORE BUSINESS FORMS, INC. 23

*SECNO 5.800

3470 ENCROACHMENT STATIONS= 1980.0 2200.0 TYPE= 1 TARGET= 220.000

5.80	11.75	759.45	0.00	759.16	759.68	.23	.33	.03	752.30
7420.	122.	7290.	7.	117.	1895.	13.	666.	130.	752.50
.83	1.04	3.85	.57	.080	.040	.080	.040	747.70	1980.00
.000508	760.	935.	1040.	2	0	0	0.00	220.00	2200.00

*SECNO 5.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 763.20 ELREA= 763.20

5.90	11.68	759.48	0.00	759.21	759.72	.24	.04	.00	765.00
7420.	0.	7420.	0.	0.	1890.	0.	669.	131.	764.90
.83	0.00	3.93	0.00	.080	.040	.080	.040	747.80	2000.00
.000618	65.	65.	65.	0	0	0	0.00	207.00	2207.00

CCHV= .300 CEHV= .500

*SECNO 6.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 764.90 MAX ELLC= 761.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 763.20 ELREA= 763.20

ROAD BRIDGE SECTION (F) AT MOSEL AVENUE

6.00	11.67	759.47	0.00	759.22	759.72	.25	.00	.01	765.00
7390.	0.	7390.	0.	0.	1829.	0.	669.	131.	764.90
.83	0.00	4.04	0.00	.080	.040	.080	.040	747.80	2000.00
.000874	1.	1.	1.	0	0	0	-61.78	207.00	2207.00

*SECNO 6.100

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

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 765.00 MAX ELLC= 761.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 765.10 ELREA= 765.10

6.10	12.53	759.53	0.00	759.23	759.76	.23	.03	.01	765.00
7390.	0.	7390.	0.	0.	1913.	0.	670.	131.	765.10
.84	0.00	3.86	0.00	.080	.040	.080	.040	747.00	2000.00
.000765	35.	35.	35.	2	0	0	-64.35	207.00	2207.00

*SECNO 6.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 765.10 ELREA= 765.10

MOORE BUSINESS FORMS, INC 23

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      6.20      12.55     759.55       0.00     759.24     759.76       .22        .00        .00     765.00
      7390.        0.      7390.         0.         0.      1982.        0.       670.       131.      765.10
       .84       0.00       3.73       0.00       .080       .040       .080       .039     747.00    2000.00
   .000526         1.         1.         1.          2          0          0       0.00     207.00    2207.00
```

*SECNO 6.300

3470 ENCROACHMENT STATIONS=   1900.0   2307.0 TYPE=   1 TARGET=   407.000

```
      6.30      12.65     759.65       0.00     759.25     759.81       .16        .03        .02     755.00
      7390.       387.      6711.       292.       415.      2003.       349.       676.       132.      755.50
       .85        .93       3.35        .84       .050       .025       .050       .039     747.00    1900.00
   .000155        100.       100.       100.          2          0          0       0.00     407.00    2307.00
```

CCHV=   .100 CEHV=   .300
*SECNO 7.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

```
      7.00      12.47     760.07       0.00     759.76     760.32       .25        .49        .03     754.10
      7390.       431.      6313.       646.       895.      1461.       832.       855.       189.      754.00
      1.03        .48       4.32        .78       .050       .025       .050       .036     747.60    1099.25
   .000238       2775.      2555.      2625.          2          0          0       0.00    1451.51    2550.75
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MOORE BUSINESS FORMS, INC 23



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO Twp

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100 yr Natural
- upstream



*PROF 1

CCHV= .100 CEHV= .300
*SECNO 8.000

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

VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY (H)

8.00	16.58	763.58	0.00	763.58	764.07	.49	0.00	0.00	754.50
6910.	61.	6764.	85.	64.	1188.	85.	0.	0.	753.30
0.00	.96	5.69	1.01	.080	.030	.080	0.000	747.00	.02
.000398	1650.	1400.	700.	0	0	0	0.00	108.16	108.18

CCHV= .300 CEHV= .500
*SECNO 8.900

VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE (I)

8.90	14.91	764.31	0.00	0.00	764.55	.23	.40	.08	754.90
6900.	145.	6690.	66.	159.	1698.	92.	51.	5.	754.60
.10	.91	3.94	.72	.080	.030	.080	.030	749.40	.03
.000224	1300.	1350.	1400.	2	0	0	0.00	182.00	182.03

*SECNO 9.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 769.00 ELREA= 769.00

D/S FACE OF KING HWY. BRIDGE (J)

9.00	15.23	764.43	0.00	0.00	764.58	.15	.01	.02	769.00
6900.	0.	6900.	0.	0.	2213.	0.	53.	5.	768.80
.10	0.00	3.12	0.00	.080	.030	.080	.030	749.20	0.00
.000164	50.	50.	50.	2	0	0	0.00	190.00	190.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	3.00	0.00	159.00	6.00	1975.00	0.00	751.30	749.20

*SECNO 9.100
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
764.71	764.60	.01	0.	6900.	1975.	1974.	764.20	768.80

BUSINESS FORMS INC. 27 MOORE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 769.00 ELREA= 769.00

U/S FACE OF KING HWY. BRIDGE

9.10	13.26	764.56	0.00	0.00	764.71	.15	.13	0.00	769.00
6900.	0.	6900.	0.	0.	2195.	0.	56.	5.	768.80
.11	0.00	3.14	0.00	.080	.030	.080	.030	751.30	0.00
.000169	56.	56.	56.	2	0	0	0.00	190.00	190.00

CCHV= .100 CEHV= .300

*SECNO 9.200

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

VALLEY SECTION 50 FT. U/S OF KING HWY. BRIDGE (K)

9.20	13.27	764.57	0.00	0.00	764.72	.15	.01	.00	769.00
6900.	0.	6900.	0.	0.	2197.	0.	59.	5.	768.80
.11	0.00	3.14	0.00	.080	.030	.080	.030	751.30	0.00
.000169	50.	50.	50.	0	0	0	0.00	190.00	190.00

*SECNO 9.500

3470 ENCROACHMENT STATIONS= 1800.0 2400.0 TYPE= 1 TARGET= 600.000

9.50	13.32	764.82	0.00	0.00	764.88	.06	.15	.01	755.50
6900.	1339.	4892.	669.	1844.	2145.	1227.	167.	17.	754.70
.31	.73	2.28	.55	.080	.030	.080	.030	751.50	1800.00
.000084	1225.	1275.	1325.	2	0	0	0.00	600.00	2400.00

*SECNO 10.000

3470 ENCROACHMENT STATIONS= 2000.0 2570.0 TYPE= 1 TARGET= 570.000

VALLEY SECT. JUST D/S OF WESTERLY OXBOW (L)

10.00	13.27	764.87	0.00	0.00	764.97	.10	.08	.01	755.40
6900.	16.	5435.	1448.	31.	1930.	2136.	246.	27.	754.60
.39	.52	2.82	.68	.080	.030	.080	.030	751.60	2002.31
.000129	800.	750.	700.	2	0	0	0.00	562.52	2564.83

*SECNO 11.000

3470 ENCROACHMENT STATIONS= 2000.0 2692.0 TYPE= 1 TARGET= 692.000

VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP. (M)

11.00	11.04	765.04	0.00	0.00	765.13	.09	.16	.00	756.70
6900.	86.	5319.	1495.	127.	1951.	2203.	361.	43.	756.70
.54	.67	2.73	.68	.080	.030	.080	.030	754.00	2016.06
.000141	1200.	1200.	1200.	2	0	0	0.00	645.75	2661.81

MOORE BUSINESS FORMS INC 27

*SECNO 11.200

3470 ENCROACHMENT STATIONS= 1970.0 2900.0 TYPE= 1 TARGET= 930.000

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW X (N)

11.20	11.19	765.19	0.00	0.00	765.24	.05	.11	.00	758.90
6900.	1289.	4066.	1545.	2311.	1859.	1861.	465.	60.	758.90
.69	.56	2.19	.83	.080	.030	.080	.030	754.00	1970.00
.000115	1300.	850.	650.	2	0	0	0.00	930.00	2900.00

*SECNO 12.000

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

3470 ENCROACHMENT STATIONS= 2350.0 3050.0 TYPE= 1 TARGET= 700.000

VALLEY SECT. JUST U/S OF D/S OXBOW (O)

12.00	15.24	765.24	0.00	0.00	765.31	.08	.06	.01	757.30
6900.	1286.	5533.	80.	2296.	2227.	201.	526.	67.	756.80
.77	.56	2.48	.40	.080	.030	.080	.030	750.00	2350.00
.000092	100.	680.	1000.	2	0	0	0.00	666.74	3016.74

CCHV= .300 CEHV= .500

*SECNO 12.800

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD. (P)

12.80	11.23	765.43	0.00	0.00	765.59	.17	.24	.04	757.50
6900.	48.	6822.	30.	67.	2070.	45.	653.	85.	758.00
.91	.72	3.30	.66	.080	.030	.080	.030	754.20	.16
.000272	1600.	1600.	1600.	2	0	0	0.00	280.97	281.13

*SECNO 12.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 770.30 ELREA= 777.20

D/S FACE OF SPRINKLE RD. BRIDGE (Q)

12.90	11.25	765.45	0.00	0.00	765.62	.17	.03	.00	757.50
6900.	0.	6900.	0.	0.	2075.	0.	658.	85.	758.00
.92	0.00	3.33	0.00	.080	.030	.080	.030	754.20	17.00
.000276	100.	100.	100.	0	0	0	0.00	252.00	269.00

*SECNO 13.000

3370 NORMAL BRIDGE.NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.60

MOORE BUSINESS FORMS INC 27

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 174.0 174.1

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 770.30 ELREA= 777.20

1' INSIDE D/S FACE OF SPRINKLE RD. BRIDGE

13.00	11.25	765.45	0.00	0.00	765.63	.18	.00	.01	757.50
6900.	0.	6900.	0.	0.	2010.	0.	658.	85.	758.00
.92	0.00	3.43	0.00	.080	.030	.080	.030	754.20	17.00
.000397	1.	1.	1.	0	0	0	-66.70	252.00	269.00

*SECNO 13.100

3370 NORMAL BRIDGE.NRD= 20 MIN ELTRD= 770.30 MAX ELLC= 774.60

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 174.0 174.1

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 770.30 ELREA= 777.20

1' INSIDE SPRINKLE ROAD BRIDGE U/S

13.10	11.27	765.47	0.00	0.00	765.65	.18	.02	.00	757.50
6900.	0.	6900.	0.	0.	2014.	0.	661.	86.	758.00
.92	0.00	3.43	0.00	.080	.030	.080	.030	754.20	17.00
.000395	62.	62.	62.	0	0	0	-66.82	252.00	269.00

*SECNO 13.200

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 770.30 ELREA= 777.20

U/S FACE SPRINKLE ROAD BRIDGE

13.20	11.29	765.49	0.00	0.00	765.66	.17	.00	.00	757.50
6900.	0.	6900.	0.	0.	2084.	0.	661.	86.	758.00
.92	0.00	3.31	0.00	.080	.030	.080	.030	754.20	17.00
.000272	1.	1.	1.	1	0	0	0.00	252.00	269.00

*SECNO 14.000

3470 ENCROACHMENT STATIONS= 2672.0 3024.0 TYPE= 1 TARGET= 352.000

VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.

14.00	11.46	765.56	0.00	0.00	765.68	.12	.01	.01	763.70
6900.	14.	6819.	68.	40.	2425.	106.	664.	86.	759.40
.93	.34	2.81	.64	.080	.030	.080	.030	754.10	2672.00
.000204	50.	50.	50.	2	0	0	0.00	352.00	3024.00

MOORE BUSINESS FORMS INC 21

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-yr run SUMMARY

- upstream

00BREAK00

****
HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01,02,03
MODIFICATION - 50,51,52,53
****

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

KALAMAZOO RIVER

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	8.000	763.58	.02	8.00	92.00	108.18	108.16	1400.00
	8.000	763.68	4.69	8.00	92.00	97.49	92.80	1400.00
	8.900	764.31	.03	20.00	158.00	182.03	182.00	1350.00
	8.900	764.42	6.09	20.00	158.00	161.17	155.08	1350.00
	9.000	764.43	0.00	0.00	190.00	190.00	190.00	50.00
	9.000	764.55	0.00	0.00	190.00	190.00	190.00	50.00
	9.100	764.56	0.00	0.00	190.00	190.00	190.00	56.00
	9.100	764.68	0.00	0.00	190.00	190.00	190.00	56.00
	9.200	764.57	0.00	0.00	190.00	190.00	190.00	50.00
	9.200	764.69	0.00	0.00	190.00	190.00	190.00	50.00
	9.500	764.82	1800.00	2000.00	2190.00	2400.00	600.00	1275.00
	9.500	764.93	1800.00	2000.00	2190.00	2300.00	500.00	1275.00
	10.000	764.87	2002.31	2008.00	2180.00	2564.83	562.52	750.00
	10.000	764.98	2002.40	2008.00	2180.00	2500.00	497.60	750.00
	11.000	765.04	2016.06	2043.00	2238.00	2661.81	645.75	1200.00
	11.000	765.15	2037.45	2043.00	2238.00	2602.80	565.35	1200.00
	11.200	765.19	1970.00	2468.00	2690.00	2900.00	930.00	850.00
	11.200	765.31	1970.00	2468.00	2690.00	2875.00	905.00	850.00
	12.000	765.24	2350.00	2758.00	2944.00	3016.74	666.74	680.00
	12.000	765.35	2360.09	2758.00	2944.00	2944.00	583.91	680.00
	12.800	765.43	.16	17.00	269.00	281.13	280.97	1600.00
	12.800	765.55	17.00	17.00	269.00	269.00	252.00	1600.00
	12.900	765.45	17.00	17.00	269.00	269.00	252.00	100.00
	12.900	765.58	17.00	17.00	269.00	269.00	252.00	100.00
*	13.000	765.45	17.00	17.00	269.00	269.00	252.00	1.00
*	13.000	765.58	17.00	17.00	269.00	269.00	252.00	1.00

MOORE BUSINESS FORMS INC 27

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
*	13.100	765.47	17.00	17.00	269.00	269.00	252.00	62.00
*	13.100	765.60	17.00	17.00	269.00	269.00	252.00	62.00
	13.200	765.49	17.00	17.00	269.00	269.00	252.00	1.00
	13.200	765.62	17.00	17.00	269.00	269.00	252.00	1.00
	14.000	765.56	2672.00	2698.00	2998.00	3024.00	352.00	50.00
	14.000	765.69	2672.00	2698.00	2998.00	3024.00	352.00	50.00

MOORE BUSINESS FORMS INC 27

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	8.000	763.58	0.00	764.07	108.16	61.08	6763.86	85.06	0.00	0.00	8.00	92.00	0.00
	8.000	763.68	.10	764.18	92.80	19.60	6849.43	40.97	.01	4.69	8.00	92.00	97.49
	8.900	764.31	0.00	764.55	182.00	144.77	6689.55	65.68	0.00	0.00	20.00	158.00	0.00
	8.900	764.42	.11	764.66	155.08	102.41	6783.38	14.21	.01	6.09	20.00	158.00	161.17
	9.000	764.43	0.00	764.58	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	0.00
	9.000	764.55	.12	764.70	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	190.00
	9.100	764.56	0.00	764.71	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	0.00
	9.100	764.68	.12	764.83	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	190.00
	9.200	764.57	0.00	764.72	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	0.00
	9.200	764.69	.12	764.84	190.00	0.00	6900.00	0.00	0.00	0.00	0.00	190.00	190.00
	9.500	764.82	0.00	764.88	600.00	1338.82	4892.21	668.97	600.00	1800.00	2000.00	2190.00	2400.00
	9.500	764.93	.11	764.99	500.00	1396.49	5086.30	417.21	500.00	1800.00	2000.00	2190.00	2300.00
	10.000	764.87	0.00	764.97	562.52	16.26	5435.34	1448.40	570.00	2000.00	2008.00	2180.00	2570.00
	10.000	764.98	.11	765.08	497.60	16.69	5519.34	1363.97	497.60	2002.40	2008.00	2180.00	2500.00
	11.000	765.04	0.00	765.13	645.75	85.83	5319.33	1494.85	692.00	2000.00	2043.00	2238.00	2692.00
	11.000	765.15	.11	765.25	565.35	21.45	5400.58	1477.97	.02	2037.45	2043.00	2238.00	2602.81
	11.200	765.19	0.00	765.24	930.00	1289.37	4065.85	1544.78	930.00	1970.00	2468.00	2690.00	2900.00
	11.200	765.31	.11	765.36	905.00	1346.54	4172.63	1380.84	905.00	1970.00	2468.00	2690.00	2875.00
	12.000	765.24	0.00	765.31	666.74	1286.14	5533.47	80.38	700.00	2350.00	2758.00	2944.00	3050.00
	12.000	765.35	.12	765.43	583.91	1325.35	5574.65	0.00	.11	2360.09	2758.00	2944.00	2944.00
	12.800	765.43	0.00	765.59	280.97	47.89	6822.39	29.73	0.00	0.00	17.00	269.00	0.00
	12.800	765.55	.13	765.72	252.00	0.00	6900.00	0.00	.01	17.00	17.00	269.00	269.00
	12.900	765.45	0.00	765.62	252.00	0.00	6900.00	0.00	0.00	0.00	17.00	269.00	0.00
	12.900	765.58	.13	765.75	252.00	0.00	6900.00	0.00	0.00	17.00	17.00	269.00	269.00
*	13.000	765.45	0.00	765.63	252.00	0.00	6900.00	0.00	0.00	0.00	17.00	269.00	0.00
*	13.000	765.58	.13	765.76	252.00	0.00	6900.00	0.00	0.00	17.00	17.00	269.00	269.00
*	13.100	765.47	0.00	765.65	252.00	0.00	6900.00	0.00	0.00	0.00	17.00	269.00	0.00
*	13.100	765.60	.13	765.78	252.00	0.00	6900.00	0.00	0.00	17.00	17.00	269.00	269.00
	13.200	765.49	0.00	765.66	252.00	0.00	6900.00	0.00	0.00	0.00	17.00	269.00	0.00
	13.200	765.62	.13	765.78	252.00	0.00	6900.00	0.00	0.00	17.00	17.00	269.00	269.00
	14.000	765.56	0.00	765.68	352.00	13.88	6818.53	67.59	352.00	2672.00	2698.00	2998.00	3024.00
	14.000	765.69	.13	765.81	352.00	15.39	6815.51	69.10	352.00	2672.00	2698.00	2998.00	3024.00

SUMMARY OF ERRORS

MOORE BUSINESS FORMS INC 27

```
 CAUTION  SECNO=    13.000  PROFILE= 1  BRIDGE DECK DEFINITION ERROR
 CAUTION  SECNO=    13.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=    13.100  PROFILE= 1  BRIDGE DECK DEFINITION ERROR
 CAUTION  SECNO=    13.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
```

MOORE BUSINESS FORMS INC 27

FLOODWAY DATA, KALAMAZOO RIVER
PROFILE NO. 2

STATION	FLOODWAY WIDTH (FT)	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
8.000	93.	1273.	5.4	763.7	763.6	.1
8.900	155.	1859.	3.7	764.4	764.3	.1
9.000	190.	2235.	3.1	764.5	764.4	.1
9.100	190.	2218.	3.1	764.7	764.6	.1
9.200	190.	2220.	3.1	764.7	764.6	.1
9.500	500.	4744.	1.5	764.9	764.8	.1
10.000	498.	3933.	1.8	765.0	764.9	.1
11.000	565.	4117.	1.7	765.1	765.0	.1
11.200	905.	5907.	1.2	765.3	765.2	.1
12.000	584.	4538.	1.5	765.3	765.2	.1
12.800	252.	2102.	3.3	765.5	765.4	.1
12.900	252.	2109.	3.3	765.6	765.5	.1
13.000	252.	2042.	3.4	765.5	765.4	.1
13.100	252.	2047.	3.4	765.6	765.5	.1
13.200	252.	2117.	3.3	765.6	765.5	.1
14.000	352.	2616.	2.6	765.7	765.6	.1

BUSINESS FORMS INC 27
MOORE

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR SUMMARY

00BREAK00

****

[illegible] RELEASE DATED JUNE 73 UPDATED FEB 1979

EPANR CASE = 09

MODIFICATION = 05.31.79

****

NOTE= [illegible]

KALAMAZOO R. NR ALLEGAN,MICH

SUMMARY PRINTOUT TABLE 1nD

ST.NO	REACH	CLOSE	REL	FLOW	Q	VEL	DEPTH	T	TIME	WID	C	AMT.
7.000	0.00	0.00	0.00	747.00	7390.00	759.95	0.00	760.24	3.93	4.50	3807.07	3726.91
7.000	0.00	0.00	0.00	747.00	7390.00	760.05	0.00	760.35	3.92	4.51	2406.16	3754.74
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.100	1110.30	0.00	0.00	744.50	7390.30	760.04	0.00	760.02	2.73	5.45	2355.30	4576.71
9.100	1110.30	0.00	0.00	744.50	7390.30	760.94	0.00	761.12	2.66	5.47	2275.54	4572.10
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.300	1.00	769.30	773.45	744.73	7390.30	760.91	0.00	761.05	2.35	2.97	2644.55	4310.59
9.300	1.00	769.30	773.45	744.73	7390.30	761.06	0.00	761.16	2.28	2.94	2571.[illegible]	4295.59
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.500	1.00	0.00	0.00	744.70	7390.00	760.93	0.00	761.03	2.11	2.00	2567.02	5302.06
9.500	1.00	0.00	0.00	744.70	7390.00	761.04	0.00	761.17	2.05	2.00	2504.[illegible]	5287.56
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10.000	900.30	0.00	0.00	745.90	7390.00	760.11	0.00	760.23	2.99	3.56	3721.59	4961.[illegible]
10.000	900.30	0.00	0.00	745.90	7390.00	760.22	0.00	760.33	2.93	3.26	2705.24	5062.[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.200	50.30	0.00	0.00	749.50	7390.00	761.36	0.00	761.65	5.42	4.22	1753.77	5172.60
11.200	50.00	0.00	0.00	749.50	7390.00	761.45	0.00	761.72	5.43	4.16	1706.01	5150.70
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.400	61.00	765.80	765.80	746.70	7390.00	761.41	0.00	761.70	9.27	4.62	1636.42	2430.06
11.400	61.00	765.80	765.80	746.70	7390.00	761.50	0.00	761.80	9.29	4.56	1617.[illegible]4	2424.[illegible]

PRINTED IN U.S.A.

FORM 1411-08-PRINTED BY ROTARY MANIFOLD FORMS.

SECNO	XLCH	ELTRD	ELLC	ELSIN	G	CLSEL	CRIMS	EG	TLKMS	VCH	AREA	.CIK
11.500	1.00	0.30	0.00	748.70	7390.00	761.53	0.00	761.75	4.26	3.92	1884.76	3580.24
11.600	50.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.75	4.26	3.92	1884.76	3580.24
11.700	100.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.75	4.26	3.92	1884.76	3580.24
11.800	150.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.75	4.26	3.92	1884.76	3580.24
11.900	200.00	0.00	0.00	748.70	7390.00	761.53	0.00	761.75	4.26	3.92	1884.76	3580.24
12.000	300.00	0.00	0.00	747.50	7390.00	761.94	0.00	762.11	1.72	3.46	2379.49	5039.10
12.100	50.00	0.00	0.00	747.50	7390.00	761.94	0.00	762.04	2.56	3.24	2273.42	4805.40
12.200	50.00	0.00	0.00	747.50	7390.00	761.94	0.00	762.04	2.56	3.24	2273.42	4805.40
12.300	50.00	0.00	0.00	747.50	7390.00	761.94	0.00	762.04	2.56	3.24	2273.42	4805.40
12.400	20.00	750.20	762.10	757.50	7390.00	762.10	0.00	762.30	3.74	3.72	1987.01	3821.10
12.500	50.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
12.600	50.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
12.700	100.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
12.800	100.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
12.900	100.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
13.000	100.00	0.00	0.00	751.50	7390.00	762.11	0.00	762.35	3.77	3.74	2021.65	3886.97
13.100	500.00	0.00	0.00	750.00	7390.00	762.32	0.00	762.50	1.30	3.62	2102.11	3515.15
13.200	50.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.45	1.90	3.44	2077.59	3516.75
13.300	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.400	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.500	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.600	50.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.700	50.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.800	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
13.900	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
14.000	100.00	0.00	0.00	748.90	7390.00	762.45	0.00	762.51	1.97	3.46	2087.38	3532.15
14.100	1250.00	0.00	0.00	748.90	6990.00	763.05	0.00	762.22	1.97	3.40	2070.49	3500.15
14.200	50.00	0.00	0.00	748.90	6990.00	762.90	0.00	762.14	2.09	3.45	2084.79	4702.25
14.300	100.00	0.00	0.00	748.90	6990.00	762.90	0.00	762.14	2.09	3.45	2084.79	4702.25
14.400	100.00	0.00	0.00	748.90	6990.00	762.90	0.00	762.14	2.09	3.45	2084.79	4702.25
14.500	100.00	0.00	0.00	748.90	6990.00	762.90	0.00	762.14	2.09	3.45	2084.79	4702.25
14.600	50.00	736.00	750.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
14.700	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
14.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
14.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.400	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
15.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
16.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
17.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
18.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
19.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
20.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
21.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
22.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
23.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
24.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
25.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
26.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
27.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
28.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.700	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.800	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
29.900	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.000	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.100	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.200	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.300	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.400	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.500	100.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.26	1.93	4.75	1459.98	2300.15
30.600	50.00	0.00	0.00	748.90	6990.00	762.91	0.00	762.

SECND	[illegible]	ELTRD	ELLC	ELMIN	[illegible]	COSEC	CRISS	3G	TOK#S	VCH	AREA	[illegible]
15.000	1400.00	0.00	0.00	745.70	6910.00	763.41	0.00	763.51	0.99	2.74	3668.72	6943.64
[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	763.50	0.00	[illegible]	[illegible]	[illegible]	3504.35	[illegible]
[illegible]	[illegible]	0.00	0.00	[illegible]	[illegible]	[illegible]	0.00	[illegible]	0.79	2.42	2730.36	[illegible]
16.000	1325.00	0.00	0.00	742.00	[illegible]	[illegible]	0.00	763.72	0.78	2.50	2806.65	[illegible]
16.200	50.00	0.00	0.00	742.00	6910.00	763.55	0.00	763.66	0.83	2.65	2605.92	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	2.50	2760.[illegible]	[illegible]
16.400	11.50	763.40	[illegible]	[illegible]	[illegible]	[illegible]	0.00	[illegible]	0.71	2.49	2776.26	[illegible]
16.500	50.00	0.00	0.00	745.70	6910.00	763.54	0.00	[illegible]	1.24	2.90	2705.22	2786.51
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.70	[illegible]	[illegible]
17.000	1400.00	0.00	0.00	747.00	6910.00	763.65	0.00	764.16	[illegible]	[illegible]	1230.70	[illegible]

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KALAMAZOO R. KALAMAZOO

SUMMARY PRINTOUT TABLE 350

SECTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7.000	7390.00	759.95	0.00	0.00	0.00	1418.66	0.00
7.000	7390.00	760.03	0.00	0.00	0.10	368.38	0.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.100	7390.00	760.04	0.00	0.37	0.00	234.22	1100.00
9.100	7390.00	760.94	0.00	0.37	0.10	209.96	1100.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.300	7390.00	760.91	0.00	-0.00	0.00	249.70	1.00
9.300	7390.00	761.02	0.00	-0.00	0.11	250.45	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.300	7390.00	760.9[illegible]	0.00	0.01	0.00	249.66	1.00
9.300	7390.00	761.0[illegible]	0.00	0.01	0.11	250.52	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10.000	7390.00	761.1[illegible]	0.00	0.17	0.00	402.14	900.00
10.000	7390.00	761.22	0.00	0.[illegible]	0.10	40[illegible].52	900.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.200	7390.00	761.[illegible]	0.00	0.07	0.00	191.00	50.00
11.200	7390.00	761.4[illegible]	0.00	0.07	0.09	191.00	50.00
[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
11.400	7390.00	761.41	0.00	0.10	0.00	191.00	41.00
11.400	7390.00	761.50	0.00	0.10	0.09	191.00	41.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.600	7390.00	761.53	0.00	0.02	0.00	196.96	50.00
11.600	7390.00	761.6[illegible]	0.00	0.02	0.0[illegible]	197.[illegible]	50.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	500.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.000	7390.00	761.8[illegible]	0.00	0.10	0.00	240.45	600.00
12.000	7390.00	761.9[illegible]	0.00	0.10	0.09	244.[illegible]0	600.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50.00

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SECND	Q	CASEL	DIFWS?	DIFWSX	DIFKWS	TOPWID	XLCH
12.400	7390.00	762.09	0.00	0.21	0.00	254.00	28.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.500	7390.00	[illegible]	[illegible]	[illegible]	[illegible]	254.00	[illegible]
13.100	7390.00	762.23	0.00	0.52	0.00	105.66	300.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	130.70	[illegible]
13.200	7390.00	762.33	[illegible]	[illegible]	[illegible]	130.70	50.00
13.300	7390.00	762.05	0.00	-0.19	0.00	130.70	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	130.70	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	130.70	[illegible]
13.400	7390.00	762.24	0.00	[illegible]	0.09	130.70	49.00
13.500	7390.00	762.56	0.00	[illegible]	0.00	180.70	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	7390.00	762.74	0.00	[illegible]	[illegible]	[illegible]	50.00
14.400	6910.00	762.95	0.00	[illegible]	0.00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	6910.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14.500	6910.00	[illegible]	0.00	[illegible]	0.00	[illegible]	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14.600	6910.00	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
14.700	6910.00	[illegible]	0.00	[illegible]	[illegible]	[illegible]	1.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	6910.00	763.24	0.00	[illegible]	[illegible]	[illegible]	50.00
[illegible]	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	1400.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16.[illegible]	6910.00	763.52	0.00	[illegible]	[illegible]	[illegible]	1325.00
[illegible]	6910.00	[illegible]	0.00	[illegible]	[illegible]	[illegible]	50.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16.[illegible]	6910.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16.500	6910.00	763.56	[illegible]	-0.01	0.00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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SECND	Q	CUSEL	DIFJSP	DIFJSX	DIFRWS	TORWID	XLCF
17.000	6910.00	763.50	0.00	-0.00	0.00	108.16	1400.00
17.000	6910.00	763.50	0.00	-0.02	0.00	95.95	1400.00

SUMMARY OF ERRORS

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FLOODWAY DATA/ KALAMAZOO R. KALAMAZOO
PROFILE NO. 2

STATION	FLOW AREA WIDTH (FT)	FLOW AREA AREA	FLOW AREA VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	WATER SURFACE ELEVATION INCREASE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.200	250.	2592.	2.9	761.0	760.9	0.1
9.300	250.	2311.	2.9	761.0	760.9	0.1
9.400	250.	2312.	2.9	761.0	760.9	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.100	2[illegible]1.	1861.	4.0	761.4	761.3	0.1
11.200	191.	1769.	4.2	761.5	761.4	0.1
11.300	191.	15[illegible]9.	4.9	761.4	761.3	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11.700	377.	2[illegible].	2.3	[illegible]	[illegible]	0.1
12.000	2[illegible].	[illegible]	3.[illegible]	[illegible]	[illegible]	0.1
12.100	25[illegible].	[illegible]	3.2	762.[illegible]	[illegible]	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13.200	[illegible]	2162.	3.4	[illegible]	[illegible]	0.1
13.300	[illegible]	[illegible]	[illegible]	762.[illegible]	762.1	0.1
13.400	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14.200	1[illegible]3.	2[illegible].	[illegible]	763.1	763.0	0.1
14.300	1[illegible]3.	[illegible]	4.7	763.0	762.9	0.1
14.400	1[illegible]3.	[illegible]	4.7	763.0	762.9	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15.100	[illegible]2.	2[illegible].	2.5	763.6	763.[illegible]	0.1
15.200	177.	2[illegible]2.	2.[illegible]	763.6	763.5	0.1
15.400	177.	2[illegible].	2.5	763.[illegible]	763.6	0.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100-YR SUMMARY RUN - downstream

00BREAK00

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  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

KALAMAZOO RIVER

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	0.000	755.29	1890.73	2004.00	2186.00	2353.91	463.18	0.00
	0.000	755.39	1915.00	2004.00	2186.00	2293.00	378.00	0.00
	1.000	755.65	1696.30	2120.00	2429.00	2498.32	802.03	760.00
	1.000	755.75	1767.00	2120.00	2429.00	2444.00	677.00	760.00
	2.000	755.87	1421.31	2005.00	2520.00	2884.69	1463.39	850.00
	2.000	755.98	1560.00	2005.00	2520.00	2732.00	1172.00	850.00
	3.000	756.36	1916.00	2006.00	2182.00	2504.31	588.31	2010.00
	3.000	756.46	1916.00	2006.00	2182.00	2515.00	599.00	2010.00
	3.700	756.83	2016.00	2036.00	2324.00	2391.78	375.78	580.00
	3.700	756.90	2016.00	2036.00	2324.00	2391.00	375.00	580.00
	3.900	757.37	1995.00	2036.00	2324.00	2365.00	370.00	900.00
	3.900	757.44	2019.00	2036.00	2324.00	2324.00	305.00	900.00
	3.910	757.42	2008.15	2030.00	2334.00	2355.22	347.08	50.00
	3.910	757.49	2030.00	2030.00	2334.00	2334.00	304.00	50.00
	4.000	757.42	2008.11	2030.00	2334.00	2355.26	347.15	1.00
	4.000	757.49	2030.00	2030.00	2334.00	2334.00	304.00	1.00
*	4.100	757.67	2007.14	2030.00	2334.00	2356.20	349.07	10.00
*	4.100	757.74	2030.00	2030.00	2334.00	2334.00	304.00	10.00
	4.200	757.67	2007.13	2030.00	2334.00	2356.21	349.07	1.00
	4.200	757.74	2030.00	2030.00	2334.00	2334.00	304.00	1.00
	4.500	758.05	1497.85	2120.00	2246.00	2269.58	771.73	1000.00
	4.500	758.14	1491.48	2120.00	2246.00	2269.72	778.25	1000.00
	4.900	758.98	1917.94	2070.00	2246.00	2271.16	353.22	1735.00
	4.900	759.04	1991.00	2070.00	2246.00	2254.00	263.00	1735.00
	4.910	759.10	2000.00	2038.00	2280.00	2298.00	298.00	50.00
	4.910	759.17	2032.00	2038.00	2280.00	2280.00	248.00	50.00

MOORE BUSINESS FORMS, INC. 23

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	5.000	759.10	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.000	759.17	2023.00	2038.00	2280.00	2282.00	259.00	1.00
*	5.100	759.20	2000.00	2038.00	2280.00	2298.00	298.00	10.00
*	5.100	759.27	2023.00	2038.00	2280.00	2282.00	259.00	10.00
	5.200	759.20	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.200	759.27	2031.00	2038.00	2280.00	2280.00	249.00	1.00
	5.800	759.45	1980.00	2006.00	2198.00	2200.00	220.00	935.00
	5.800	759.55	2006.00	2006.00	2198.00	2198.00	192.00	935.00
	5.900	759.48	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	5.900	759.59	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	6.000	759.47	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.000	759.58	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.100	759.53	2000.00	2000.00	2207.00	2207.00	207.00	35.00
	6.100	759.63	2000.00	2000.00	2207.00	2207.00	207.00	35.00
	6.200	759.55	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.200	759.65	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.300	759.65	1900.00	2000.00	2207.00	2307.00	407.00	100.00
	6.300	759.75	1900.00	2000.00	2207.00	2307.00	407.00	100.00
	7.000	760.07	1099.25	2016.00	2158.00	2550.75	1451.51	2555.00
	7.000	760.16	1707.00	2016.00	2158.00	2317.00	610.00	2555.00

MOORE BUSINESS FORMS, INC 23

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	0.000	755.29	0.00	755.49	463.18	496.37	6216.69	706.94	538.00	1858.00	2004.00	2186.00	2396.00
	0.000	755.39	.10	755.60	378.00	481.93	6342.70	595.36	378.00	1915.00	2004.00	2186.00	2293.00
	1.000	755.65	.34	755.73	802.03	1395.25	5895.97	128.78	2012.00	622.00	2120.00	2429.00	2634.00
	1.000	755.75	.44	755.83	677.00	1346.03	6031.45	42.51	677.00	1767.00	2120.00	2429.00	2444.00
	2.000	755.87	.32	755.91	1463.39	1027.12	5464.36	928.52	2218.00	1128.00	2005.00	2520.00	3346.00
	2.000	755.98	.43	756.02	1172.00	963.44	5610.02	846.54	1172.00	1560.00	2005.00	2520.00	2732.00
	3.000	756.36	.11	756.62	588.31	294.29	6785.79	339.92	1134.00	1916.00	2006.00	2182.00	3050.00
	3.000	756.46	.21	756.71	599.00	302.75	6755.59	361.66	599.00	1916.00	2006.00	2182.00	2515.00
	3.700	756.83	.27	757.01	375.78	100.12	7265.20	54.69	484.00	2016.00	2036.00	2324.00	2500.00
	3.700	756.90	.34	757.09	375.00	100.97	7260.84	58.19	375.00	2016.00	2036.00	2324.00	2391.00
	3.900	757.37	.37	757.53	370.00	191.31	7159.76	68.94	370.00	1995.00	2036.00	2324.00	2365.00
	3.900	757.44	.44	757.60	305.00	92.93	7327.07	0.00	305.00	2019.00	2036.00	2324.00	2324.00
	3.910	757.42	.40	757.55	347.08	43.51	7334.29	42.20	0.00	0.00	2030.00	2334.00	0.00
	3.910	757.49	.47	757.63	304.00	0.00	7420.00	0.00	304.00	2030.00	2030.00	2334.00	2334.00
	4.000	757.42	.39	757.55	347.15	43.62	7334.07	42.31	0.00	0.00	2030.00	2334.00	0.00
	4.000	757.49	.46	757.63	304.00	0.00	7420.00	0.00	304.00	2030.00	2030.00	2334.00	2334.00
*	4.100	757.67	.54	757.79	349.07	46.55	7328.29	45.15	0.00	0.00	2030.00	2334.00	0.00
*	4.100	757.74	.61	757.87	304.00	0.00	7420.00	0.00	304.00	2030.00	2030.00	2334.00	2334.00
	4.200	757.67	.53	757.79	349.07	46.56	7328.28	45.16	0.00	0.00	2030.00	2334.00	0.00
	4.200	757.74	.60	757.87	304.00	0.00	7420.00	0.00	304.00	2030.00	2030.00	2334.00	2334.00
	4.500	758.05	.39	758.20	771.73	2982.76	4336.33	100.91	0.00	0.00	2120.00	2246.00	0.00
	4.500	758.14	.38	758.28	778.25	3002.28	4315.51	102.21	1.00	0.00	2120.00	2246.00	0.00
	4.900	758.98	.28	759.19	353.22	574.36	6711.52	134.12	0.00	0.00	2070.00	2246.00	0.00
	4.900	759.04	.34	759.27	263.00	482.66	6888.51	48.83	263.00	1991.00	2070.00	2246.00	2254.00
	4.910	759.10	.36	759.22	298.00	122.56	7242.12	55.32	0.00	0.00	2038.00	2280.00	0.00
	4.910	759.17	.43	759.30	248.00	24.70	7395.30	0.00	248.00	2032.00	2038.00	2280.00	2280.00
	5.000	759.10	.35	759.22	298.00	122.57	7242.10	55.33	0.00	0.00	2038.00	2280.00	0.00
	5.000	759.17	.42	759.30	259.00	67.86	7346.94	5.20	259.00	2023.00	2038.00	2280.00	2282.00
*	5.100	759.20	.35	759.32	298.00	125.13	7238.47	56.40	0.00	0.00	2038.00	2280.00	0.00
*	5.100	759.27	.42	759.40	259.00	68.55	7346.24	5.21	259.00	2023.00	2038.00	2280.00	2282.00
	5.200	759.20	.34	759.32	298.00	125.14	7238.46	56.40	0.00	0.00	2038.00	2280.00	0.00
	5.200	759.27	.41	759.40	249.00	30.13	7389.87	0.00	249.00	2031.00	2038.00	2280.00	2280.00
	5.800	759.45	.29	759.68	220.00	122.25	7290.47	7.28	220.00	1980.00	2006.00	2198.00	2200.00
	5.800	759.55	.39	759.78	192.00	0.00	7420.00	0.00	192.00	2006.00	2006.00	2198.00	2198.00
	5.900	759.48	.27	759.72	207.00	0.00	7420.00	0.00	0.00	0.00	2000.00	2207.00	0.00

MOORE BUSINESS FORMS, INC. 23

5.900	759.59	.38	759.82	207.00	0.00	7420.00	0.00	207.00	2000.00	2000.00	2207.00	2207.00

MOORE BUSINESS FORMS, INC 23

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
6.000	759.47	.25	759.72	207.00	0.00	7390.00	0.00	0.00	0.00	2000.00	2207.00	0.00
6.000	759.58	.36	759.83	207.00	0.00	7390.00	0.00	207.00	2000.00	2000.00	2207.00	2207.00
6.100	759.53	.30	759.76	207.00	0.00	7390.00	0.00	0.00	0.00	2000.00	2207.00	0.00
6.100	759.63	.40	759.86	207.00	0.00	7390.00	0.00	207.00	2000.00	2000.00	2207.00	2207.00
6.200	759.55	.31	759.76	207.00	0.00	7390.00	0.00	0.00	0.00	2000.00	2207.00	0.00
6.200	759.65	.41	759.87	207.00	0.00	7390.00	0.00	207.00	2000.00	2000.00	2207.00	2207.00
6.300	759.65	.40	759.81	407.00	386.99	6711.04	291.97	407.00	1900.00	2000.00	2207.00	2307.00
6.300	759.75	.50	759.91	407.00	395.13	6694.44	300.44	407.00	1900.00	2000.00	2207.00	2307.00
7.000	760.07	.31	760.32	1451.51	431.22	6312.79	645.99	0.00	0.00	2016.00	2158.00	0.00
7.000	760.16	.40	760.42	610.00	362.30	6454.68	573.03	610.00	1707.00	2016.00	2158.00	2317.00

SUMMARY OF ERRORS

NOTE SECNO= 4.100 PROFILE= 1 WSEL BASED ON X5 CARD
NOTE SECNO= 4.100 PROFILE= 2 WSEL BASED ON X5 CARD

NOTE SECNO= 5.100 PROFILE= 1 WSEL BASED ON X5 CARD
NOTE SECNO= 5.100 PROFILE= 2 WSEL BASED ON X5 CARD

MOORE BUSINESS FORMS, INC. 23

FLOODWAY DATA, KALAMAZOO RIVER
PROFILE NO. 2

STATION	FLOODWAY WIDTH (FT)	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.000	378.	2512.	3.0	755.4	755.3	.1
1.000	677.	4092.	1.8	755.8	755.7	.1
2.000	1172.	5457.	1.4	756.0	755.9	.1
3.000	599.	2386.	3.1	756.5	756.4	.1
3.700	375.	2262.	3.3	756.9	756.8	.1
3.900	305.	2328.	3.2	757.5	757.4	.1
3.910	304.	2509.	3.0	757.5	757.4	.1
4.000	304.	2509.	3.0	757.5	757.4	.1
4.100	304.	2585.	2.9	757.8	757.7	.1
4.200	304.	2585.	2.9	757.8	757.7	.1
4.500	778.	3824.	1.9	758.2	758.1	.1
4.900	263.	2170.	3.4	759.1	759.0	.1
4.910	248.	2579.	2.9	759.2	759.1	.1
5.000	259.	2640.	2.8	759.2	759.1	.1
5.100	259.	2666.	2.8	759.3	759.2	.1
5.200	249.	2610.	2.8	759.3	759.2	.1
5.800	192.	1915.	3.9	759.5	759.4	.1
5.900	207.	1913.	3.9	759.6	759.5	.1
6.000	207.	1851.	4.0	759.6	759.5	.1
6.100	207.	1935.	3.8	759.6	759.5	.1
6.200	207.	2002.	3.7	759.6	759.5	.1
6.300	407.	2810.	2.6	759.7	759.6	.1
7.000	610.	2547.	2.9	760.2	760.1	.1

MOORE BUSINESS FORMS, INC 23

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  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
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MOORE BUSINESS FORMS, INC 23

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE [redacted] INPUT

FABRICATED VALLEY SECTION

80.10	12.03	779.83	0.00	0.00	779.83	.00	.02	.00	777.00
6750.	3.	6715.	32.	67.	14609.	668.	9374.	856.	777.00
11.21	.05	.46	.05	.110	.040	.110	.040	767.80	1952.82
.000008	1400.	1400.	1400.	0	0	0	0.00	2118.95	4071.77

*SECNO 80.200

FABRICATED VALLEY SECTION

80.20	10.44	779.84	0.00	0.00	779.88	.03	.04	.01	777.00
6750.	70.	6609.	70.	405.	4542.	405.	9849.	932.	777.00
11.60	.17	1.46	.17	.110	.040	.110	.040	769.40	1715.51
.000103	2000.	2000.	2000.	2	0	0	0.00	1168.99	2884.49

CCHV= .300 CEHV= .500
*SECNO 80.900

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 784.05 ELREA= 786.25

80.90	9.08	779.98	0.00	0.00	780.69	.70	.47	.34	785.70
6750.	0.	6750.	0.	0.	1003.	0.	9968.	958.	787.90
11.67	0.00	6.73	0.00	.100	.040	.100	.040	770.90	2001.26
.003066	2100.	1600.	1600.	2	0	0	0.00	166.98	2168.24

*SECNO 51.000

3370 NORMAL BRIDGE.NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 785.70 ELREA= 787.90

DOWNSTREAM FACE OF 35TH STREET BRIDGE (A)

DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

81.00	9.06	779.96	0.00	0.00	780.71	.75	.00	.02	785.70
6750.	0.	6750.	0.	0.	973.	0.	9968.	958.	787.90
11.67	0.00	6.93	0.00	.100	.014	.100	.040	770.90	2001.34
.000491	1.	1.	1.	2	0	0	-26.28	166.82	2168.16

*SECNO 81.100

3370 NORMAL BRIDGE.NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 785.70 ELREA= 787.90

81.10	9.96	780.26	0.00	0.00	780.79	.52	.01	.07	785.70

FLOODWAY DATA. KALAMAZOO RIVER AT GALES
PROFILE NO. 2

STATION	FLOODWAY WIDTH (FT)	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
70.000	1800.	32022.	.2	779.9	779.8	.1
71.000	3400.	54150.	.1	779.9	779.8	.1
72.000	1200.	11465.	.6	779.9	779.8	.1
80.000	620.	5542.	1.2	779.9	779.8	.1
80.100	1600.	14762.	.5	779.9	779.8	.1
80.200	600.	4601.	1.5	779.9	779.8	.1
80.900	168.	1022.	6.6	780.1	780.0	.1
81.000	168.	992.	6.8	780.1	780.0	.1
81.100	173.	1150.	5.7	780.4	780.3	.1
81.200	173.	1219.	5.5	780.4	780.3	.1
83.000	1313.	4709.	1.4	783.3	783.2	.1
84.800	752.	2819.	2.4	784.9	784.8	.1
84.900	176.	2050.	3.3	785.7	785.6	.1
85.000	176.	2002.	3.4	785.7	785.6	.1
85.100	176.	2038.	3.3	785.8	785.7	.1
85.200	176.	2086.	3.2	785.8	785.7	.1
87.800	819.	3869.	1.7	786.1	786.0	.1
87.900	210.	1543.	4.4	787.0	786.9	.1
88.000	210.	1498.	4.5	787.0	786.9	.1
88.100	210.	1710.	3.9	787.1	787.0	.1
88.200	210.	1772.	3.8	787.1	787.0	.1
88.300	465.	2220.	3.0	787.1	787.1	0.0
90.000	1160.	5473.	1.2	789.9	789.8	.1
91.000	1994.	8030.	.8	791.3	791.2	.1
99.000	888.	4856.	1.4	792.8	792.7	.1
100.000	820.	3420.	2.0	792.9	792.8	.1
101.000	371.	2932.	2.3	793.3	793.2	.1
102.000	833.	4697.	1.4	793.7	793.6	.1
103.000	518.	3675.	1.8	793.9	793.8	.1
104.000	441.	2821.	2.4	794.2	794.1	.1
104.900	152.	1445.	4.8	794.2	794.1	.1
105.000	152.	1342.	5.0	794.3	794.1	.1
105.100	152.	1478.	4.5	794.3	794.2	.1
105.200	152.	1721.	3.9	794.4	794.3	.1
108.000	358.	2439.	2.7	794.6	794.5	.1
108.900	194.	2031.	3.3	794.8	794.5	.1
109.000	194.	1837.	3.6	794.8	794.5	.1
109.100	194.	1829.	3.7	794.8	794.5	.1
109.200	194.	1992.	3.4	794.7	794.5	.1
112.000	1509.	9354.	.7	795.1	795.0	.1
113.000	1502.	9185.	.7	795.2	795.1	.1
114.000	2004.	12048.	.6	795.2	795.1	.1
115.000	3126.	19250.	.3	795.3	795.2	.1

KALAMAZOO RIVER AT GALES

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	IOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
70.000	779.75	0.00	779.75	3725.00	35.21	6713.03	1.76	0.00	0.00	2000.00	3800.00	0.00
70.000	779.85	.10	779.85	1800.00	0.00	6750.00	0.00	.01	2000.00	2000.00	3800.00	3800.00
71.000	779.75	0.00	779.75	3758.67	1.02	6746.73	2.26	0.00	0.00	2000.00	5400.00	0.00
71.000	779.85	.10	779.85	3400.00	0.00	6750.00	0.00	.00	2000.00	2000.00	5400.00	5400.00
72.000	779.75	0.00	779.76	2026.63	60.04	6682.46	7.50	0.00	0.00	2000.00	3200.00	0.00
72.000	779.85	.10	779.86	1200.00	0.00	6750.00	0.00	.01	2000.00	2000.00	3200.00	3200.00
80.000	779.78	0.00	779.80	1094.13	21.19	6709.50	19.30	0.00	0.00	1780.00	2400.00	0.00
80.000	779.88	.10	779.90	620.00	0.00	6750.00	0.00	.01	1780.00	1780.00	2400.00	2400.00
80.100	779.83	0.00	779.93	2118.95	3.22	6714.58	32.20	0.00	0.00	2000.00	3600.00	0.00
80.100	779.92	.10	779.93	1600.00	0.00	6750.00	0.00	.01	2000.00	2000.00	3600.00	3600.00
80.200	779.84	0.00	779.88	1168.99	70.27	6609.46	70.27	0.00	0.00	2000.00	2600.00	0.00
80.200	779.94	.10	779.98	600.00	0.00	6750.00	0.00	.02	2000.00	2000.00	2600.00	2600.00
80.500	779.98	0.00	780.64	106.95	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
80.500	780.09	.11	780.77	107.84	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
81.000	779.96	0.00	780.71	106.82	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
81.000	780.07	.11	780.79	107.85	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
81.100	780.26	0.00	780.79	172.43	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
81.100	780.36	.09	780.87	172.84	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
81.200	780.31	0.00	780.80	172.65	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
81.200	780.40	.09	780.88	172.95	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
83.000	783.18	0.00	783.27	1518.09	2.09	4494.25	2253.67	0.00	0.00	3082.00	3269.00	0.00
83.000	783.26	.08	783.36	1264.55	0.00	4585.54	2164.46	.03	3082.00	3082.00	3269.00	4395.27
84.800	784.81	0.00	784.90	1084.75	269.84	6302.86	177.30	2424.00	1170.00	2000.00	2195.00	3594.00
84.800	784.90	.10	785.06	751.47	235.29	6405.01	109.69	.02	1486.76	2000.00	2195.00	2238.74
84.900	785.65	0.00	785.82	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
84.900	785.74	.09	785.91	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
85.000	785.64	0.00	785.82	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
85.000	785.74	.09	785.91	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
85.100	785.65	0.00	785.83	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
85.100	785.74	.09	785.91	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
85.200	785.66	0.00	785.83	176.00	0.00	6750.00	0.00	2424.00	1170.00	2000.00	2176.00	3594.00
85.200	785.75	.09	785.92	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
87.400	786.05	0.00	786.16	852.72	63.05	5153.76	1533.19	968.00	1800.00	2000.00	2190.00	2786.00
87.400	786.13	.08	786.24	819.47	66.94	5154.74	1528.32	865.00	1835.00	2000.00	2190.00	2700.00
87.900	786.88	0.00	787.19	210.00	0.00	6750.00	0.00	2018.00	478.00	2000.00	2210.00	2498.00

HEC2-RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01.02.03
MODIFICATION - 50.51.52.53

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

KALAMAZOO RIVER AT GALES

SUMMARY PRINTOUT

SECNO	CWSEL	SSTA	SICHL	SICHR	ENDST	TOPWID	XLCH
70.000	779.75	166.67	2000.00	3800.00	3891.67	3725.00	0.00
70.000	779.85	2000.00	2000.00	3800.00	3800.00	1800.00	0.00
71.000	779.75	1624.80	2000.00	5400.00	5583.47	3758.67	2900.00
71.000	779.85	2000.00	2000.00	5400.00	5400.00	3400.00	2900.00
72.000	779.75	1205.22	2000.00	3200.00	3291.85	2026.63	7500.00
72.000	779.85	2000.00	2000.00	3200.00	3200.00	1200.00	7500.00
80.000	779.78	1531.86	1780.00	2400.00	2625.99	1094.13	1600.00
80.000	779.88	1780.00	1780.00	2400.00	2400.00	620.00	1600.00
80.100	779.83	1952.82	2000.00	3600.00	4071.77	2118.95	1400.00
80.100	779.92	2000.00	2000.00	3600.00	3600.00	1600.00	1400.00
80.200	779.84	1715.51	2000.00	2600.00	2584.49	1168.99	2000.00
80.200	779.94	2000.00	2000.00	2600.00	2600.00	600.00	2000.00
80.900	779.98	2001.26	2000.00	2178.00	2168.24	166.98	1600.00
80.900	780.09	2000.82	2000.00	2178.00	2168.66	167.84	1600.00
81.000	779.96	2001.34	2000.00	2178.00	2168.16	166.82	1.00
81.000	780.07	2000.90	2000.00	2178.00	2168.58	167.68	1.00
81.100	780.26	2000.14	2000.00	2178.00	2172.57	172.43	31.00
81.100	780.36	2000.00	2000.00	2178.00	2172.41	172.84	31.00
81.200	780.31	2000.00	2000.00	2178.00	2172.69	172.69	1.00
81.200	780.40	2000.00	2000.00	2178.00	2172.45	172.95	1.00
83.000	783.18	3076.32	3082.00	3269.00	4054.63	1518.09	3375.00
83.000	783.26	3082.00	3082.00	3269.00	4395.27	1264.55	3375.00
84.800	784.81	1198.22	2000.00	2195.00	2282.98	1084.76	4500.00
84.800	784.90	1496.76	2000.00	2195.00	2238.74	751.97	4500.00
84.900	785.65	2000.00	2000.00	2176.00	2176.00	176.00	2400.00
84.900	785.74	2000.00	2000.00	2176.00	2176.00	176.00	2400.00

80.000	1000.00												
80.100	1400.00	0.00	0.00	767.80	4500.00	778.10	0.00	778.10	.07	.38	11954.44	16710.51	
80.100	1400.00	0.00	0.00	767.80	6070.00	779.32	0.00	779.33	.08	.44	14305.11	21655.15	
80.100	1400.00	0.00	0.00	767.80	6750.00	779.83	0.00	779.83	.08	.45	15343.48	23833.66	
80.100	1400.00	0.00	0.00	767.80	8420.00	780.98	0.00	780.99	.09	.51	17849.13	29231.37	
80.200	2000.00	0.00	0.00	769.40	4500.00	778.12	0.00	778.14	1.13	1.25	3525.15	4233.04	
80.200	2000.00	0.00	0.00	769.40	6070.00	779.34	0.00	779.37	1.06	1.41	4789.90	5883.48	
80.200	2000.00	0.00	0.00	769.40	6750.00	779.84	0.00	779.88	1.03	1.48	5351.33	6641.90	
80.200	2000.00	0.00	0.00	769.40	8420.00	781.00	0.00	781.03	.96	1.54	6800.94	8613.99	
80.900	1600.00	0.00	0.00	770.90	4500.00	778.36	0.00	778.93	33.46	6.06	742.03	777.96	
80.900	1600.00	0.00	0.00	770.90	6070.00	779.51	0.00	780.12	31.51	6.56	924.93	1081.43	
80.900	1600.00	0.00	0.00	770.90	6750.00	779.98	0.00	780.65	30.66	6.73	1002.76	1219.00	
80.900	1600.00	0.00	0.00	770.90	8420.00	781.06	0.00	781.84	28.58	7.10	1186.46	1575.09	
81.000	1.00	783.70	784.60	770.90	4500.00	778.34	0.00	778.95	5.14	6.24	721.48	1984.55	
81.000	1.00	783.70	784.60	770.90	6070.00	779.49	0.00	780.20	5.00	6.76	897.63	2715.67	
81.000	1.00	783.70	784.60	770.90	6750.00	779.96	0.00	780.71	4.91	6.93	973.33	3047.11	
81.000	1.00	783.70	784.60	770.90	8420.00	781.04	0.00	781.87	4.70	7.31	1152.17	3884.03	

SECNO	XLCH	ELEND	ELLC	FLMIN	W	CRSEL	CRIWS	FG	10K*S	VCH	AREA	.01K
81.100	31.00	783.70	784.60	770.30	4500.00	778.63	0.00	779.02	2.70	5.01	898.54	2736.88
81.100	31.00	783.70	784.60	770.30	6070.00	779.79	0.00	780.28	2.87	5.59	1085.48	3584.11
81.100	31.00	783.70	784.60	770.30	6750.00	780.28	0.00	780.79	2.91	5.80	1163.90	3956.02
81.100	31.00	783.70	784.60	770.30	8420.00	781.34	0.00	781.95	2.97	6.25	1346.61	4889.43
81.200	1.00	0.00	0.00	770.30	4500.00	778.67	0.00	779.03	16.77	4.85	928.59	1098.87
81.200	1.00	0.00	0.00	770.30	6070.00	779.84	0.00	780.25	17.37	5.41	1121.82	1456.22
81.200	1.00	0.00	0.00	770.30	6750.00	780.31	0.00	780.80	17.48	5.61	1202.80	1614.45
81.200	1.00	0.00	0.00	770.30	8420.00	781.39	0.00	781.96	17.30	6.05	1391.23	2024.63
83.000	3375.00	0.00	0.00	772.00	4500.00	781.67	0.00	781.77	4.61	2.82	3011.92	2096.13
83.000	3375.00	0.00	0.00	772.00	6070.00	782.75	0.00	782.85	4.03	2.91	4407.73	3023.67
83.000	3375.00	0.00	0.00	772.00	6750.00	783.18	0.00	783.27	3.81	2.93	5035.45	3456.00
83.000	3375.00	0.00	0.00	772.00	8420.00	784.16	0.00	784.25	3.35	2.96	6565.15	4603.17
84.800	4500.00	0.00	0.00	772.40	4500.00	783.32	0.00	783.43	3.04	2.68	1813.03	2582.58
84.800	4500.00	0.00	0.00	772.40	6070.00	784.40	0.00	784.55	3.50	3.10	2670.34	3245.34
84.800	4500.00	0.00	0.00	772.40	6750.00	784.81	0.00	784.96	3.61	3.24	3101.84	3554.61
84.800	4500.00	0.00	0.00	772.40	8420.00	785.70	0.00	785.87	3.76	3.50	4074.30	4341.54
84.900	2400.00	0.00	0.00	772.70	4500.00	784.00	0.00	784.10	2.54	2.58	1742.73	2821.74
84.900	2400.00	0.00	0.00	772.70	6070.00	785.20	0.00	785.35	3.21	3.10	1955.02	3389.19
84.900	2400.00	0.00	0.00	772.70	6750.00	785.65	0.00	785.82	3.50	3.32	2033.35	3607.41
84.900	2400.00	0.00	0.00	772.70	8420.00	786.62	0.00	786.85	4.21	3.82	2204.80	4101.31
85.000	1.00	783.70	784.60	772.70	4500.00	783.98	0.00	784.10	.41	2.64	1702.48	7001.75
85.000	1.00	783.70	784.60	772.70	6070.00	785.20	0.00	785.38	.53	3.18	1909.86	8301.74
85.000	1.00	783.70	784.60	772.70	6750.00	785.82	0.00	785.99	.59	3.40	1986.38	8795.64
85.000	1.00	783.70	784.60	772.70	8420.00	786.62	0.00	786.85	.72	3.91	2153.96	9901.37
85.100	1.00	783.70	784.60	772.70	4500.00	784.00	0.00	784.11	.40	2.59	1737.09	7107.92
85.100	1.00	783.70	784.60	772.70	6070.00	785.20	0.00	785.36	.52	3.12	1944.41	8401.71
85.100	1.00	783.70	784.60	772.70	6750.00	785.82	0.00	785.97	.58	3.34	2020.96	8842.82
85.100	1.00	783.70	784.60	772.70	8420.00	786.62	0.00	786.85	.71	3.86	2188.24	9892.47

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1.15	.12	0.00	2514.57	1600.00
50.100	4500.00	778.10	0.00	.04	0.00	1804.54	1400.00
50.100	6070.00	779.32	1.23	.04	0.00	2027.12	1400.00
50.100	6750.00	779.83	.51	.05	0.00	2118.05	1400.00
50.100	8420.00	781.08	1.15	.05	0.00	2323.54	1400.00
50.200	4500.00	778.12	0.00	.02	0.00	823.21	2000.00
50.200	6070.00	779.34	1.23	.02	0.00	1068.63	2000.00
50.200	6750.00	779.84	.51	.02	0.00	1168.90	2000.00
50.200	8420.00	781.06	1.15	.02	0.00	1334.58	2000.00
80.900	4500.00	778.36	0.00	.26	0.00	154.50	1600.00
80.900	6070.00	779.51	1.15	.17	0.00	163.35	1600.00
80.900	6750.00	779.98	.47	.14	0.00	166.98	1600.00
80.900	8420.00	781.06	1.07	.07	0.00	172.27	1600.00
81.000	4500.00	778.34	0.00	-.02	0.00	154.44	1.00
81.000	6070.00	779.49	1.15	-.02	0.00	163.20	1.00
81.000	6750.00	779.96	.47	-.02	0.00	166.82	1.00
81.000	8420.00	781.04	1.07	-.02	0.00	172.10	1.00
81.100	4500.00	778.53	0.00	.26	0.00	161.16	31.00
81.100	6070.00	779.70	1.17	.30	0.00	169.19	31.00
81.100	6750.00	780.20	.47	.30	0.00	172.43	31.00
81.100	8420.00	781.24	1.07	.30	0.00	175.50	31.00
81.200	4500.00	778.57	0.00	.03	0.00	161.38	1.00
81.200	6070.00	779.74	1.17	.04	0.00	169.45	1.00
81.200	6750.00	780.21	.47	.04	0.00	172.69	1.00
81.200	8420.00	781.29	1.07	.05	0.00	175.73	1.00
83.000	4500.00	778.87	0.00	3.00	0.00	1162.91	3375.00
83.000	6070.00	780.75	1.88	2.92	0.00	1391.12	3375.00
83.000	6750.00	781.52	.78	2.87	0.00	1518.00	3375.00
83.000	8420.00	784.16	2.64	2.77	0.00	1584.05	3375.00

SECNO	Q	CWSEL	DIFWSP	DIFWSA	DIFWS	TOPWTD	XLCH
84.800	4500.00	783.32	0.00	1.66	0.00	272.54	4500.00
84.800	6070.00	784.40	1.08	1.65	1.08	1041.40	4500.00
84.800	6750.00	784.81	.40	1.62	1.48	1084.76	4500.00
84.800	8420.00	785.70	.89	1.53	2.37	1098.23	4500.00
84.900	4500.00	784.00	0.00	.67	0.00	176.00	2400.00
84.900	6070.00	785.20	1.21	.80	1.21	176.00	2400.00
84.900	6750.00	785.65	.44	.84	1.65	176.00	2400.00
84.900	8420.00	786.62	.97	.93	2.63	176.00	2400.00
85.000	4500.00	783.99	0.00	-.00	0.00	176.00	1.00
85.000	6070.00	785.20	1.20	-.00	1.20	176.00	1.00
85.000	6750.00	785.64	.44	-.00	1.65	176.00	1.00
85.000	8420.00	786.62	.97	-.01	2.62	176.00	1.00
85.100	4500.00	784.00	0.00	.01	0.00	176.00	20.00
85.100	6070.00	785.21	1.21	.01	1.21	176.00	20.00
85.100	6750.00	785.65	.45	.01	1.65	176.00	20.00
85.100	8420.00	786.63	.97	.01	2.63	176.00	20.00
85.200	4500.00	784.01	0.00	.01	0.00	176.00	1.00
85.200	6070.00	785.22	1.21	.01	1.21	176.00	1.00
85.200	6750.00	785.66	.45	.01	1.65	176.00	1.00
85.200	8420.00	786.64	.98	.01	2.63	176.00	1.00
87.800	4500.00	784.29	0.00	.28	0.00	762.76	875.00
87.800	6070.00	785.56	1.28	.35	1.28	828.07	875.00
87.800	6750.00	786.05	.48	.38	1.76	892.72	875.00
87.800	8420.00	787.11	1.06	.47	2.82	907.21	875.00
87.900	4500.00	785.27	0.00	.99	0.00	208.26	1500.00
87.900	6070.00	786.44	1.16	.87	1.16	210.00	1500.00
87.900	6750.00	786.88	.45	.84	1.61	210.00	1500.00
87.900	8420.00	787.89	1.01	.78	2.62	210.00	1500.00
88.000	4500.00	785.27	0.00	-.01	0.00	208.28	1.00
88.000	6070.00	786.43	1.16	-.01	1.16	210.00	1.00
88.000	6750.00	786.88	.45	-.01	1.61	210.00	1.00
88.000	8420.00	787.88	1.01	-.01	2.61	210.00	1.00
88.100	4500.00	785.36	0.00	.09	0.00	210.00	29.00
88.100	6070.00	786.53	1.17	.10	1.17	210.00	29.00
88.100	6750.00	786.98	.45	.10	1.62	210.00	29.00
88.100	8420.00	787.99	1.01	.11	2.63	210.00	29.00
88.200	4500.00	785.37	0.00	.01	0.00	210.00	1.00
88.200	6070.00	786.55	1.17	.02	1.17	210.00	1.00
88.200	6750.00	787.00	.46	.02	1.63	210.00	1.00
88.200	8420.00	788.02	1.02	.03	2.65	210.00	1.00
88.300	4500.00	785.48	0.00	.11	0.00	552.99	800.00
88.300	6070.00	786.68	1.19	.13	1.19	895.63	800.00
88.300	6750.00	787.14	.47	.14	1.66	1029.76	800.00
88.300	8420.00	788.25	1.10	.23	2.76	1346.90	800.00

	768.000	1885.000	768.300	1935.000	769.500	1985.000	769.400	2040.000	769.600	2070.000
	769.800	2100.000	770.400	2165.000	767.100	2250.000	772.100	2280.000	773.500	2315.000
	774.900	2345.000	776.000	2350.000	775.000	2400.000	780.000	2655.000	780.000	2930.000
	782.000	3095.000	784.000	3200.000	786.000	3270.000	0.000	0.000	0.000	0.000

FABRICATED VALLEY SECTION

x1	80.100	8.000	2000.000	3600.000	1400.000	1400.000	1400.000	0.000	0.000	0.000
	790.000	1200.000	780.000	1950.000	777.000	2000.000	768.000	2400.000	770.000	2800.000
	767.800	3200.000	777.000	3600.000	780.000	4100.000	0.000	0.000	0.000	0.000

FABRICATED VALLEY SECTION

x1	80.200	8.000	2000.000	2660.000	2000.000	2000.000	2000.000	0.000	0.000	0.000
	790.000	600.000	780.000	1700.000	777.000	2000.000	772.000	2150.000	769.400	2450.000
	777.000	2600.000	780.000	2900.000	790.000	3200.000	0.000	0.000	0.000	0.000
C	.100	.100	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

x1	80.900	42.000	2000.000	2178.000	2100.000	1600.000	1600.000	0.000	0.000	0.000
x3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	784.050	786.250	0.000
	789.200	370.000	787.800	502.000	786.800	604.000	784.800	786.000	784.200	889.000
	784.000	986.000	783.800	1088.000	783.400	1188.000	783.500	1290.000	783.500	1392.000
	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
	785.700	2000.000	780.300	2000.000	774.500	2023.000	774.600	2039.000	775.600	2054.000
	772.200	2077.000	770.900	2104.000	772.300	2126.000	772.000	2145.000	776.700	2156.000
	782.600	2178.000	787.900	2178.000	788.200	2279.000	789.600	2379.000	791.100	2481.000
	791.900	2581.000	793.100	2685.000	793.700	2789.000	794.000	2885.000	794.500	2993.000
	794.600	3095.000	794.700	3195.000	795.100	3295.000	795.200	3395.000	795.300	3491.000
	795.500	3575.000	795.800	3691.000	0.000	0.000	0.000	0.000	0.000	0.000
C	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF 35TH STREET BRIDGE (A)

DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

x1	81.000	50.000	2000.000	2178.000	1.000	1.000	1.000	0.000	0.000	0.000
x3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	14.000	1808.000	783.700	0.000	2000.000	785.700	0.000	2000.000	785.700	782.400
	2058.000	786.400	783.100	2058.100	786.400	775.000	2060.000	786.400	774.700	2060.100
	786.400	783.100	2118.000	787.200	783.900	2118.100	787.200	771.600	2120.000	787.200
	771.800	2120.100	787.200	783.900	2178.000	787.900	784.600	2178.000	787.900	0.000
	2279.000	788.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	789.200	370.000	787.800	502.000	786.800	604.000	784.800	786.000	784.200	889.000
	784.000	986.000	783.800	1088.000	783.400	1188.000	783.500	1290.000	783.500	1392.000
	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
	785.700	2000.000	780.300	2000.000	774.500	2023.000	774.600	2039.000	775.600	2054.000
	775.000	2058.000	775.000	2054.100	774.700	2060.000	774.700	2060.100	772.200	2077.000
	770.900	2109.000	771.600	2118.000	771.600	2118.100	771.800	2120.000	771.800	2120.100
	772.300	2126.000	772.000	2145.000	776.700	2156.000	782.600	2178.000	787.900	2178.000
	788.200	2279.000	789.600	2379.000	791.100	2481.000	791.900	2581.000	793.100	2685.000
	793.700	2789.000	794.000	2885.000	794.500	2993.000	794.600	3095.000	794.700	3195.000
	795.100	3295.000	795.200	3395.000	795.300	3491.000	795.500	3575.000	795.800	3691.000

x1	31.100	50.000	2000.000	2178.000	31.000	31.000	31.000	0.000	0.000	0.000
x3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

	14.000	1006.000	783.700	0.000	2000.000	785.700	0.000	2000.000	785.700	792.400
	2058.000	786.400	783.100	2058.100	786.400	773.200	2060.000	786.400	773.000	2060.100
	786.400	783.100	2118.000	787.200	783.900	2118.100	787.200	771.400	2120.000	787.200
	771.400	2120.100	787.200	783.900	2178.000	787.900	784.600	2178.000	787.900	0.000
	2279.000	788.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	789.200	370.000	787.600	502.000	786.800	604.000	784.800	786.000	784.200	889.000
	784.600	986.000	783.800	1088.000	783.400	1185.000	783.500	1290.000	783.500	1392.000
	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
	785.700	2000.000	780.300	2000.000	774.700	2023.000	774.300	2039.000	773.700	2052.000
	773.200	2058.000	773.200	2058.100	773.000	2060.000	773.000	2060.100	771.500	2076.000
	770.700	2088.000	771.400	2118.000	771.400	2118.100	771.400	2120.000	771.400	2120.100
	770.300	2130.000	771.100	2146.000	776.500	2162.000	782.200	2178.000	787.900	2178.000
	788.200	2279.000	789.600	2379.000	791.100	2481.000	791.900	2581.000	793.100	2685.000
	793.700	2789.000	794.000	2885.000	794.500	2993.000	794.600	3095.000	794.700	3195.000
	795.100	3295.000	795.200	3393.000	795.300	3491.000	795.500	3575.000	795.800	3691.000
	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	21.200	0.000	0.000	178.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	785.700	787.900	0.000

SURVEYED VALLEY SECTION (B)

X1	83.000	44.000	3082.000	3269.000	3350.000	3100.000	3375.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	793.000	1718.000	792.500	1788.000	796.000	1896.000	795.200	2000.000	793.200	2132.000
	792.500	2228.000	792.600	2324.000	792.600	2420.000	791.700	2514.000	791.100	2634.000
	790.400	2728.000	790.200	2822.000	790.300	2908.000	789.800	2972.000	787.500	3066.000
	780.800	3082.000	778.400	3093.000	775.100	3118.000	773.500	3143.000	772.000	3168.000
	773.700	3193.000	774.400	3224.000	777.900	3266.000	779.800	3269.000	779.400	3316.000
	775.300	3316.000	775.200	3338.000	776.800	3354.000	779.600	3362.000	779.900	3480.000
	779.200	3574.000	780.200	3708.000	778.800	3806.000	778.900	3900.000	781.600	3988.000
	781.700	4074.000	783.600	4218.000	782.000	4326.000	780.800	4422.000	780.400	4498.000
	782.800	4592.000	783.000	4654.000	789.300	4676.000	790.100	4774.000	0.000	0.000
VC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
-1	0.000	7.100	7.100	7.100	7.100	0.000	1170.000	3594.000	0.000	0.000

SURVEYED VALLEY SECTION (C)

X1	84.800	39.000	2000.000	2195.000	4525.000	4463.000	4500.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
	790.600	864.000	789.000	1160.000	788.100	1170.000	784.600	1200.000	783.600	1400.000
	783.800	1600.000	783.400	1800.000	783.500	2000.000	780.800	2011.000	774.500	2034.000
	773.700	2051.000	773.900	2086.000	772.400	2124.000	772.900	2142.000	774.900	2176.000
	775.700	2186.000	781.200	2195.000	781.000	2224.000	791.300	2260.000	787.100	2298.000
	787.800	2402.000	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000
	790.400	2828.000	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000
	789.800	3312.000	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000
VC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	54.900	43.000	2000.000	2176.000	2400.000	2400.000	2400.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	788.150	788.250	0.000
	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
	786.300	864.000	783.700	1160.000	788.100	1170.000	787.000	1300.000	786.800	1402.000
	786.700	1502.000	786.700	1603.000	787.000	1702.000	787.200	1800.000	787.200	1898.000
	788.800	2000.000	777.800	2000.000	774.500	2034.000	773.700	2051.000	773.900	2086.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE RUN ~~[illegible]~~

– downstream

00BREAK00

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**********************************************************
*  HEC2 WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED JULY 1979                                     *
*  ERROR CORR - 01,02,03                                 *
*  MODIFICATION - 50,51,52,53                            *
*                                                        *
*  RUN DATE  80/09/03. TIME  05.27.42.                   *
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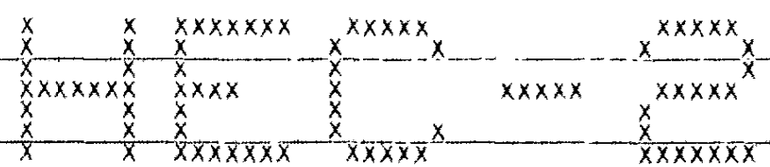
FIS Kalamazoo Twp, Kalamazoo Co., MI

Kalamazoo River D/S Portion

10, 50, 100 and 500 year Profiles

Rev 1 9-4-80



MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

C
T1       10  YEAR  PROFILE -- STUDY LIMITS UPSTREAM TO SEWAGE DISPOSAL PLANT
T2      STARTING WATER SURFACE FROM SLOPE-AREA METHOD
T3      KALAMAZOO R., KALAMAZOO  TOWNSHIP
J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        2.         0.         0.    .000450       0.00       0.0         0.     750.000     0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
      38.000     1.000     53.000     21.000     22.000     54.000      4.000     39.000    150.000    201.000
J5  LPRNT     NUMSEC                        ********REQUESTED SECTION NUMBERS********
     -10.000   -10.000     0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
NC       .070       .070       .035       .100       .300      0.000      0.000      0.000      0.000      0.000
QT      7.000  4970.000  6680.000  7420.000  9220.000  7420.000  5646.000  7000.000      0.000      0.000
ET      0.000      9.100      9.100      9.100      9.100      1.400      9.100      9.100   1858.000   2396.000

X1      0.000     27.000   2004.000   2186.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    771.100    996.000    769.000   1078.000    766.700   1172.000    764.100   1290.000    762.200   1456.000
GR    760.400   1544.000    759.000   1634.000    758.700   1648.000    754.000   1730.000    753.300   1810.000
GR    760.200   1858.000    751.200   1918.000    750.700   2000.000    749.600   2004.000    746.600   2040.000
GR    746.800   2072.000    744.300   2116.000    745.400   2154.000    749.600   2186.000    751.600   2200.000
GR    750.200   2278.000    753.900   2342.000    760.200   2396.000    759.000   2458.000    759.600   2534.000
GR    762.200   2554.000    773.600   2600.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      9.100      9.100      9.100      9.100      1.400      9.100      9.100    622.000   2634.000

          VALLEY SECTION (A) AT DOWNSTREAM STUDY LIMITS -- I.E. G AVENUE

X1      1.000     36.000   2120.000   2429.000    625.000    905.000    760.000      0.000      0.000      0.000
X2      0.000    755.310      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    771.900    386.000    769.900    496.000    767.800    622.000    765.800    824.000    764.600    926.000
GR    763.800   1026.000    762.700   1130.000    760.700   1196.000    761.100   1298.000    760.900   1394.000
GR    760.300   1502.000    760.000   1596.000    759.200   1658.000    752.700   1728.000    751.000   2000.000
GR    749.700   2120.000    747.700   2180.000    747.800   2224.000    747.000   2280.000    746.500   2310.000
GR    747.400   2340.000    747.700   2380.000    749.800   2429.000    751.800   2433.000    753.400   2488.000
GR    763.400   2534.000    768.100   2634.000    766.700   2720.000    763.100   2926.000    763.000   2998.000
GR    762.800   3084.000    753.700   3250.000    766.700   3332.000    767.000   3704.000    756.200   3794.000
GR    763.600   3986.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      9.100      9.100      9.100      9.100      1.400      9.100      9.100   1128.000   3346.000
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MOORE BUSINESS FORMS, INC 23

VALLEY SECTION (B)

X1	2.000	37.000	2005.000	2520.000	1270.000	800.000	850.000	0.000	0.000	0.000
X2	0.000	755.550	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	763.400	452.000	763.400	618.000	763.400	784.000	763.400	936.000	764.600	1128.000
GR	760.700	1228.000	755.900	1338.000	757.200	1392.000	754.300	1456.000	753.600	1526.000
GR	753.600	1624.000	753.400	1760.000	751.400	1848.000	752.300	2000.000	750.400	2005.000
GR	748.100	2026.000	746.900	2050.000	748.800	2078.000	750.300	2098.000	751.800	2104.000
GR	751.800	2230.000	752.400	2284.000	750.700	2352.000	747.800	2416.000	748.300	2470.000
GR	749.000	2506.000	750.300	2520.000	752.000	2526.000	750.300	2668.000	757.500	2948.000
GR	761.200	3184.000	762.300	3346.000	757.900	3540.000	757.400	3690.000	756.300	3836.000
GR	759.200	3934.000	757.600	4028.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	9.100	9.100	1916.000	3050.000
NC	.080	.080	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION (C)

X1	3.000	12.000	2006.000	2182.000	1290.000	2010.000	2010.000	0.000	0.000	0.000
X2	0.000	756.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1650.000	752.400	2000.000	751.400	2006.000	747.700	2024.000	745.800	2068.000
GR	746.800	2116.000	747.300	2146.000	747.800	2168.000	751.100	2182.000	752.800	2190.000
GR	755.000	2300.000	760.000	3050.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	9.100	9.100	2016.000	2500.000

X1	3.700	13.000	2036.000	2324.000	700.000	410.000	580.000	0.000	0.000	0.000
X2	0.000	756.560	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1200.000	754.000	2000.000	751.800	2036.000	748.400	2070.000	749.400	2120.000
GR	749.200	2176.000	749.800	2230.000	750.300	2270.000	749.900	2308.000	751.800	2324.000
GR	756.200	2340.000	755.600	2350.000	760.000	2500.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	1.400	9.100	9.100	1995.000	2365.000

X1	3.900	0.000	0.000	0.000	1300.000	490.000	900.000	0.000	0.000	0.000
X2	0.000	757.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	3.910	29.000	2030.000	2334.000	50.000	50.000	50.000	0.000	0.000	0.000
X2	0.000	757.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	764.800	2000.000	759.500	2000.000	751.800	2030.000	751.800	2030.000	751.800	2030.000
GR	749.900	2046.000	750.000	2062.000	750.000	2074.000	749.500	2090.000	749.400	2106.000
GR	748.500	2122.000	748.900	2138.000	748.600	2154.000	747.000	2170.000	748.500	2186.000
GR	748.000	2202.000	748.600	2218.000	748.300	2219.000	748.800	2235.000	749.000	2251.000
GR	749.000	2267.000	749.300	2283.000	750.400	2299.000	751.000	2315.000	750.600	2331.000
GR	751.800	2334.000	759.200	2362.000	759.200	2362.000	764.800	2362.000	0.000	0.000

RAILROAD BRIDGE SECTION (D)

X1	4.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
X2	0.000	757.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.500	3.000	0.000	300.000	36.000	4224.000	2.340	752.000	752.000

X1	4.100	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	762.100	764.800	0.000	0.000	0.000	0.000	0.000
X2	0.000	757.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X5	-7.000	.250	.250	.250	.250	.250	.250	.250	.250	0.000
BT	4.000	2000.000	764.800	0.000	2000.000	764.800	762.100	2362.000	764.800	762.000

MOORE BUSINESS FORMS, INC 23

BT	2362.000	764.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	757.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.500	11.000	2120.000	2246.000	500.000	1000.000	1000.000	0.000	0.000	0.000
X2	0.000	757.660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1350.000	750.000	2110.000	750.000	2110.000	750.000	2110.000	748.900	2120.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
GR	761.800	2276.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.900	11.000	2070.000	2246.000	1735.000	1735.000	1735.000	0.000	0.000	0.000
X2	0.000	758.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1900.000	754.300	2000.000	753.800	2068.000	751.600	2070.000	748.500	2096.000
GR	748.900	2136.000	748.400	2162.000	748.800	2214.000	752.500	2246.000	754.800	2264.000
GR	761.800	2276.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.910	11.000	2038.000	2280.000	50.000	50.000	50.000	0.000	0.000	0.000
X2	0.000	758.740	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1925.000	762.500	2000.000	757.100	2000.000	752.600	2038.000	747.500	2078.000
GR	747.700	2140.000	747.400	2204.000	750.100	2250.000	752.500	2280.000	757.200	2298.000
GR	762.400	2298.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

RAILROAD BRIDGE SECTION (E)

X1	5.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	758.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.500	3.000	0.000	175.000	30.000	2790.000	5.790	747.200	747.200
X1	5.100	0.000	0.000	0.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	758.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	759.100	762.400	0.000	0.000	0.000	0.000	0.000
X5	-7.000	.100	.100	.100	.100	.100	.100	.100	.100	0.000
BT	4.000	2000.000	762.500	0.000	2000.000	762.500	759.100	2298.000	762.400	758.800
BT	2298.000	762.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	5.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	758.860	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	1.400	9.100	9.100	1980.000	2200.000
X1	5.800	10.000	2006.000	2198.000	760.000	1040.000	935.000	0.000	0.000	0.000
X2	0.000	759.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	760.000	1445.000	755.200	2000.000	752.300	2006.000	747.700	2050.000	748.000	2084.000
GR	749.700	2123.000	750.100	2150.000	751.100	2189.000	752.500	2198.000	763.900	2220.000
X1	5.900	15.000	2000.000	2207.000	65.000	65.000	65.000	0.000	0.000	0.000
X2	0.000	759.210	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
GR	765.000	2000.000	754.900	2000.000	752.600	2014.000	747.800	2057.000	747.800	2057.100
GR	747.800	2060.000	747.800	2060.100	748.000	2104.000	750.300	2146.000	750.300	2146.100
GR	750.600	2149.000	750.600	2149.100	752.600	2189.000	756.200	2207.000	764.900	2207.000

MOORE BUSINESS FORMS, INC 23

QI	7.000	4950.000	6650.000	7390.000	9180.000	7390.000	5623.000	7000.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

ROAD BRIDGE SECTION (F) AT MOSEL AVENUE

X1	6.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	759.220	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	763.200	763.200	0.000
BT	12.000	2000.000	765.000	0.000	2000.000	765.000	761.400	2057.000	765.000	761.400
BT	2057.100	765.000	747.800	2060.000	765.000	747.800	2060.100	765.000	761.400	2146.000
BT	764.900	761.500	2146.100	764.900	750.300	2149.000	764.900	750.600	2149.100	764.900
BT	761.500	2207.000	764.900	761.500	2207.000	764.900	0.000	0.000	0.000	0.000

X1	6.100	20.000	2000.000	2207.000	35.000	35.000	35.000	0.000	0.000	0.000
X2	0.000	759.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	765.100	765.100	0.000
BT	12.000	2000.000	765.000	0.000	2000.000	765.000	761.400	2057.000	765.000	761.400
BT	2057.100	765.000	748.900	2060.000	765.000	748.900	2060.100	765.000	761.400	2146.000
BT	765.100	761.300	2146.100	765.100	748.600	2149.000	765.100	748.600	2149.100	765.100
BT	761.300	2207.000	765.100	761.300	2207.000	765.100	0.000	0.000	0.000	0.000
GR	765.000	2000.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	765.100	2207.000

X1	6.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X2	0.000	759.240	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	765.100	765.100	0.000
NC	.050	.050	.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	6.300	20.000	2000.000	2207.000	100.000	100.000	100.000	0.000	0.000	0.000
X2	0.000	759.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	1900.000	0.000	2307.000	0.000	0.000	0.000	0.000
GR	760.000	1500.000	755.000	2000.000	752.700	2018.000	749.100	2039.000	748.900	2057.000
GR	748.900	2057.100	748.900	2060.000	748.900	2060.100	747.500	2079.000	747.000	2099.000
GR	748.700	2119.000	748.600	2138.000	748.600	2146.000	748.600	2146.100	748.600	2149.000
GR	748.600	2149.100	750.700	2169.000	752.700	2189.000	755.500	2207.000	760.000	2550.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION (G) AT TOWNSHIP BOUNDRY -- DOWNSTREAM DISPOSAL PLANT

X1	7.000	12.000	2016.000	2158.000	2775.000	2625.000	2555.000	0.000	0.000	0.000
X2	0.000	759.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	765.000	1050.000	760.000	1100.000	758.300	2000.000	754.100	2016.000	747.900	2062.000
GR	747.600	2098.000	750.000	2134.000	754.000	2158.000	756.500	2168.000	756.100	2174.000
GR	760.000	2550.000	765.000	2600.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

T1       50  YEAR  PROFILE -- STUDY LIMITS UPSTREAM TO SEWAGE DISPOSAL PLANT
T2     STARTING WATER SURFACE FROM SLOPE-AREA METHOD
T3     KALAMAZOO R., KALAMAZOO  TOWNSHIP

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
     -10.       3.        0.        0.     .000450     0.00      0.0       0.     750.000    0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 23

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR =  01,02,03
  MODIFICATION =  50,51,52,53
**********************************************************

T1      100  YEAR  PROFILE -- STUDY LIMITS UPSTREAM TO SEWAGE DISPOSAL PLANT
T2      STARTING WATER SURFACE FROM SLOPE-AREA METHOD
T3      KALAMAZOO R., KALAMAZOO  TOWNSHIP

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.       4.        0.        0.    .000450     0.00      0.0       0.      750.000   0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

T1      500  YEAR  PROFILE -- STUDY LIMITS UPSTREAM TO SEWAGE DISPOSAL PLANT
T2      STARTING WATER SURFACE FROM SLOPE-AREA METHOD
T3      KALAMAZOO R., KALAMAZOO  TOWNSHIP

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.       5.        0.        0.    .000450     0.00      0.0       0.     750.000    0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000    0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

MOORE BUSINESS FORMS, INC 23

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY - downstream

00BREAK00

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

KALAMAZOO R., KALAMAZOO

SUMMARY PRINTOUT

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
0.000	753.69	1901.38	2004.00	2186.00	2338.41	437.03	0.00
0.000	754.83	1893.81	2004.00	2186.00	2349.96	456.16	0.00
0.000	755.32	1890.55	2004.00	2186.00	2354.15	463.59	0.00
0.000	756.34	1883.71	2004.00	2186.00	2362.95	479.24	0.00
1.000	754.04	1713.60	2120.00	2429.00	2490.93	777.33	760.00
1.000	755.19	1701.32	2120.00	2429.00	2496.18	794.86	760.00
1.000	755.67	1696.05	2120.00	2429.00	2498.43	802.38	760.00
1.000	756.71	1684.79	2120.00	2429.00	2503.24	818.44	760.00
2.000	754.30	1456.29	2005.00	2520.00	2823.44	1367.15	850.00
2.000	755.42	1431.35	2005.00	2520.00	2866.99	1435.64	850.00
2.000	755.89	1420.85	2005.00	2520.00	2885.49	1464.64	850.00
2.000	756.92	1314.67	2005.00	2520.00	2925.37	1592.77	850.00
3.000	755.01	1916.00	2006.00	2182.00	2301.72	385.72	2010.00
3.000	755.96	1916.00	2006.00	2182.00	2444.74	528.74	2010.00
3.000	756.38	1916.00	2006.00	2182.00	2506.39	590.39	2010.00
3.000	757.30	1916.00	2006.00	2182.00	2644.73	728.73	2010.00
3.700	755.42	2016.00	2036.00	2324.00	2337.15	321.15	580.00
3.700	756.42	2016.00	2036.00	2324.00	2377.92	361.92	580.00
3.700	756.84	2016.00	2036.00	2324.00	2392.16	376.16	580.00
3.700	757.76	2016.00	2036.00	2324.00	2423.67	407.67	580.00
3.900	755.92	1995.00	2036.00	2324.00	2360.84	360.11	900.00
3.900	756.96	1995.00	2036.00	2324.00	2365.00	370.00	900.00
3.900	757.38	1995.00	2036.00	2324.00	2365.00	370.00	900.00
3.900	758.32	1995.00	2036.00	2324.00	2365.00	370.00	900.00
3.910	755.96	2013.82	2030.00	2334.00	2349.71	335.89	50.00
3.910	757.00	2009.77	2030.00	2334.00	2353.65	343.87	50.00
3.910	757.43	2008.11	2030.00	2334.00	2355.25	347.14	50.00
3.910	758.37	2004.44	2030.00	2334.00	2358.82	354.38	50.00
4.000	755.96	2013.79	2030.00	2334.00	2349.74	335.95	1.00
4.000	757.00	2009.74	2030.00	2334.00	2353.68	343.94	1.00
4.000	757.43	2008.08	2030.00	2334.00	2355.29	347.21	1.00
4.000	758.37	2004.40	2030.00	2334.00	2358.86	354.46	1.00

MOORE BUSINESS FORMS, INC 23

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
*	4.100	756.21	2012.82	2030.00	2334.00	2350.69	337.87	10.00
*	4.100	757.25	2008.76	2030.00	2334.00	2354.63	345.86	10.00
*	4.100	757.68	2007.10	2030.00	2334.00	2356.24	349.13	10.00
*	4.100	758.62	2003.43	2030.00	2334.00	2359.81	356.38	10.00
	4.200	756.21	2012.82	2030.00	2334.00	2350.69	337.87	1.00
	4.200	757.25	2008.76	2030.00	2334.00	2354.63	345.87	1.00
	4.200	757.68	2007.10	2030.00	2334.00	2356.24	349.13	1.00
	4.200	758.62	2003.43	2030.00	2334.00	2359.81	356.38	1.00
	4.500	756.55	1612.00	2120.00	2246.00	2267.00	655.01	1000.00
	4.500	757.63	1530.40	2120.00	2246.00	2268.85	738.45	1000.00
	4.500	758.06	1497.32	2120.00	2246.00	2269.59	772.27	1000.00
	4.500	759.03	1423.82	2120.00	2246.00	2271.25	847.43	1000.00
	4.900	757.43	1945.16	2070.00	2246.00	2268.50	323.34	1735.00
	4.900	758.54	1925.60	2070.00	2246.00	2270.41	344.81	1735.00
	4.900	758.98	1917.86	2070.00	2246.00	2271.17	353.31	1735.00
	4.900	759.96	1900.77	2070.00	2246.00	2272.84	372.07	1735.00
	4.910	757.52	2000.00	2038.00	2280.00	2298.00	298.00	50.00
	4.910	758.65	2000.00	2038.00	2280.00	2298.00	298.00	50.00
	4.910	759.10	2000.00	2038.00	2280.00	2298.00	298.00	50.00
	4.910	760.09	1925.00	2038.00	2280.00	2298.00	300.64	50.00
	5.000	757.52	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.000	758.65	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.000	759.10	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.000	760.09	1925.00	2038.00	2280.00	2298.00	300.66	1.00
*	5.100	757.62	2000.00	2038.00	2280.00	2298.00	298.00	10.00
*	5.100	758.75	2000.00	2038.00	2280.00	2298.00	298.00	10.00
*	5.100	759.20	2000.00	2038.00	2280.00	2298.00	298.00	10.00
*	5.100	760.19	1925.00	2038.00	2280.00	2298.00	303.65	10.00
	5.200	757.62	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.200	758.75	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.200	759.20	2000.00	2038.00	2280.00	2298.00	298.00	1.00
	5.200	760.19	1925.00	2038.00	2280.00	2298.00	303.66	1.00
	5.800	757.83	1980.00	2006.00	2198.00	2200.00	220.00	935.00
	5.800	758.99	1980.00	2006.00	2198.00	2200.00	220.00	935.00
	5.800	759.45	1980.00	2006.00	2198.00	2200.00	220.00	935.00
	5.800	760.46	1980.00	2006.00	2198.00	2200.00	220.00	935.00
	5.900	757.85	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	5.900	759.02	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	5.900	759.48	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	5.900	760.49	2000.00	2000.00	2207.00	2207.00	207.00	65.00
	6.000	757.85	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.000	759.01	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.000	759.47	2000.00	2000.00	2207.00	2207.00	207.00	1.00
	6.000	760.49	2000.00	2000.00	2207.00	2207.00	207.00	1.00

MOORE BUSINESS FORMS, INC 23

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
6.100	757.89	2000.00	2000.00	2207.00	2207.00	207.00	35.00
6.100	759.07	2000.00	2000.00	2207.00	2207.00	207.00	35.00
6.100	759.53	2000.00	2000.00	2207.00	2207.00	207.00	35.00
6.100	760.55	2000.00	2000.00	2207.00	2207.00	207.00	35.00
6.200	757.91	2000.00	2000.00	2207.00	2207.00	207.00	1.00
6.200	759.09	2000.00	2000.00	2207.00	2207.00	207.00	1.00
6.200	759.55	2000.00	2000.00	2207.00	2207.00	207.00	1.00
6.200	760.58	2000.00	2000.00	2207.00	2207.00	207.00	1.00
6.300	757.96	1900.00	2000.00	2207.00	2307.00	407.00	100.00
6.300	759.17	1900.00	2000.00	2207.00	2307.00	407.00	100.00
6.300	759.65	1900.00	2000.00	2207.00	2307.00	407.00	100.00
6.300	760.72	1900.00	2000.00	2207.00	2307.00	407.00	100.00
7.000	758.36	1968.88	2016.00	2158.00	2391.77	422.89	2555.00
7.000	759.59	1317.58	2016.00	2158.00	2510.38	1192.80	2555.00
7.000	760.08	1099.22	2016.00	2158.00	2550.78	1451.57	2555.00
7.000	761.16	1088.41	2016.00	2158.00	2561.59	1473.18	2555.00

MOORE BUSINESS FORMS, INC 23

KALAMAZOO R., KALAMAZOO

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	0.000	0.00	0.00	0.00	744.30	4970.00	753.69	0.00	753.85	4.52	3.37	1943.88	2338.64
	0.000	0.00	0.00	0.00	744.30	6680.00	754.83	0.00	755.02	4.57	3.74	2452.37	3125.78
	0.000	0.00	0.00	0.00	744.30	7420.00	755.32	0.00	755.51	4.50	3.85	2676.74	3498.80
	0.000	0.00	0.00	0.00	744.30	9220.00	756.34	0.00	756.56	4.49	4.14	3160.95	4350.22
	1.000	760.00	0.00	0.00	746.50	4970.00	754.04	0.00	754.10	2.39	2.22	3058.25	3216.30
	1.000	760.00	0.00	0.00	746.50	6680.00	755.19	0.00	755.26	2.21	2.38	3954.86	4498.51
	1.000	760.00	0.00	0.00	746.50	7420.00	755.67	0.00	755.75	2.11	2.43	4345.52	5110.00
	1.000	760.00	0.00	0.00	746.50	9220.00	756.71	0.00	756.79	1.99	2.57	5192.58	6535.21
	2.000	850.00	0.00	0.00	746.90	4970.00	754.30	0.00	754.34	3.04	1.90	3643.90	2851.49
	2.000	850.00	0.00	0.00	746.90	6680.00	755.42	0.00	755.46	2.15	1.87	5213.41	4557.88
	2.000	850.00	0.00	0.00	746.90	7420.00	755.89	0.00	755.93	1.89	1.86	5903.36	5398.82
	2.000	850.00	0.00	0.00	746.90	9220.00	756.92	0.00	756.96	1.54	1.87	7470.62	7440.22
	3.000	2010.00	0.00	0.00	745.80	4970.00	755.01	0.00	755.20	5.88	3.51	1669.01	2049.43
	3.000	2010.00	0.00	0.00	745.80	6680.00	755.96	0.00	756.20	6.74	4.06	2104.94	2573.13
	3.000	2010.00	0.00	0.00	745.80	7420.00	756.38	0.00	756.63	6.89	4.24	2334.95	2827.06
	3.000	2010.00	0.00	0.00	745.80	9220.00	757.30	0.00	757.58	7.07	4.58	2943.24	3467.70
	3.700	580.00	0.00	0.00	748.40	4970.00	755.42	0.00	755.55	6.14	2.96	1742.02	2005.48
	3.700	580.00	0.00	0.00	748.40	6680.00	756.42	0.00	756.59	6.44	3.37	2082.51	2632.75
	3.700	580.00	0.00	0.00	748.40	7420.00	756.84	0.00	757.02	6.47	3.51	2236.66	2917.18
	3.700	580.00	0.00	0.00	748.40	9220.00	757.76	0.00	757.98	6.58	3.84	2598.92	3594.92
	3.900	900.00	0.00	0.00	748.40	4970.00	755.92	0.00	756.03	4.56	2.69	1954.32	2326.77
	3.900	900.00	0.00	0.00	748.40	6680.00	756.96	0.00	757.10	4.86	3.08	2337.15	3031.42
	3.900	900.00	0.00	0.00	748.40	7420.00	757.38	0.00	757.54	4.93	3.22	2494.29	3343.13
	3.900	900.00	0.00	0.00	748.40	9220.00	758.32	0.00	758.51	5.11	3.54	2842.76	4079.52
	3.910	50.00	0.00	0.00	747.00	4970.00	755.96	0.00	756.05	3.36	2.42	2106.37	2712.45
	3.910	50.00	0.00	0.00	747.00	6680.00	757.00	0.00	757.12	3.73	2.81	2459.87	3459.33
	3.910	50.00	0.00	0.00	747.00	7420.00	757.43	0.00	757.56	3.84	2.95	2606.78	3786.37
	3.910	50.00	0.00	0.00	747.00	9220.00	758.37	0.00	758.53	4.10	3.28	2937.57	4555.60
	4.000	1.00	0.00	0.00	747.00	4970.00	755.96	0.00	756.05	3.34	2.42	2108.97	2717.73
	4.000	1.00	0.00	0.00	747.00	6680.00	757.00	0.00	757.12	3.71	2.80	2462.92	3466.04
	4.000	1.00	0.00	0.00	747.00	7420.00	757.43	0.00	757.56	3.83	2.95	2609.97	3793.56
	4.000	1.00	0.00	0.00	747.00	9220.00	758.37	0.00	758.53	4.08	3.27	2941.03	4563.87
*	4.100	10.00	100000.00	100000.00	747.00	4970.00	756.21	0.00	756.29	2.96	2.33	2193.18	2890.41
*	4.100	10.00	100000.00	100000.00	747.00	6680.00	757.25	0.00	757.36	3.34	2.71	2549.16	3656.99
*	4.100	10.00	100000.00	100000.00	747.00	7420.00	757.68	0.00	757.80	3.46	2.86	2697.03	3991.82
*	4.100	10.00	100000.00	100000.00	747.00	9220.00	758.62	0.00	758.78	3.72	3.18	3029.92	4778.07
	4.200	1.00	0.00	0.00	747.00	4970.00	756.21	0.00	756.29	2.96	2.33	2193.29	2890.63
	4.200	1.00	0.00	0.00	747.00	6680.00	757.25	0.00	757.36	3.34	2.71	2549.28	3657.26
	4.200	1.00	0.00	0.00	747.00	7420.00	757.68	0.00	757.80	3.45	2.86	2697.16	3992.11
	4.200	1.00	0.00	0.00	747.00	9220.00	758.62	0.00	758.78	3.72	3.18	3030.06	4778.40
	4.500	1000.00	0.00	0.00	748.40	4970.00	756.55	0.00	756.67	5.90	3.42	2687.86	2046.24
	4.500	1000.00	0.00	0.00	748.40	6680.00	757.63	0.00	757.77	5.95	3.76	3435.93	2739.54

MOORE BUSINESS FORMS, INC 23

4.500	1000.00	0.00	0.00	748.40	7420.00	758.06	0.00	758.21	5.90	3.87	3764.71	3055.08
4.500	1000.00	0.00	0.00	748.40	9220.00	759.03	0.00	759.18	5.79	4.11	4547.88	3830.52

MOORE BUSINESS FORMS, INC 23

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	TOK*S	VCH	AREA	.01K
	4.900	1735.00	0.00	0.00	748.40	4970.00	757.43	0.00	757.58	4.54	3.21	1843.38	2333.77
	4.900	1735.00	0.00	0.00	748.40	6680.00	758.54	0.00	758.74	5.11	3.72	2215.85	2954.73
	4.900	1735.00	0.00	0.00	748.40	7420.00	758.98	0.00	759.20	5.31	3.90	2369.77	3220.31
	4.900	1735.00	0.00	0.00	748.40	9220.00	759.96	0.00	760.22	5.74	4.33	2723.07	3847.19
	4.910	50.00	0.00	0.00	747.40	4970.00	757.52	0.00	757.60	2.07	2.29	2291.04	3451.90
	4.910	50.00	0.00	0.00	747.40	6680.00	758.65	0.00	758.76	2.47	2.70	2628.93	4248.22
	4.910	50.00	0.00	0.00	747.40	7420.00	759.10	0.00	759.23	2.62	2.87	2762.32	4581.13
	4.910	50.00	0.00	0.00	747.40	9220.00	760.09	0.00	760.25	2.97	3.24	3056.88	5351.69
	5.000	1.00	0.00	0.00	747.40	4970.00	757.52	0.00	757.60	2.07	2.29	2291.14	3452.12
	5.000	1.00	0.00	0.00	747.40	6680.00	758.65	0.00	758.76	2.47	2.70	2629.04	4248.49
	5.000	1.00	0.00	0.00	747.40	7420.00	759.10	0.00	759.23	2.62	2.87	2762.44	4581.42
	5.000	1.00	0.00	0.00	747.40	9220.00	760.09	0.00	760.25	2.97	3.24	3057.01	5352.02
*	5.100	10.00	100000.00	100000.00	747.40	4970.00	757.62	0.00	757.70	1.99	2.26	2320.90	3519.50
*	5.100	10.00	100000.00	100000.00	747.40	6680.00	758.75	0.00	758.86	2.39	2.68	2658.80	4321.88
*	5.100	10.00	100000.00	100000.00	747.40	7420.00	759.20	0.00	759.32	2.54	2.84	2792.20	4657.09
*	5.100	10.00	100000.00	100000.00	747.40	9220.00	760.19	0.00	760.34	2.88	3.21	3087.18	5432.60
	5.200	1.00	0.00	0.00	747.40	4970.00	757.62	0.00	757.70	1.99	2.26	2320.96	3519.63
	5.200	1.00	0.00	0.00	747.40	6680.00	758.75	0.00	758.86	2.39	2.68	2658.88	4322.06
	5.200	1.00	0.00	0.00	747.40	7420.00	759.20	0.00	759.32	2.54	2.84	2792.28	4657.29
	5.200	1.00	0.00	0.00	747.40	9220.00	760.19	0.00	760.34	2.88	3.21	3087.27	5432.84
	5.800	935.00	0.00	0.00	747.70	4970.00	757.83	0.00	757.98	4.18	3.10	1669.59	2430.37
	5.800	935.00	0.00	0.00	747.70	6680.00	758.99	0.00	759.20	4.83	3.64	1925.65	3040.36
	5.800	935.00	0.00	0.00	747.70	7420.00	759.45	0.00	759.68	5.07	3.85	2026.41	3295.37
	5.800	935.00	0.00	0.00	747.70	9220.00	760.46	0.00	760.75	5.64	4.33	2247.40	3883.16
	5.900	65.00	0.00	0.00	747.80	4970.00	757.85	0.00	758.01	5.22	3.20	1554.34	2175.70
	5.900	65.00	0.00	0.00	747.80	6680.00	759.02	0.00	759.24	5.91	3.72	1795.97	2748.06
	5.900	65.00	0.00	0.00	747.80	7420.00	759.48	0.00	759.72	6.17	3.92	1891.04	2986.28
	5.900	65.00	0.00	0.00	747.80	9220.00	760.49	0.00	760.79	6.80	4.39	2100.84	3536.54
	6.000	1.00	764.90	761.50	747.80	4950.00	757.85	0.00	758.02	7.04	3.29	1503.03	1864.98
	6.000	1.00	764.90	761.50	747.80	6650.00	759.01	0.00	759.24	8.24	3.83	1737.56	2316.60
	6.000	1.00	764.90	761.50	747.80	7390.00	759.47	0.00	759.73	8.73	4.04	1829.83	2501.33
	6.000	1.00	764.90	761.50	747.80	9180.00	760.49	0.00	760.80	9.87	4.51	2033.49	2921.70
	6.100	35.00	765.00	761.40	747.00	4950.00	757.89	0.00	758.05	6.00	3.12	1585.25	2021.13
	6.100	35.00	765.00	761.40	747.00	6650.00	759.07	0.00	759.28	7.16	3.65	1821.20	2484.95
	6.100	35.00	765.00	761.40	747.00	7390.00	759.53	0.00	759.76	7.64	3.86	1914.01	2674.18
	6.100	35.00	765.00	761.40	747.00	9180.00	760.55	0.00	760.84	8.75	4.33	2118.98	3104.28
	6.200	1.00	0.00	0.00	747.00	4950.00	757.91	0.00	758.05	4.34	3.02	1641.07	2376.04
	6.200	1.00	0.00	0.00	747.00	6650.00	759.09	0.00	759.28	5.01	3.53	1884.67	2970.71
	6.200	1.00	0.00	0.00	747.00	7390.00	759.55	0.00	759.77	5.26	3.73	1982.75	3223.41
	6.200	1.00	0.00	0.00	747.00	9180.00	760.58	0.00	760.85	5.85	4.18	2195.13	3795.24
	6.300	100.00	0.00	0.00	747.00	4950.00	757.96	0.00	758.08	1.44	2.84	2079.38	4123.77
	6.300	100.00	0.00	0.00	747.00	6650.00	759.17	0.00	759.32	1.52	3.21	2572.74	5391.35
	6.300	100.00	0.00	0.00	747.00	7390.00	759.65	0.00	759.81	1.55	3.35	2767.88	5936.45
	6.300	100.00	0.00	0.00	747.00	9180.00	760.72	0.00	760.90	1.61	3.66	3201.17	7229.99

MOORE BUSINESS FORMS, INC 23

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7.000	2555.00	0.00	0.00	747.60	4950.00	758.36	0.00	758.59	2.49	3.91	1541.99	3139.88
7.000	2555.00	0.00	0.00	747.60	6650.00	759.59	0.00	759.84	2.50	4.29	2535.82	4207.12
7.000	2555.00	0.00	0.00	747.60	7390.00	760.08	0.00	760.32	2.38	4.32	3192.75	4794.70
7.000	2555.00	0.00	0.00	747.60	9180.00	761.16	0.00	761.36	1.95	4.18	4772.96	6582.00

KALAMAZOO R., KALAMAZOO

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	0.000	4970.00	753.69	0.00	0.00	0.00	437.03	0.00
	0.000	6680.00	754.83	1.14	0.00	1.14	456.16	0.00
	0.000	7420.00	755.32	.49	0.00	1.62	463.59	0.00
	0.000	9220.00	756.34	1.03	0.00	2.65	479.24	0.00
	1.000	4970.00	754.04	0.00	.34	-1.27	777.33	760.00
	1.000	6680.00	755.19	1.15	.36	-.12	794.86	760.00
	1.000	7420.00	755.67	.49	.36	.36	802.38	760.00
	1.000	9220.00	756.71	1.04	.37	1.40	818.44	760.00
	2.000	4970.00	754.30	0.00	.26	-1.25	1367.15	850.00
	2.000	6680.00	755.42	1.12	.23	-.13	1435.64	850.00
	2.000	7420.00	755.89	.48	.22	.34	1464.64	850.00
	2.000	9220.00	756.92	1.03	.21	1.37	1592.77	850.00
	3.000	4970.00	755.01	0.00	.71	-1.24	385.72	2010.00
	3.000	6680.00	755.96	.95	.55	-.29	528.74	2010.00
	3.000	7420.00	756.38	.41	.48	.13	590.39	2010.00
	3.000	9220.00	757.30	.92	.38	1.05	728.73	2010.00
	3.700	4970.00	755.42	0.00	.40	-1.14	321.15	580.00
	3.700	6680.00	756.42	1.00	.45	-.14	361.92	580.00
	3.700	7420.00	756.84	.42	.46	.28	376.16	580.00
	3.700	9220.00	757.76	.92	.46	1.20	407.67	580.00
	3.900	4970.00	755.92	0.00	.50	-1.08	360.11	900.00
	3.900	6680.00	756.96	1.04	.54	-.04	370.00	900.00
	3.900	7420.00	757.38	.42	.54	.38	370.00	900.00
	3.900	9220.00	758.32	.94	.56	1.32	370.00	900.00
	3.910	4970.00	755.96	0.00	.04	-1.06	335.89	50.00
	3.910	6680.00	757.00	1.04	.05	-.02	343.87	50.00
	3.910	7420.00	757.43	.43	.05	.41	347.14	50.00
	3.910	9220.00	758.37	.94	.05	1.35	354.38	50.00
	4.000	4970.00	755.96	0.00	.00	-1.07	335.95	1.00
	4.000	6680.00	757.00	1.04	.00	-.03	343.94	1.00
	4.000	7420.00	757.43	.43	.00	.40	347.21	1.00
	4.000	9220.00	758.37	.94	.00	1.34	354.46	1.00
*	4.100	4970.00	756.21	0.00	.25	-.92	337.87	10.00
*	4.100	6680.00	757.25	1.04	.25	.12	345.86	10.00
*	4.100	7420.00	757.68	.43	.25	.55	349.13	10.00
*	4.100	9220.00	758.62	.94	.25	1.49	356.38	10.00
	4.200	4970.00	756.21	0.00	.00	-.93	337.87	1.00
	4.200	6680.00	757.25	1.04	.00	.11	345.87	1.00
	4.200	7420.00	757.68	.43	.00	.54	349.13	1.00
	4.200	9220.00	758.62	.94	.00	1.48	356.38	1.00
	4.500	4970.00	756.55	0.00	.34	-1.11	655.01	1000.00
	4.500	6680.00	757.63	1.07	.37	-.03	738.45	1000.00

MOORE BUSINESS FORMS, INC 23

4.500	7420.00	758.06	.44	.38	.40	772.27	1000.00
4.500	9220.00	759.03	.97	.41	1.37	847.43	1000.00

MOORE BUSINESS FORMS, INC 23

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.900	4970.00	757.43	0.00	.87	-1.27	323.34	1735.00
	4.900	6680.00	758.54	1.11	.91	-.16	344.81	1735.00
	4.900	7420.00	758.98	.44	.92	.28	353.31	1735.00
	4.900	9220.00	759.96	.97	.93	1.26	372.07	1735.00
	4.910	4970.00	757.52	0.00	.09	-1.22	298.00	50.00
	4.910	6680.00	758.65	1.13	.11	-.09	298.00	50.00
	4.910	7420.00	759.10	.45	.12	.36	298.00	50.00
	4.910	9220.00	760.09	.99	.13	1.35	300.64	50.00
	5.000	4970.00	757.52	0.00	.00	-1.23	298.00	1.00
	5.000	6680.00	758.65	1.13	.00	-.10	298.00	1.00
	5.000	7420.00	759.10	.45	.00	.35	298.00	1.00
	5.000	9220.00	760.09	.99	.00	1.34	300.66	1.00
*	5.100	4970.00	757.62	0.00	.10	-1.23	298.00	10.00
*	5.100	6680.00	758.75	1.13	.10	-.10	298.00	10.00
*	5.100	7420.00	759.20	.45	.10	.35	298.00	10.00
*	5.100	9220.00	760.19	.99	.10	1.34	303.65	10.00
	5.200	4970.00	757.62	0.00	.00	-1.24	298.00	1.00
	5.200	6680.00	758.75	1.13	.00	-.11	298.00	1.00
	5.200	7420.00	759.20	.45	.00	.34	298.00	1.00
	5.200	9220.00	760.19	.99	.00	1.33	303.66	1.00
	5.800	4970.00	757.83	0.00	.21	-1.33	220.00	935.00
	5.800	6680.00	758.99	1.16	.24	-.17	220.00	935.00
	5.800	7420.00	759.45	.46	.25	.29	220.00	935.00
	5.800	9220.00	760.46	1.01	.27	1.30	220.00	935.00
	5.900	4970.00	757.85	0.00	.02	-1.36	207.00	65.00
	5.900	6680.00	759.02	1.17	.03	-.19	207.00	65.00
	5.900	7420.00	759.48	.46	.03	.27	207.00	65.00
	5.900	9220.00	760.49	1.01	.03	1.28	207.00	65.00
	6.000	4950.00	757.85	0.00	-.00	-1.37	207.00	1.00
	6.000	6650.00	759.01	1.17	-.01	-.21	207.00	1.00
	6.000	7390.00	759.47	.46	-.01	.25	207.00	1.00
	6.000	9180.00	760.49	1.01	-.01	1.27	207.00	1.00
	6.100	4950.00	757.89	0.00	.04	-1.34	207.00	35.00
	6.100	6650.00	759.07	1.17	.05	-.16	207.00	35.00
	6.100	7390.00	759.53	.46	.06	.30	207.00	35.00
	6.100	9180.00	760.55	1.02	.07	1.32	207.00	35.00
	6.200	4950.00	757.91	0.00	.01	-1.33	207.00	1.00
	6.200	6650.00	759.09	1.18	.02	-.15	207.00	1.00
	6.200	7390.00	759.55	.46	.02	.31	207.00	1.00
	6.200	9180.00	760.58	1.03	.03	1.34	207.00	1.00
	6.300	4950.00	757.96	0.00	.05	-1.29	407.00	100.00
	6.300	6650.00	759.17	1.21	.08	-.08	407.00	100.00
	6.300	7390.00	759.65	.48	.10	.40	407.00	100.00
	6.300	9180.00	760.72	1.06	.14	1.47	407.00	100.00

MOORE BUSINESS FORMS, INC 23

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
7.000	4950.00	758.36	0.00	.40	-1.40	422.89	2555.00
7.000	6650.00	759.59	1.23	.42	-.17	1192.80	2555.00
7.000	7390.00	760.08	.49	.43	.32	1451.57	2555.00
7.000	9180.00	761.16	1.09	.45	1.40	1473.18	2555.00

SUMMARY OF ERRORS

NOTE SECNO= 4.100 PROFILE= 1 WSEL BASED ON X5 CARD
NOTE SECNO= 4.100 PROFILE= 2 WSEL BASED ON X5 CARD
NOTE SECNO= 4.100 PROFILE= 3 WSEL BASED ON X5 CARD
NOTE SECNO= 4.100 PROFILE= 4 WSEL BASED ON X5 CARD

NOTE SECNO= 5.100 PROFILE= 1 WSEL BASED ON X5 CARD
NOTE SECNO= 5.100 PROFILE= 2 WSEL BASED ON X5 CARD
NOTE SECNO= 5.100 PROFILE= 3 WSEL BASED ON X5 CARD
NOTE SECNO= 5.100 PROFILE= 4 WSEL BASED ON X5 CARD

MOORE BUSINESS FORMS, INC 23

FLOOD INSURANCE ZONE DATA FOR KALAMAZOO R., KALAMAZOO

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND@ 10_	2_	0.2_
0.000	0.	-1.62	-.49	1.03
1.000	760.	-1.64	-.49	1.04
2.000	1610.	-1.60	-.48	1.03
3.000	3620.	-1.36	-.41	.92
3.700	4200.	-1.42	-.42	.92
3.900	5100.	-1.46	-.42	.94
3.910	5150.	-1.47	-.43	.94
4.000	5151.	-1.47	-.43	.94
4.100	5161.	-1.47	-.43	.94
4.200	5162.	-1.47	-.43	.94
4.500	6162.	-1.51	-.44	.97
4.900	7897.	-1.56	-.44	.97
4.910	7947.	-1.58	-.45	.99
5.000	7948.	-1.58	-.45	.99
5.100	7958.	-1.58	-.45	.99
5.200	7959.	-1.58	-.45	.99
5.800	8894.	-1.62	-.46	1.01
5.900	8959.	-1.63	-.46	1.01
6.000	8960.	-1.62	-.46	1.01
6.100	8995.	-1.64	-.46	1.02
6.200	8996.	-1.64	-.46	1.03
6.300	9096.	-1.69	-.48	1.06
7.000	11651.	-1.72	-.49	1.09
WEIGHTED AVG FOR REACH		-1.56	-.45	1.00

FHF FOR THE REACH = 015 WITH 100.0_ OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 3

MOORE BUSINESS FORMS, INC 23

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**********************************************************
```

MOORE BUSINESS FORMS, INC 23

00BREAK00

1) COUNTY: Kalamazoo

2) STUDY NAME: Kalamazoo Twp

3) WATERCOURSE: Kalamazoo River

4) DOCUMENT TYPE: Multiple Profiles run upstream

00BREAK00

```
**************************************************
*  HEC2 WATER SURFACE PROFILES                   *
*  VERSION OF NOVEMBER 1976                      *
*  UPDATED JULY 1979                             *
*  ERROR CORR - 01.02.03                         *
*  MODIFICATION - 50.51.52.53                    *
*                                                *
*  RUN DATE  80/06/17. TIME  08.13.08.           *
**************************************************
```

RECEIVED
JUN 20 1980
WATER MANAGEMENT

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

Multi-profile
Upstream (See 8-14)

BUSINESS FORMS INC 27

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

C
T1KALAMAZOO CITY FLOOD INSURANCE STUDY
T2MULTI PROFILE RUN
T3      KALAMAZOO RIVER
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.000000	0.00	0.0	0.	761.070	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	150.000	201.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

J5	LPRNT	NUMSEC	********REQUESTED SECTION NUMBERS********									
	-10.000	-10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
QT	5.000	4620.000	6210.000	6910.000	6910.000	8580.000	0.000	0.000	0.000	0.000	0.000	
NC	.080	.080	.030	.100	.300	0.000	0.000	0.000	0.000	0.000	0.000	
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000	0.000	

VALLEY SECT. AT CITY OF KALAMAZOO/KALAMAZOO TWP. CORP. BOUNDARY (H)

X1	8.000	9.000	8.000	92.000	1650.000	700.000	1400.000	0.000	0.000	0.000	
GR	765.000	0.000	756.600	.100	754.500	8.000	751.900	20.000	747.600	48.000	
GR	747.000	78.000	753.300	92.000	763.300	108.000	765.000	109.100	0.000	0.000	
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000	
GT	5.000	4620.000	6210.000	6900.000	6900.000	8570.000	0.000	0.000	0.000	0.000	

VALLEY SECT. 50 FT. D/S OF KING HWY. BRIDGE (I)

X1	8.900	11.000	20.000	158.000	1300.000	1400.000	1350.000	0.000	0.000	0.000	
GR	767.000	0.000	757.800	.100	754.900	20.000	751.600	42.000	749.400	78.000	
GR	753.400	110.000	752.000	136.000	754.600	158.000	763.600	174.000	763.000	182.000	
GR	767.000	182.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

D/S FACE OF KING HWY. BRIDGE (J)

X1	9.000	21.000	0.000	190.000	50.000	50.000	50.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000	
GR	769.000	0.000	758.600	0.000	754.900	10.000	751.300	32.000	749.200	42.000	
GR	750.600	58.500	750.600	58.600	750.600	61.500	750.600	61.600	751.800	74.000	
GR	751.000	96.000	752.300	114.000	753.200	128.500	753.200	128.600	753.300	131.500	
GR	753.300	131.600	752.400	146.000	753.800	166.000	754.800	170.000	759.700	190.000	

MOORE BUSINESS FORMS INC 27

GR	768.800	190.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.500	3.000	0.000	159.000	6.000	1975.000	0.000	751.300	749.200

U/S FACE OF KING HWY. BRIDGE

X1	9.100	21.000	0.000	190.000	56.000	56.000	56.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	764.200	768.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	769.000	769.000	0.000
BT	12.000	0.000	769.000	0.000	0.000	769.000	764.200	58.500	769.000	764.200
BT	58.600	769.000	751.500	61.500	769.000	751.500	61.600	769.000	764.200	128.500
BT	768.900	764.200	128.600	768.900	752.500	131.500	768.900	752.500	131.600	768.900
BT	764.200	190.000	768.800	764.200	190.000	768.800	0.000	0.000	0.000	0.000
GR	769.000	0.000	758.000	0.000	754.800	12.000	752.800	32.000	751.700	42.000
GR	751.500	58.500	751.500	58.600	751.500	61.500	751.500	61.600	751.300	74.000
GR	751.900	96.000	751.800	114.000	752.500	128.500	752.500	128.600	752.500	131.500
GR	752.500	131.600	753.500	146.000	753.600	166.000	755.100	182.000	758.900	190.000
GR	768.800	190.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 50 FT. U/S OF KING HWY. BRIDGE (K)

X1	9.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	7.100	9.100	1800.000	2300.000	1800.000	2400.000
X1	9.500	14.000	2000.000	2190.000	1225.000	1325.000	1275.000	0.000	0.000	0.000
GR	767.700	600.000	761.200	1000.000	758.200	1500.000	755.700	1800.000	755.500	2000.000
GR	754.100	2050.000	753.900	2070.000	753.400	2100.000	752.500	2130.000	751.500	2160.000
GR	754.700	2190.000	758.200	2200.000	760.000	2400.000	765.700	2430.000	0.000	0.000
FT	0.000	9.100	9.100	9.100	7.100	9.100	2002.400	2500.000	2000.000	2570.000

VALLEY SECT. JUST D/S OF WESTERLY OXBOW (L)

X1	10.000	17.000	2008.000	2180.000	800.000	700.000	750.000	0.000	0.000	0.000
GR	769.800	650.000	762.500	1050.000	763.200	1300.000	758.000	1600.000	774.500	1700.000
GR	770.000	2000.000	758.900	2005.000	755.400	2008.000	754.400	2046.000	754.200	2068.000
GR	753.700	2096.000	752.800	2126.000	751.600	2158.000	754.600	2180.000	758.200	2198.000
GR	760.000	2525.000	765.500	2570.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	1.400	9.100	0.000	0.000	2000.000	2692.000

VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP. (M)

X1	11.000	17.000	2043.000	2238.000	1200.000	1200.000	1200.000	0.000	0.000	0.000
GR	770.300	400.000	766.700	800.000	765.000	1100.000	764.500	1200.000	771.300	1300.000
GR	771.300	2000.000	759.600	2030.000	756.700	2043.000	754.100	2082.000	754.300	2114.000
GR	755.500	2144.000	755.400	2178.000	754.000	2204.000	756.700	2238.000	758.800	2242.000
GR	760.000	2600.000	767.500	2692.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	9.100	9.100	9.100	7.100	9.100	1970.000	2875.000	1970.000	2900.000

VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBOW X (N)

X1	11.200	15.000	2468.000	2690.000	1300.000	650.000	850.000	0.000	0.000	0.000
GR	765.700	1100.000	762.000	1500.000	761.500	2100.000	758.900	2468.000	756.300	2507.000
GR	756.500	2539.000	757.700	2569.000	757.600	2603.000	754.000	2629.000	756.600	2663.000

MOORE BUSINESS FORMS INC 27

GR	758.900	2690.000	756.100	2725.000	756.100	2900.000	760.000	2925.000	766.000	2970.000
ET	0.000	9.100	9.100	9.100	1.400	9.100	0.000	0.000	2350.000	3050.000

VALLEY SECT. JUST U/S OF D/S OXBOW (O)

X1	12.000	15.000	2758.000	2944.000	100.000	1000.000	680.000	0.000	0.000	0.000
GR	765.800	1300.000	761.900	1700.000	763.800	2300.000	760.000	2350.000	758.000	2375.000
GR	761.400	2700.000	757.300	2758.000	753.100	2800.000	750.000	2820.000	750.700	2860.000
GR	754.600	2900.000	755.300	2926.000	756.800	2944.000	761.100	2956.000	767.500	3050.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000

VALLEY SECT. 100 FT. D/S OF SPRINKLE RD. (P)

X1	12.800	30.000	17.000	269.000	1600.000	1600.000	1600.000	0.000	0.000	0.000
GR	770.300	0.000	765.500	0.000	757.500	17.000	755.000	37.000	756.600	55.000
GR	756.600	55.100	756.600	57.000	756.600	57.100	756.500	79.000	757.900	89.000
GR	761.200	94.000	761.400	114.000	761.400	114.100	761.400	116.000	761.400	116.100
GR	761.000	159.000	758.100	165.000	755.200	174.000	755.700	174.100	755.200	176.000
GR	755.200	176.100	754.400	217.000	754.200	236.000	754.200	236.100	754.200	238.000
GR	754.200	238.100	755.000	257.000	758.000	269.000	772.700	293.000	777.200	293.000

D/S FACE OF SPRINKLE RD. BRIDGE (Q)

X1	12.900	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000

1' INSIDE D/S FACE OF SPRINKLE RD. BRIDGE

X1	13.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000
BT	20.000	0.000	770.300	0.000	0.000	770.300	767.700	55.000	771.500	768.900
BT	55.100	771.500	756.600	57.000	771.500	756.600	57.100	771.500	768.900	114.000
BT	773.000	770.400	114.100	773.000	761.400	116.000	773.000	761.400	116.100	773.000
BT	770.400	174.000	774.400	771.800	174.100	774.400	755.200	176.000	774.400	755.200
BT	176.100	774.400	771.800	236.000	775.900	773.300	236.100	775.900	754.200	238.000
BT	775.900	754.200	238.100	775.900	773.300	293.000	777.200	774.600	293.000	777.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1' INSIDE SPRINKLE ROAD BRIDGE U/S

X1	13.100	0.000	0.000	0.000	62.000	62.000	62.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000

U/S FACE SPRINKLE ROAD BRIDGE

X1	13.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	770.300	777.200	0.000
ET	0.000	7.100	7.100	7.100	7.100	7.100	2672.000	3024.000	0.000	0.000

VALLEY SECT. 50 FT. U/S OF SPRINKLE RD.

MOORE BUSINESS FORMS INC 27

X1	14.000	44.000	2698.000	2998.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	770.200	0.000	768.000	74.000	769.000	358.000	768.200	556.000	777.600	650.000
GR	773.000	664.000	766.200	686.000	767.800	718.000	765.600	792.000	766.900	1008.000
GR	765.800	1086.000	767.600	1130.000	766.200	1230.000	764.200	1380.000	768.600	1474.000
GR	766.700	1532.000	770.100	1808.000	769.000	1912.000	770.400	1988.000	765.600	2142.000
GR	765.400	2460.000	765.000	2644.000	763.700	2698.000	758.200	2707.000	754.900	2723.000
GR	755.300	2743.000	755.200	2760.000	756.100	2780.000	763.000	2788.000	763.100	2824.000
GR	759.100	2873.000	756.900	2879.000	754.100	2902.000	755.100	2942.000	754.100	2980.000
GR	756.700	2992.000	759.400	2998.000	765.200	3034.000	769.000	3214.000	766.100	3260.000
GR	796.700	3608.000	779.200	3702.000	783.000	3744.000	800.100	3812.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 27

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

T1KALAMAZOO CITY FLOOD INSURANCE STUDY
T2MULTI PROFILE RUN
T3      KALAMAZOO RIVER

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSFL      FQ
       0.        3.        0.        0.  0.000000      0.00      0.0       0.   762.770     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

BUSINESS FORMS INC 27
MOORE

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50,51,52,53
**************************************************
```

```
T1KALAMAZOO CITY FLOOD INSURANCE STUDY
T2MULTI PROFILE RUN
T3      KALAMAZOO RIVER
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.000000	0.00	0.0	0.	763.580	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC 27

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50,51,52,53
**********************************************************
```

```
T1KALAMAZOO CITY FLOOD INSURANCE STUDY
T2MULTI PROFILE RUN
T3      KALAMAZOO RIVER
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	6.	0.	0.	0.000000	0.00	0.0	0.	765.550	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS INC. 27



1) COUNTY: KALAMAZOO

2) STUDY NAME: KALAMAZOO TWP

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: MULTIPLE PROFILES
SUMMARY
upstream



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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**********************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
8.000	1400.00	0.00	0.00	747.00	4620.00	761.07	0.00	761.40	3.45	4.65	1069.41	2486.43
8.000	1400.00	0.00	0.00	747.00	6210.00	762.77	0.00	763.22	3.93	5.44	1249.19	3133.06
8.000	1400.00	0.00	0.00	747.00	6910.00	763.58	0.00	764.07	3.98	5.69	1336.45	3463.37
8.000	1400.00	0.00	0.00	747.00	8580.00	765.55	0.00	766.13	3.93	6.17	1550.72	4327.12
8.900	1350.00	0.00	0.00	749.40	4620.00	761.65	0.00	761.82	2.30	3.39	1480.34	3045.19
8.900	1350.00	0.00	0.00	749.40	6210.00	763.47	0.00	763.69	2.31	3.82	1794.91	4082.56
8.900	1350.00	0.00	0.00	749.40	6900.00	764.31	0.00	764.55	2.24	3.94	1948.09	4607.01
8.900	1350.00	0.00	0.00	749.40	8570.00	766.33	0.00	766.60	2.06	4.18	2316.08	5970.49
9.000	50.00	0.00	0.00	749.20	4620.00	761.74	0.00	761.85	1.70	2.72	1701.29	3543.25
9.000	50.00	0.00	0.00	749.20	6210.00	763.58	0.00	763.72	1.69	3.03	2051.28	4780.37
9.000	50.00	0.00	0.00	749.20	6900.00	764.43	0.00	764.58	1.64	3.12	2212.56	5392.75
9.000	50.00	0.00	0.00	749.20	8570.00	766.46	0.00	766.63	1.52	3.30	2598.98	6959.42
9.100	56.00	768.80	764.20	751.30	4620.00	761.75	0.00	761.87	1.85	2.78	1660.85	3394.70
9.100	56.00	768.80	764.20	751.30	6210.00	763.59	0.00	763.74	1.81	3.09	2011.24	4613.36
9.100	56.00	768.80	764.20	751.30	6900.00	764.56	0.00	764.71	1.69	3.14	2195.49	5305.12
9.100	56.00	768.80	764.20	751.30	8570.00	766.73	0.00	766.90	1.51	3.29	2608.51	6971.95
9.200	50.00	0.00	0.00	751.30	4620.00	761.76	0.00	761.88	1.85	2.78	1662.54	3400.24
9.200	50.00	0.00	0.00	751.30	6210.00	763.60	0.00	763.75	1.81	3.09	2012.90	4619.45
9.200	50.00	0.00	0.00	751.30	6900.00	764.57	0.00	764.72	1.69	3.14	2197.06	5311.17
9.200	50.00	0.00	0.00	751.30	8570.00	766.74	0.00	766.91	1.51	3.28	2609.94	6977.99
9.500	1275.00	0.00	0.00	751.50	4620.00	762.00	0.00	762.06	1.12	2.18	3523.48	4358.76
9.500	1275.00	0.00	0.00	751.50	6210.00	763.86	0.00	763.92	.95	2.29	4639.32	6369.88
9.500	1275.00	0.00	0.00	751.50	6900.00	764.82	0.00	764.88	.84	2.28	5215.81	7533.61
9.500	1275.00	0.00	0.00	751.50	8570.00	766.98	0.00	767.04	.67	2.30	6515.27	10445.00
10.000	750.00	0.00	0.00	751.60	4620.00	762.08	0.00	762.18	1.83	2.77	2560.61	3415.63
10.000	750.00	0.00	0.00	751.60	6210.00	763.92	0.00	764.02	1.49	2.85	3564.71	5087.25
10.000	750.00	0.00	0.00	751.60	6900.00	764.87	0.00	764.97	1.29	2.82	4096.61	6076.26
10.000	750.00	0.00	0.00	751.60	8570.00	767.02	0.00	767.11	.99	2.78	5318.74	8610.08
11.000	1200.00	0.00	0.00	754.00	4620.00	762.32	0.00	762.42	2.24	2.79	2581.75	3083.89
11.000	1200.00	0.00	0.00	754.00	6210.00	764.11	0.00	764.21	1.68	2.79	3690.26	4795.12
11.000	1200.00	0.00	0.00	754.00	6900.00	765.04	0.00	765.13	1.41	2.73	4282.04	5816.45
11.000	1200.00	0.00	0.00	754.00	8570.00	767.15	0.00	767.23	1.02	2.64	5681.43	8482.26

MOORE BUSINESS FORMS, INC. 27

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	11.200	850.00	0.00	0.00	754.00	4620.00	762.56	0.00	762.61	2.18	2.34	3576.72	3132.55
	11.200	850.00	0.00	0.00	754.00	6210.00	764.29	0.00	764.35	1.43	2.26	5193.13	5187.23
	11.200	850.00	0.00	0.00	754.00	6900.00	765.19	0.00	765.24	1.15	2.19	6030.61	6431.52
	11.200	850.00	0.00	0.00	754.00	8570.00	767.27	0.00	767.31	.78	2.08	7964.44	9728.46
	12.000	680.00	0.00	0.00	750.00	4620.00	762.64	0.00	762.72	1.13	2.34	3046.11	4337.89
	12.000	680.00	0.00	0.00	750.00	6210.00	764.35	0.00	764.43	1.03	2.49	4138.77	6127.68
	12.000	680.00	0.00	0.00	750.00	6900.00	765.24	0.00	765.31	.92	2.48	4724.13	7180.18
	12.000	680.00	0.00	0.00	750.00	8570.00	767.30	0.00	767.37	.74	2.48	6128.80	9932.21
	12.800	1600.00	0.00	0.00	754.20	4620.00	762.92	0.00	763.07	4.16	3.19	1486.76	2266.21
	12.800	1600.00	0.00	0.00	754.20	6210.00	764.57	0.00	764.74	3.18	3.31	1943.28	3481.23
	12.800	1600.00	0.00	0.00	754.20	6900.00	765.43	0.00	765.59	2.72	3.30	2182.14	4186.69
	12.800	1600.00	0.00	0.00	754.20	8570.00	767.43	0.00	767.60	2.01	3.28	2747.32	6038.72
	12.900	100.00	0.00	0.00	754.20	4620.00	762.96	0.00	763.12	4.12	3.19	1446.36	2276.89
	12.900	100.00	0.00	0.00	754.20	6210.00	764.60	0.00	764.77	3.22	3.34	1860.19	3463.22
	12.900	100.00	0.00	0.00	754.20	6900.00	765.45	0.00	765.62	2.76	3.33	2074.93	4154.89
	12.900	100.00	0.00	0.00	754.20	8570.00	767.45	0.00	767.62	2.06	3.32	2579.67	5972.58
*	13.000	1.00	770.30	774.60	754.20	4620.00	762.95	0.00	763.12	5.48	3.30	1401.40	1972.67
*	13.000	1.00	770.30	774.60	754.20	6210.00	764.60	0.00	764.78	4.51	3.45	1802.61	2924.96
*	13.000	1.00	770.30	774.60	754.20	6900.00	765.45	0.00	765.63	3.97	3.43	2010.00	3462.05
*	13.000	1.00	770.30	774.60	754.20	8570.00	767.45	0.00	767.63	3.15	3.43	2497.72	4828.35
*	13.100	62.00	770.30	774.60	754.20	4620.00	762.99	0.00	763.16	5.41	3.28	1407.42	1986.04
*	13.100	62.00	770.30	774.60	754.20	6210.00	764.63	0.00	764.81	4.47	3.44	1807.10	2936.28
*	13.100	62.00	770.30	774.60	754.20	6900.00	765.47	0.00	765.65	3.95	3.43	2013.72	3471.96
*	13.100	62.00	770.30	774.60	754.20	8570.00	767.47	0.00	767.65	3.14	3.43	2500.28	4835.86
	13.200	1.00	0.00	0.00	754.20	4620.00	763.00	0.00	763.16	4.01	3.17	1457.92	2307.29
	13.200	1.00	0.00	0.00	754.20	6210.00	764.64	0.00	764.81	3.16	3.32	1870.48	3495.20
	13.200	1.00	0.00	0.00	754.20	6900.00	765.49	0.00	765.66	2.72	3.31	2083.71	4184.22
	13.200	1.00	0.00	0.00	754.20	8570.00	767.48	0.00	767.65	2.04	3.31	2586.14	5997.59
	14.000	50.00	0.00	0.00	754.10	4620.00	763.07	0.00	763.19	3.01	2.74	1720.18	2661.67
	14.000	50.00	0.00	0.00	754.10	6210.00	764.72	0.00	764.84	2.40	2.84	2273.17	4005.72
	14.000	50.00	0.00	0.00	754.10	6900.00	765.56	0.00	765.68	2.04	2.81	2570.94	4830.63
	14.000	50.00	0.00	0.00	754.10	8570.00	767.56	0.00	767.68	1.49	2.78	3273.14	7019.41

MOORE BUSINESS FORMS INC 27

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
8.000	4620.00	761.07	0.00	0.00	0.00	104.39	1400.00
8.000	6210.00	762.77	1.70	0.00	0.00	107.13	1400.00
8.000	6910.00	763.58	.81	0.00	0.00	108.16	1400.00
8.000	8580.00	765.55	1.97	0.00	0.00	109.10	1400.00
8.900	4620.00	761.65	0.00	.58	0.00	170.48	1350.00
8.900	6210.00	763.47	1.82	.70	0.00	180.00	1350.00
8.900	6900.00	764.31	.84	.73	0.00	182.00	1350.00
8.900	8570.00	766.33	2.02	.78	0.00	182.08	1350.00
9.000	4620.00	761.74	0.00	.09	0.00	190.00	50.00
9.000	6210.00	763.58	1.84	.11	0.00	190.00	50.00
9.000	6900.00	764.43	.85	.12	0.00	190.00	50.00
9.000	8570.00	766.46	2.03	.13	0.00	190.00	50.00
9.100	4620.00	761.75	0.00	.01	0.00	190.00	56.00
9.100	6210.00	763.59	1.84	.01	0.00	190.00	56.00
9.100	6900.00	764.56	.97	.13	0.00	190.00	56.00
9.100	8570.00	766.73	2.17	.27	0.00	190.00	56.00
9.200	4620.00	761.76	0.00	.01	0.00	190.00	50.00
9.200	6210.00	763.60	1.84	.01	0.00	190.00	50.00
9.200	6900.00	764.57	.97	.01	0.00	190.00	50.00
9.200	8570.00	766.74	2.17	.01	0.00	190.00	50.00
9.500	4620.00	762.00	0.00	.25	0.00	600.00	1275.00
9.500	6210.00	763.86	1.85	.26	1.85	600.00	1275.00
9.500	6900.00	764.82	.96	.25	2.81	600.00	1275.00
9.500	8570.00	766.98	2.17	.24	4.98	600.00	1275.00
10.000	4620.00	762.08	0.00	.07	0.00	538.43	750.00
10.000	6210.00	763.92	1.84	.06	1.84	554.30	750.00
10.000	6900.00	764.87	.95	.05	2.79	562.52	750.00
10.000	8570.00	767.02	2.15	.04	4.94	568.66	750.00
11.000	4620.00	762.32	0.00	.24	0.00	605.44	1200.00
11.000	6210.00	764.11	1.79	.20	1.79	632.01	1200.00
11.000	6900.00	765.04	.93	.17	2.72	645.75	1200.00
11.000	8570.00	767.15	2.12	.13	4.83	677.13	1200.00
11.200	4620.00	762.56	0.00	.24	0.00	930.00	850.00
11.200	6210.00	764.29	1.74	.18	1.74	930.00	850.00
11.200	6900.00	765.19	.90	.16	2.64	930.00	850.00
11.200	8570.00	767.27	2.08	.12	4.72	930.00	850.00
12.000	4620.00	762.64	0.00	.09	0.00	628.69	680.00
12.000	6210.00	764.35	1.70	.06	1.70	653.72	680.00
12.000	6900.00	765.24	.89	.04	2.59	666.74	680.00
12.000	8570.00	767.30	2.06	.02	4.65	697.00	680.00
12.800	4620.00	762.92	0.00	.27	0.00	271.51	1600.00
12.800	6210.00	764.57	1.65	.22	1.65	277.76	1600.00

BUSINESS FORMS INC 27 MOORE

12.800	6900.00	765.43	.86	.19	2.51	280.97	1600.00
12.800	8570.00	767.43	2.01	.14	4.52	284.39	1600.00

MOORE BUSINESS FORMS INC 27

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	12.900	4620.00	762.96	0.00	.04	0.00	252.00	100.00
	12.900	6210.00	764.60	1.64	.03	1.64	252.00	100.00
	12.900	6900.00	765.45	.85	.02	2.49	252.00	100.00
	12.900	8570.00	767.45	2.00	.02	4.49	252.00	100.00
*	13.000	4620.00	762.95	0.00	-.00	0.00	252.00	1.00
*	13.000	6210.00	764.60	1.64	-.01	1.64	252.00	1.00
*	13.000	6900.00	765.45	.85	-.01	2.49	252.00	1.00
*	13.000	8570.00	767.45	2.00	-.01	4.49	252.00	1.00
*	13.100	4620.00	762.99	0.00	.04	0.00	252.00	62.00
*	13.100	6210.00	764.63	1.64	.03	1.64	252.00	62.00
*	13.100	6900.00	765.47	.85	.03	2.48	252.00	62.00
*	13.100	8570.00	767.47	1.99	.02	4.48	252.00	62.00
	13.200	4620.00	763.00	0.00	.02	0.00	252.00	1.00
	13.200	6210.00	764.64	1.64	.02	1.64	252.00	1.00
	13.200	6900.00	765.49	.85	.02	2.48	252.00	1.00
	13.200	8570.00	767.48	1.99	.02	4.48	252.00	1.00
	14.000	4620.00	763.07	0.00	.07	0.00	311.79	50.00
	14.000	6210.00	764.72	1.64	.08	1.64	352.00	50.00
	14.000	6900.00	765.56	.85	.08	2.49	352.00	50.00
	14.000	8570.00	767.56	1.99	.08	4.48	352.00	50.00

SUMMARY OF ERRORS

CAUTION SECNO= 13.000 PROFILE= 1 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.000 PROFILE= 2 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.000 PROFILE= 3 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.000 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 13.100 PROFILE= 1 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.100 PROFILE= 2 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.100 PROFILE= 3 BRIDGE DECK DEFINITION ERROR
CAUTION SECNO= 13.100 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

MOORE BUSINESS FORMS INC 27

FLOOD INSURANCE ZONE.DATA FOR KALAMAZOO RIVER

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND@ 10_	2_	0.2_
8.000	0.	-2.51	-.81	1.97
8.900	1350.	-2.66	-.84	2.02
9.000	1400.	-2.69	-.85	2.03
9.100	1456.	-2.81	-.97	2.17
9.200	1506.	-2.81	-.97	2.17
9.500	2781.	-2.81	-.96	2.17
10.000	3531.	-2.79	-.95	2.15
11.000	4731.	-2.72	-.93	2.12
11.200	5581.	-2.64	-.90	2.08
12.000	6261.	-2.59	-.89	2.06
12.800	7861.	-2.51	-.86	2.01
12.900	7961.	-2.49	-.85	2.00
13.000	7962.	-2.49	-.85	2.00
13.100	8024.	-2.48	-.85	1.99
13.200	8025.	-2.48	-.85	1.99
14.000	8075.	-2.49	-.85	1.99
WEIGHTED AVG FOR REACH		-2.67	-.90	2.09

FHF FOR THE REACH = 025 WITH 100.0_ OF THE REACH WITHIN 1.0 FEET
ZONE FOR THE REACH = A 5

MOORE BUSINESS FORMS INC 27



1) COUNTY: Kalamazoo

2) STUDY NAME: Kalamazoo Twp

3) WATERCOURSE: Kalamazoo River

4) DOCUMENT TYPE: Report



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RECEIVED
JUL 21 1980
WATER MANAGEMENT

HYDRAULIC ANALYSIS REPORT

KALAMAZOO RIVER

AT

KALAMAZOO TOWNSHIP

KALAMAZOO COUNTY

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 East Washington Avenue
Jackson, Michigan 49201

June, 1980

INTRODUCTION

The Kalamazoo River Flood Insurance Study was broken up by community into five segments including Kalamazoo City, Kalamazoo Township, Comstock Township, City of Galesburg, and the Village of Augusta. These communities were assigned to Wade, Trim & Associates, Inc. and Commonwealth Associates Inc. without regard to study location and hydraulic continuity. In order to interpret the hydraulic data logically and accurately, the entire Kalamazoo River study should be reviewed at the same time. Commonwealth and Wade Trim coordinated their studies and submittals to make this possible.

This report will describe the hydraulic calculations performed in analyzing the Kalamazoo River in the portion of Kalamazoo Township outside the city of Kalamazoo. Since the city of Kalamazoo divides the township into two segments, two separate analyses were performed. Between the two studies conducted by Commonwealth, Wade, Trim and Associates analyzed the city of Kalamazoo. The studies by Commonwealth and Wade,Trim were coordinated to match high-water marks and starting water surface elevations. Structure data and stream cross sections were taken by Commonwealth survey crews in January, 1979. The flood discharge values were obtained from the hydrology report for the Kalamazoo River at Kalamazoo Township. The report was prepared by Commonwealth in May, 1979, and was approved by the DNR on August 1, 1979. Contour information was obtained from the U.S.G.S. topographic map for Kalamazoo, Michigan.

The above data was analyzed by Commonwealth Associates Inc., Jackson, Michigan under the supervision of Project Manager, R. D. Landis.

METHOD OF ANALYSIS

The water surface profile was computed and plotted at various cross sections using the HEC-2 computer program. The cross sections were taken at representative locations along the river reach where changes occurred in slope or cross-sectional area and at hydraulic structures. Where an abrupt change occurred in the channel, several cross sections were taken to accurately describe the transition. Hydraulic structures were analyzed using the Normal Bridge routine option of the HEC-2 program.

VARIABLES AND COEFFICIENTS

Manning's coefficient of roughness "n" depends on several factors such as: 1) type and amount of vegetation, 2) channel configuration and stage, 3) material through which the channel is constructed, and 4) channel meandering. Without an in-depth study of these factors, an "n" value can only be estimated. The values used in this analysis were obtained from photographs taken at the time of the field survey.

Manning's Roughness Coefficient

Natural channel	.03 -.035
Bridge channel	.014-.015
Railroad bridge channel	.06
Overbanks	.07 -.08

The loss coefficients (contraction and expansion) were obtained from the "Application of the HEC-2 Bridge Routines," Corps of Engineers, Training Document No. 6, June, 1974.

Coefficients for Natural Channel

Contraction	0.1
Expansion	0.3

Coefficients for Bridges and Constriction

Contraction	0.3
Expansion	0.5

Corp E's Flood cont. / profile shows 1947 profile
1904 Flood HW is noted on the Corp 30.

HIGH-WATER MARKS

There were no high-water marks available within the CAI study limits for the Kalamazoo River analysis. However, the Kalamazoo Sewage Treatment Works located 600 feet upstream of Section 7 monitors the daily water surface elevation and the USGS Comstock gaging station is located 4,500 feet upstream of Section 13. High-water data from both locations was used to check the results obtained.

The flows corresponding to the observed water surface elevations at the treatment works were obtained by extrapolating the flow records at the Comstock gage downstream to the treatment plant location. This extrapolation was based on the drainage area proportion method using the drainage areas and exponents given in the hydrology report. A copy of the calculations and a plot of the results are shown in Appendix A.

The Comstock gaging station high-water marks checked favorably against the calculated values obtained by Wade, Trim for Comstock Township. Since Wade, Trim based their starting water surface for Comstock Township on the Commonwealth water surface at the Kalamazoo Township line, the Commonwealth values also agree with the Comstock gage.

STARTING CONDITIONS

For the downstream portion of the Kalamazoo Township analysis, a cross section was taken approximately 800 feet downstream of the Kalamazoo Township boundary. The slope area method was used at this point to determine a starting water surface. The resulting water elevation at the upstream limit of this portion of the study complied with the high-water marks at the treatment plant. This is MP 71 308 = 751.8 100 yr profile .5 high

The upstream portion of the Kalamazoo Township analysis (between the city of Kalamazoo and Comstock Township) starting water surface was based on results of the Wade, Trim study, immediately downstream, for the city of Kalakazoo.

SPECIAL PROBLEMS AND CONSIDERATIONS

Located on the upstream portion of Kalamazoo Township (between Sections 10 and 12) there is a bypass channel which created approximately 2,000 feet of divided channel. The 100-year flow going through the bypass was determined to be 70 cfs with 6,830 cfs staying in the main channel. The 70 cfs would not make a difference in flood elevation of the Kalamazoo River. This was confirmed by a computer run which is included with a rating curve for the bypass channel in Appendix B. OK

At the confluence of the Kalamazoo River and Davis Creek, a unique situation occurs. The waste disposal ponds on the west side of Davis Creek have very high banks which create an island flow situation. However, south of the ponds, where ground elevation is only 760±, the Davis Creek banks are considerably higher (764±) creating a dike or berm. Cross Section 11 was run along the west bank of Davis Creek to analyze the effect of the dike. Although the 100-year water surface is above the Davis Creek bank elevation, the amount of flow was less than 1 percent of the total flow. This flow was considered an ineffective flow and all the water was channeled north of the waste disposal ponds for the floodway. The amount of water south of the waste disposal ponds will be extremely large but will be part of the flood plain not the flood way. On the east side of Davis Creek, along Comstock Road, a large amount of fill has been placed (up to approximate

Elevation 765) which is not shown on the topographic map. This is the cause of the change in the flood plain in that area on the flood map.

The elevation at Cross Section 12 indicates a large dip or hole in the bottom of the Kalamazoo River at this point. Survey data and field notes were all double checked to verify that the minimum elevation was correct.

REFERENCES

1. Guide for Selecting Roughness Coefficient "n" Values for Channels, United States Department of Agriculture, Soil Conservation Service, December, 1963.

2. Applied Hydraulics in Engineering, Morris and Wiggert, Second Edition, 1972.

APPENDIX A

Starting water surface elevation calculations.

APPENDIX B

Calculations for "n," bridge factors and dam hydraulics along with bridge sketches.

APPENDIX C

Water surface profiles indicating 10, 50, 100 and 500-year floods.

APPENDIX D

Cross section reference and plots

APPENDIX E

The final HEC-2 printouts for the multiprofile run, 100-year natural, and encroachment run. Also, a map indicating the 100-year flood plain, floodway, and location of the cross sections.

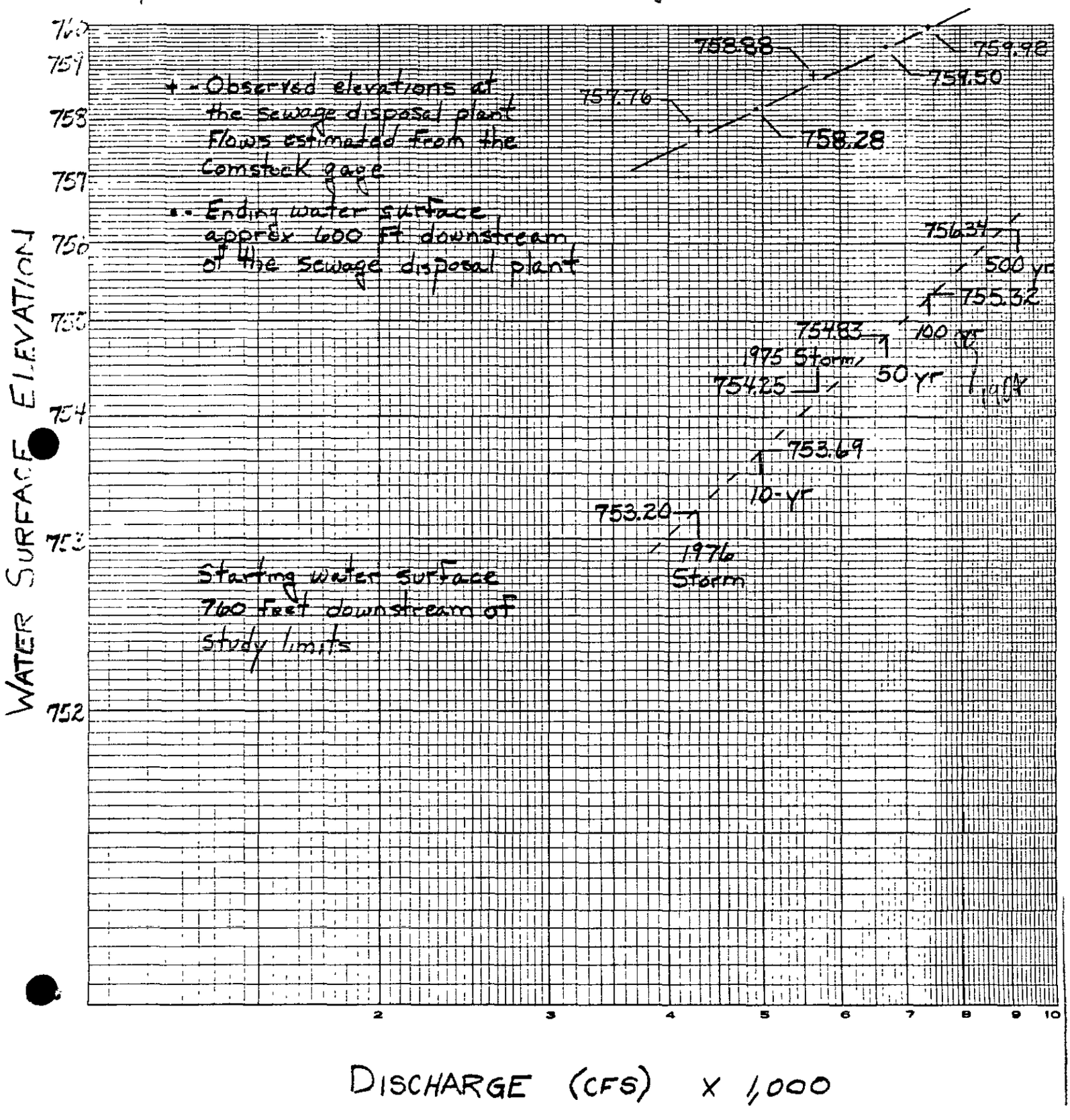
APPENDIX A

(STARTING WATER SURFACE ELEVATION)

This is at MP 71. The CFE's 308 profile shows the 1964 flood to be elev 754.8

KALAMAZOO RIVER--KALAMAZOO TWP.

Computed Water Surface AND Recorded High Water Marks



HYDROLOGY OF KALAMAZOO RIVER AT KALAMAZOO TOWNSHIP

Flood flows for the Kalamazoo River were required for the detailed Flood Insurance Study of Kalamazoo Township. The annual peak flows recorded at Comstock for the period 1933-1977 were used as a basis for the estimated flood flows. Log-Pearson Type III method was employed to analyze the peak flows. A regional skews coefficient of -0.03 was used in the analysis.

The recommended flood flows at the gage location are listed in Table 1. Flows required at the study locations were then extrapolated from the gage by the Drainage-Area Proportion Method using an exponent of 0.9453. The recommended flows for the Kalamazoo River at the study locations are also listed in Table 1.

A copy of the calculations, computer printout, and maps used in the study is attached.

TABLE 1

RECOMMENDED FLOWS FOR KALAMAZOO RIVER AT KALAMAZOO TOWNSHIP

Location	Drainage Area sq mi	Exponent	Flows (cfs) for 10-yr	50-yr	100-yr	500-yr
At Comstock Gage	1067	-	4530	6090	6770	8410
At Township Line (Sec. 19/24)	1068	0.9453	4530	6100	6780	8420
At Township Line (Sec. 23)	1089	0.9453	4620	6210	6900	8570
At Michigan Avenue	1090	0.9453	4620	6210	6910	8580
At Township Line (Sec. 10)	1170	0.9453	4940	6640	7390	9180
At Mosel Street	1171	0.9453	4950	6650	7390	9180
At Township Line (Sec. 3/34)	1176	0.9453	4970	6680	7420	9220

APPENDIX B

(CALCULATIONS AND BRIDGE SKETCHES)

FORM 25 0

Wade Trim & Associates Inc.
Civil Engineers • Land Surveyors

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

(313) 291 5400

WORK SHEET

Bridge Location: KING HWY. (EASTERLY BRIDGE AT BYPASS WITHIN COMSTOCK TWP.)
Bridge Losses - SB Cart

REFERENCE

1. XK (Pier Shape Coefficient) No PIER 0 — HEC-2 manual
XKOR (Loss Coefficient) = 1.0 + Σk, ~~Σk = $k_f + k_e + k_p$~~
where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers
Description of Bridge: CONCRETE BOX CULVERT
$k_f = 29.1\, n^2 L / R^{4/3}$ for English units
Area = 6 × 5.25 = 31.5 Wp = (6)2 + 5.25(2) = 22.5
$R = A/wp = 31.5/22.5 = 1.4$ $R^{4/3} = 1.57$ $L = 77'$
n (composite) = 0.013
$K_f = 29.1 \times (0.013)^2 \times 77 / 1.57 = 0.24$

$K_e = 0.5$ — Hydraulic Charts for the Selection of Highway Culvert Circular No. 5 Dec. 1965 pg.

$K_p = 0$ if bridge has no intermediate piers

$K_p = 0.05$ if bridge has intermediate piers — HEC-2 manual

2. XKOR = 1 + 0.24 + 0.5 + 0 = 1.74
3. COFQ = Coefficient of discharge = 3.0 — HEC-2 manu
4. RDLEN = Length of weir = _____ (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers): 6.
6. BWP = total width of obstruction = 0 — field data
7. BAREA = bridge opening inc. piers = 31.5
8. SS = side slope = 0
(horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 757.10
(0 if equal to minimum elevation in previous X-sect.)
10. ELCHD = Elevation of channel invert D/S side = 757.0
(0 if equal to minimum elevation in previous x-sect.)

SUBJECT	BY	CHK	SHEET NO.	File Code No (Job No) Owner Project Sect
KALAMAZOO RIVER BYPASS CHANNEL WITHIN COMSTOCK TOWNSHIP	AM		OF	HUD • 2024 • 07
	DATE 1/10/80	DATE		

Bridge Location: KING HWY. (EASTERLY BRIDGE AT BYPASS WITHIN KALAMAZOO TOWNSHIP)

Bridge Losses - SB Card

1. XK (Pier Shape Coefficient): 1.25 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + ΣK, ΣK = $K_f + K_e + K_p$

where K_f = friction loss coefficient
K_e = entrance loss coefficient
K_p = loss from intermediate piers

Description of Bridge: TWIN CONCRETE BOX CULVERTS (6' wide)

$K_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = 6 × 4.2 = 25.2 SQ FT WP = 2(6) + 2(4.2) = 20.4

$R = A/WP = 25.2/20.4 = 1.23$ $R^{4/3} = 1.33$ $L = 80'$

n (composite) = 6(0.03) + [6 + 2(12)](0.013)/20.4 = 0.018

$K_f = 29.1 \times (0.018)^2 \times 80 / 1.33 = 0.6$

$K_e = 0.4$ — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 43

$K_p = 0$ if bridge has no intermediate piers

$K_p = 0.05$ if bridge has no intermediate piers — HEC-2 manual

2. XKOR = 1 + 0.6 + 0.4 + 0.05 = 2.05
3. COFQ = Coefficient of discharge = 2.0 — HEC-2 manual
4. RDLEN = Length of weir = 0 (0 if read off BT cards)
5. BWC = bottom width of bridge opening (inc. piers) = 50.1
6. BWP = total width of obstruction = 1. — field data
7. BAREA = bridge opening inc. piers = 50.4
8. SS = side slope = 0 (horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 754. (0 if equal to minimum elevation in previous x-sect.)
10. ELCHD = Elevation of channel invert D/S side = 754. (0 if equal to minimum elevation in previous x-sect.)

SUBJECT KALAMAZOO RIVER PYPES CHANNEL WITHIN	BY AM	CHK.	SHEET NO.	File Code No. (Job No.) Owner Project Suffix
	DATE 1/20	DATE	OF	410 • 2027 • 07

FORM 25 0
(313) 291 5400

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

Bridge Location : KING HWY.
Bridge Losses - SB Card

REFERENCE

1. XK (Pier Shape Coefficient) 1.25 — HEC-2 manual

XKOR (Loss Coefficient) = 1.0 + Σk , $\Sigma k = k_f + k_e + k_p$

where k_f = friction loss coefficient
k_e = entrance loss coefficient
k_p = loss from intermediate piers

Description of Bridge :

$k_f = 29.1\, n^2 L / R^{4/3}$ for English units

Area = = 1975 Wp = [illegible]

$R = A/w_p$ = 5.1 $R^{4/3}$ = 8.7 L = 56'

n (composite) = 180(0.03) + 206.6(0.015)/[illegible] = 0.022

$k_f = 29.1 \times (0.022)^2 \times 56 / 8.7 = 0.1$

$k_e = 0.2$ — Hydraulic Charts for the Selection of Highway Culverts Circular No. 5 Dec. 1965 pg. 49

k_p = 0 if bridge has no intermediate piers

$k_p = 0.05$ if bridge has intermediate piers — HEC-2 manual

2. XKOR = 1 + 0.1 + 0.2 + 0.05 = ~~1.35~~ 1.5
3. COFQ - Coefficient of discharge = 3.0 — HEC-2 manual
4. RDLEN = Length of weir = 0 (0 if read off BT cards)
5. BWC = bottom width of bridge opening (ins. piers) = 159.
[illegible] = 6. — field data
[illegible] = bridge opening ins. piers = 1975.
8. SS = side slope = _____
(horizontal per 1 vertical unit)
9. ELCHU = Elevation of channel invert U/S side = 751.3
(0 if equal to minimum elevation in previous x-sect.)
10. ELCHD = Elevation of channel invert D/S side = 749.2
(0 if equal to minimum elevation in previous x-sect.)

SUBJECT KING HWY. & KALAMAZOO RIVER [illegible] BY AM CHK. SHEET NO File Code No (Job No) Owner Project Suffix

K&E 10 X 10 TO ½ INCH 7 X 10 INCHES
KEUFFEL & ESSER CO MADE IN U.S.A.

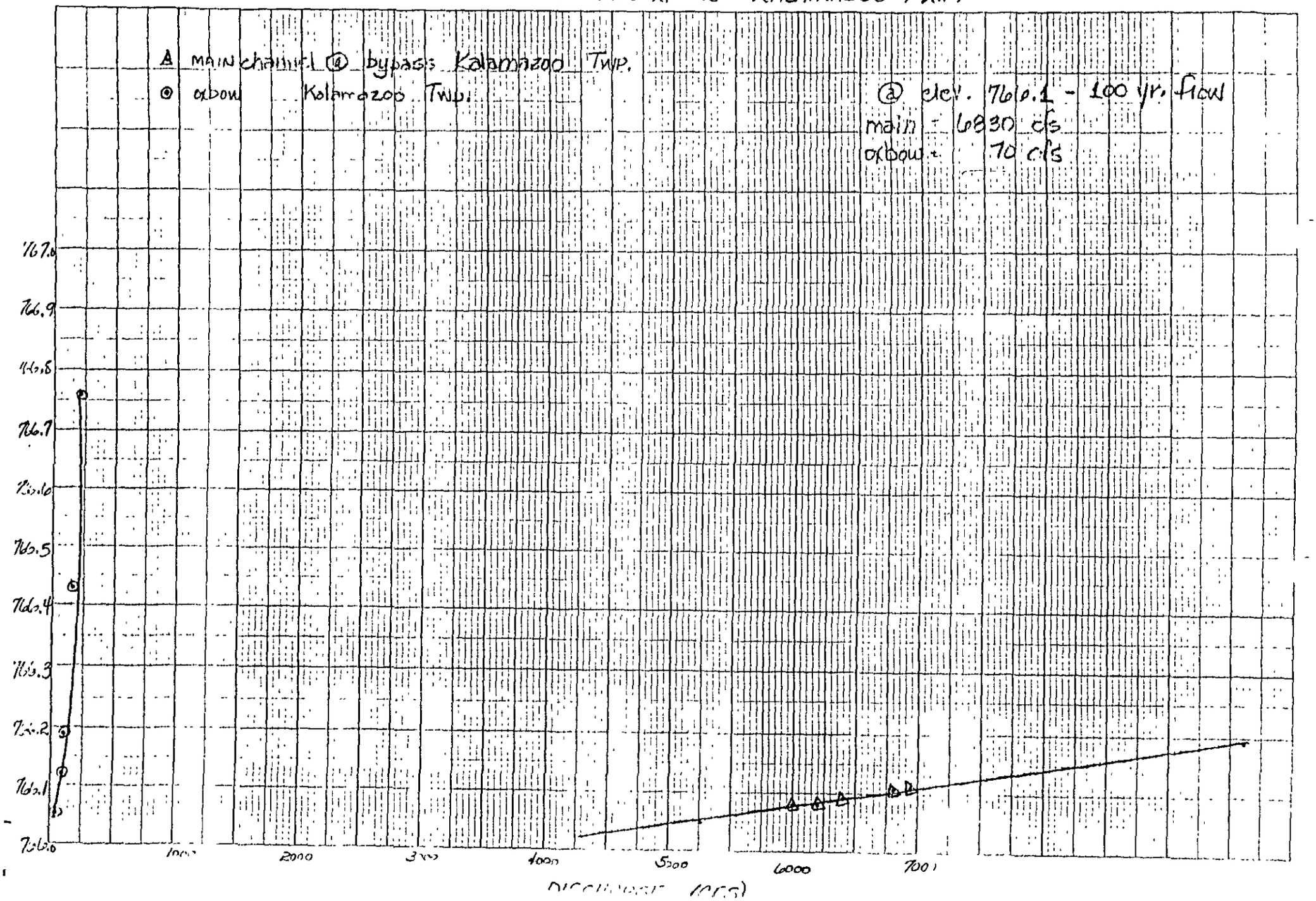
KALAMAZOO RIVER

RATING CURVE 100 YR. OXBOW IN KALAMAZOO TWP.

A MAIN channel ④ bypass Kalamazoo Twp.

⊙ oxbow Kalamazoo Twp.

② elev. 766.1 - 100 yr. flow
main = 6830 cfs
oxbow = 70 cfs



MAIN BRANCH - KALAMAZOO R.
at oxbow in Kalamazoo Twp.

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
  ERROR CORR - 01
  MODIFICATION - 50,51,52
*****************************************************

C
T1RATING CURVE
T2BYPASS CHANNEL IN KALAMAZOO TWP.
T3      KALAMAZOO RIVER BYPASS W

J1  ICHECK    INQ      NINQ     IDIR     STRT     METRIC   HVINQ    Q        WSEL     FQ

      0.       2.       3.       0.   [illegible]   0.00     0.0      0.   765.700   0.000

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    [illegible]   [illegible]   -1.[illegible]   [illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   [illegible]   [illegible]   0.000   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000

QT      5.000   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000
NC      [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000

        VALLEY SECT. JUST D/S OF WESTERLY OXBO

X1     10.000   [illegible]   8.[illegible]   180.[illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000
GR    770.000   [illegible]   758.9[illegible]   [illegible]   [illegible]   8.[illegible]   754.4[illegible]   46.000   754.200   68.000
GR    753.700   96.[illegible]   [illegible]   [illegible]   51.[illegible]   [illegible]   754.6[illegible]   150.000   758.200   192.000
GR    760.600   342.[illegible]   [illegible]   592.[illegible]   [illegible]   [illegible]   0.000    0.000    0.000    0.000
QT      5.000   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000    0.000

        VALLEY SECT. THROUGH MAIN AT OXBOW IN KALAMAZOO TWP.

X1     11.000   16.000   43.000   238.[illegible]   1200.[illegible]   1200.[illegible]   1200.000   0.000    0.000    0.000
GR    771.300   [illegible]   759.[illegible]   30.000   754.[illegible]   43.[illegible]   754.100   82.000   754.300   114.000
GR    755.500   144.[illegible]   755.[illegible]   178.[illegible]   754.[illegible]   204.[illegible]   756.700   238.000   758.800   242.000
GR    759.[illegible]   334.[illegible]   759.500   42[illegible]   759.[illegible]   504.[illegible]   759.000   584.000   758.600   644.000
GR    767.5[illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   0.000    0.000    0.000    0.000

        VALLEY SECT. THRU MAIN RIVER JUST D/S OF CONFLUENCE WITH OXBO   X

X1     11.200   17.000   4[illegible]   66[illegible]   750.[illegible]   6[illegible]   850.000   0.000    0.000    0.000
GR    770.000   [illegible]   763.[illegible]   [illegible]   759.[illegible]   455.[illegible]   755.900   458.000   756.300   507.000
GR    755.500   539.000   757.700   569.000   757.[illegible]   503.[illegible]   756.000   629.000   758.900   663.000
GR    758.800   567.000   759.100   759.000   759.500   645.[illegible]   759.400   929.000   759.000   1009.000
GR    758.600   1069.000   767.500   1117.000   [illegible]   [illegible]   0.000    0.000    0.000    0.000
EJ      0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
  ERROR CORR =  01
  MODIFICATION =  50,51,52
**************************************************

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

  KALAMAZOO RIVER BYPASS W

  SUMMARY PRINTOUT TABLE  150
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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	WSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10.000	0.00	0.00	0.00	751.76	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.000	0.00	0.00	0.00	751.76	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.000	0.00	0.00	0.00	751.76	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.000	0.00	0.00	0.00	751.76	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.000	0.00	0.00	0.00	751.76	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
11.000	1200.00	0.00	0.00	754.00	6900.00	765.96	0.00	766.03	0.98	2.07	5208.95	6072.87
11.000	1200.00	0.00	0.00	754.00	6900.00	765.96	0.00	766.03	1.04	2.13	5209.93	6074.45
11.000	1200.00	0.00	0.00	754.00	6900.00	765.96	0.00	766.04	1.11	2.20	5210.26	6074.98
11.000	1200.00	0.00	0.00	754.00	6900.00	765.96	0.00	766.04	1.25	2.34	5211.24	6076.56
11.000	1200.00	0.00	0.00	754.00	6900.00	765.96	0.00	766.05	1.29	2.37	5211.73	6077.35
11.200	950.00	0.00	0.00	756.00	6900.00	766.06	0.00	766.11	1.11	1.92	6954.07	5684.38
11.200	950.00	0.00	0.00	756.00	6900.00	766.06	0.00	766.12	1.19	1.98	6957.86	5688.85
11.200	950.00	0.00	0.00	756.00	6900.00	766.09	0.00	766.13	1.26	2.05	6962.20	5693.95
11.200	950.00	0.00	0.00	756.00	6900.00	766.11	0.00	766.15	1.42	2.17	6978.17	5712.80
11.200	950.00	0.00	0.00	756.00	6900.00	766.11	0.00	766.16	1.46	2.20	6981.41	5716.63

KALAMAZOO RIVER BYPASS W

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
10.000	6900.00	765.76	0.00	0.00	0.00	564.3	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.3	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.3	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.38	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.38	0.00
11.000	6000.00	765.98	0.00	0.22	0.00	670.13	1200.00
11.000	6200.00	765.98	0.00	0.22	0.00	670.14	1200.00
11.000	6400.00	765.98	0.00	0.22	0.00	670.15	1200.00
11.000	6800.00	765.98	0.00	0.22	0.00	670.16	1200.00
11.000	6900.00	765.98	0.00	0.22	0.00	670.16	1200.00
11.200	5900.00	766.18	0.00	0.10	0.00	1108.7	850.00
11.200	6200.00	766.08	0.00	0.11	0.00	1108.8	850.00
11.200	6400.00	766.09	0.00	0.11	0.00	1108.8	850.00
11.200	6871.00	766.11	0.00	0.13	0.00	1108.9	850.00
11.200	6900.00	766.11	0.00	0.13	0.00	1108.92	850.00

SUMMARY OF ERRORS

oxbow in Kalamazoo Twp.
KALAMAZOO RIVER

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
  ERROR CORR -  01
  MODIFICATION -  50,51,52
*****************************************************

C
T1RATING CURVE
T2BYPASS CHANNEL IN KALAMAZOO TWP.
T3       KALAMAZOO RIVER BYPASS W

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        2.        0.        0.  0.000000      0.00       0.0       0.   765.760     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSEEK     FN        ALLDC     IBW       CHNIM     ITRACE

     1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

QT      5.000  6900.000  6900.000  6900.000  6900.000  6900.000     0.000     0.000     0.000     0.000
NC      0.100     0.100     0.035     0.100     0.300     0.000     0.000     0.000     0.000     0.000

        VALLEY SECT. JUST D/S OF WESTERLY OXBOW

X1     10.000    12.000     8.000   180.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    770.000     0.000   758.900     0.100   755.400     8.000   754.400    46.000   754.200    68.000
GR    753.700    96.000   752.800   126.000   751.600   1[illegible]6.000   754.600   180.000   758.200   192.000
GR    760.600   342.000   765.400   592.000     0.000     0.000     0.000     0.000     0.000     0.000
QT      5.000    50.000    80.000   100.000   150.000   200.000     0.000     0.000     0.000     0.000
NC      0.100     0.100     0.035     0.600     0.800     0.000     0.000     0.000     0.000     0.000

        D/S FACE OF WESTERLY KING HWY. BRIDGE AT WESTERLY BYPASS [illegible]
```

X1	0.600	14.000	105.000	119.000	850.000	3 0.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.100	767.100	0.000
GR	767.100	0.000	759.800	50.000	756.200	1.000	754.500	105.000	754.500	108.100
GR	755.000	111.500	755.000	111.600	755.000	112.400	55.000	112.500	754.500	118.900
GR	754.500	119.000	756.000	165.000	767.100	1.000	67.100	231.000	0.000	0.000
SB	1.250	1.950	2.600	0.000	13.000	1.000	62.400	0.000	754.500	754.500

U/S FACE OF WESTERLY KING HWY, BRIDGE AT WESTERLY BYPASS CHANNEL

X1	10.700	0.000	0.000	0.000	130.000	130.000	130.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	759.700	767.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.100	767.100	0.000
BT	10.000	0.000	767.100	0.000	135.000	767.100	0.000	135.100	767.100	759.700
BT	111.500	767.100	759.700	111.600	767.100	0.000	112.400	767.100	0.000	112.500
BT	767.100	759.700	118.900	767.100	759.700	19.000	767.100	0.000	231.000	767.100
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECT, NEAR CENTER OF WESTERLY BYPASS CHANNEL

X1	11.100	11.000	118.000	129.000	950.000	1 0.000	1200.000	0.000	0.000	0.000
GR	770.000	976.000	761.700	978.000	762.400	1 8.000	757.600	11 6.000	754.800	1220.000
GR	755.000	1236.000	755.300	1258.300	756.600	1 8.000	757.700	12 0.000	760.000	1390.000
GR	770.000	1490.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF EASTERLY KING HWY, BRIDGE AT WESTERLY BYPASS CHANNEL

X1	11.700	14.000	24.300	37.300	75 .000	1 0.000	1300.000	0.000	0.000	0.300
X3	10.000	1.300	0.000	0.000	0.000	0.000	0.000	7 7.800	767.800	0.000
GR	767.800	1.300	7 .300	1.300	757.500	7.000	754.000	4.000	754.000	24.100
GR	756.000	31.000	754.000	31.100	756.000	1.900	756.000	1.000	754.000	36.900
GR	754.100	37.000	757.300	47.300	7 .700	0.000	767.800	1.000	0.000	0.000
SB	1.250	2.150	2.600	0.000	9.100	1.000	50.400	0.000	754.000	754.000

U/S FACE OF EASTERLY KING HWY, BRIDGE AT WESTERLY BYPASS CHANNEL

X1	11.900	0.300	0.300	0.000	0.000	0.000	80.000	0.000	0.000	0.000
X2	0.000	0.300	1.000	760.300	767.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	767.800	767.800	0.000
BT	10.000	1.000	767.800	0.000	24.000	767.800	0.000	24.100	767.800	760.200
BT	50.000	767.800	767.200	50.100	767.800	0.000	30.900	767.800	0.000	31.000
BT	767.800	767.200	61.300	767.200	767.200	31.000	767.800	0.000	61.000	767.800
BT	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.300	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000

3495 OVE[illegible]NK AREA ASSUMED ION=EFFECTIVE,FLLEA= 767.80 ELNEA= 767.80

U/S FACE OF EASTERLY KING HWY. BRIDGE AT WESTLRLY BYPASS CHANNEL

11.80	12.76	766.76	0.00	0.00	767.79	0.03	0.47	0.00	754.00
200.	0.	200.	0.	0.	152.	0.	104.	15.	754.00
3.62	0.00	1.31	0.00	0.100	0.035	0.100	0.035	754.10	24.00
0.000092	80.	80.	80.	2	0	0	0.00	13.10	37.00

****
HEC2 RELEASE DATED NOV 76 UPDATED FEB 1977
ERROR CORR - 11
MODIFICATION - 51,51,52
****

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

KALAMAZOO RIVER BYPASS 2

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10.800	0.00	0.00	0.00	751.60	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.800	0.00	0.00	0.00	751.60	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.800	0.00	0.00	0.00	751.60	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.800	0.00	0.00	0.00	751.60	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.800	0.00	0.00	0.00	751.60	6900.00	765.76	0.00	765.87	1.62	2.85	3791.60	5419.48
10.600	450.00	0.00	0.00	754.50	50.00	766.00	0.00	766.00	0.05	0.32	157.29	224.99
10.600	450.00	0.00	0.00	754.50	80.00	766.00	0.00	766.00	0.13	0.51	157.25	224.90
10.600	450.00	0.00	0.00	754.50	100.00	765.99	0.00	766.00	0.20	0.64	157.20	224.81
10.600	450.00	0.00	0.00	754.50	150.00	765.98	0.00	766.00	0.45	0.96	157.03	224.48
10.600	450.00	0.00	0.00	754.50	200.00	765.96	0.00	765.99	0.80	1.28	156.80	224.03
10.700	130.00	767.10	759.70	754.50	50.00	766.02	0.00	766.02	0.05	0.32	157.57	225.53
10.700	130.00	767.10	759.70	754.50	80.00	766.04	0.00	766.05	0.13	0.51	157.95	226.27
10.700	130.00	767.10	759.70	754.50	100.00	766.06	0.00	766.07	0.19	0.63	158.29	226.95
10.700	130.00	767.10	759.70	754.50	150.00	766.14	0.00	766.16	0.43	0.94	159.39	229.12
10.700	130.00	767.10	759.70	754.50	200.00	766.25	0.00	766.28	0.74	1.24	160.82	231.94
11.100	1200.00	0.00	0.00	754.80	50.00	766.02	0.00	766.02	0.00	0.03	2837.88	2919.84
11.100	1200.00	0.00	0.00	754.80	80.00	766.05	0.00	766.05	0.00	0.05	2853.95	2940.03
11.100	1200.00	0.00	0.00	754.80	100.00	766.08	0.00	766.08	0.00	0.07	2865.4	2954.44
11.100	1200.00	0.00	0.00	754.80	150.00	766.17	0.00	[illegible]				

11.700	1300.00	0.00	0.00	754.00	50.00	766.02	0.00	766.02	0.07	0.35	142.50	190.12
11.700	1300.00	0.00	0.00	754.00	80.00	766.05	0.00	766.05	0.18	0.56	142.93	190.91
11.700	1300.00	0.00	0.00	754.00	100.00	766.07	0.00	766.08	0.27	0.70	143.24	191.49
11.700	1300.00	0.00	0.00	754.00	150.00	766.16	0.00	766.18	0.60	1.04	144.32	193.48
11.700	1300.00	0.00	0.00	754.00	200.00	766.29	0.00	766.32	1.04	1.37	145.94	196.47
11.800	80.00	767.80	760.20	754.00	50.00	766.05	0.00	766.05	0.07	0.35	142.86	190.79
11.800	80.00	767.80	760.20	754.00	80.00	766.12	0.00	766.13	0.17	0.56	143.87	192.65
11.800	80.00	767.80	760.20	754.00	100.00	766.19	0.00	766.20	0.26	0.69	144.79	194.35
11.800	80.00	767.80	760.20	754.00	150.00	766.43	0.00	766.45	0.56	1.01	147.88	200.09
11.800	80.00	767.80	760.20	754.00	200.00	766.76	0.00	766.79	0.92	1.31	152.11	207.97

KALAMAZOO RIVER BYPASS V

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CNSEL	DIFUSP	DIFAVR	DIFEW	TOP ID	XLCH
10.000	6900.00	765.76	0.00	0.00	0.00	564.36	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.36	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.36	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.38	0.00
10.000	6900.00	765.76	0.00	0.00	0.00	564.38	0.00
10.600	50.00	766.00	0.00	0.24	0.00	14.00	450.00
10.600	80.00	766.00	0.00	0.24	0.00	14.00	450.00
10.600	100.00	766.02	0.00	0.23	0.00	14.00	450.00
10.600	150.00	765.98	0.00	0.22	0.00	14.00	450.00
10.600	200.00	765.75	0.00	0.20	0.00	14.00	450.00
10.700	50.00	766.02	0.00	0.02	0.00	14.00	130.00
10.700	80.00	766.04	0.00	0.05	0.00	14.00	130.00
10.700	100.00	766.06	0.00	0.07	0.00	14.00	130.00
10.700	150.00	766.14	0.00	0.16	0.00	14.00	130.00
10.700	200.00	766.25	0.00	0.29	0.00	14.00	130.00
11.100	50.00	766.02	0.00	0.00	0.00	473.25	1200.00
11.100	80.00	766.05	0.00	0.01	0.00	473.60	1200.00
11.100	100.00	766.08	0.00	0.01	0.00	473.85	1200.00
11.100	150.00	766.17	0.00	0.02	0.00	474.71	1200.00
11.100	200.00	766.29	0.00	0.04	0.00	474.00	1200.00
11.700	50.00	766.02	0.00	-0.00	0.00	13.00	1300.00
11.700	80.00	766.05	0.00	-0.00	0.00	13.00	1300.00
11.700	100.00	766.07	0.00	-0.00	0.00	13.00	1300.00
11.700	150.00	766.16	0.00	-0.00	0.00	13.00	1300.00
11.700	200.00	766.29	0.00	-0.00	0.00	13.00	1300.00
11.800	50.00	766.05	0.00	0.03	0.00	13.00	80.00
11.800	80.00	766.12	0.00	0.08	0.00	13.00	80.00
11.800	100.00	766.19	0.00	0.12	0.00	13.00	80.00
11.800	150.00	766.43	0.00	0.27	0.00	13.00	80.00

General Fieldnute Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-31-79

INSTRUMENTS:

TEMP (DRY BULB) 14°

WET BULB

RH %

BAR.

PROJECT: HUD

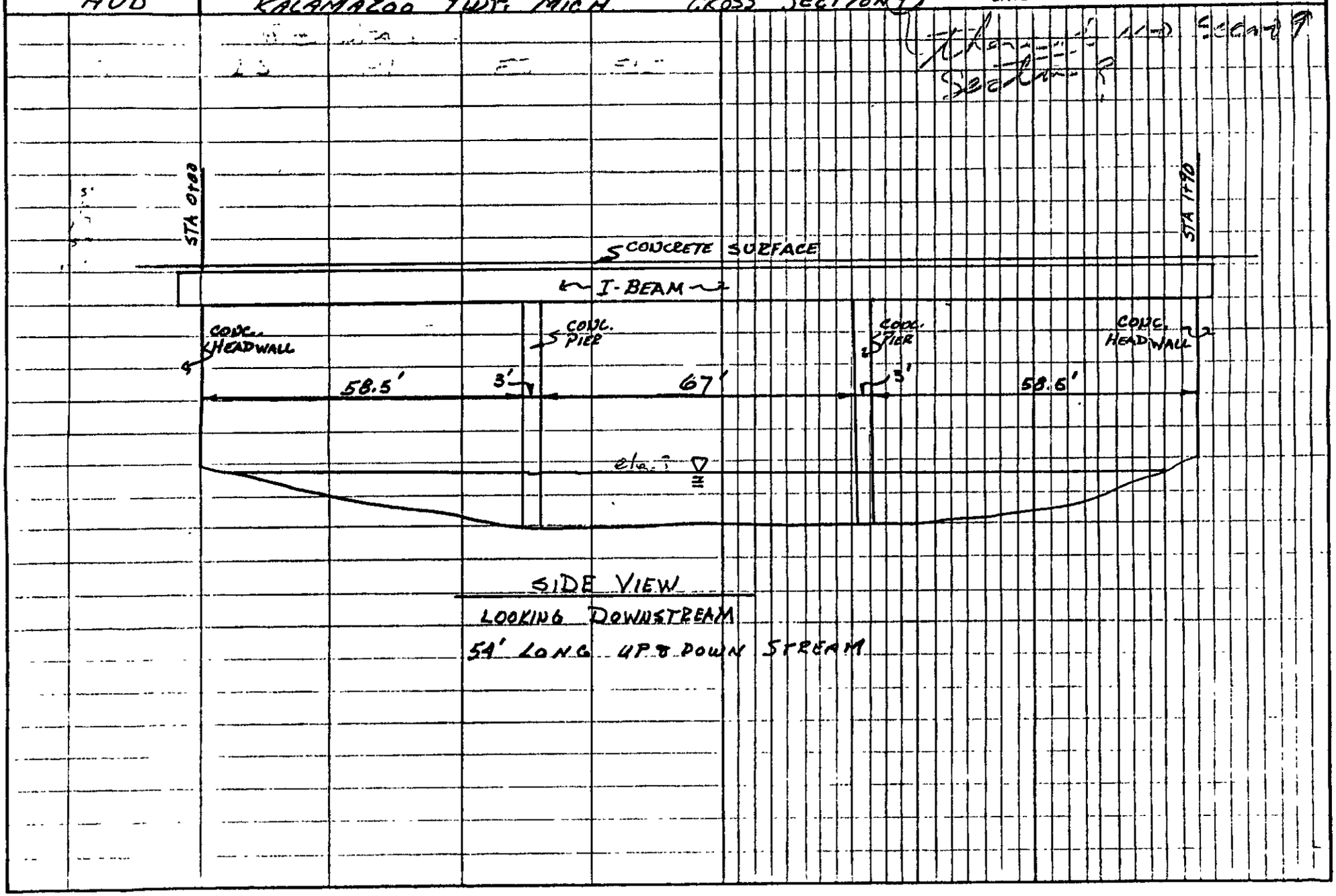
LOCATION: KALAMAZOO TWP. MICH CROSS SECTION 9

CHECKED BY

DATE

ACTIVITY Cross Section BOOK 21-07 PAGE 51

STA.



SIDE VIEW

LOOKING DOWNSTREAM

54' LONG UP & DOWN STREAM

General Fieldnote Form S-127

COMMONWEALTH ASSOCIATES INC.

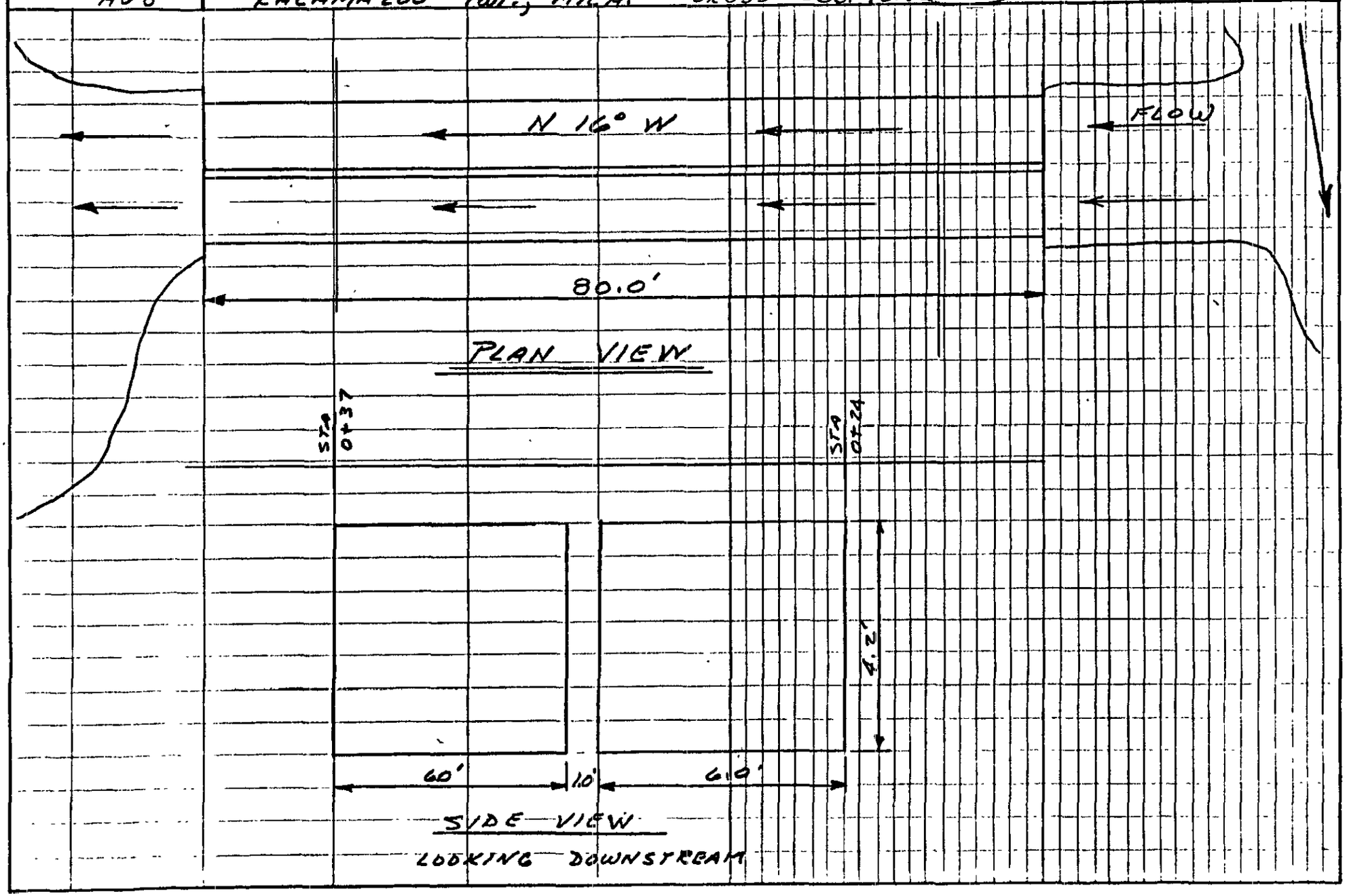
CREW: FOUTY, BEARINGER, HERR

DATE: 1-31-79 | INSTRUMENTS: | TEMP (DRY BULB) 26 | WET BULB | RH % | BAR.

PROJECT: HUD | LOCATION: KALAMAZOO TWP., MICH. CROSS SECTION | CHECKED BY | DATE

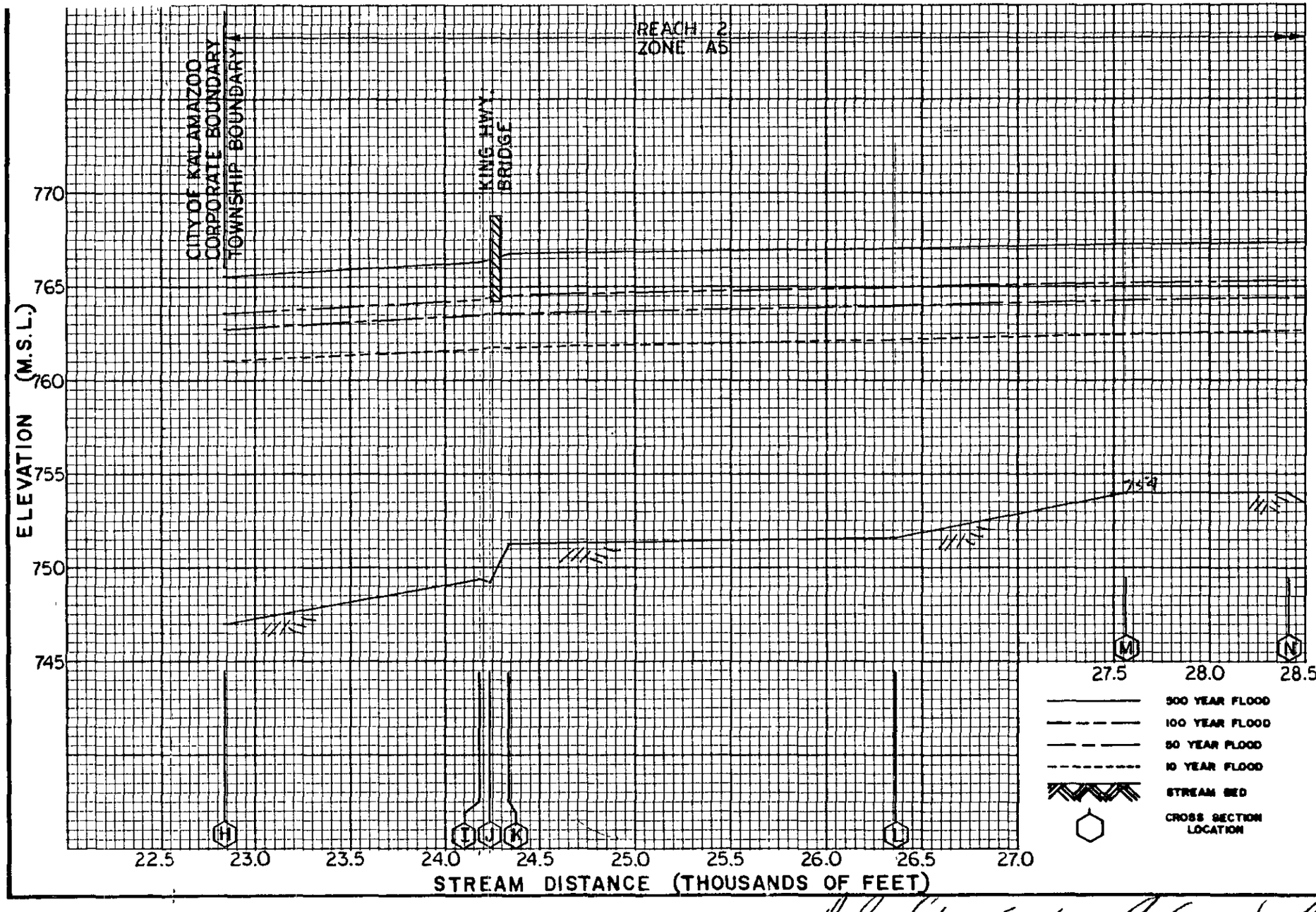
ACTIVITY CROSS SECTION BOOK 21-07 PAGE 63

STA.



APPENDIX C

(PROFILES)



KALAMAZOO RIVER

FLOOD PROFILE

KALAMAZOO TOWNSHIP

Profile Sect's A-6 in Packed

KALAMAZOO RIVER

FLOOD PROFILE

KALAMAZOO TOWNSHIP

REACH 2
ZONE A5

TOWNSHIP BOUNDARY

UPSTREAM STUDY LIMIT

SPRINKLE RD. BRIDGE

ELEVATION (M.S.L.)

770
765
760
755
750
745

28.5 29.0 29.5 30.0 30.5 31.0

STREAM DISTANCE (THOUSANDS OF FEET)

O P Q

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

APPENDIX D

(CROSS SECTION PLOTS)

CROSS SECTION REFERENCE

Cross Section ID on Profile	Sec. No. in HEC-2	Description
A	1.0	Valley Section at Kalamazoo Twp/ Cooper Twp boundary
B	2.0	Valley Section
C	3.0	Valley Section
D	4.0	Downstream face of RR bridge
E	5.0	Downstream face of RR bridge
F	6.0	Downstream face of Mosel Avenue bridge
G	7.0	Valley Section at Kalamazoo Twp/ city of Kalamazoo boundary
H	8.0	Valley Section at city of Kalamazoo/ Kalamazoo Twp boundary
I	8.9	Valley Section
J	9.0	Downstream face of King Highway bridge
K	9.2	Valley Section
L	10.0	Valley Section
M	11.0	Valley Section
N	11.2	Valley Section
O	12.0	Valley Section
P	12.8	Valley Section
Q	12.9	Downstream face of Sprinkle Road bridge

APPENDIX E

(MAP AND COMPUTER RUNS)

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BGARINGER, HERR

DATE:

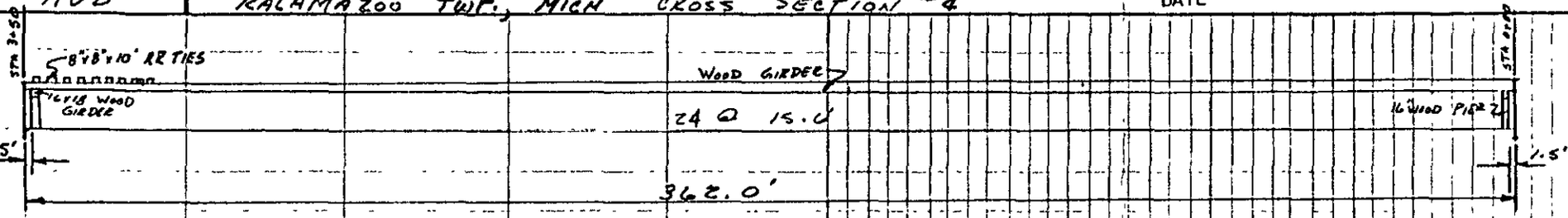
INSTRUMENTS:

TEMP (DRY BULB) 74° WET BULB RH % BAR.

PROJECT: HUD

LOCATION: KALAMAZOO TWP., MICH CROSS SECTION #4

CHECKED BY DATE



SIDE VIEW

BRIDGE IS 10' WIDE

LOOKING UPSTREAM

RECEIVED
JUL 23 1980
WATER MANAGEMENT

ACTIVITY Cross Section #4 R.R. Bridge BOOK 21-07 PAGE 34A

STA.

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE:

INSTRUMENTS:

TEMP (DRY BULB)

WET BULB

RH %

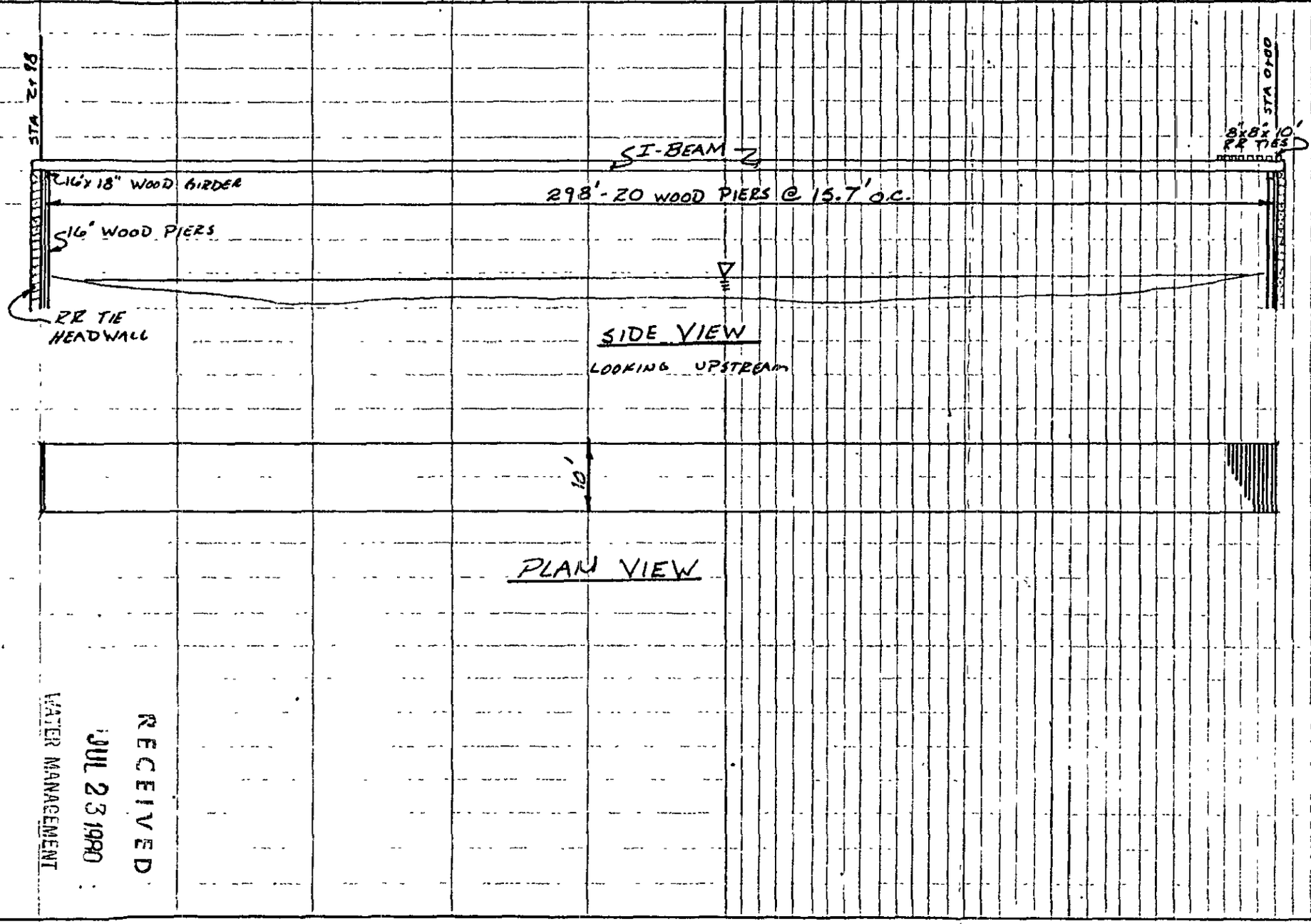
BAR.

PROJECT: HUD

LOCATION: KALAMAZOO TWP, MI. CROSS SECTION 5

CHECKED BY

DATE



RECEIVED
JUL 23 1980
WATER MANAGEMENT

ACTIVITY Cross Section 5 BOOK 2-1-07 PAGE 374

R.R. Bridge STA.

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOLTY, BEARINGER, HERR

DATE: 1-30-79

INSTRUMENTS:

TEMP (DRY BULB)

WET BULB

RH %

BAR.

PROJECT: HUD

LOCATION: KALAMAZOO TWP. MI. CROSS SECTION 6

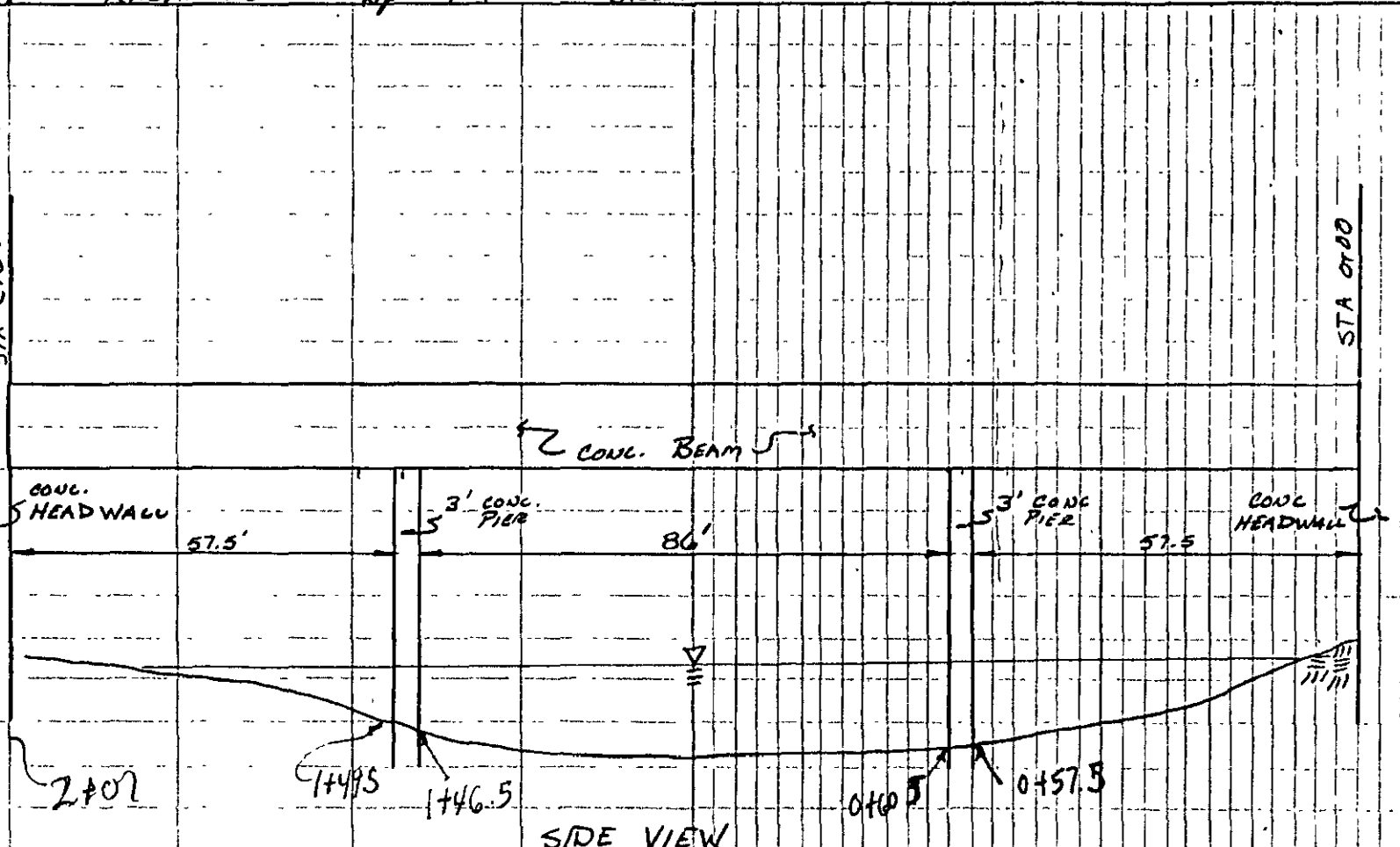
CHECKED BY

DATE

ACTIVITY Cross Section 6 Mosel Ave. Bridge

BOOK 2.1-07 PAGE 41A

STA.



SIDE VIEW

LOOKING UPSTREAM

BRIDGE IS 35' WIDE

HEADWALL - 43' WIDE

RECEIVED

JUL 23 1980

WATER MANAGEMENT

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BOARINGER, HERR

DATE: 1-31-79

INSTRUMENTS:

TEMP (DRY BULB) 14°

WET BULB

RH %

BAR.

PROJECT: HUD

LOCATION: KALAMAZOO TWP. MICH. CROSS SECTIONS

CHECKED BY

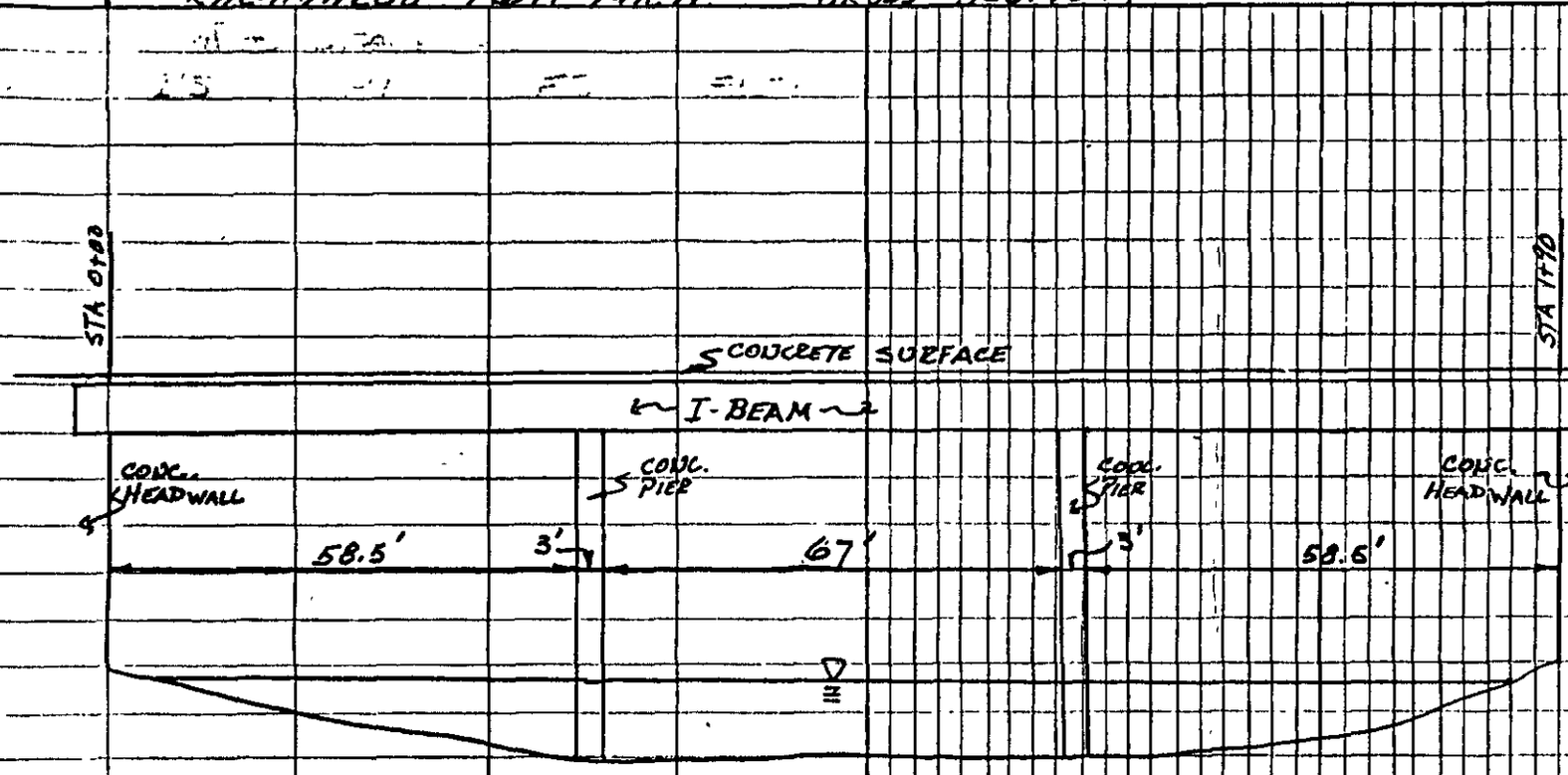
DATE

ACTIVITY Cross Section 9

KING HIGHWAY BRIDGE

BOOK 21-07 PAGE 54

STA.



SIDE VIEW

LOOKING DOWNSTREAM

54' LONG UP & DOWN STREAM

RECEIVED
JUL 23 1980
WATER MANAGEMENT

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-31-79

INSTRUMENTS:

TEMP (DRY BULB) 26° WET BULB RH % BAR.

PROJECT: HUD

LOCATION: KALAMAZOO TWP MICH CROSS SECTION

CHECKED BY DATE

S 10° E

FLOW

STA 0+55

80.0'

PLAN VIEW

STA 0+55

5.2'

6.0' 1.0' 6.0'

SIDE VIEW

LOOKING UPSTREAM

ACTIVITY CROSS SECTION @ (OX BOW) BOOK 21-07 PAGE 41

STA.

RECEIVED JUL 23 1980 WATER MANAGEMENT

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-31-79

INSTRUMENTS:

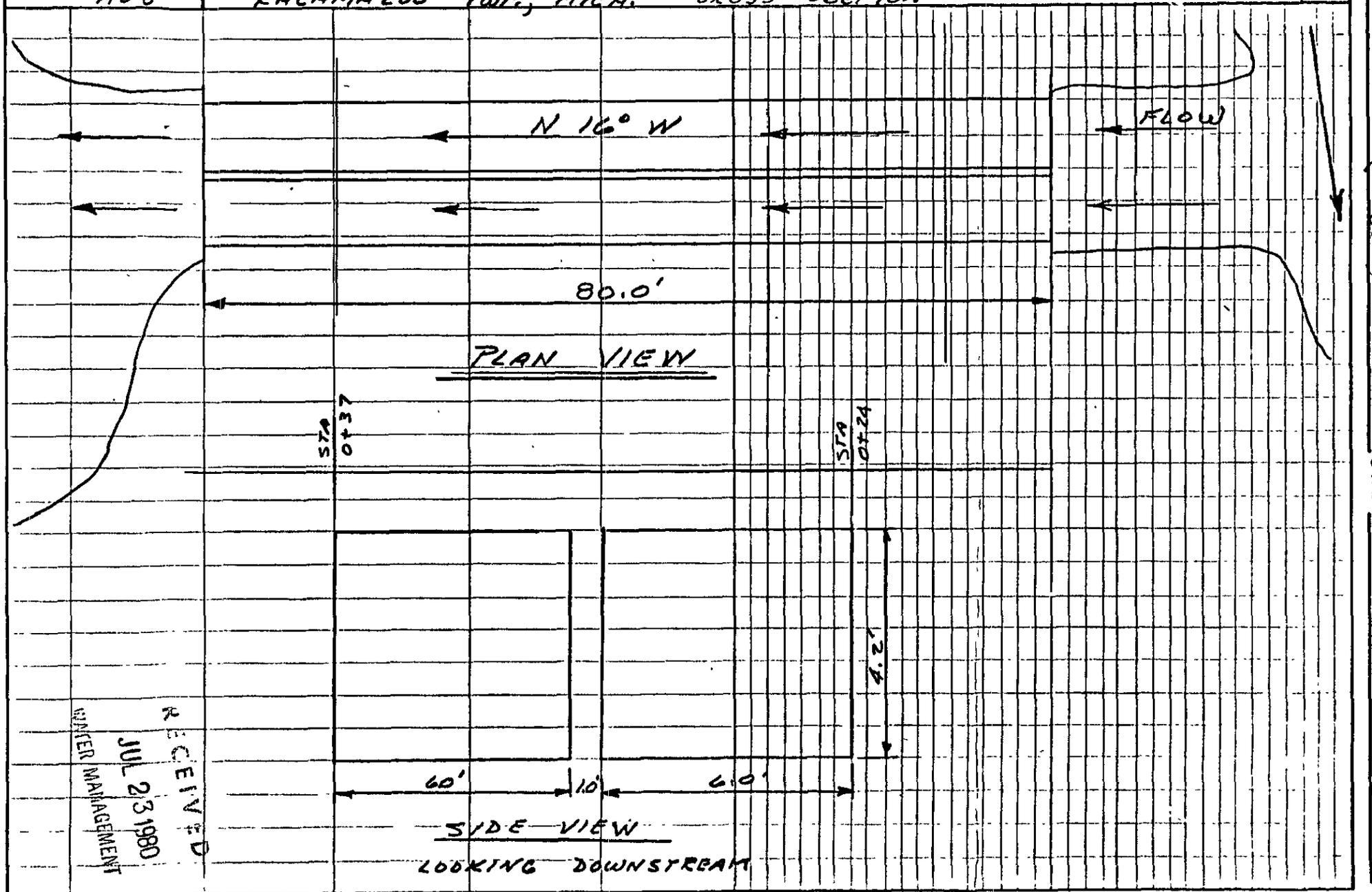
TEMP (DRY BULB) 26 WET BULB RH % BAR.

PROJECT: HUD

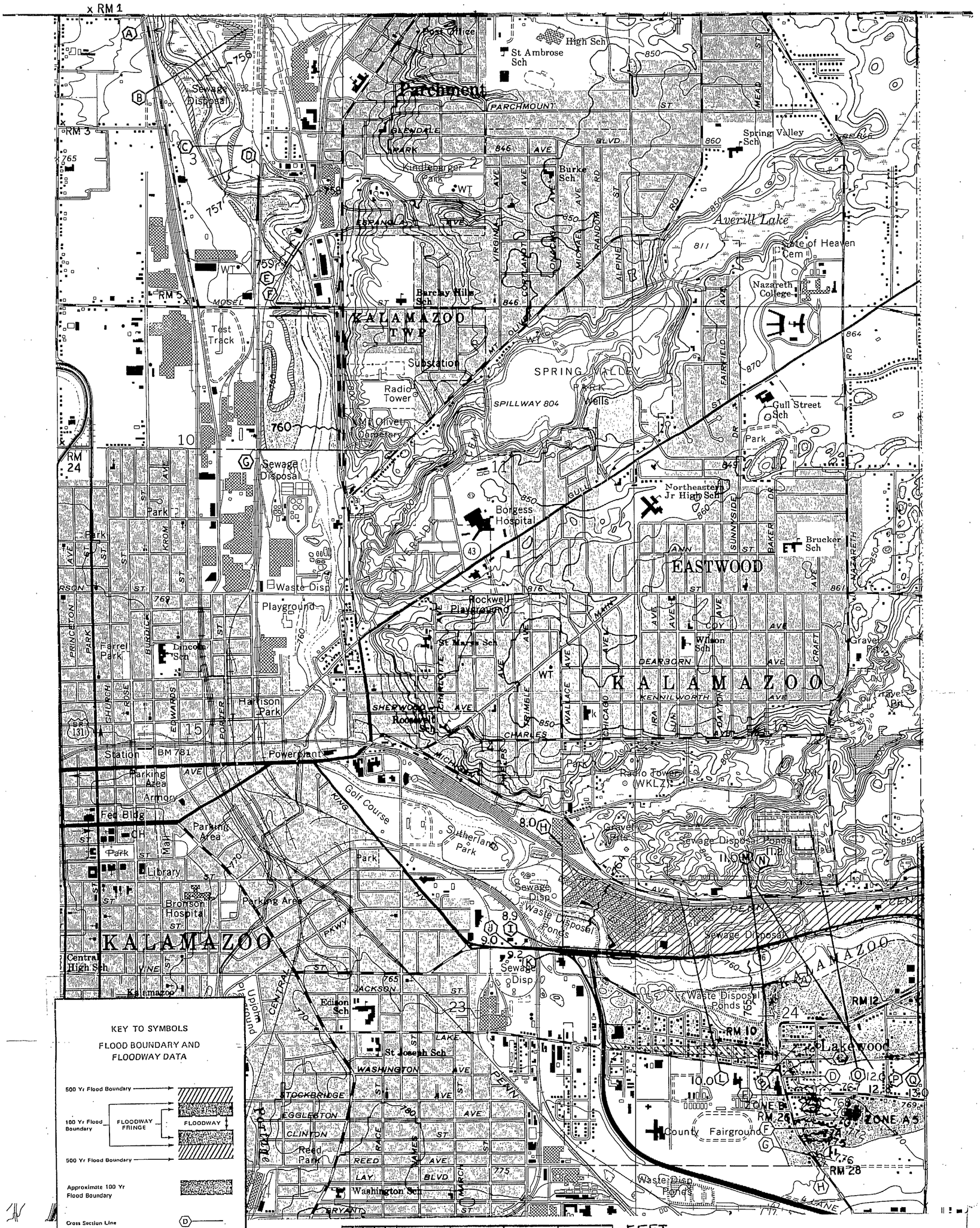
LOCATION: KALAMAZOO TWP., MICH. CROSS SECTION

CHECKED BY DATE

ACTIVITY CROSS SECTION B (OX BOW) BOOK C.1-07 PAGE 63 STA.



RECEIVED
JUL 23 1980
WATER MANAGEMENT



KEY TO SYMBOLS

FLOOD BOUNDARY AND FLOODWAY DATA

500 Yr Flood Boundary

100 Yr Flood Boundary

FLOODWAY FRINGE

FLOODWAY

500 Yr Flood Boundary

Approximate 100 Yr Flood Boundary

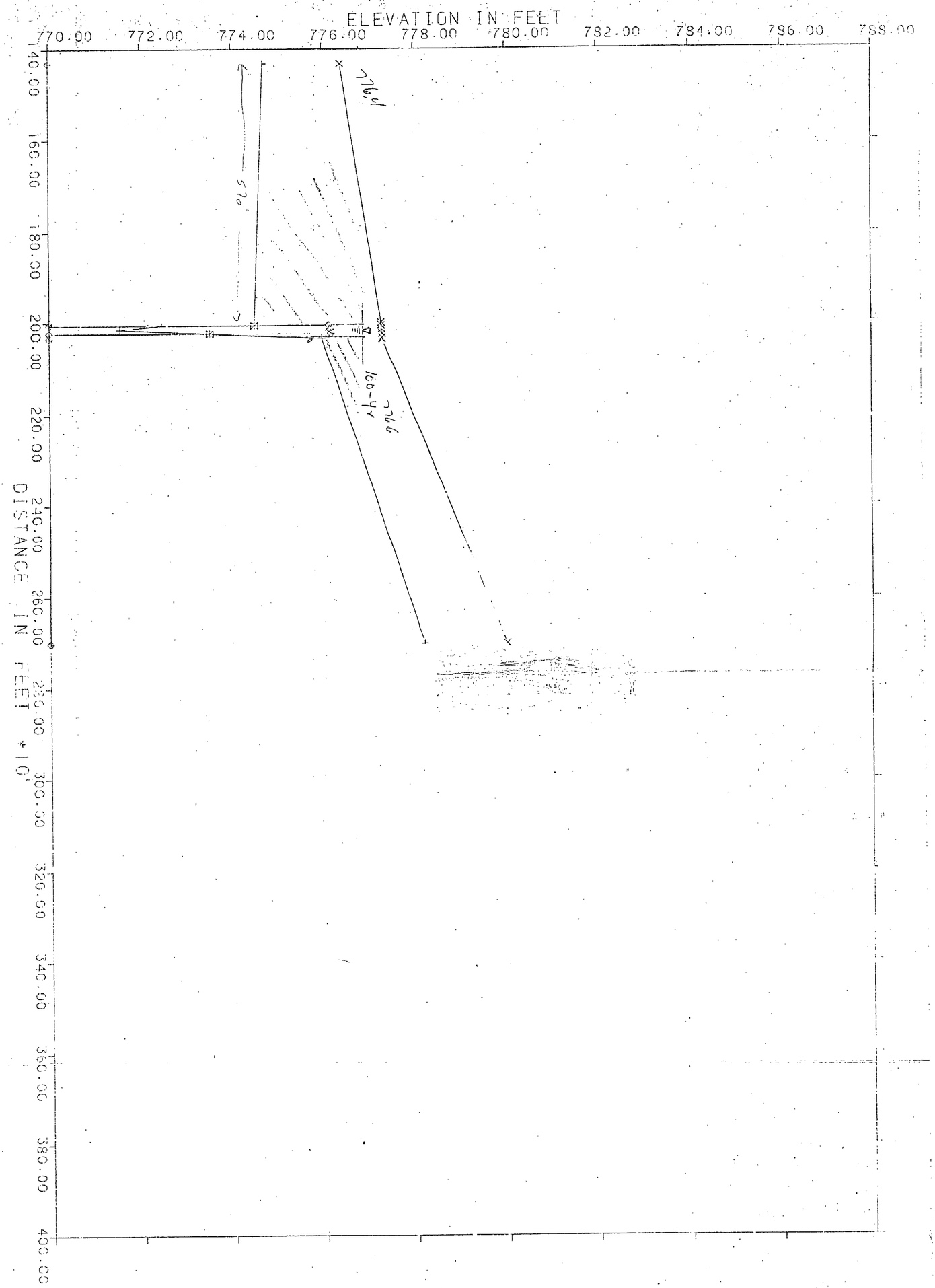
Cross Section Line

FLOOD BOUNDARY AND FLOODWAY MAP

MAP INDEX

KALAMAZOO TOWNSHIP
KALAMAZOO COUNTY

RECEIVED
SEP 08 1980
WATER MANAGEMENT



SECTION NO. 28.000

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FIGURE 1

KALAMAZOO RIVER ELEVATIONS

OUTFALL SEWER

ELEVATIONS ARE ON U.S.S.S. DATUM, TAKEN AT NOON DAILY AT THE HEADWALL OF THE KALAMAZOO SEWAGE TREATMENT WORKS.

NOTE: MAXIMUM, MINIMUM AND AVERAGE ELEVATIONS ARE FOR THE YEARS 1958 THUR 1977.

SERIOUS PROBLEM LEVEL

APPROX. FLOOD STAGE

MAXIMUM

AVERAGE

MINIMUM

7-3-86-1975

756.97-1974

757.12-1968

757.39-1926

756.93-1971

757.76-1976

757.62-1974

757.26-1960

756.94-1974

756.64-1974

756.61-1973

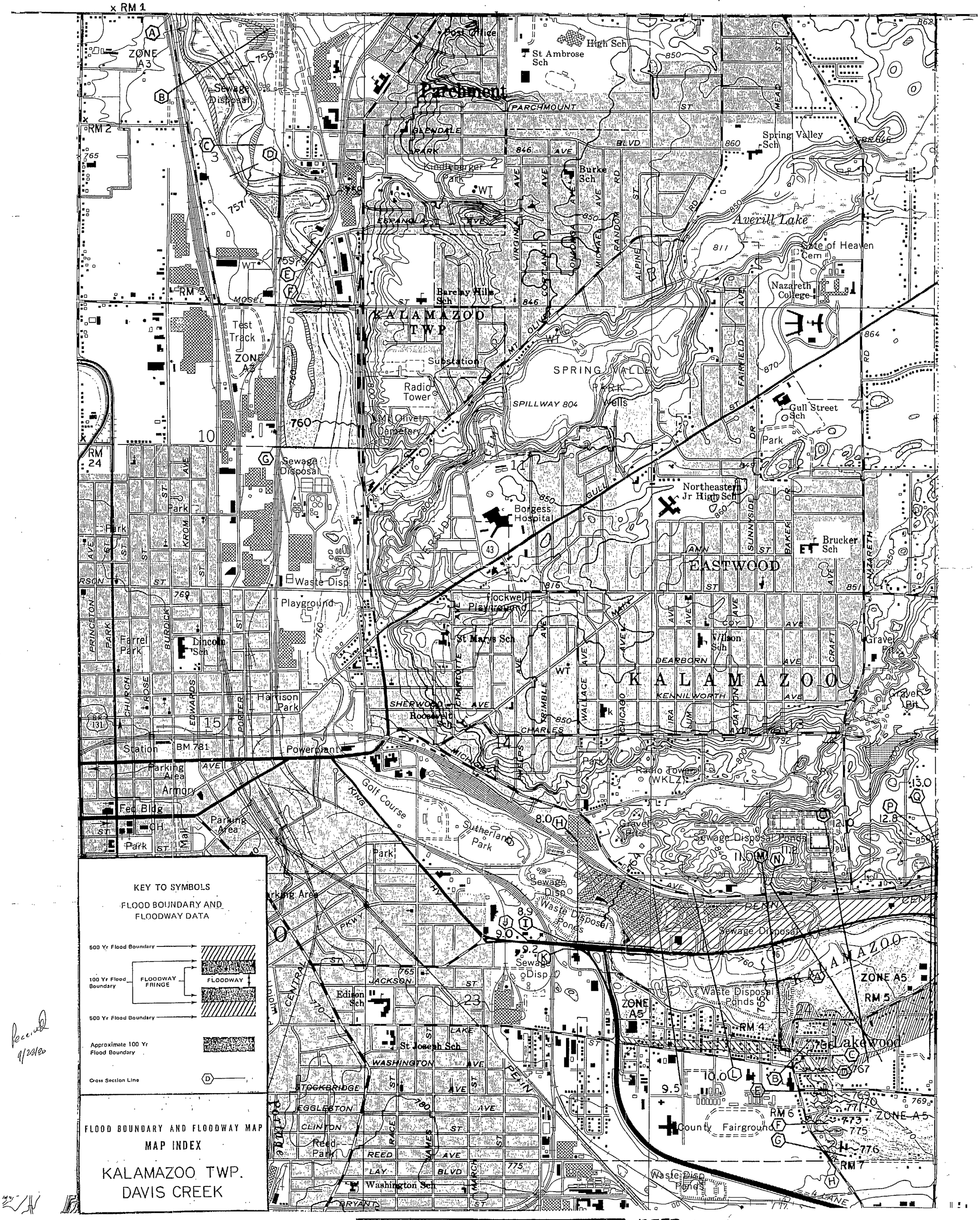
756.43-1968

756.41-1975

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
MONTHLY AVERAGE	752.94	753.50	754.58	754.06	753.59	752.74	752.46	752.13	752.25	752.50	752.59	752.95

EUGENE DIETZGEN CO.

NO. 3600 TIB DIETZGEN GRAPH PAPER
ONE YEAR BY DAYS



KEY TO SYMBOLS

FLOOD BOUNDARY AND FLOODWAY DATA

500 Yr Flood Boundary

100 Yr Flood Boundary — FLOODWAY FRINGE — FLOODWAY

500 Yr Flood Boundary

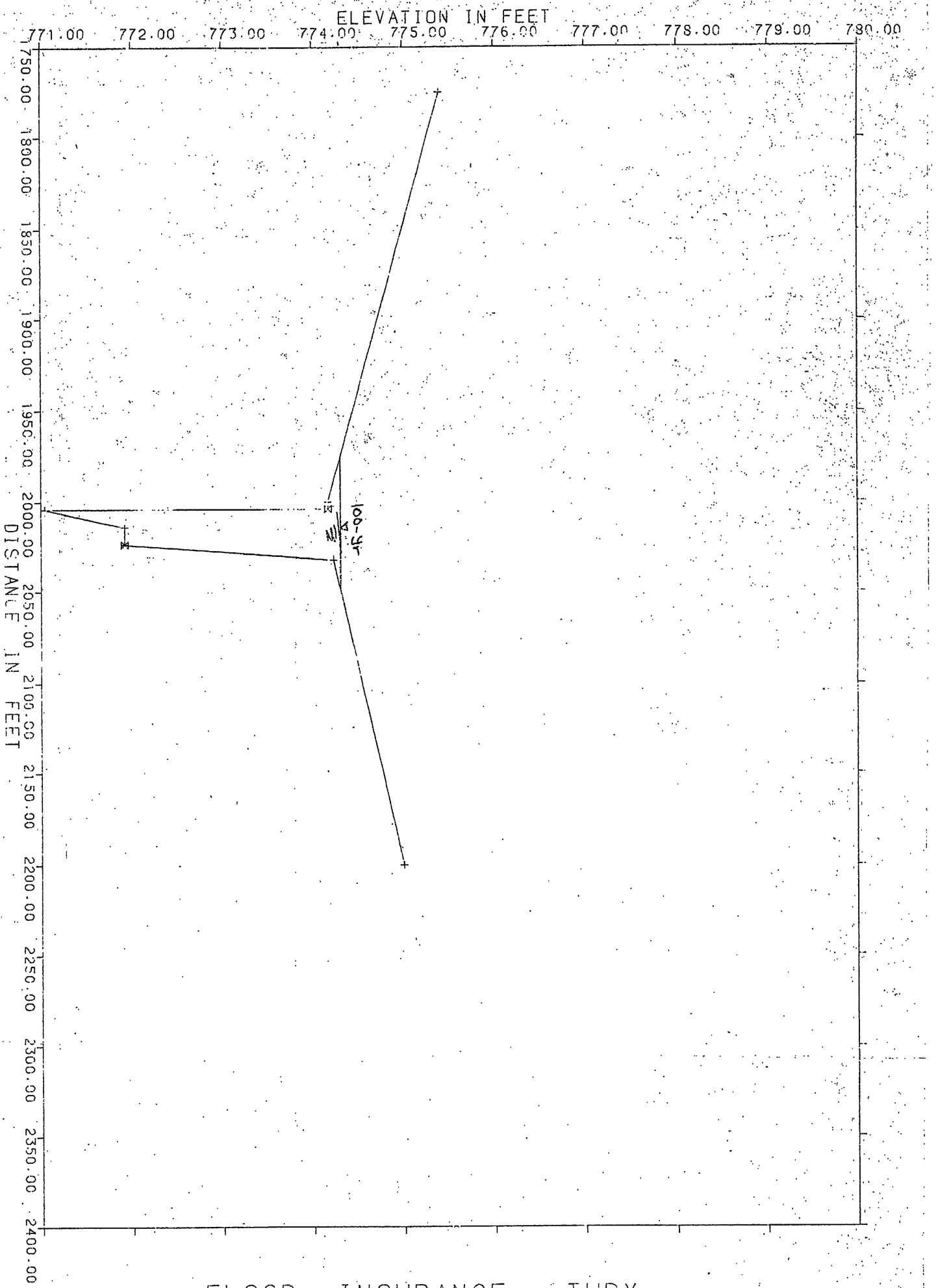
Approximate 100 Yr Flood Boundary

Cross Section Line

FLOOD BOUNDARY AND FLOODWAY MAP

MAP INDEX

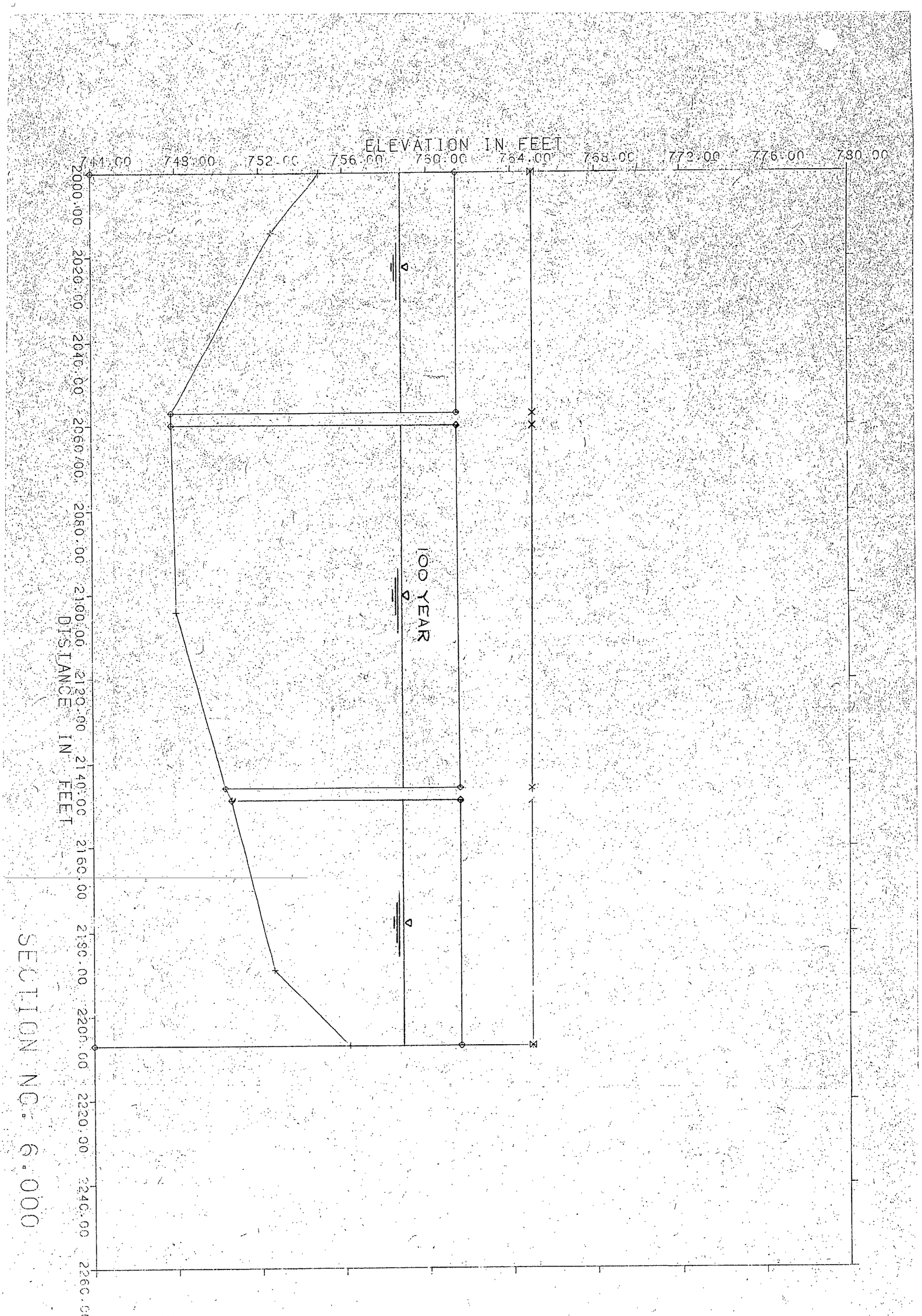
KALAMAZOO TWP.
DAVIS CREEK



SECTION NO. 26.800

FLOOD INSURANCE STUDY

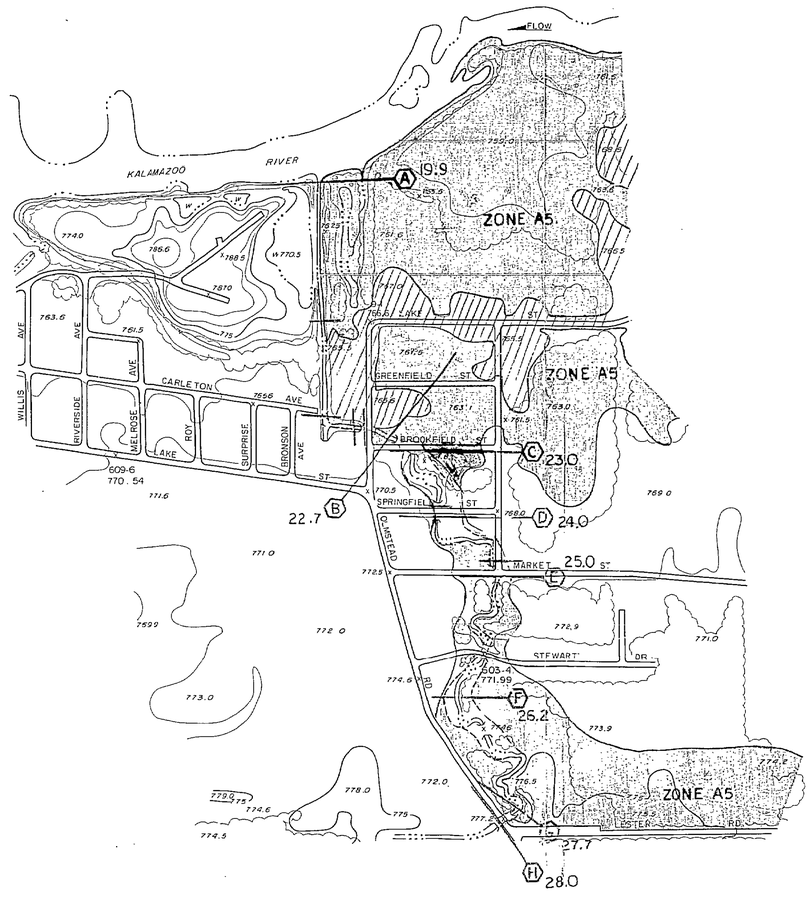
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 6.000

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



KEY TO SYMBOLS

500 Yr Flood Boundary ——→

100 Yr Flood Boundary — FLOODWAY FRINGE — Floodway

500 Yr Flood Boundary ——→

Approximate 100 Yr Flood Boundary — — — — —

Cross Section Line ——Ⓒ——

Base Flood Elevation ~~~~ 760

Elevation Reference Mark ×RM 25

N

FLOOD BOUNDARY AND FLOODWAY MAP

KALAMAZOO TOWNSHIP, MICH.
DAVIS CREEK

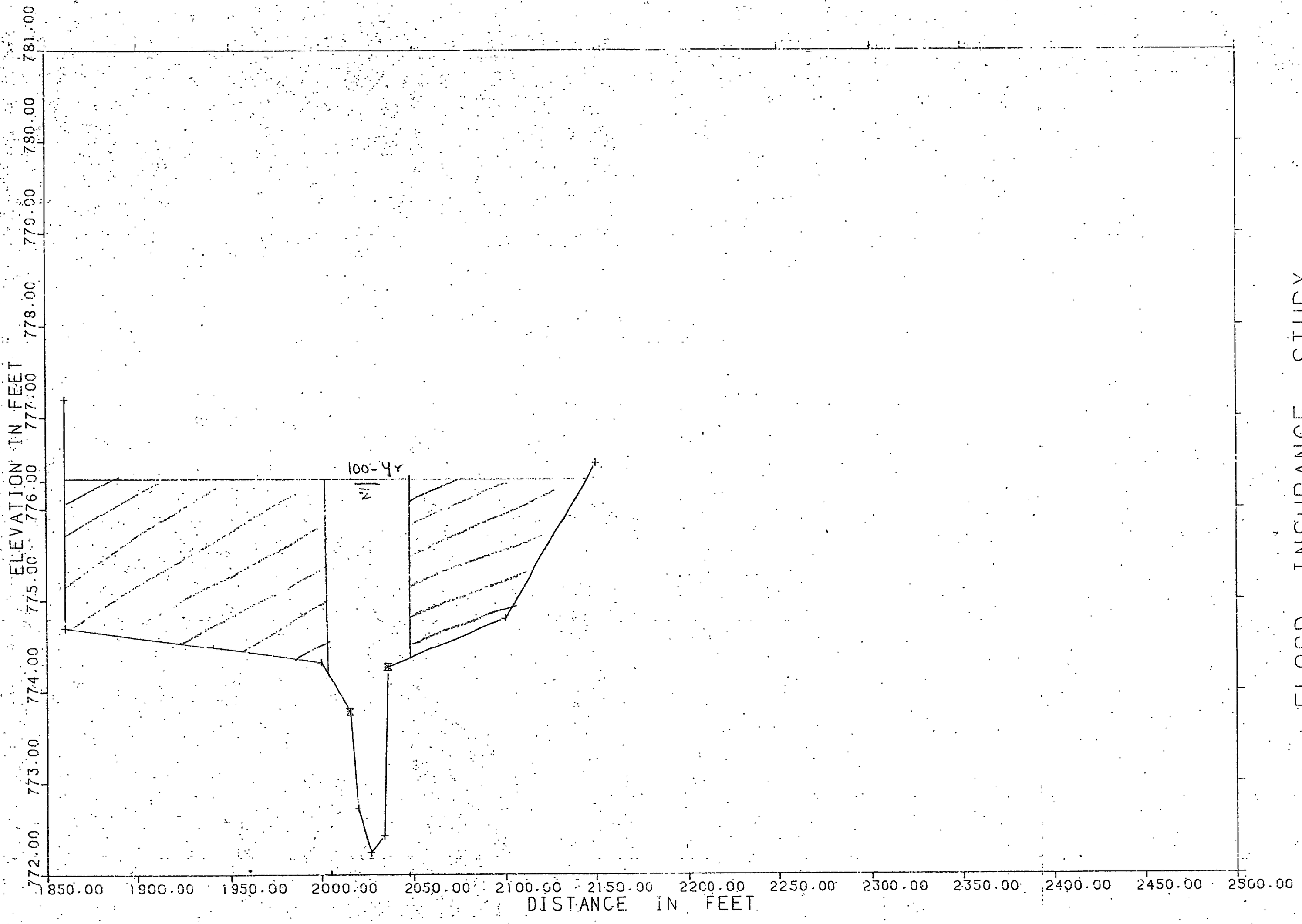
ABRAMS
AERIAL SURVEY CORPORATION
LANSING, MICHIGAN

400 0 400 800 1200
SCALE 1" = 400' CONTOUR INTERVAL 5'

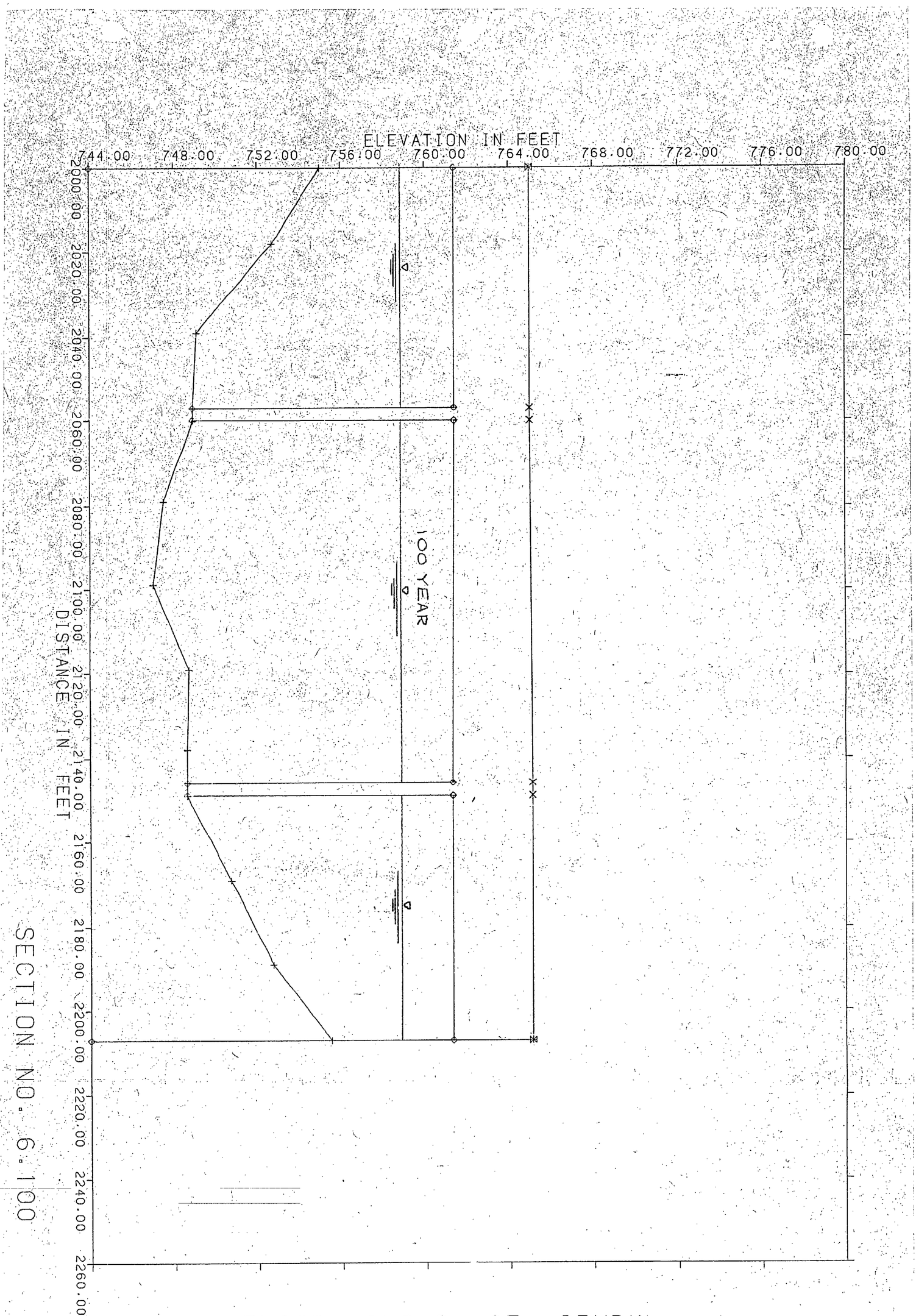
A. A. S. C. 17298

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY



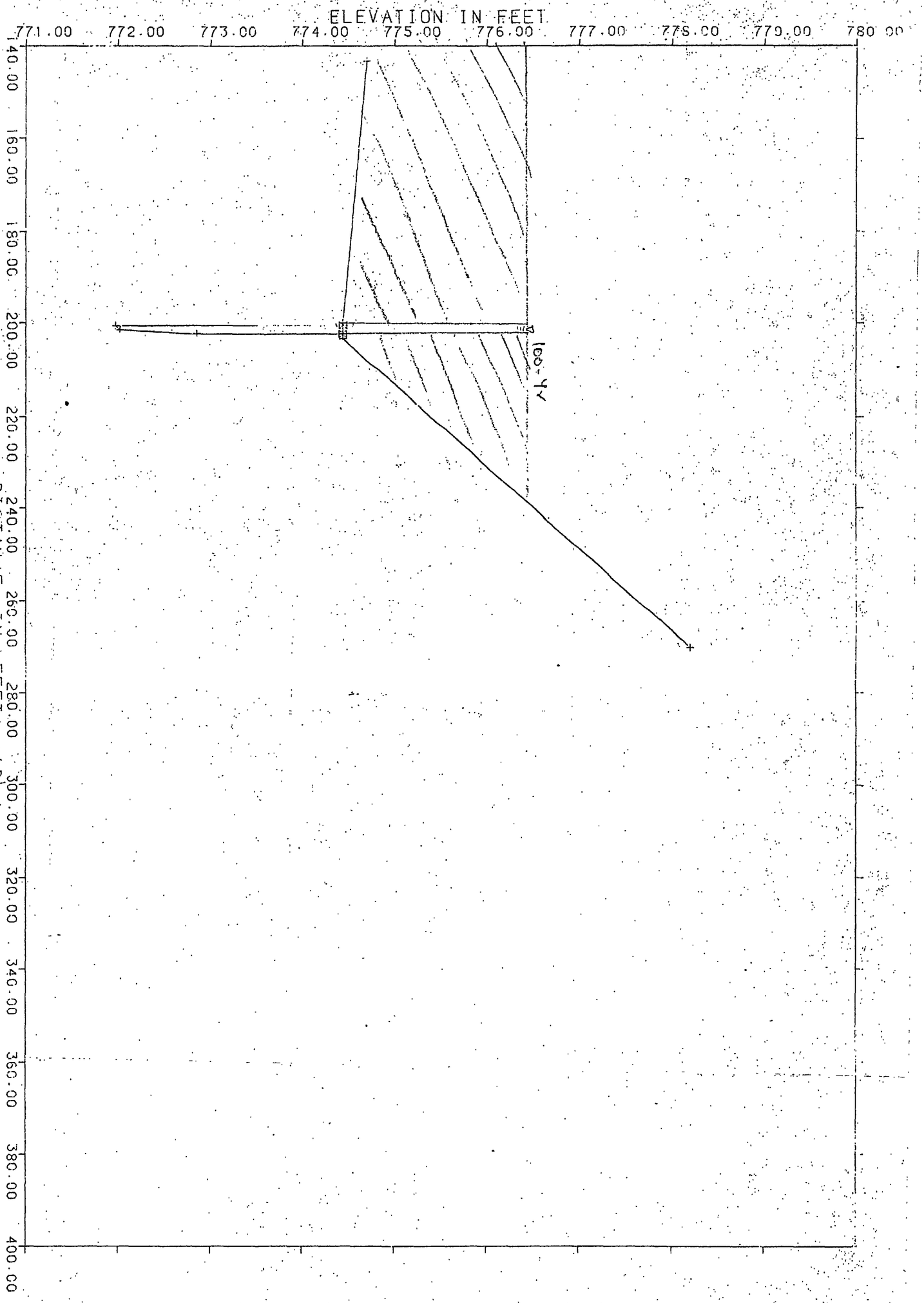
SECTION NO. 27.700



SECTION NO. 6.100

FLOOD INSURANCE STUDY

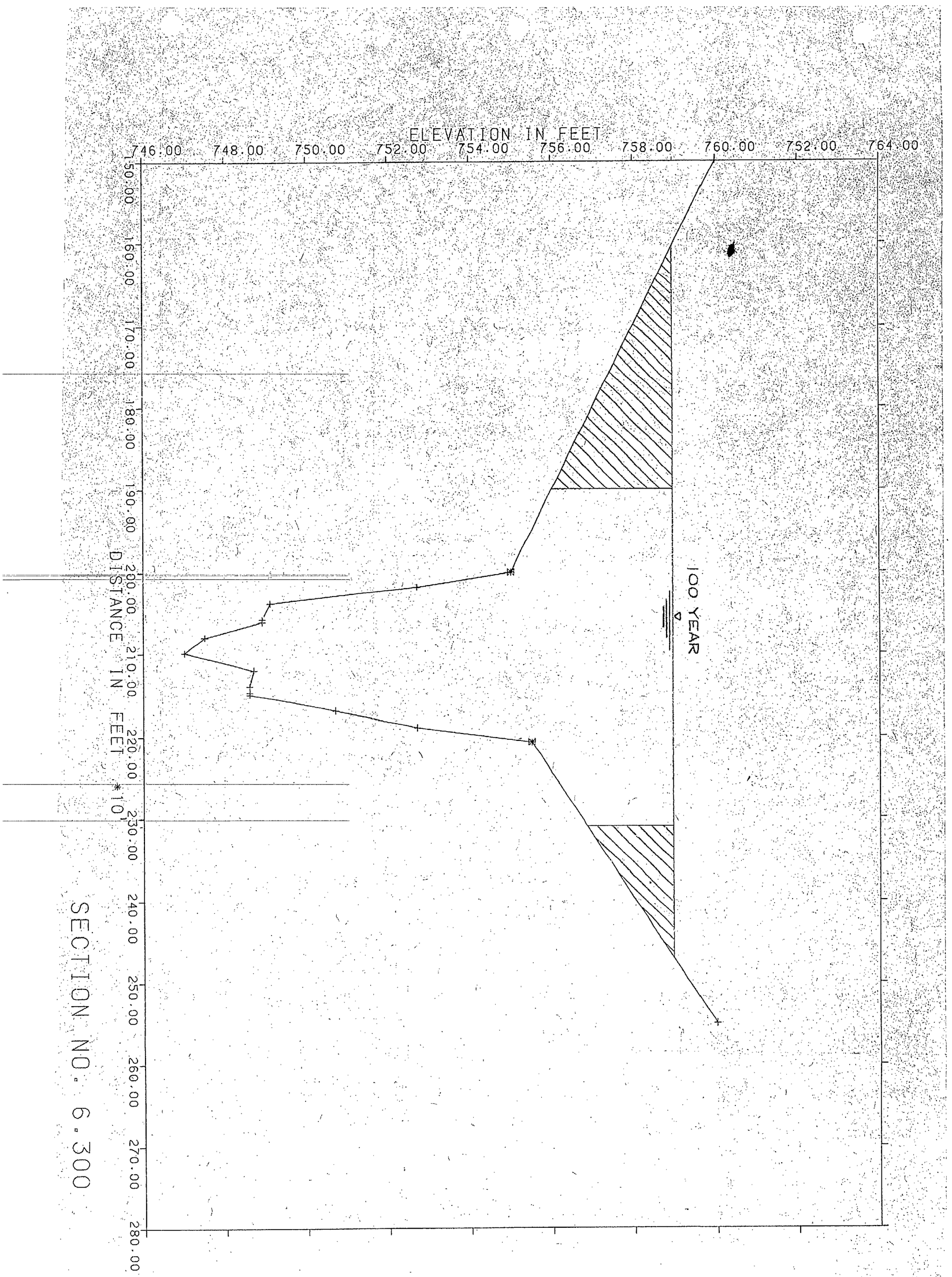
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 27.800

FLOOD INSURANCE STUDY

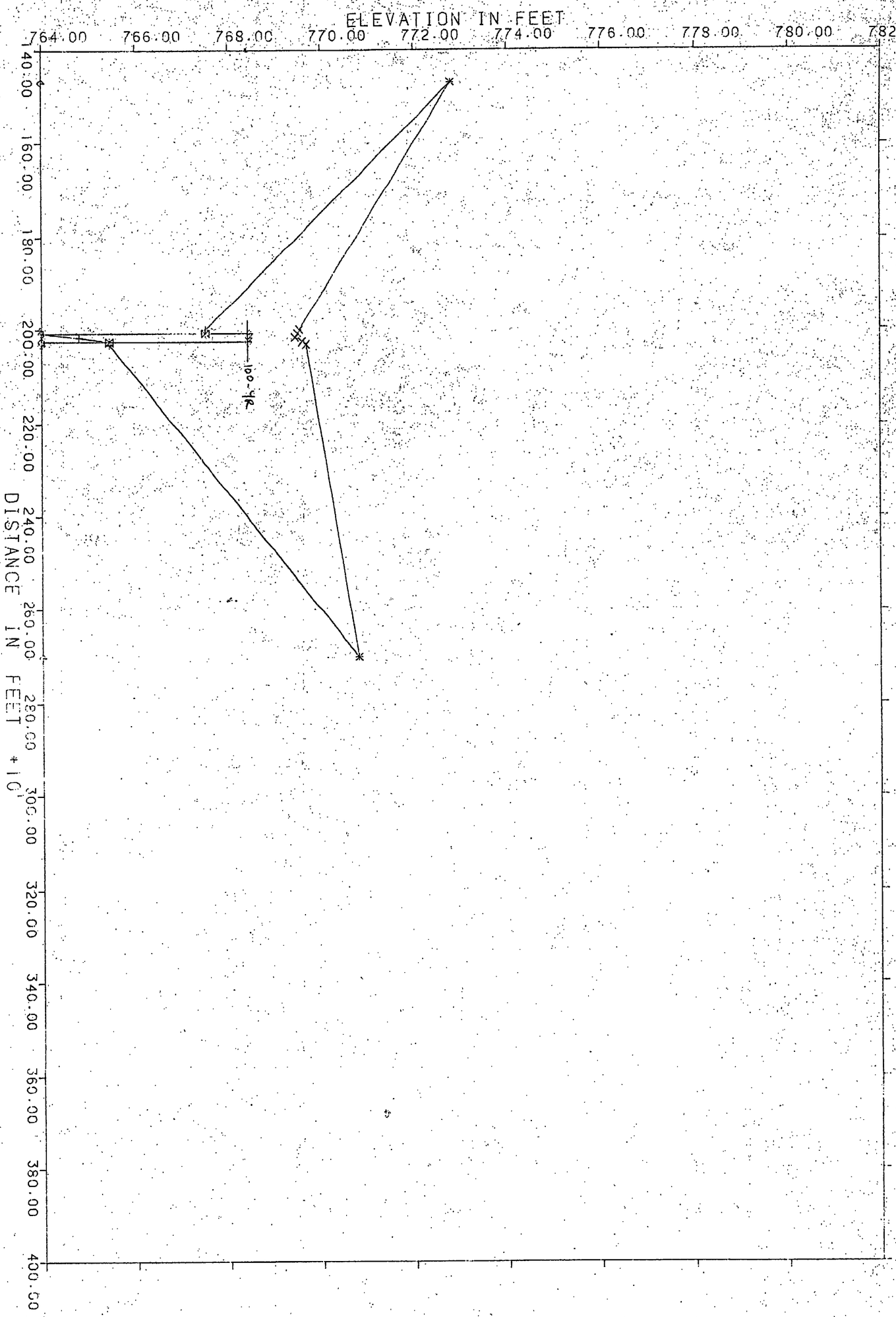
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 6.300

FLOOD INSURANCE STUDY

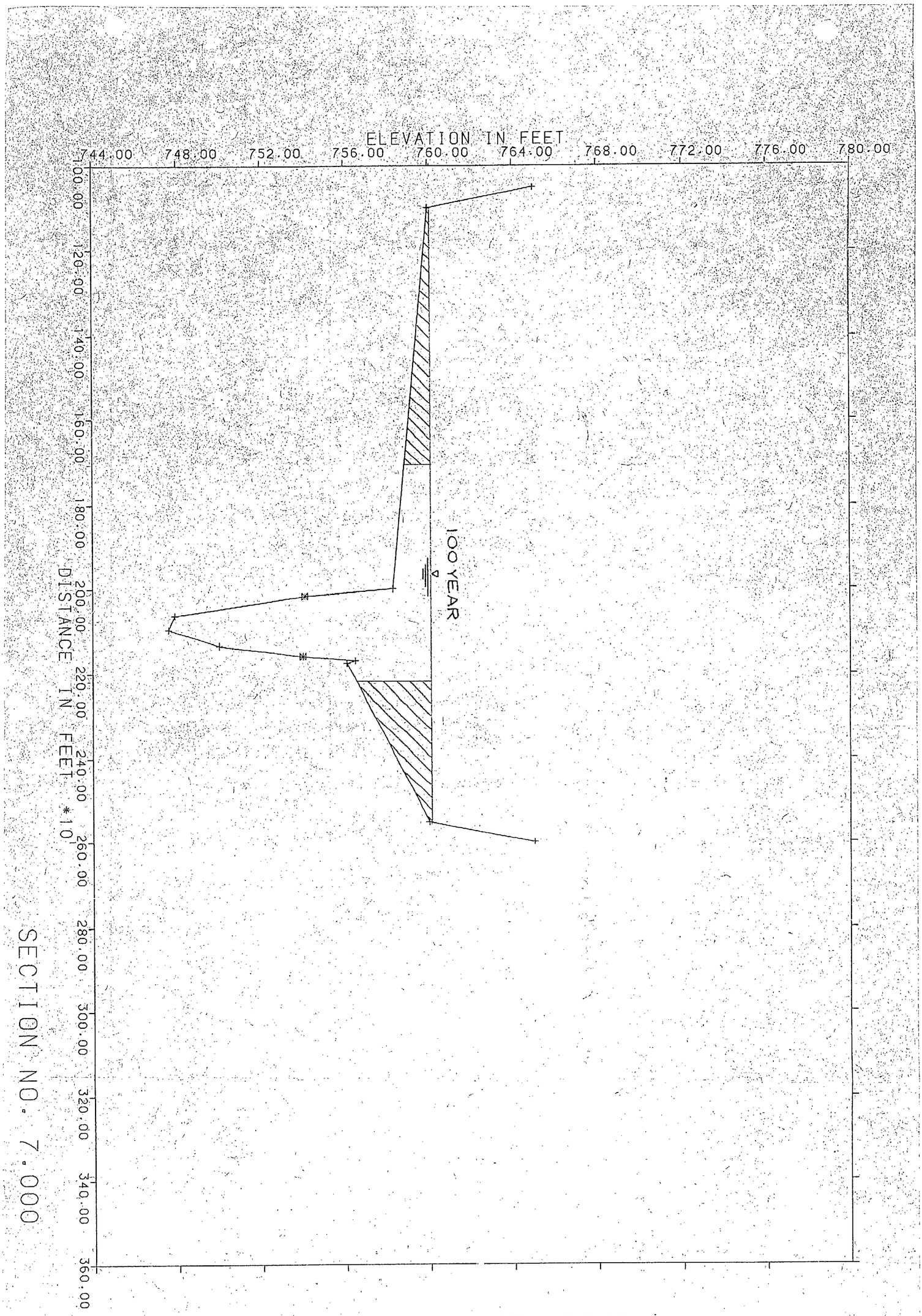
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 24.900

FLOOD INSURANCE STUDY

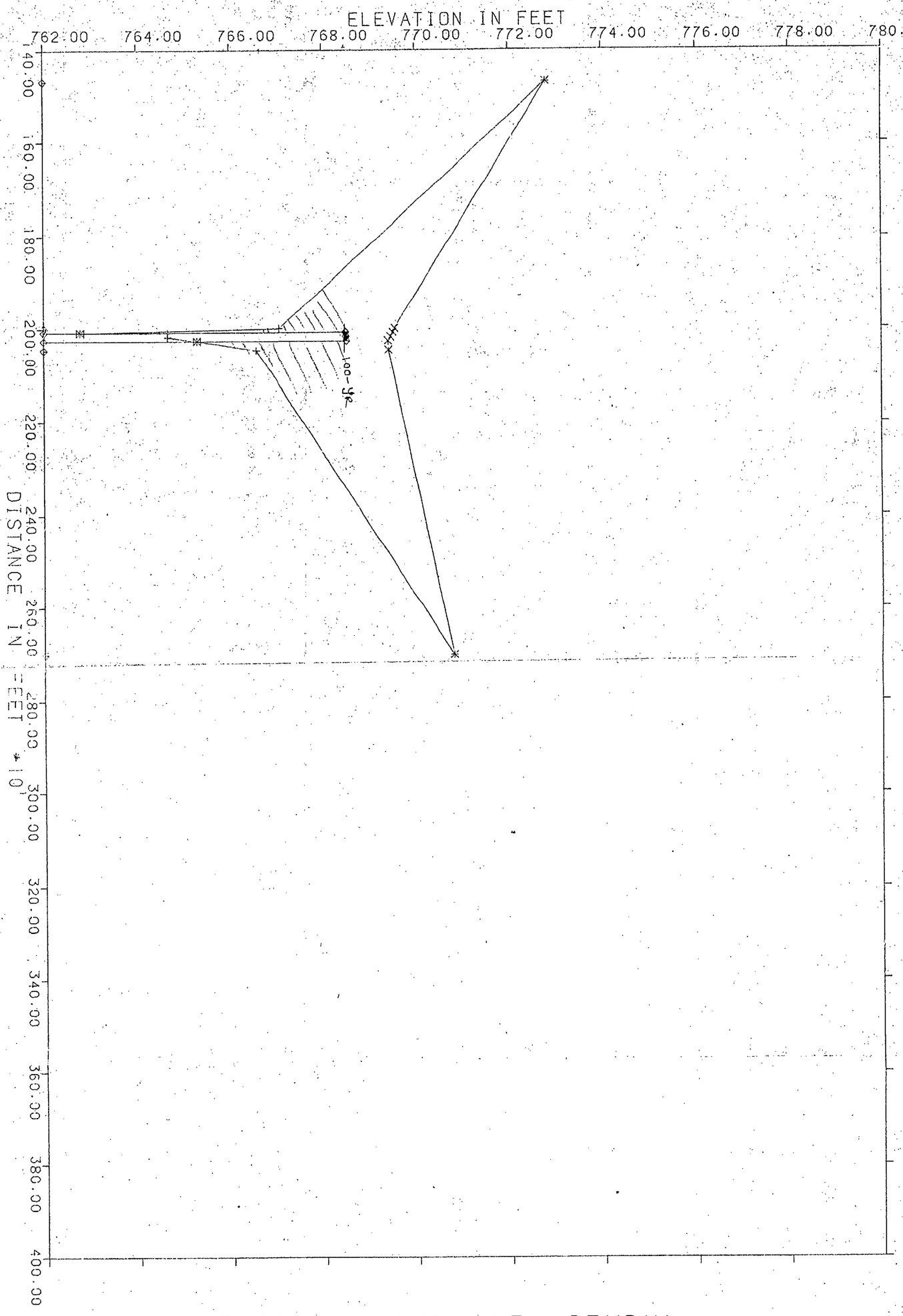
DAVIS CREEK AT KALAMAZOO TWP.



SECTION NO. 7.000

FLOOD INSURANCE STUDY

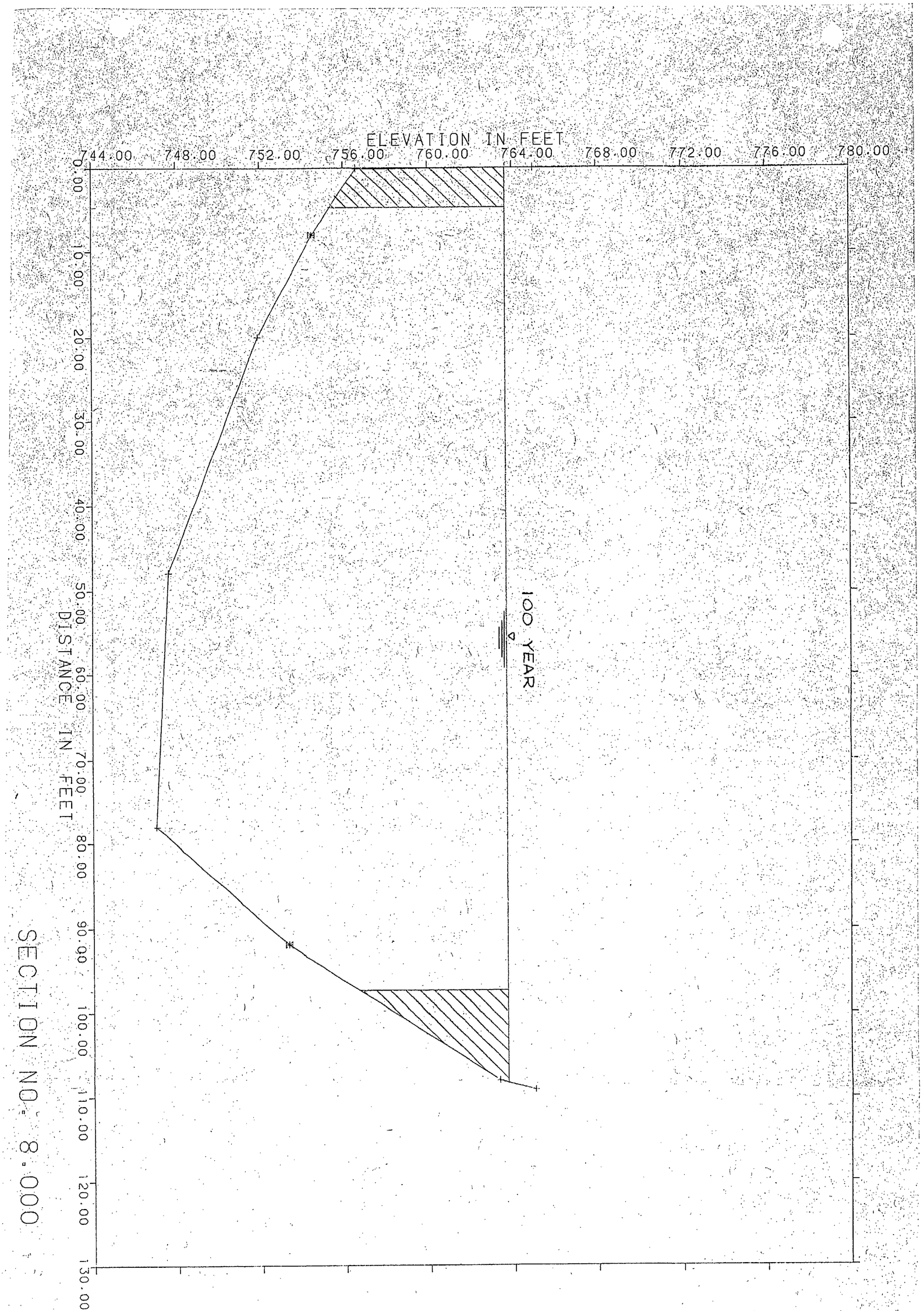
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 25.000

FLOOD INSURANCE STUDY

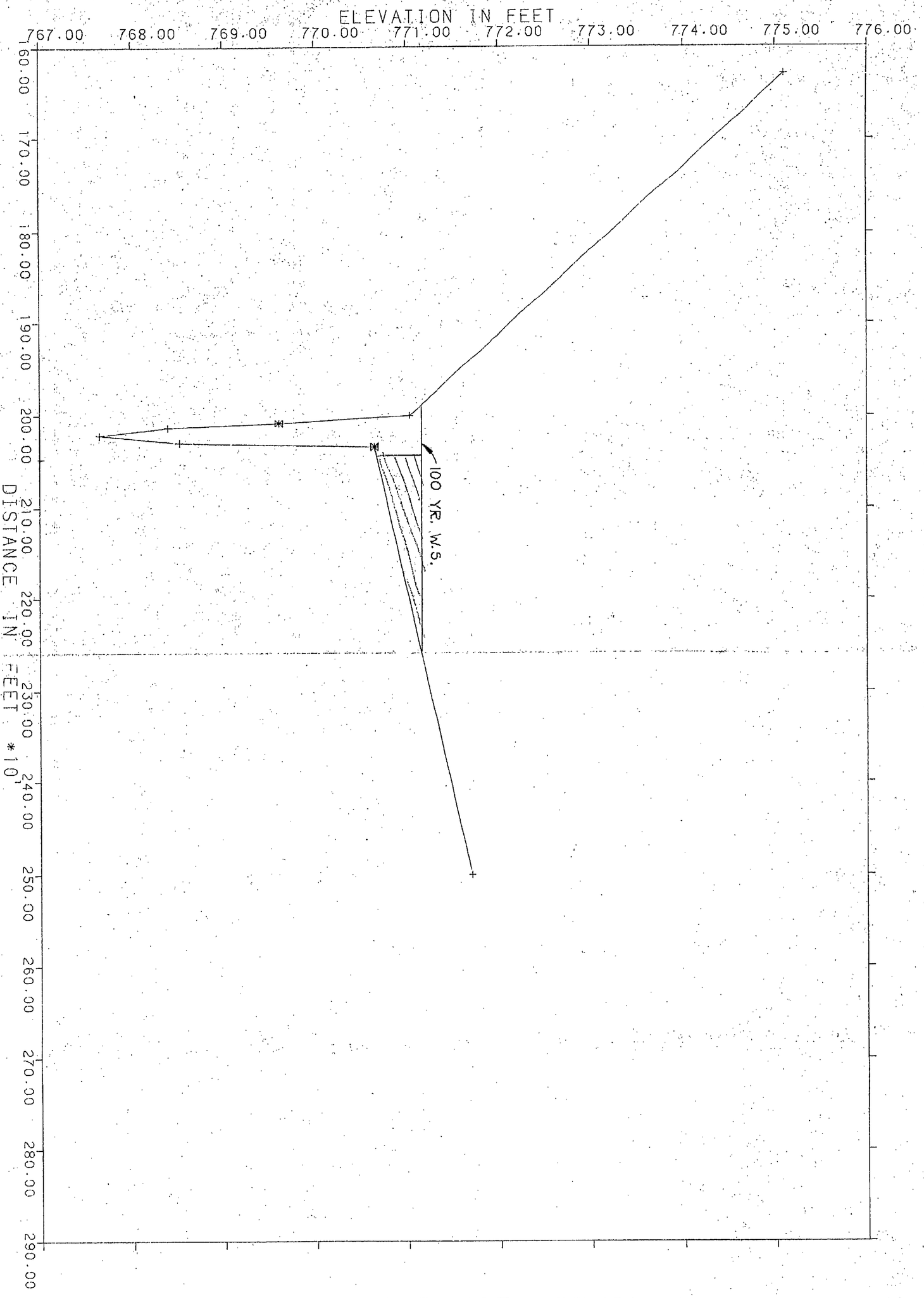
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 8.000

FLOOD INSURANCE STUDY

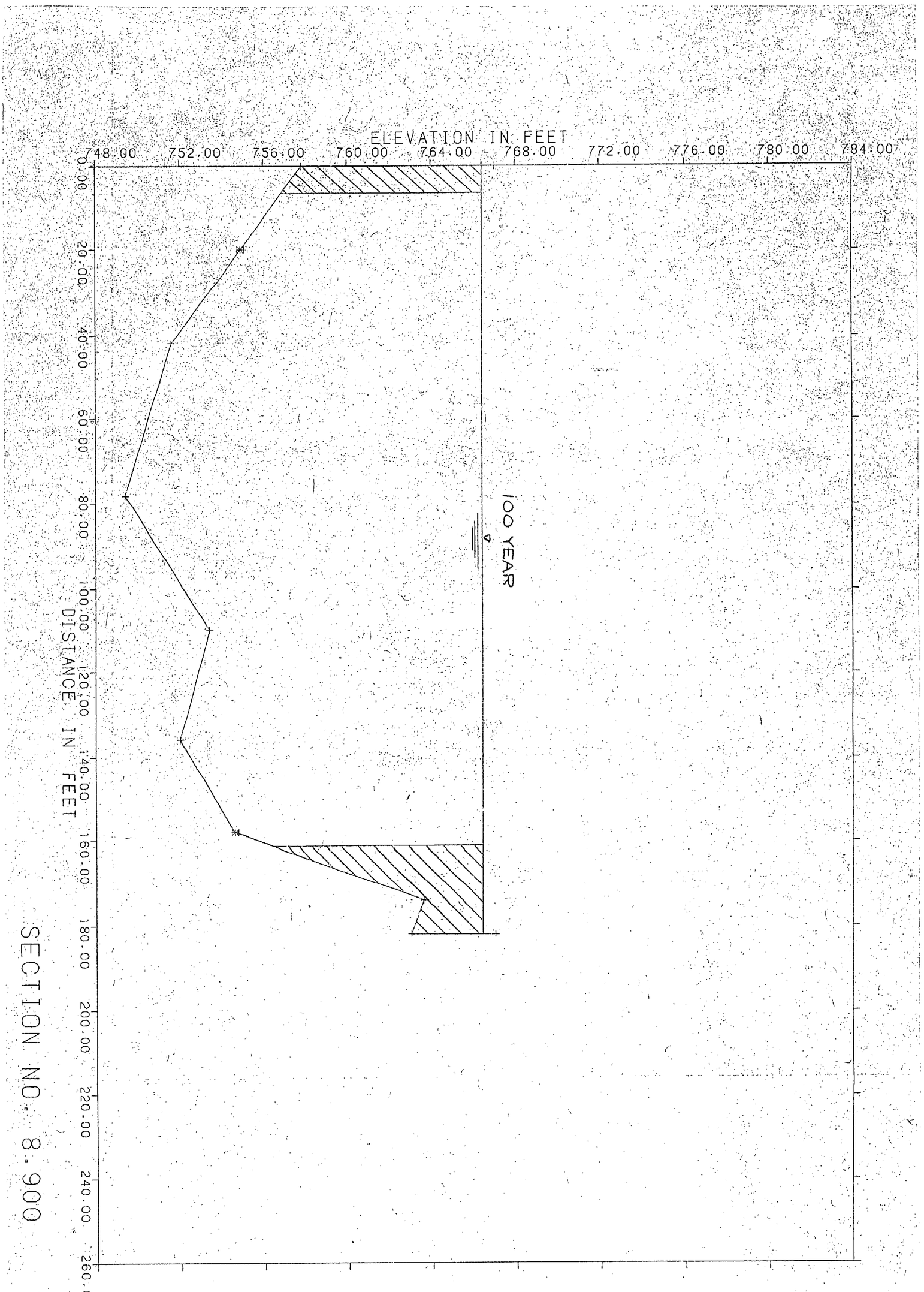
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 25.700

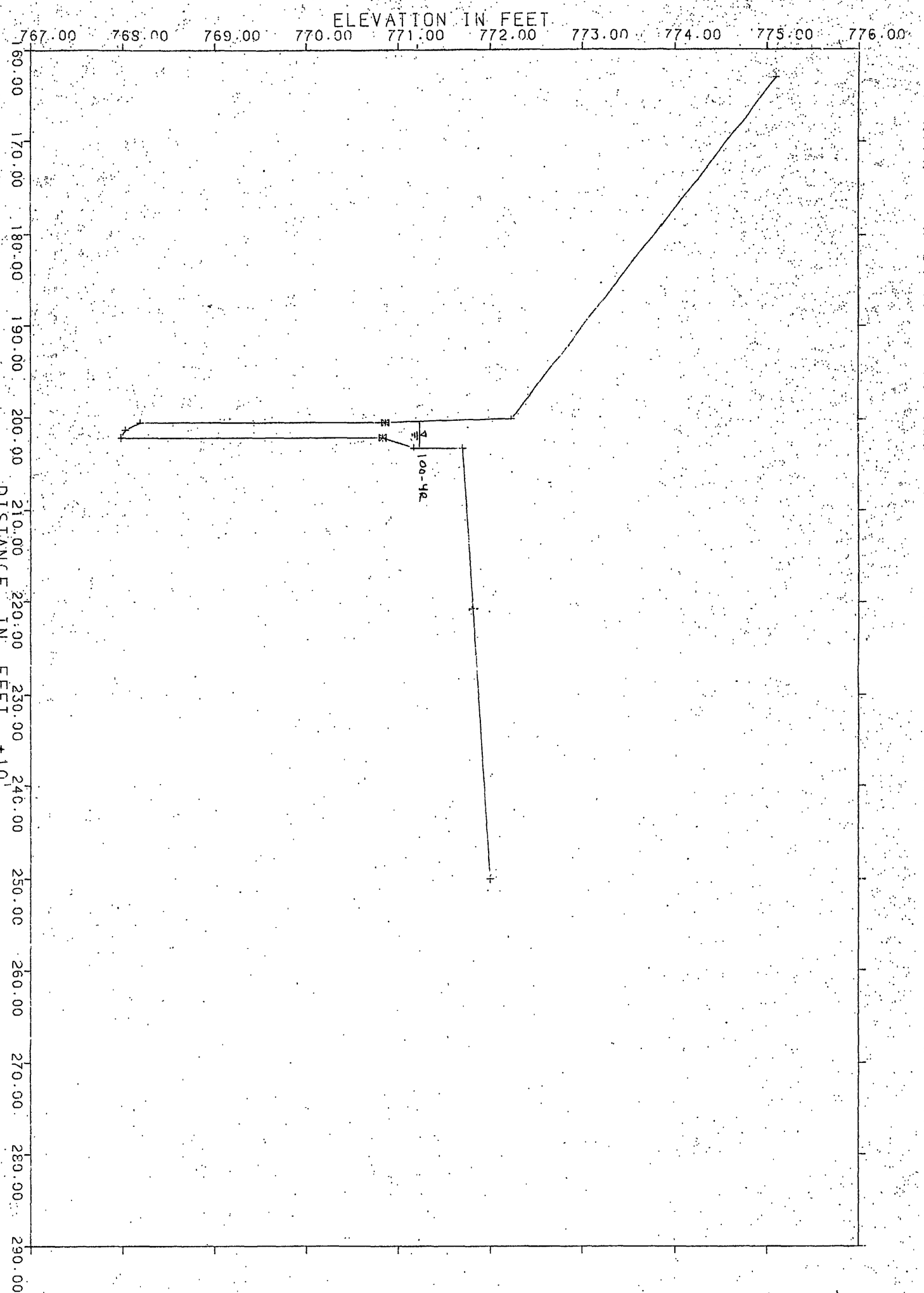
FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP



FLOOD INSURANCE STUDY

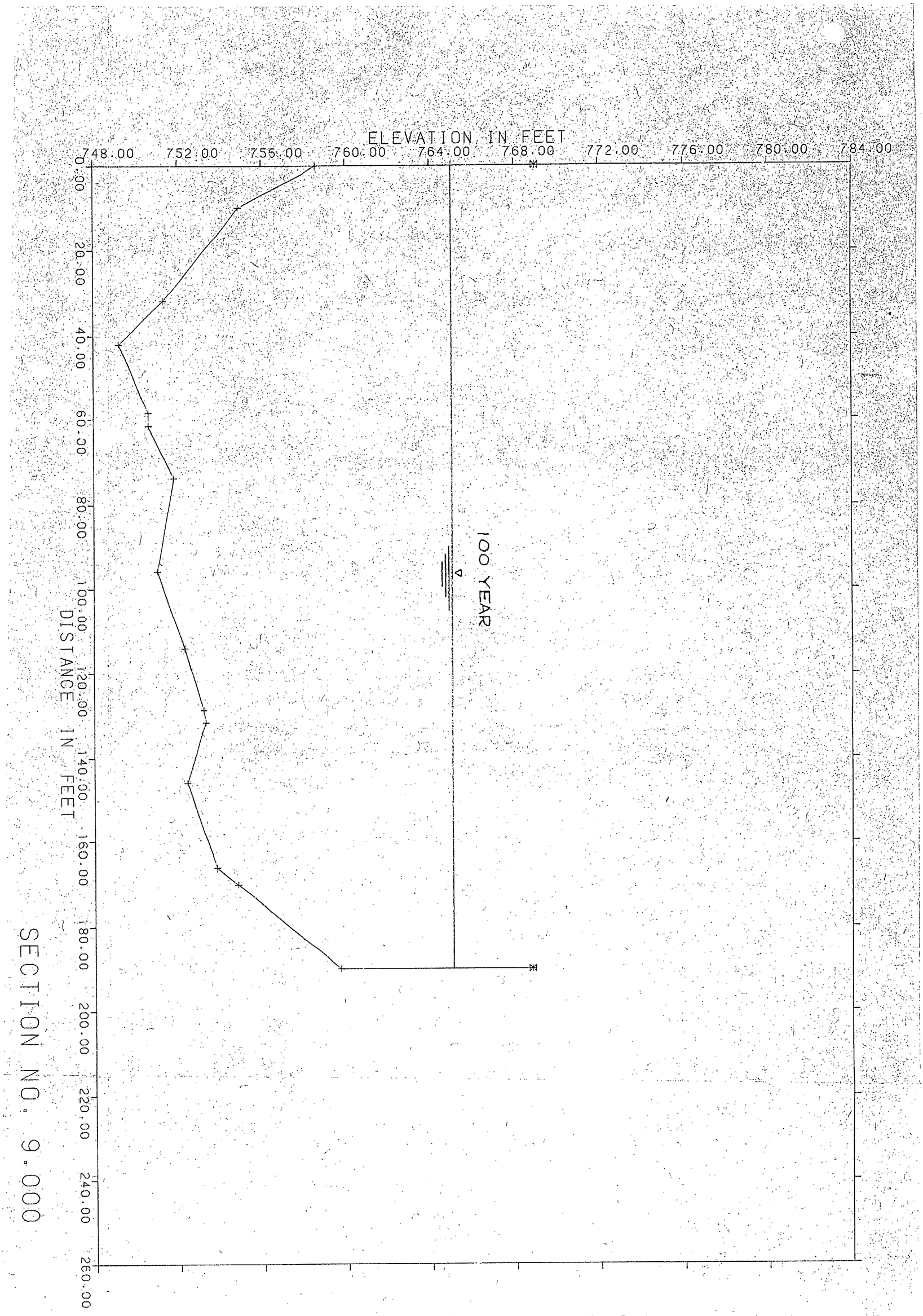
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 25.800

FLOOD INSURANCE STUDY

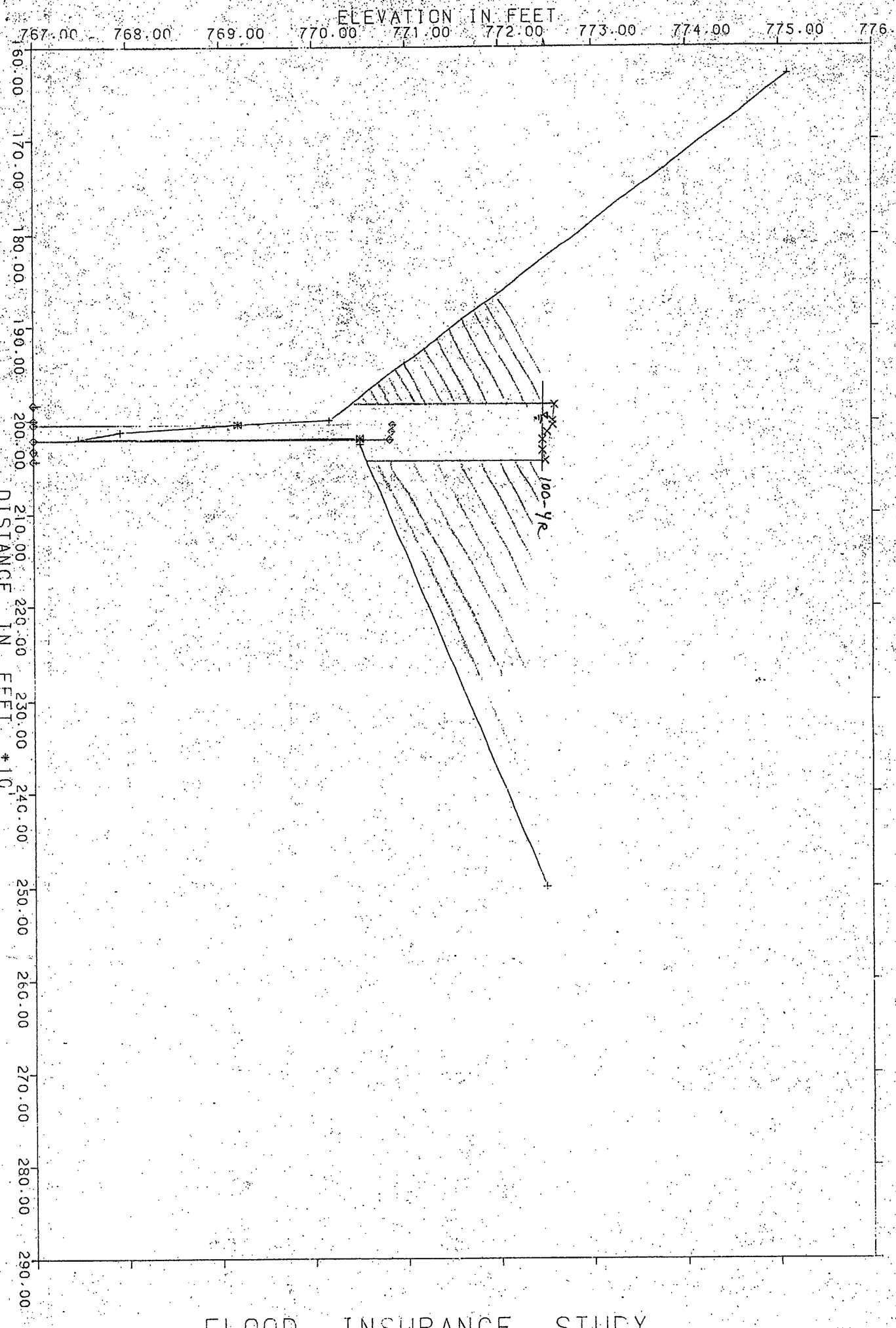
DAVIS CREEK AT KALAMAZOO TWP.



SECTION NO. 9.000

FLOOD INSURANCE STUDY

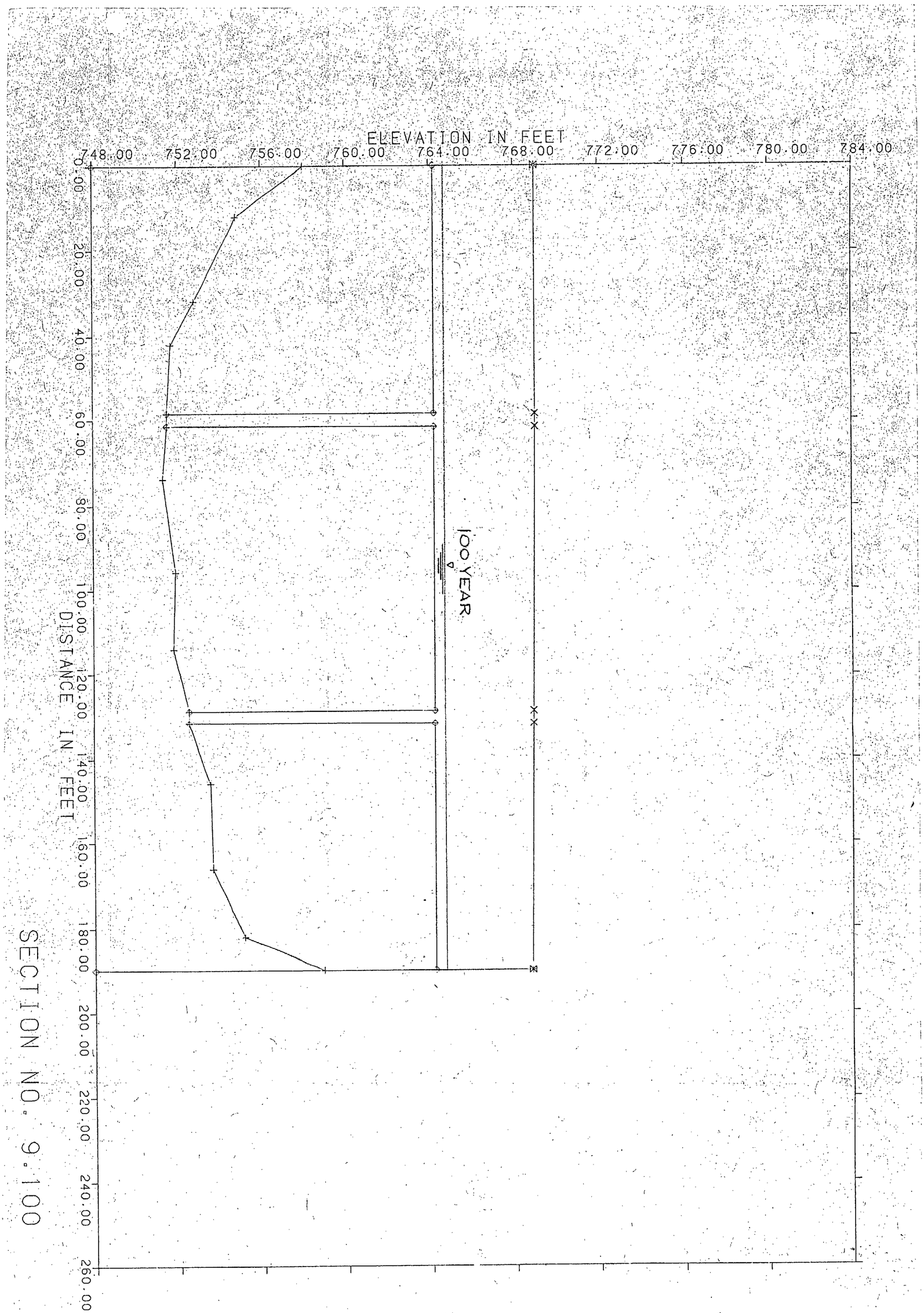
KALAMAZOO RIVER AT KALAMAZ.



SECTION NO. 26.000

FLOOD INSURANCE STUDY

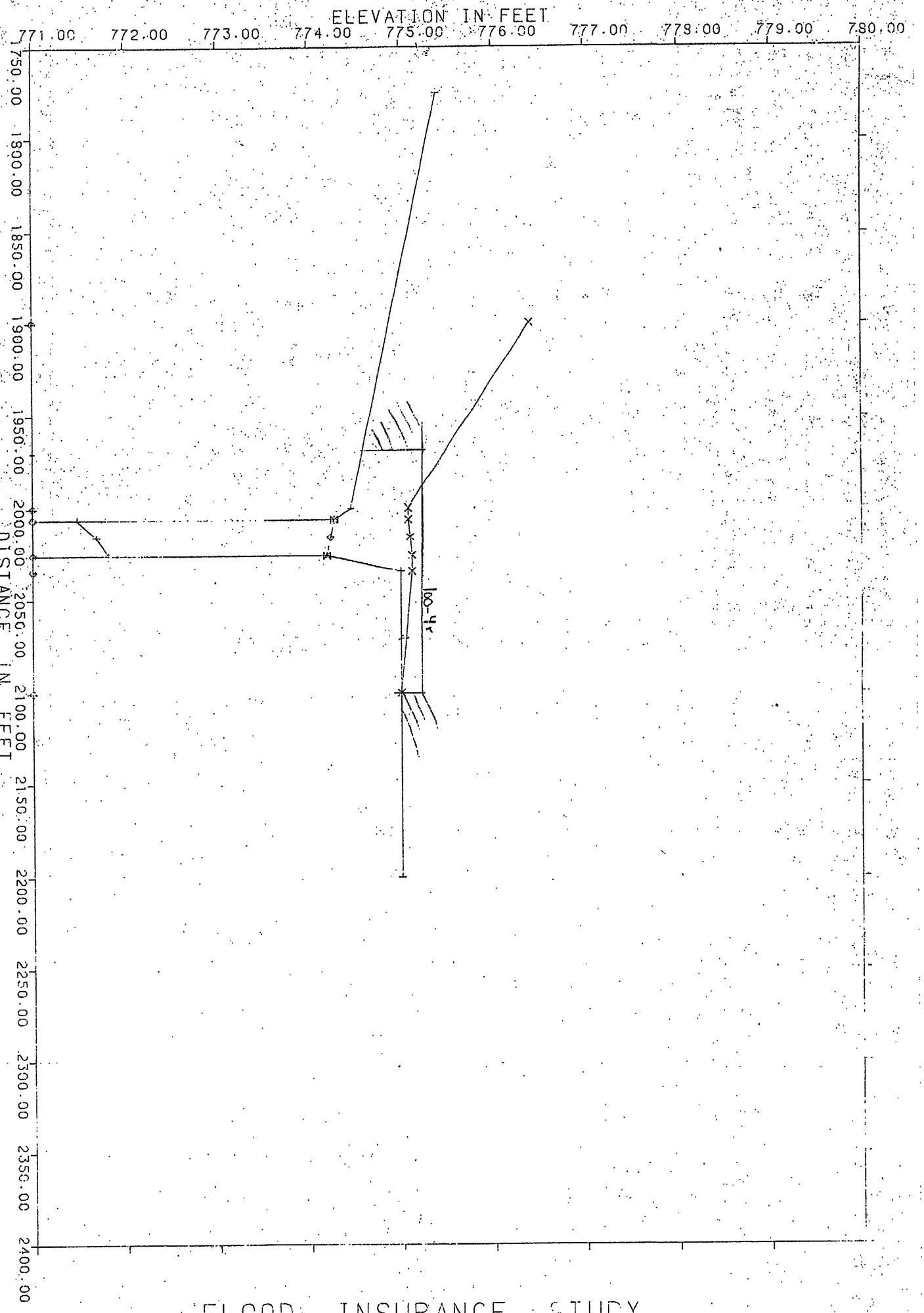
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 9.100

FLOOD INSURANCE STUDY

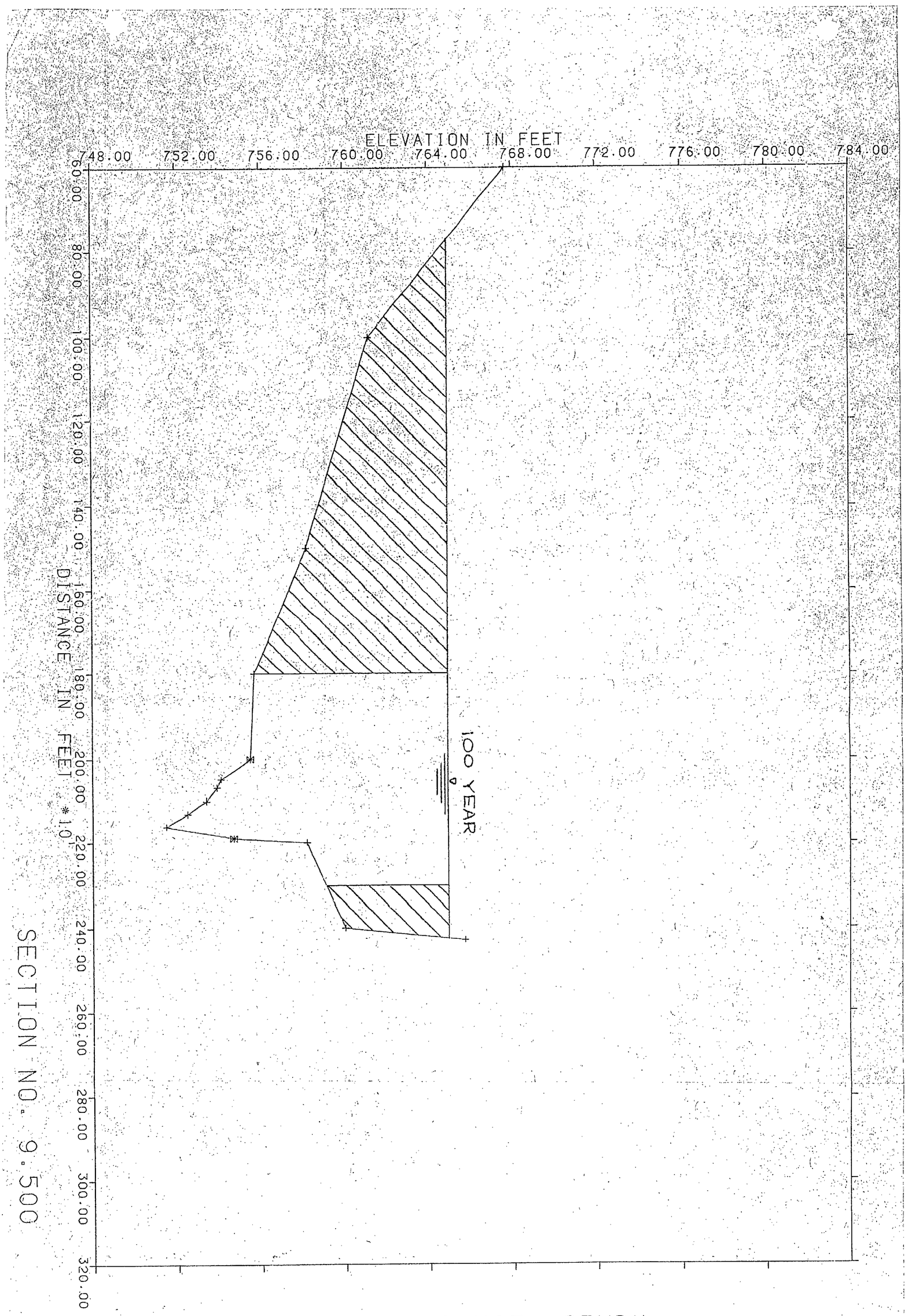
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 27.000

FLOOD INSURANCE STUDY

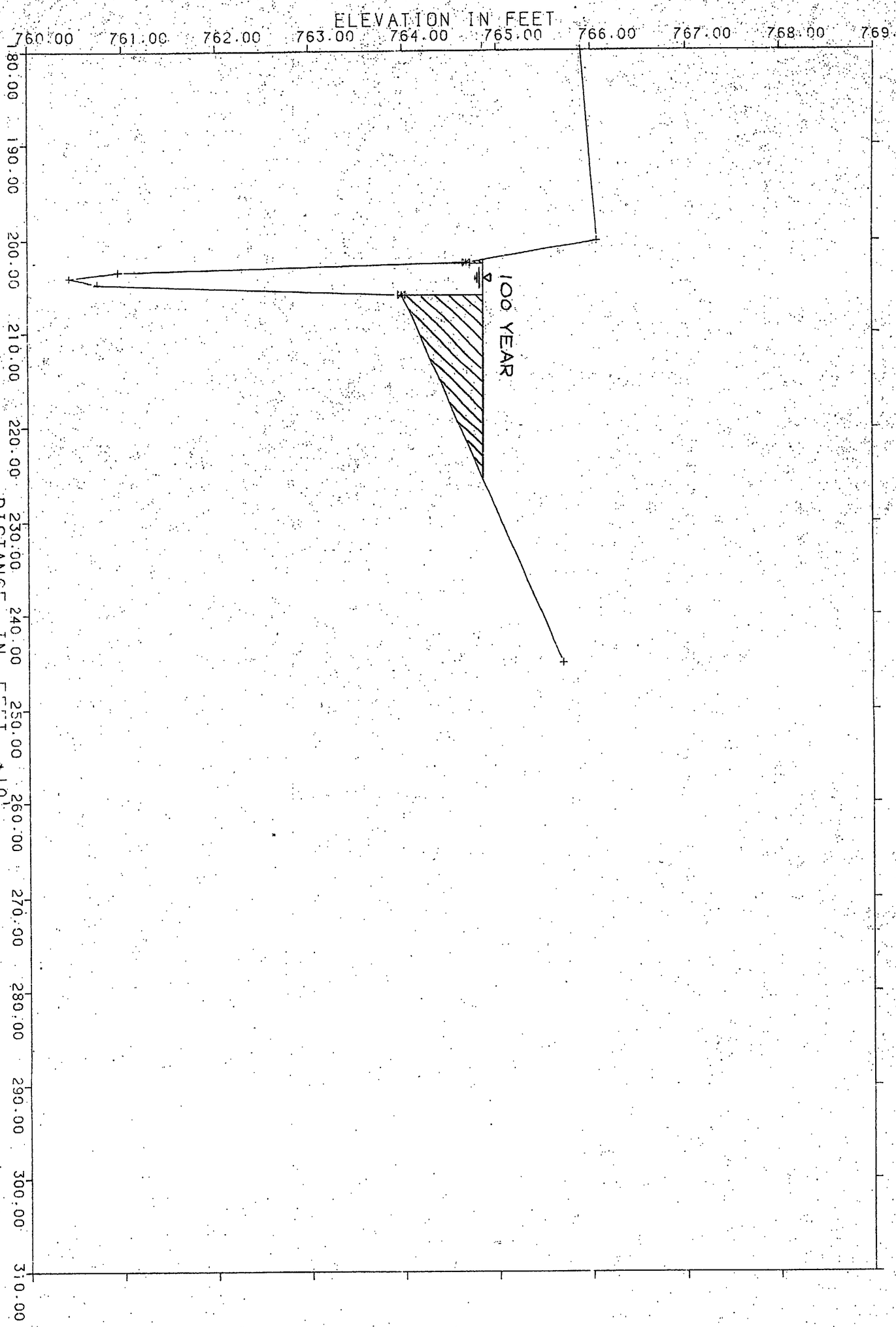
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 9.500

FLOOD INSURANCE STUDY

KALAMAZOO RIVER, AT KALAMAZ



SECTION NO. 22.700

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

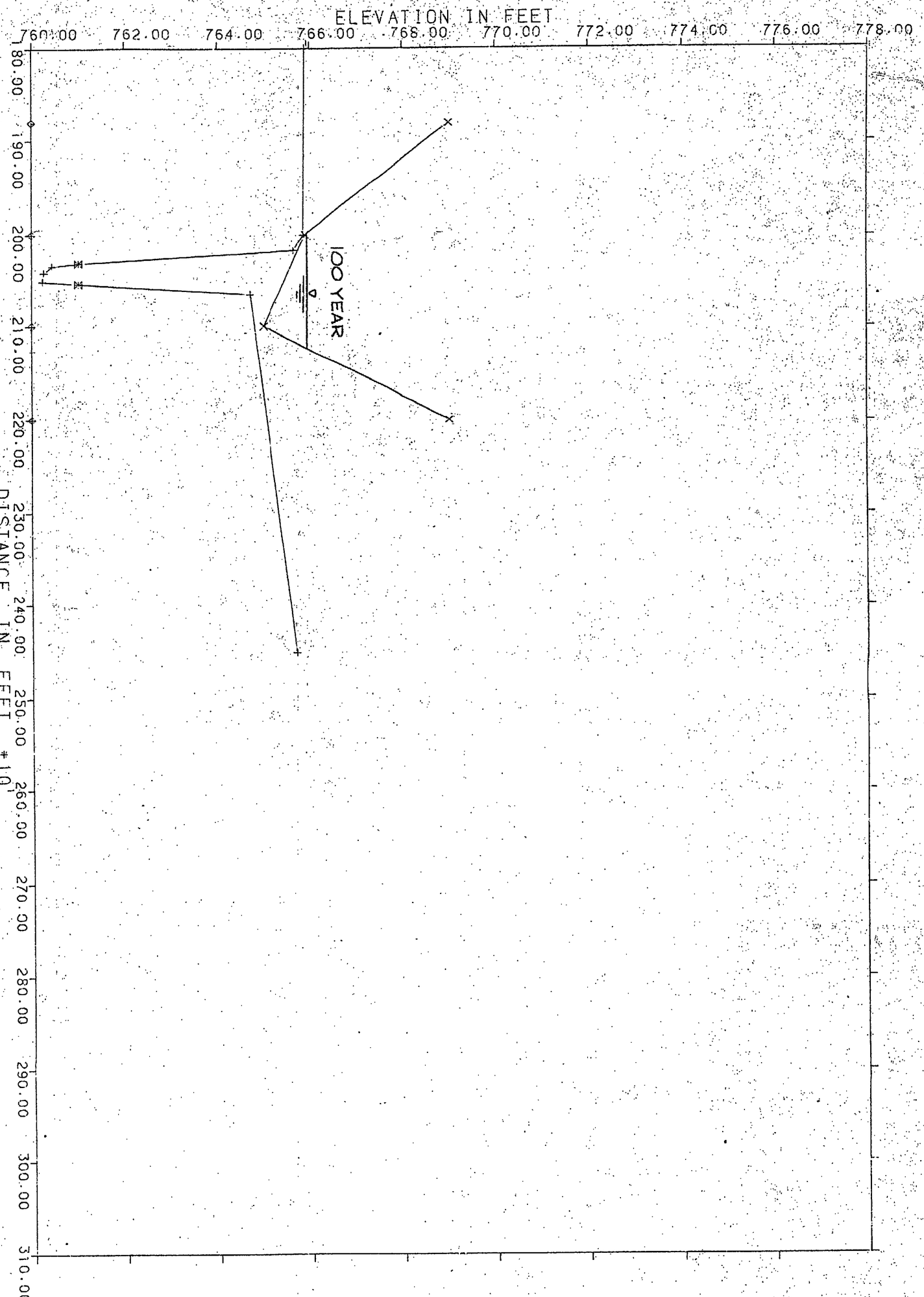
100 YEAR

ELEVATION IN FEET
748.00
752.00
756.00
760.00
764.00
768.00
772.00
776.00
780.00
784.00

60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00

DISTANCE IN FEET *10'

SECTION NO. 10.000



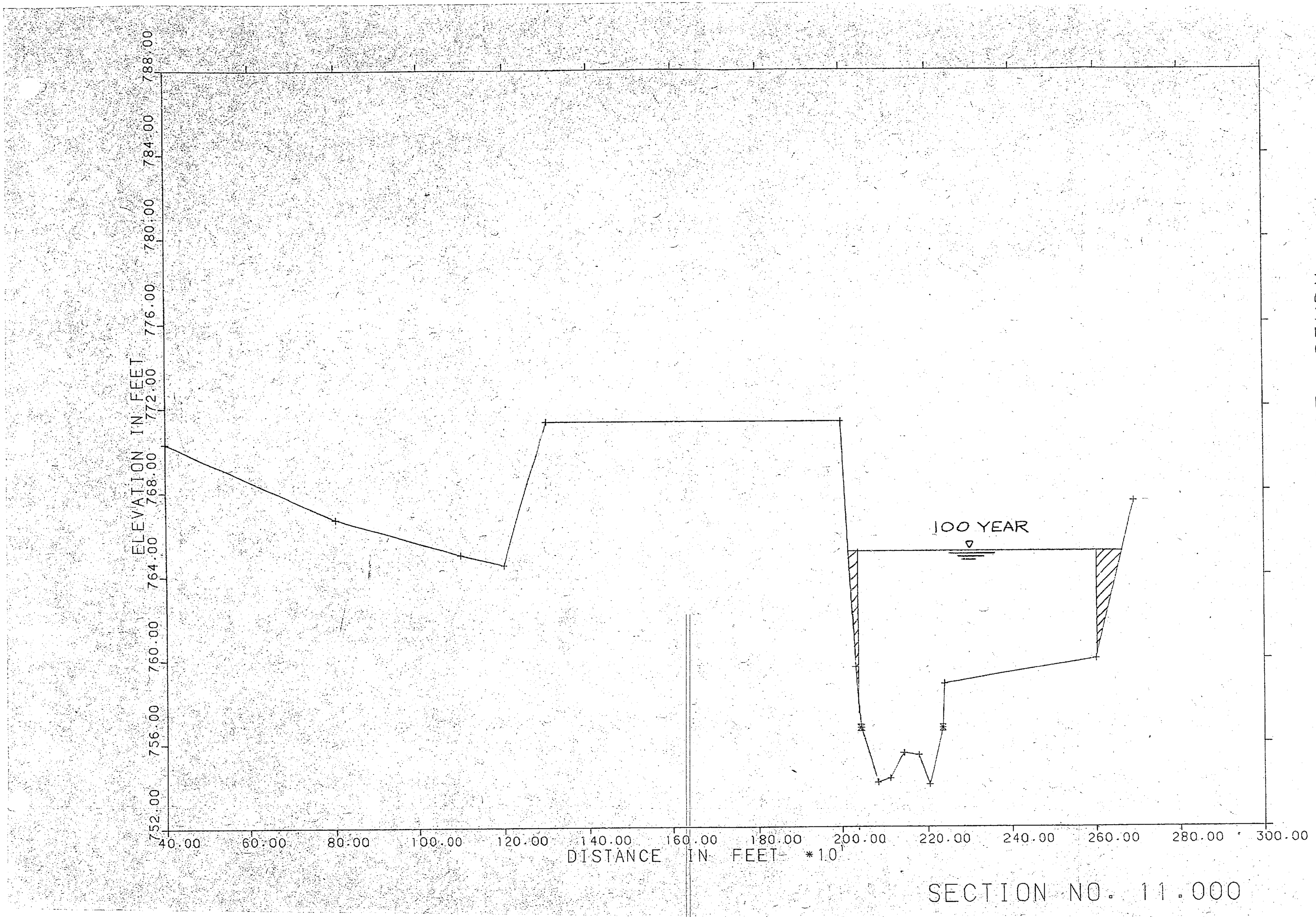
SECTION NO. 23.000

FLOOD INSURANCE STUDY

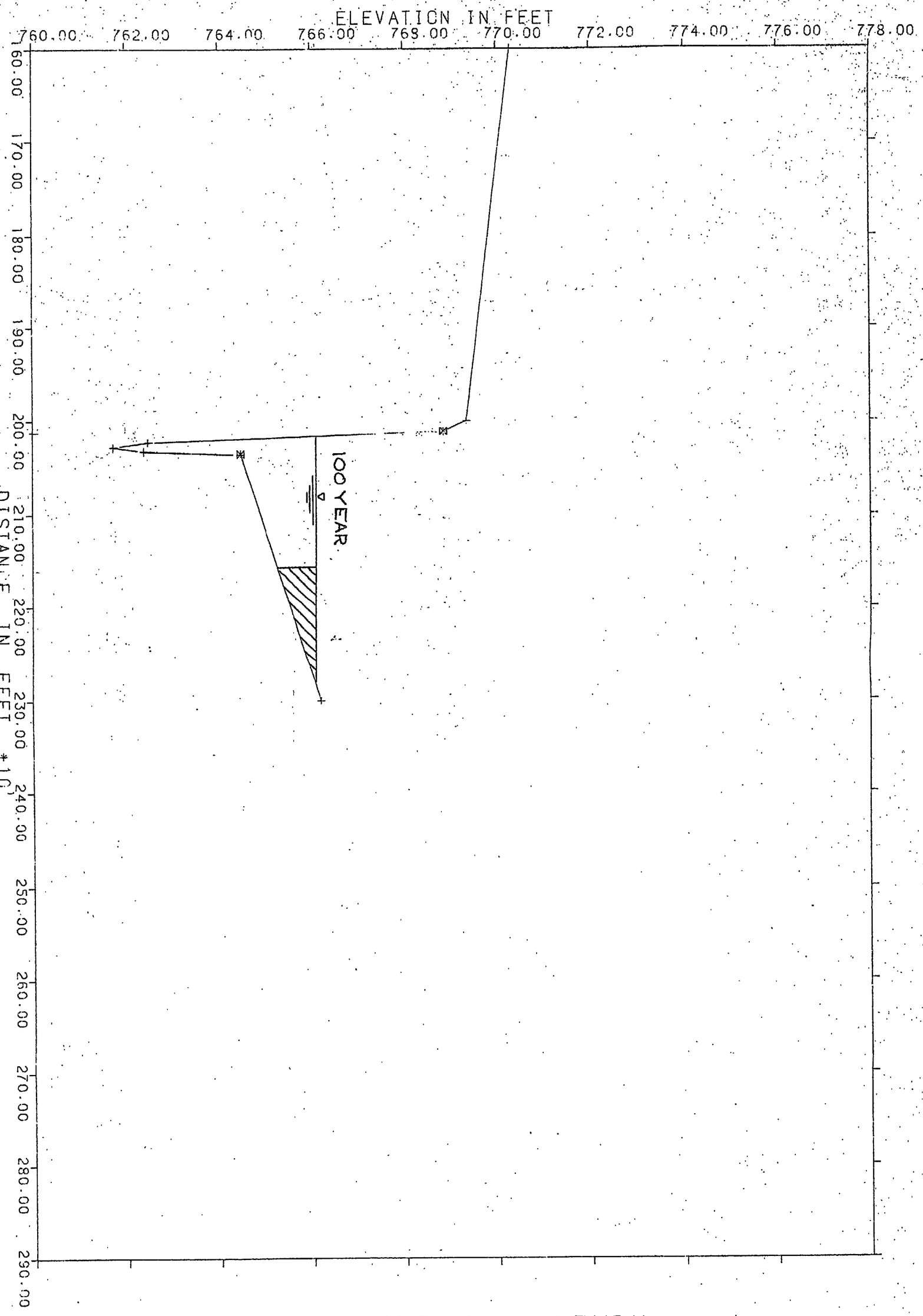
DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



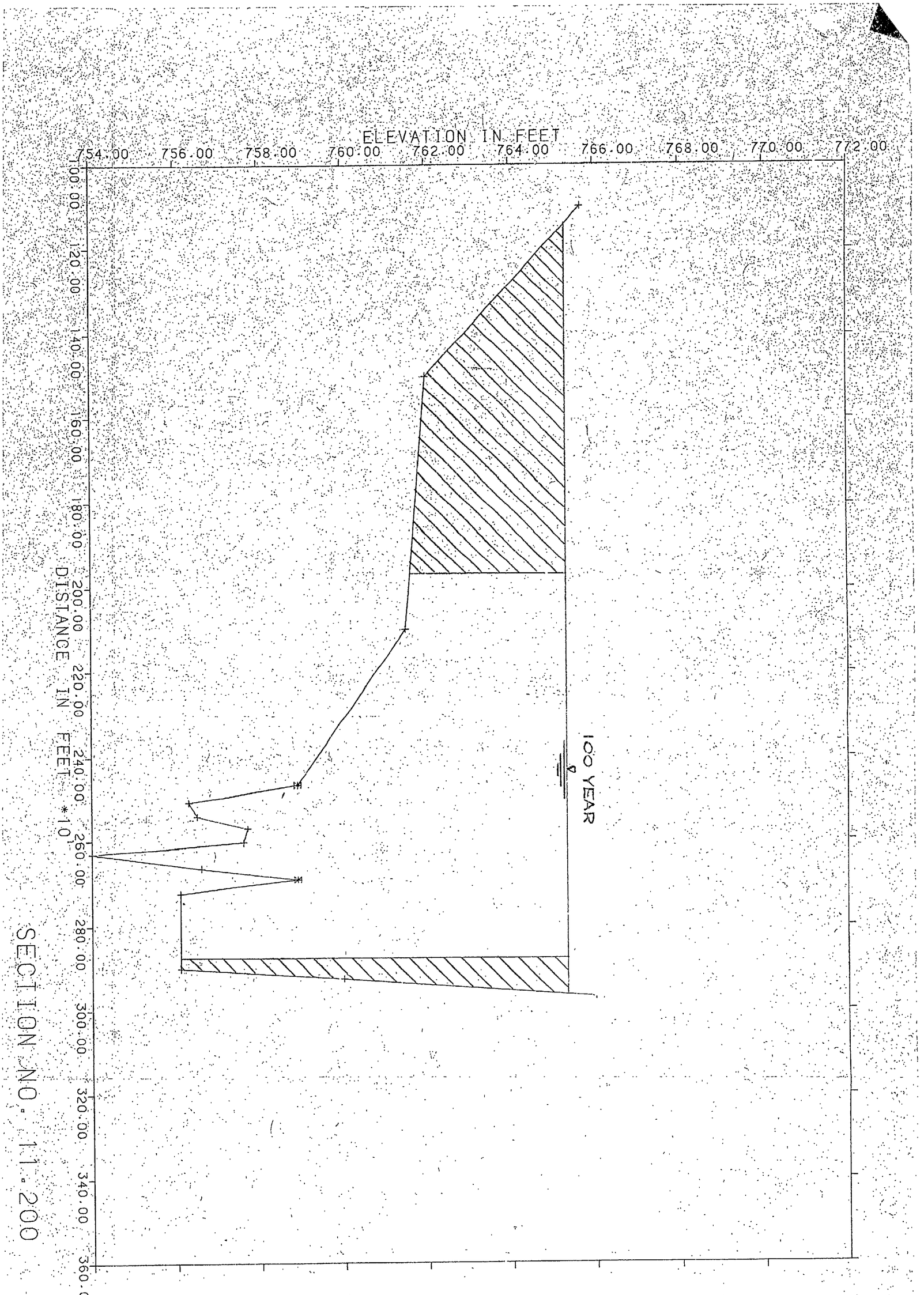
SECTION NO. 11.000



SECTION NO. 23.700

FLOOD INSURANCE STUDY

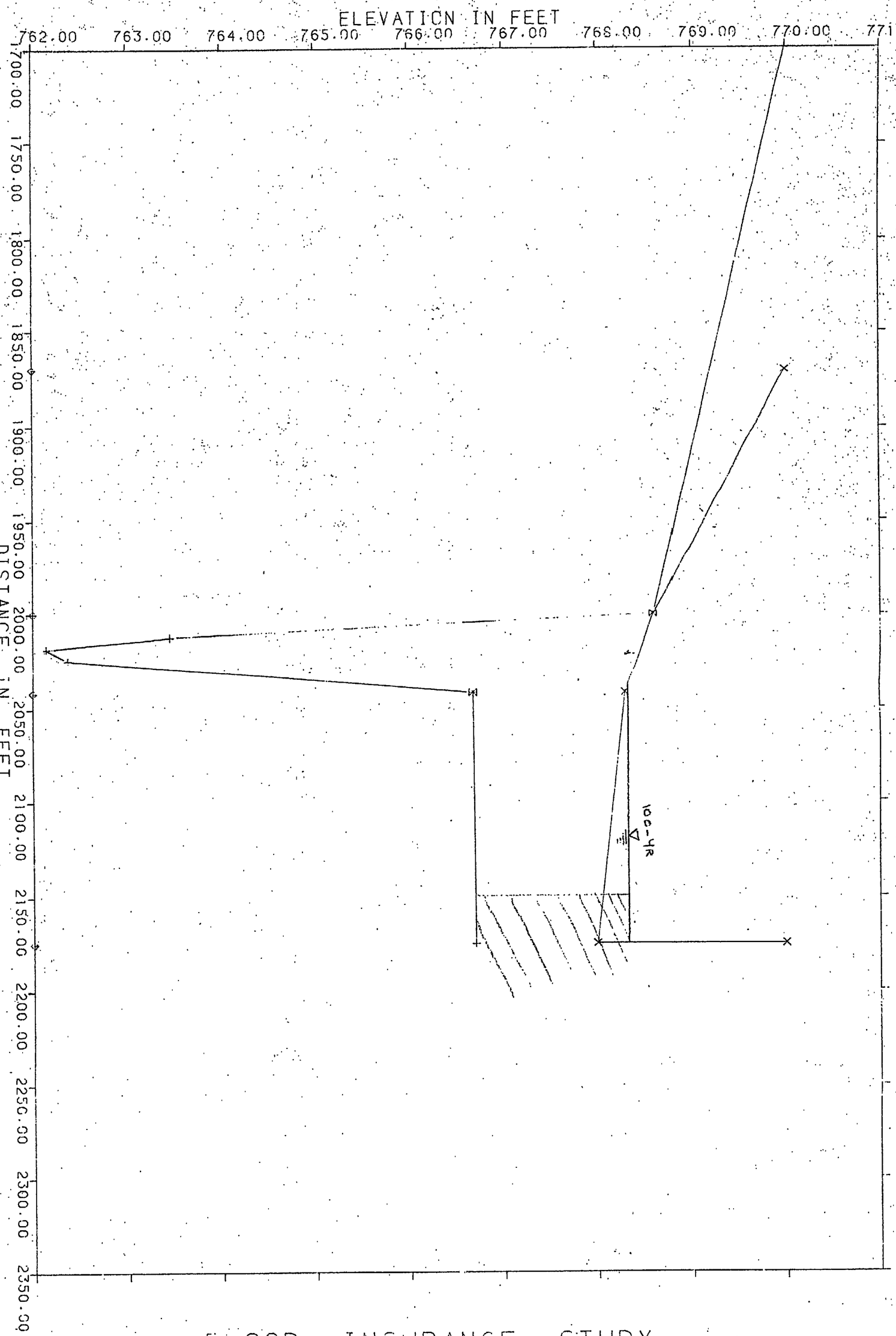
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 11.200

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



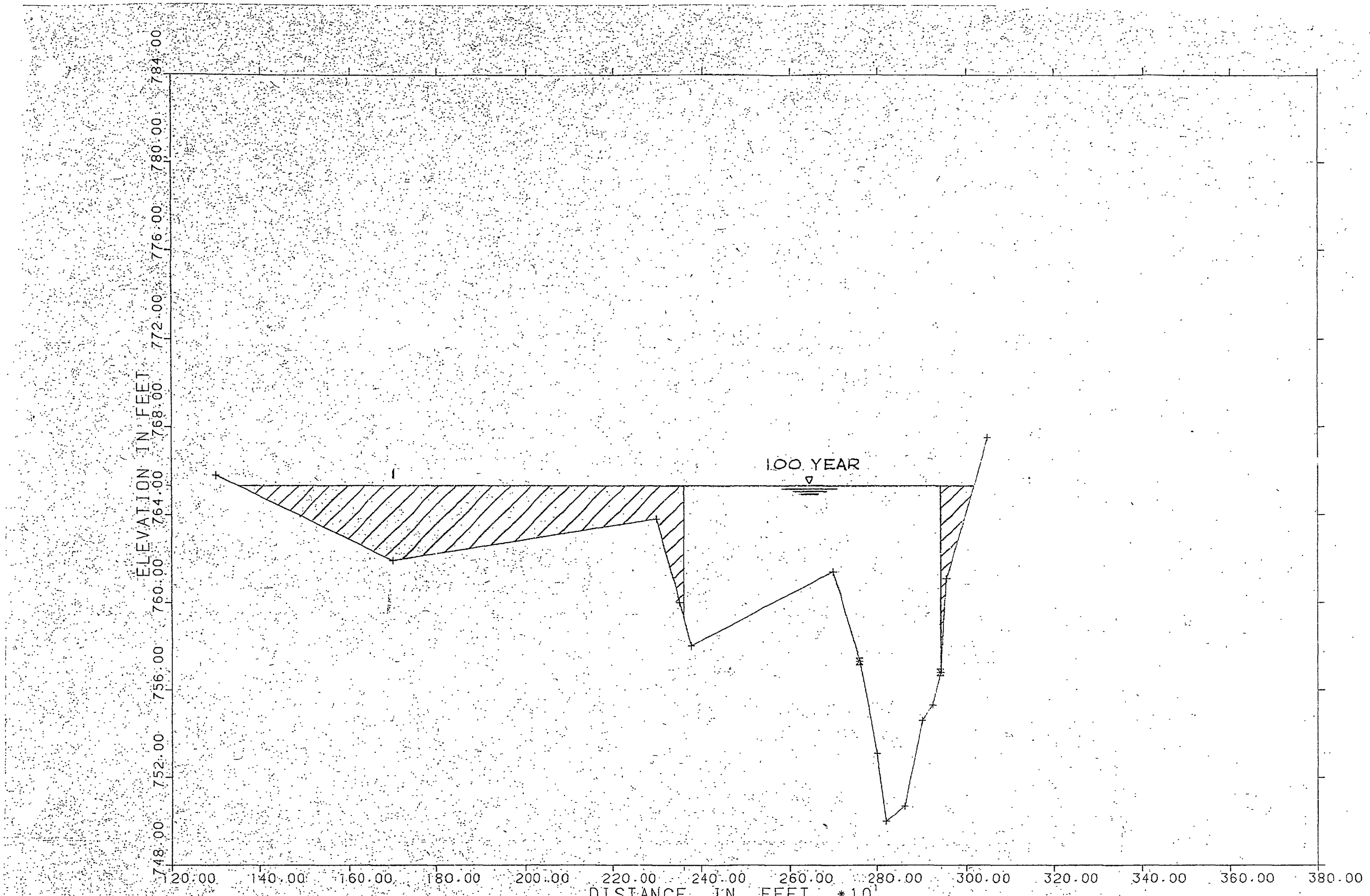
SECTION NO. 24.000

FLOOD INSURANCE STUDY

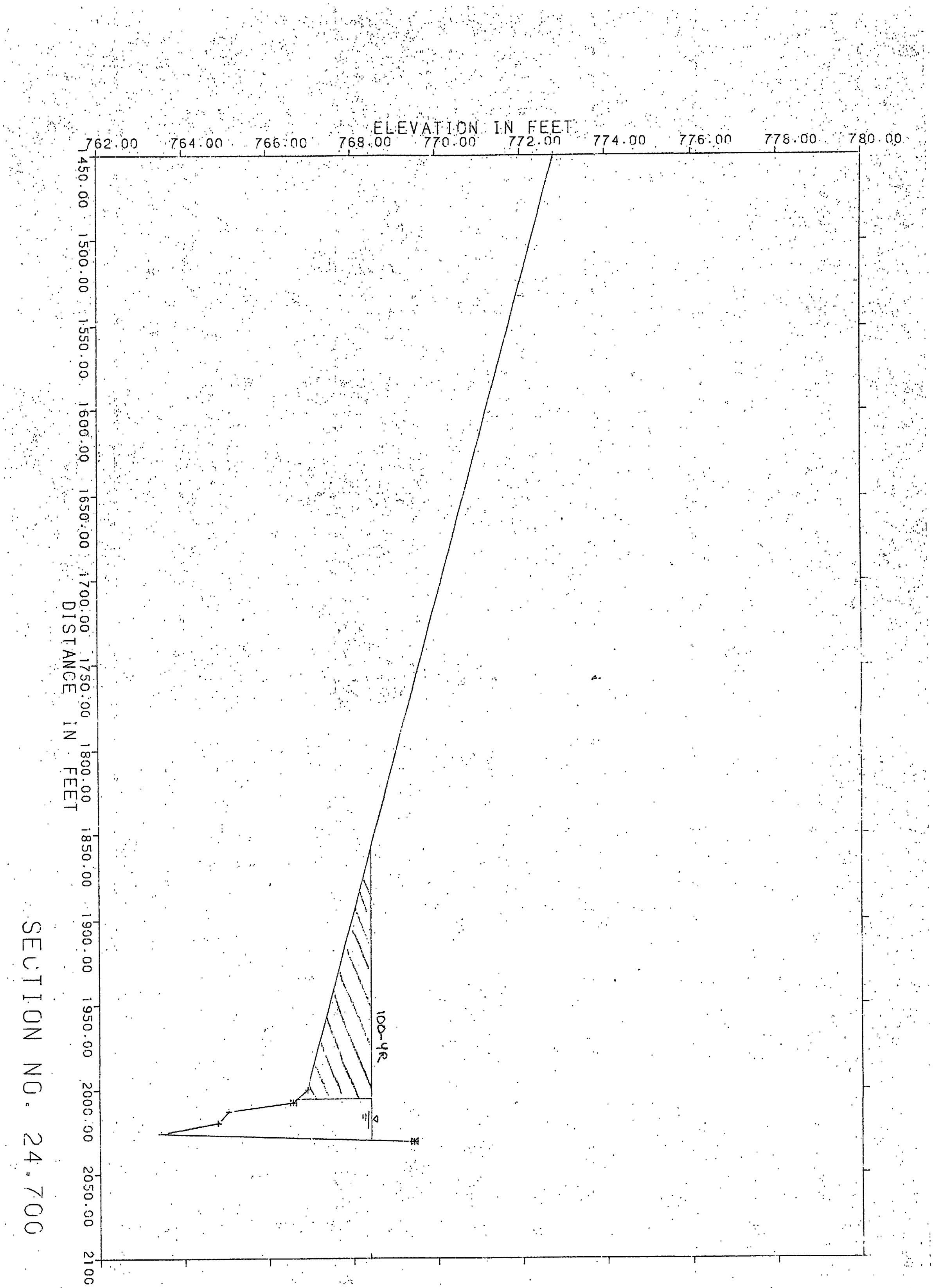
DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



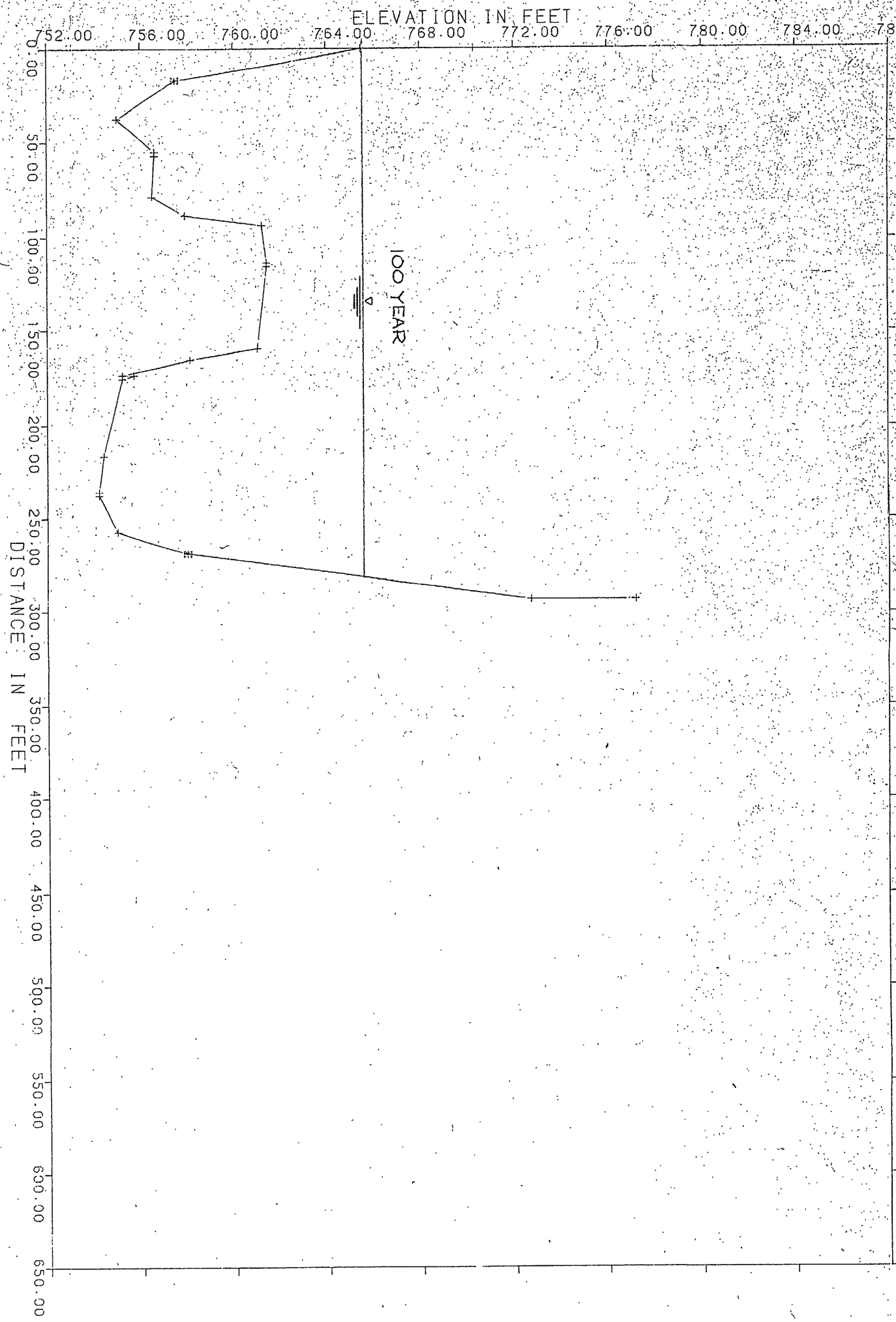
SECTION NO. 12.000



SECTION NO. 24.700

FLOOD INSURANCE STUDY

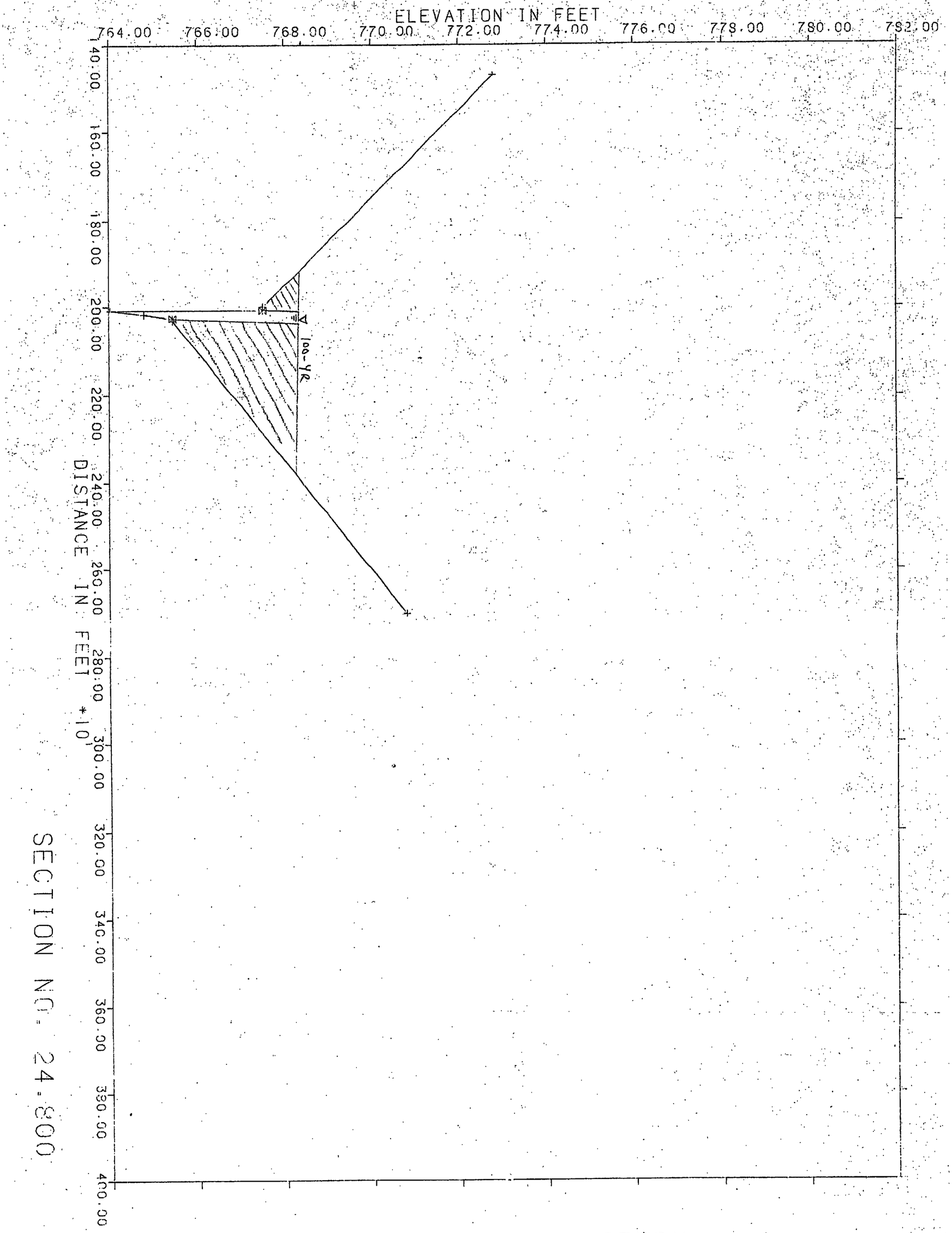
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 12.800

FLOOD INSURANCE STUDY

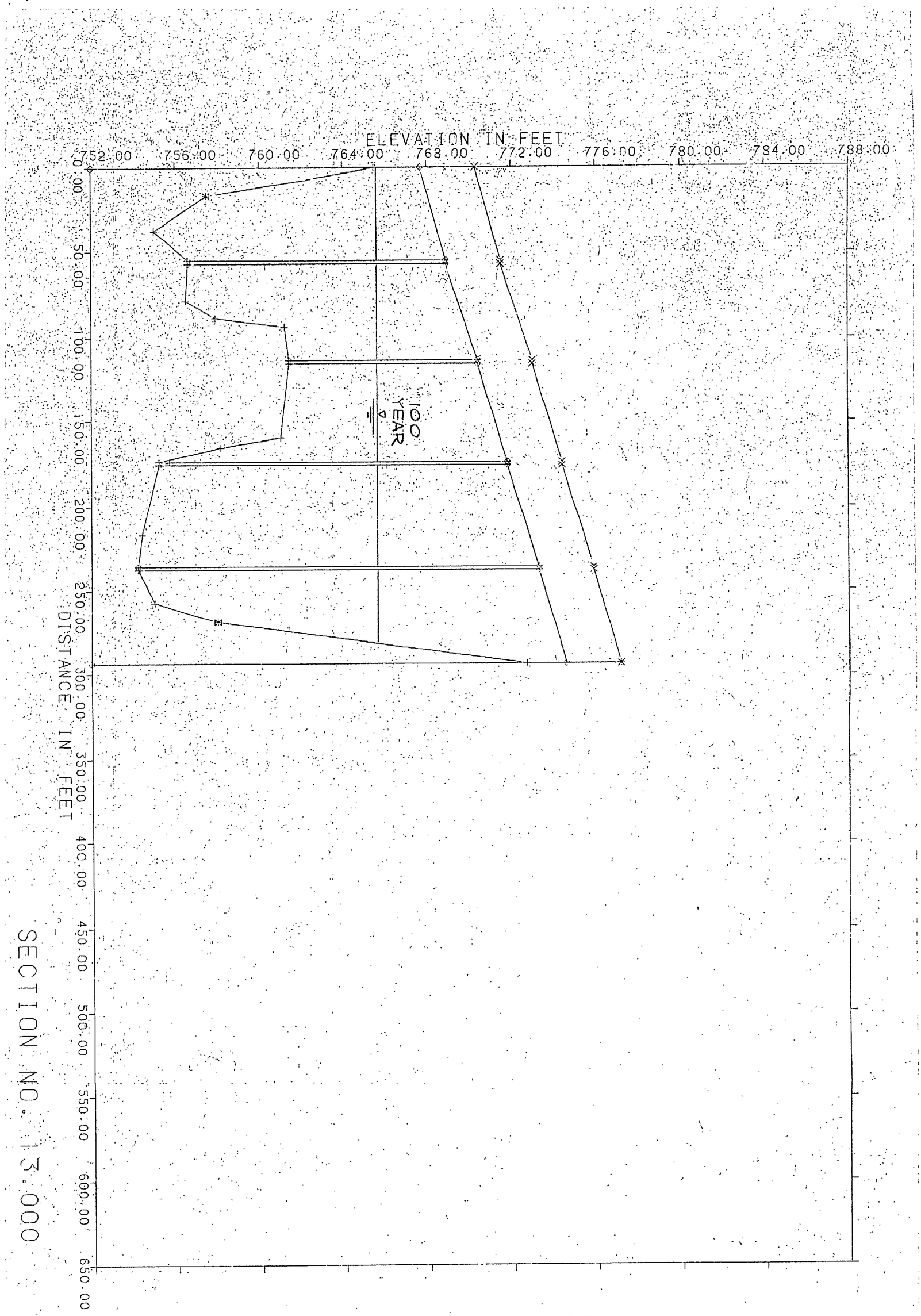
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 24.800

FLOOD INSURANCE STUDY

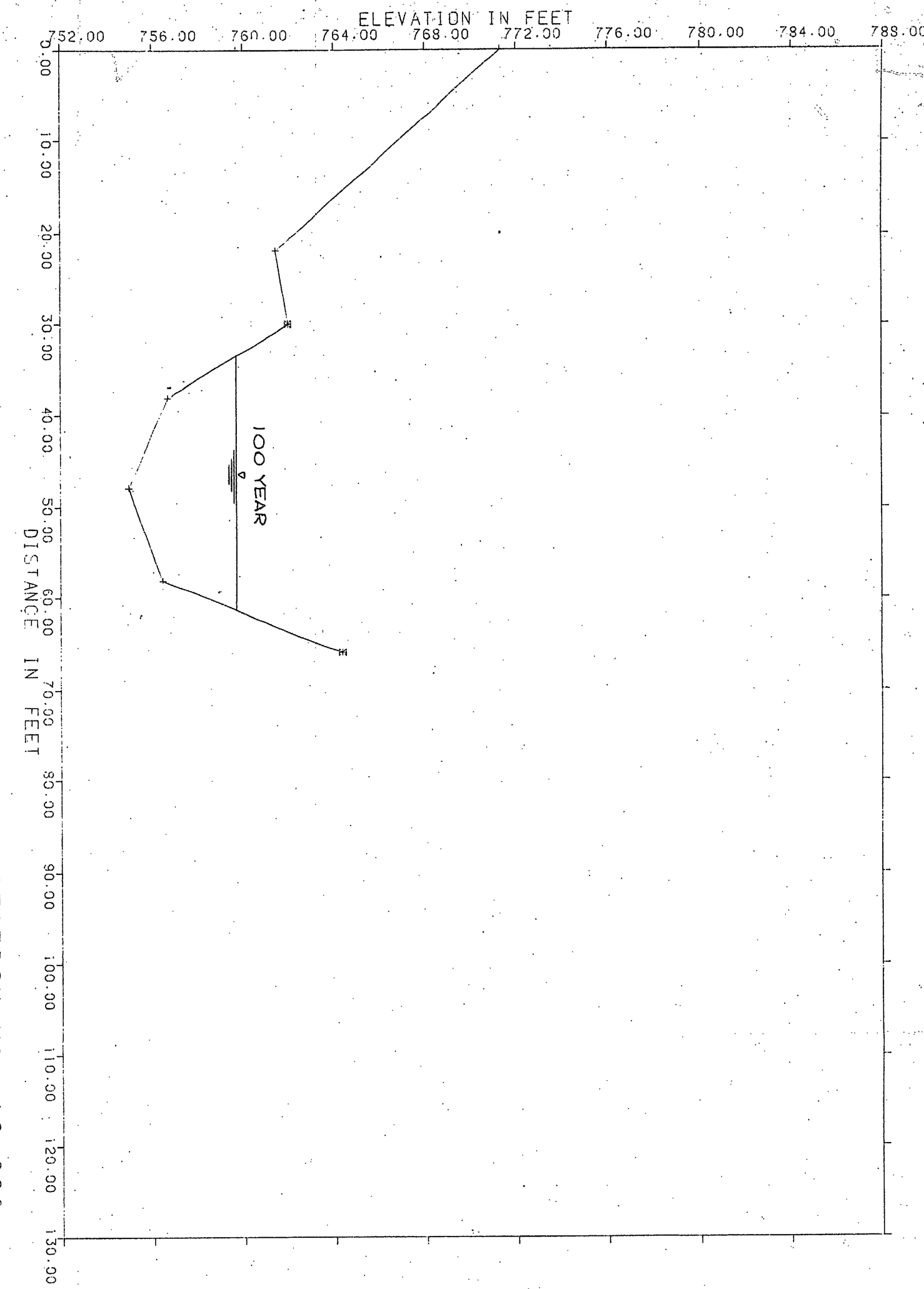
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 13.000

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 19,900

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

ELEVATION IN FEET

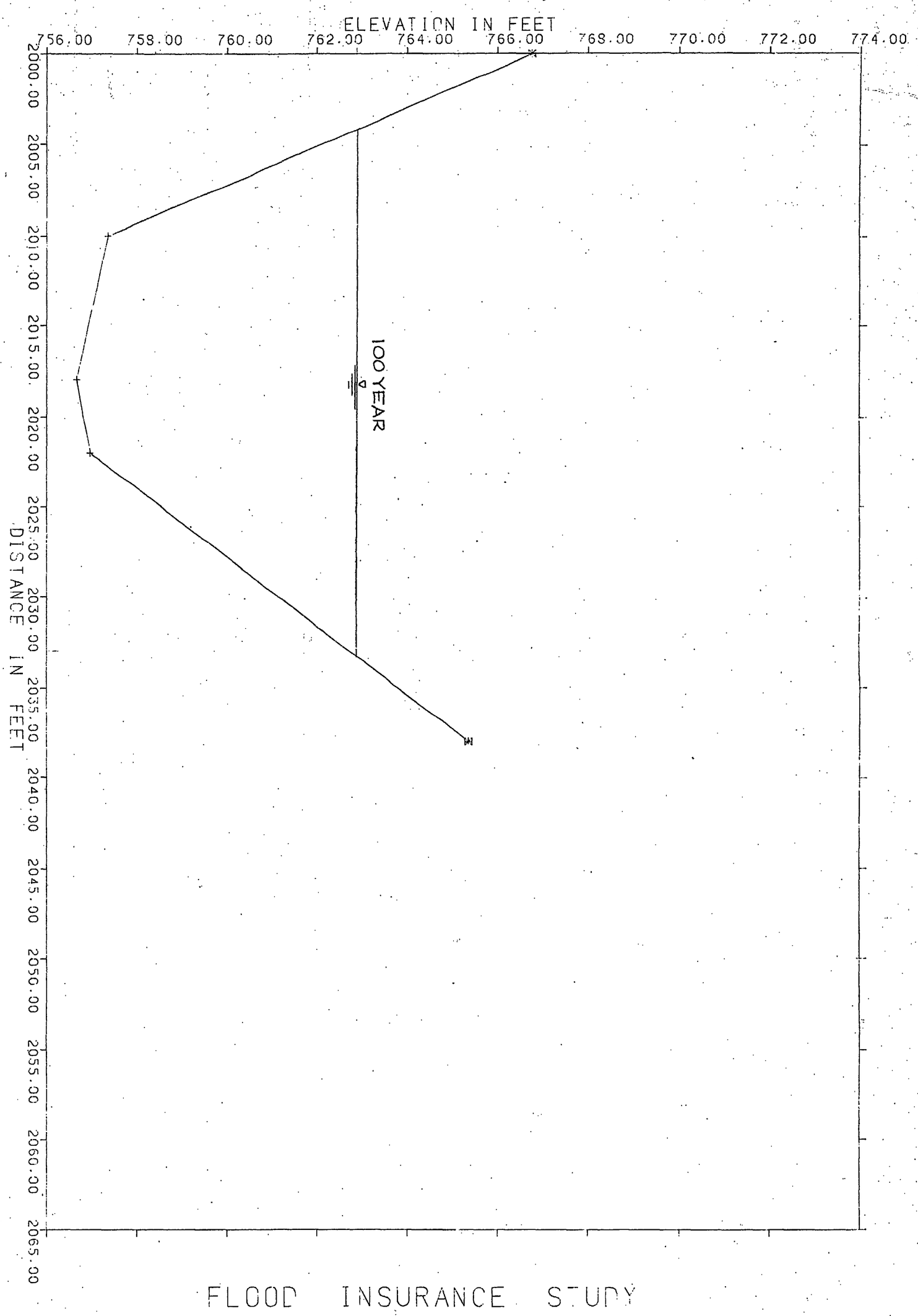
750.00
756.00
762.00
768.00
774.00
780.00
786.00
792.00
798.00
804.00

100 YEAR

0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00

DISTANCE IN FEET *10

SECTION NO. 14.000



SECTION NO. 21.000

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

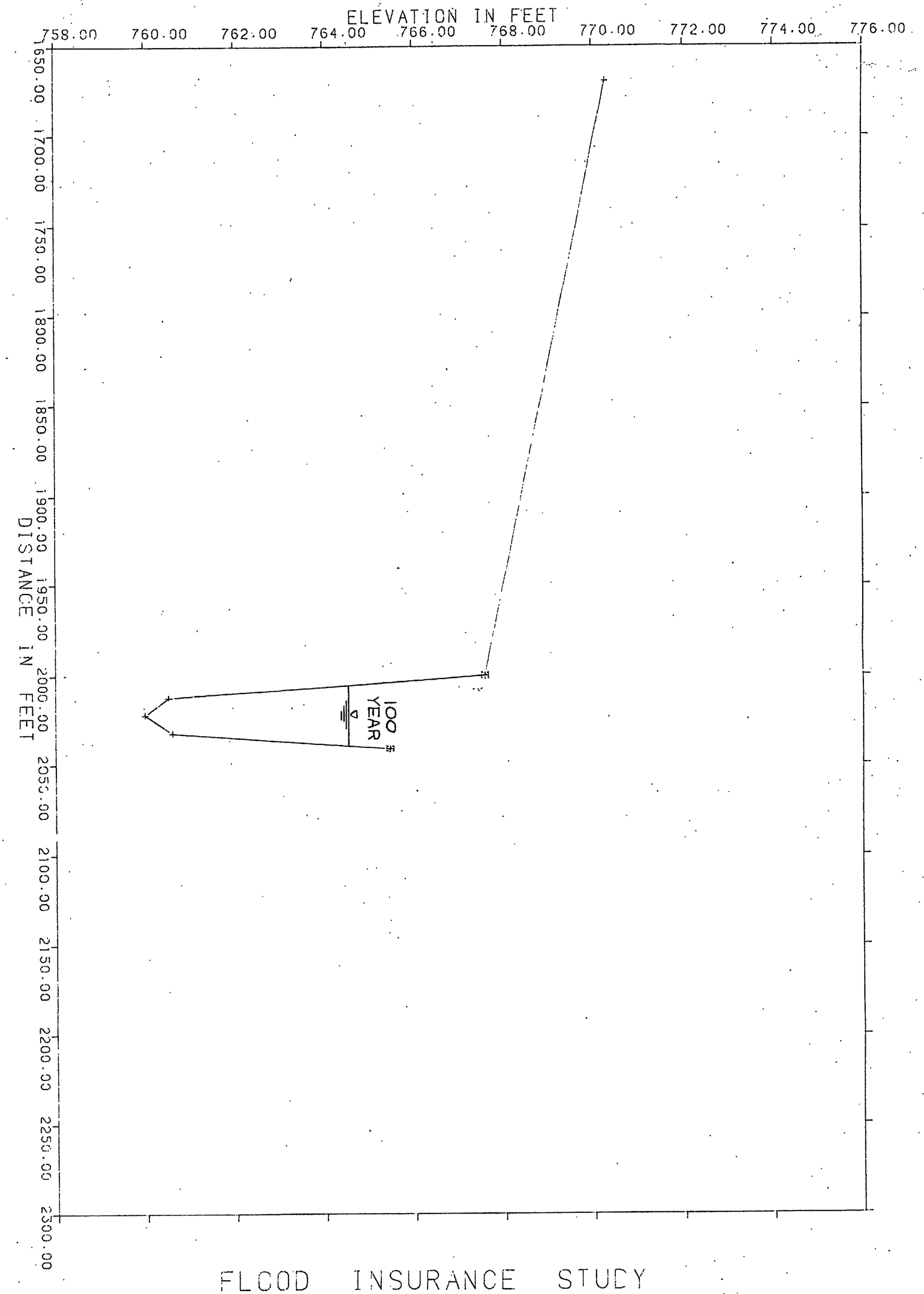
100 YEAR

ELEVATION IN FEET
744.00
748.00
752.00
756.00
760.00
764.00
768.00
772.00
776.00
780.00

2000.00 2020.00 2040.00 2060.00 2080.00 2100.00 2120.00 2140.00 2160.00 2180.00 2200.00 2220.00 2240.00 2260.00

DISTANCE IN FEET

SECTION NO. 5.000



SECTION NO. 21.700

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

100 YEAR

ELEVATION IN FEET

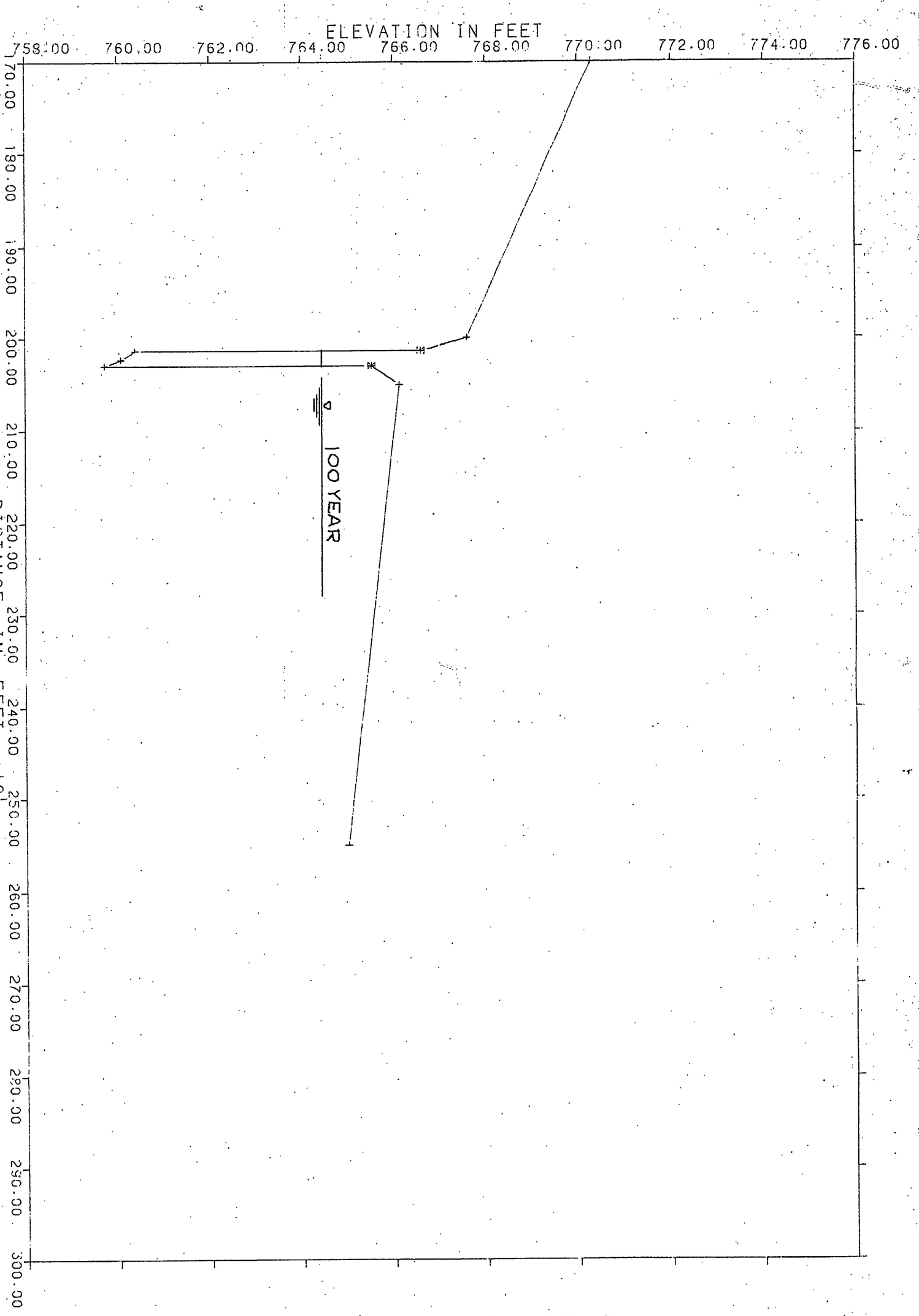
754.00 756.00 758.00 760.00 762.00

746.00 748.00 750.00 752.00

1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00 2450.00 2500.00 2550.00

DISTANCE IN FEET

SECTION NO. 4.910



SECTION NO. 21.800

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

where are the
20 wood Piers
@ 15.7' o.c

100 YEAR

blocked
one span

Nearly
two spans are blocked

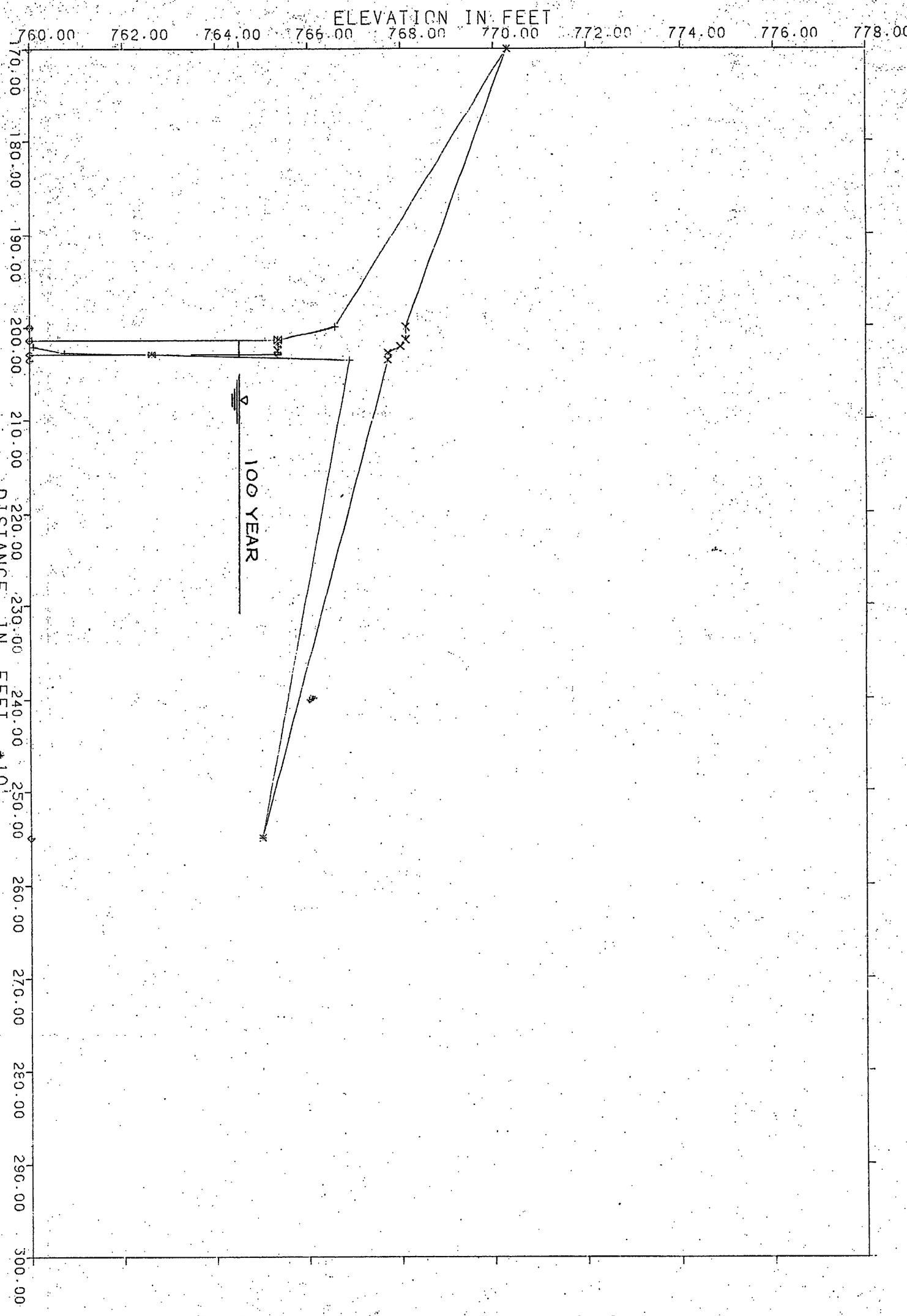
ELEVATION IN FEET

762.00
760.00
758.00
756.00
754.00
752.00
750.00
748.00
746.00

1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00 2450.00 2500.00 2550.00

DISTANCE IN FEET

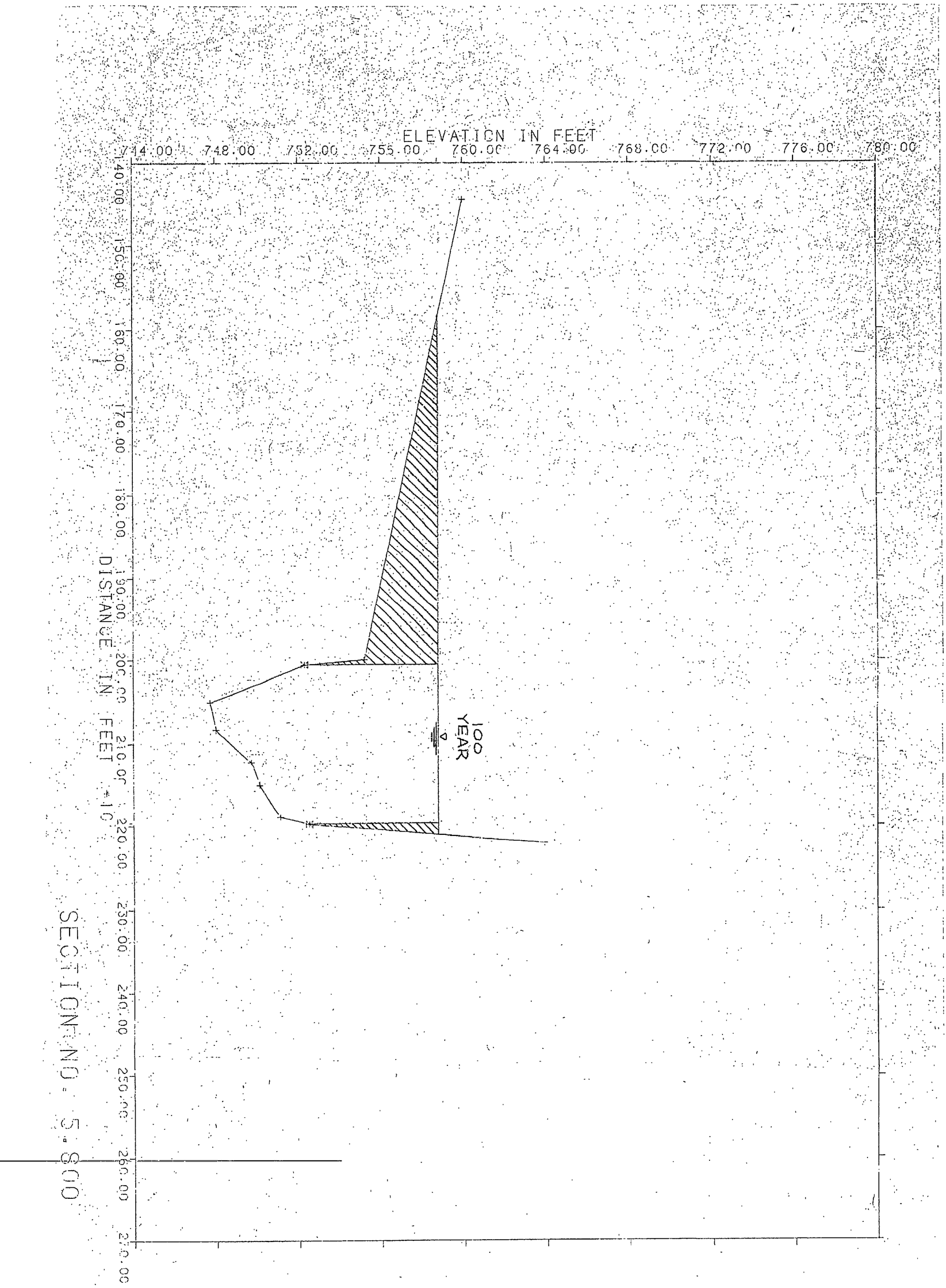
SECTION NO. 5.000



SECTION NO. 22.000

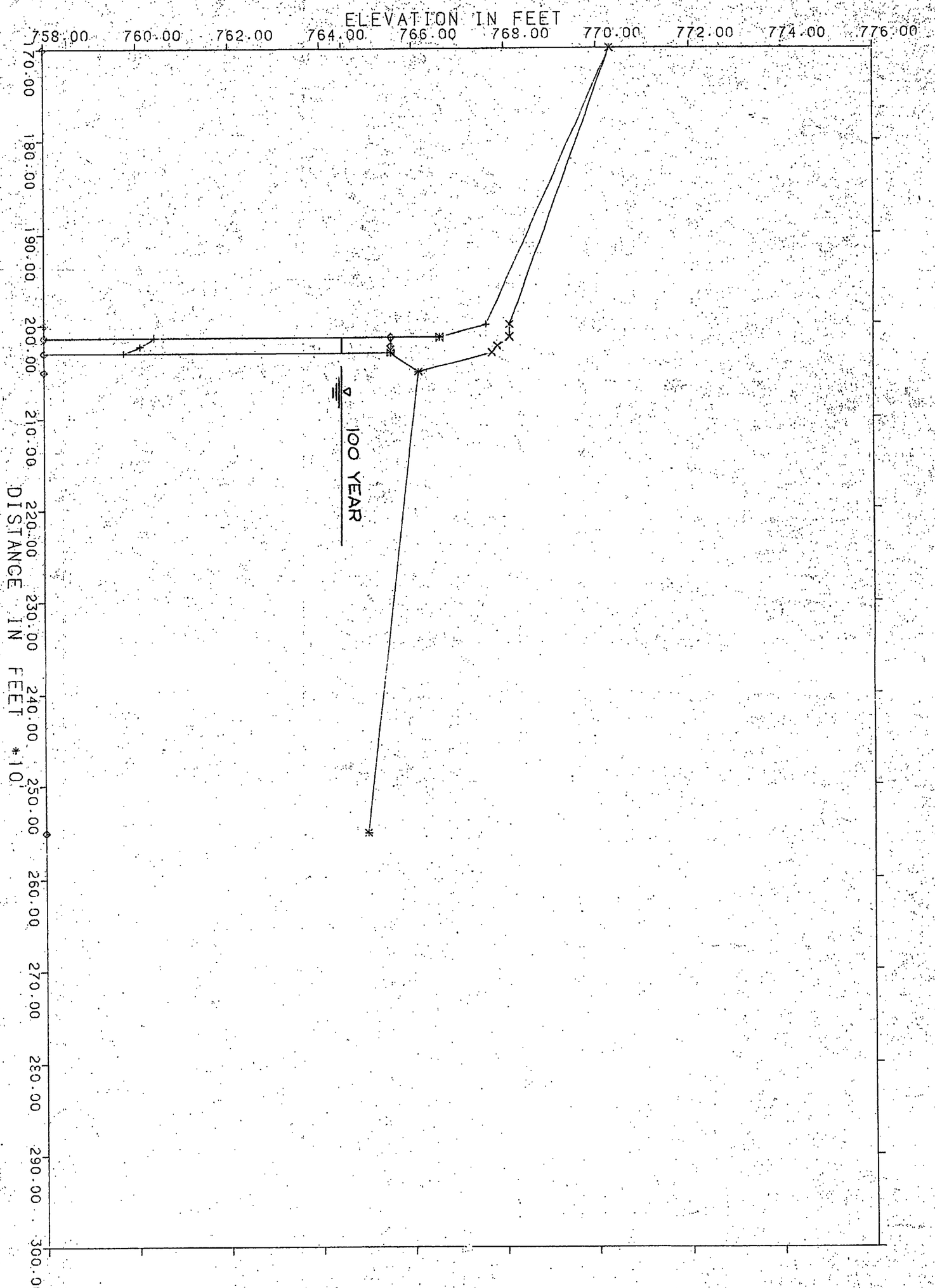
FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP



FLOOD INSURANCE STUDY

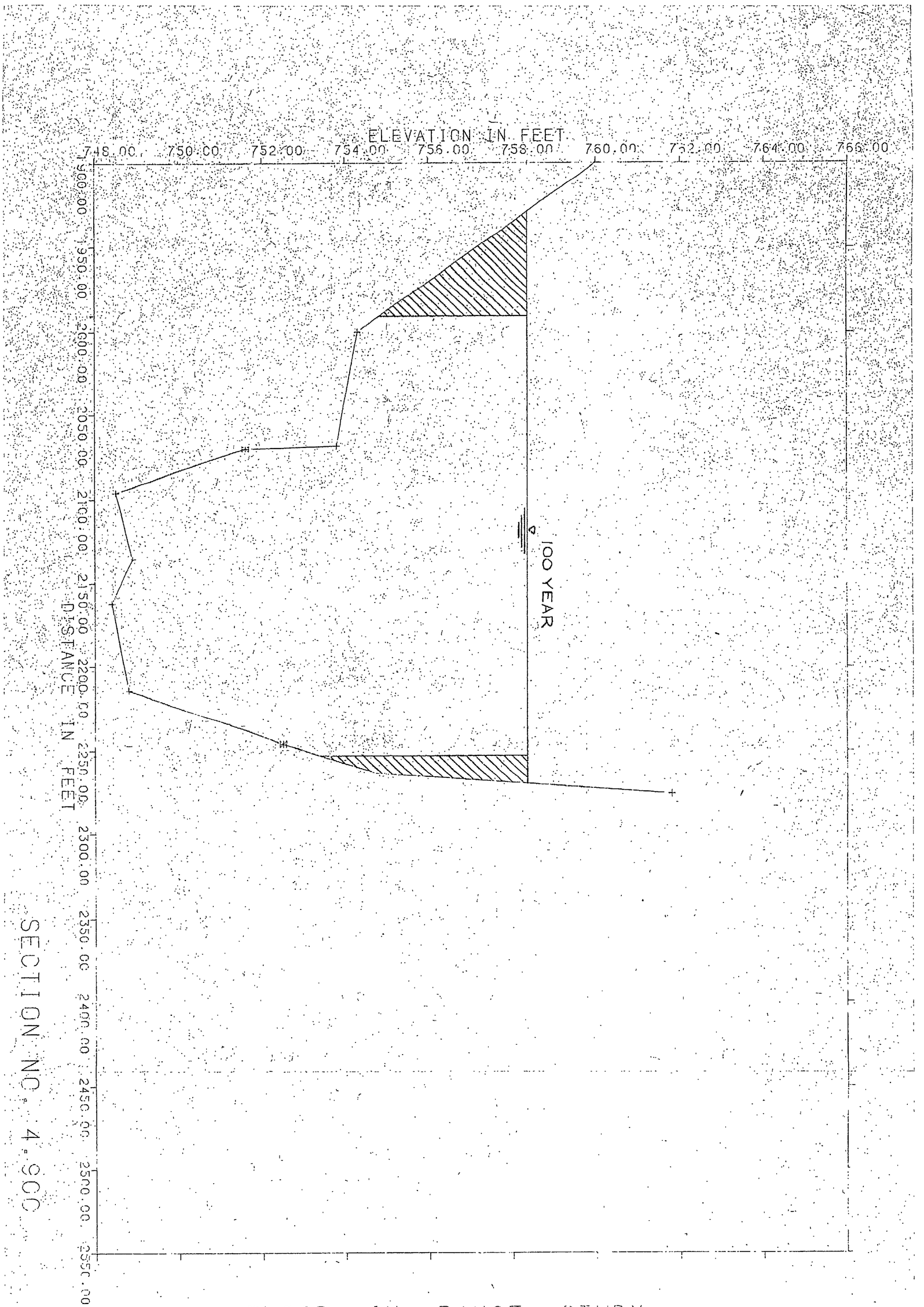
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 21.900

FLOOD INSURANCE STUDY

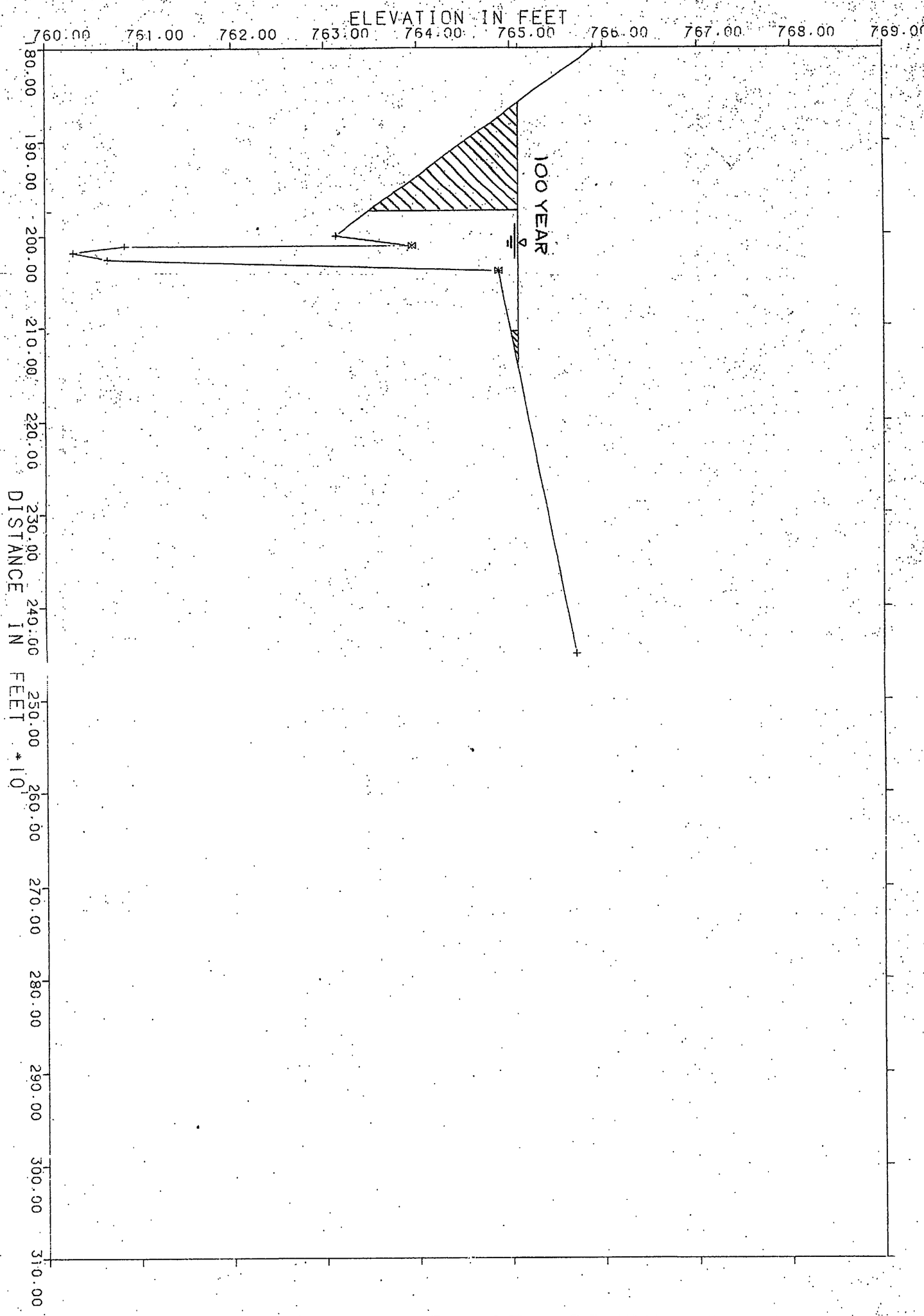
DAVIS CREEK AT KALAMAZOO TWP



SECTION NO. 4.000

FLOOD INSURANCE STUDY

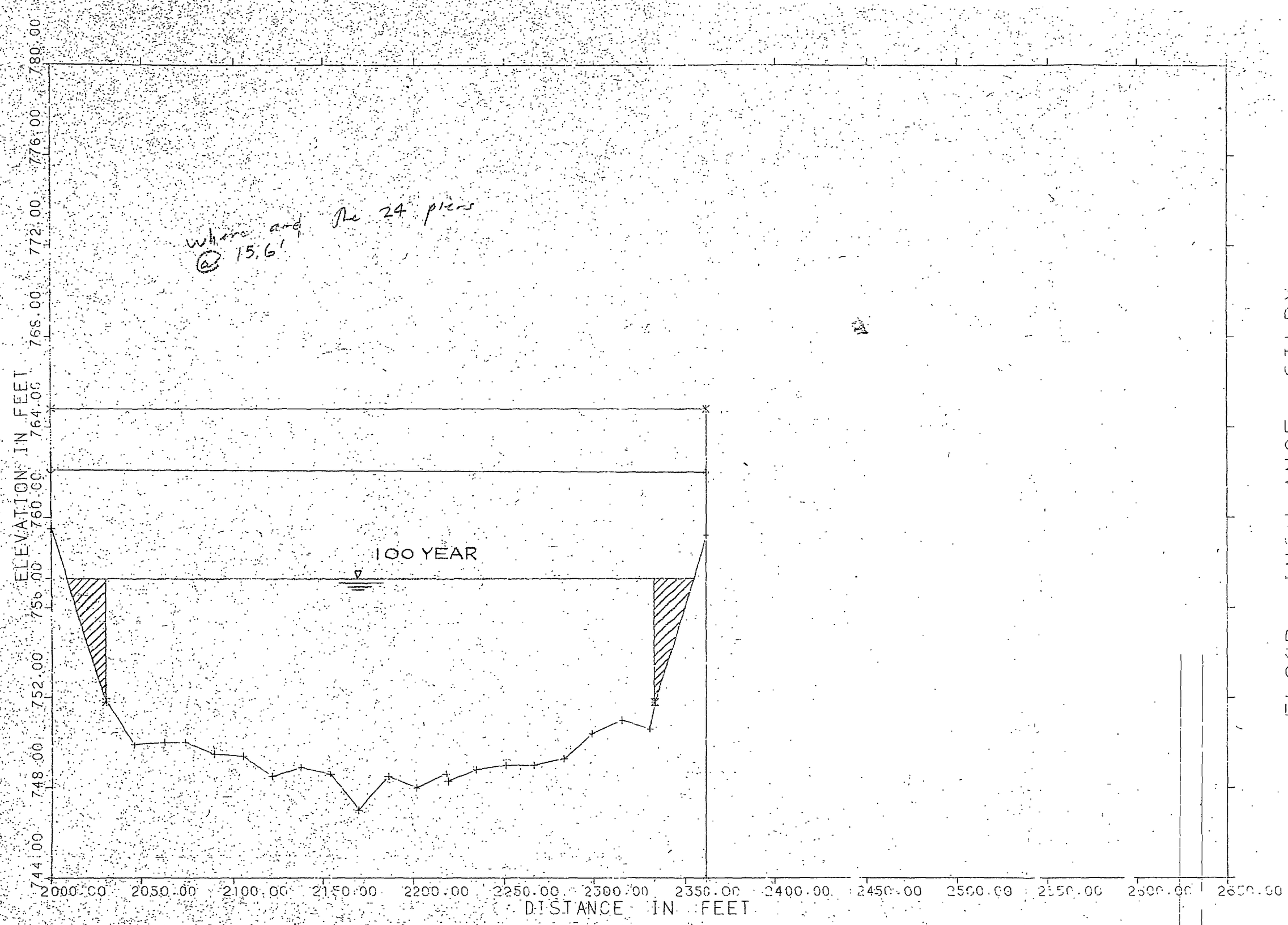
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 22,800

FLOOD INSURANCE STUDY

DAVIS CREEK AT KALAMAZOO TWP



FLOOD INSURANCE STUDY

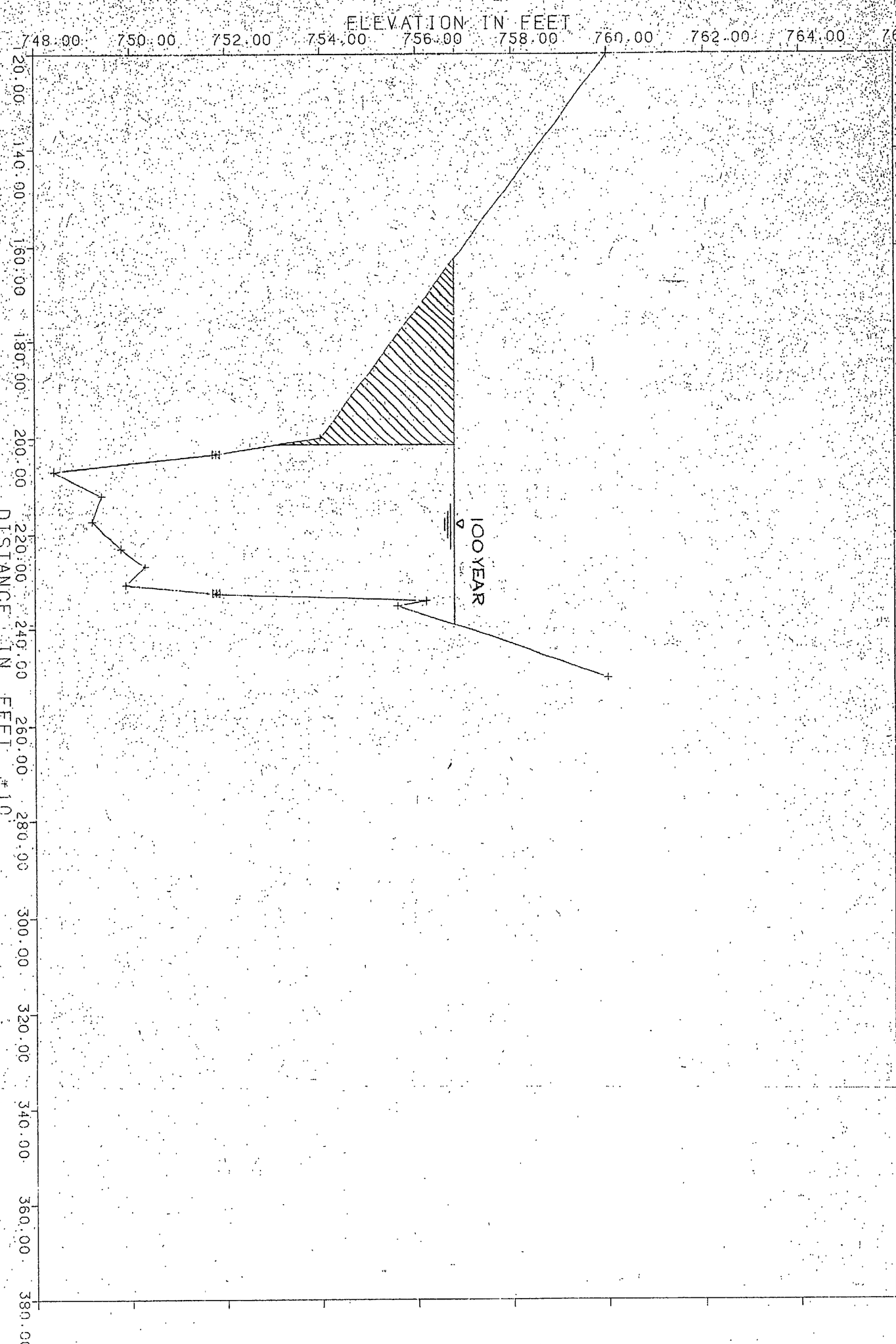
KALAMAZOO RIVER AT KALAMAZ

SECTION NO. 4.000

SECTION NO. 3.910

FLOOD INSURANCE STUDY

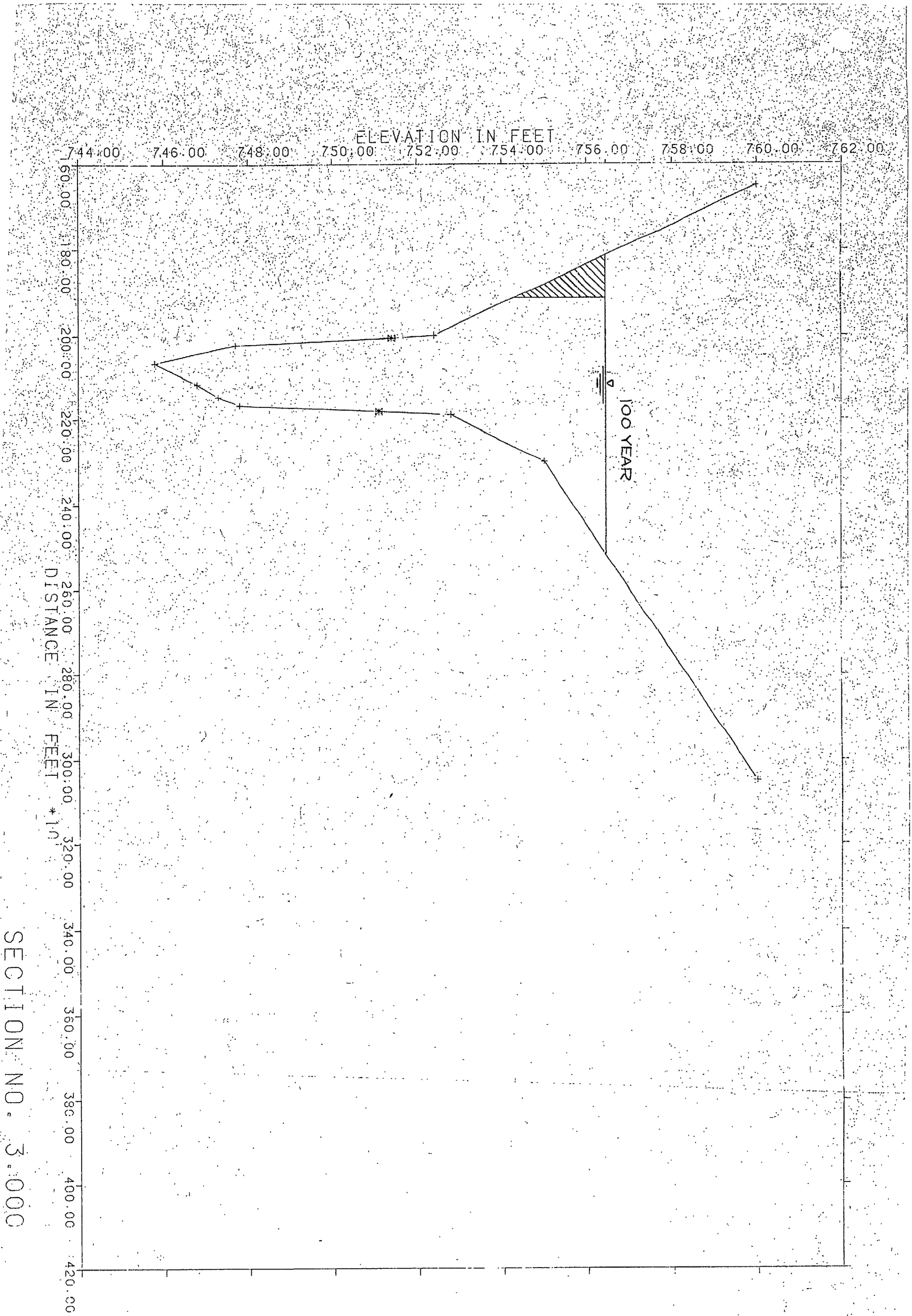
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 3.700

FLOOD INSURANCE STUDY

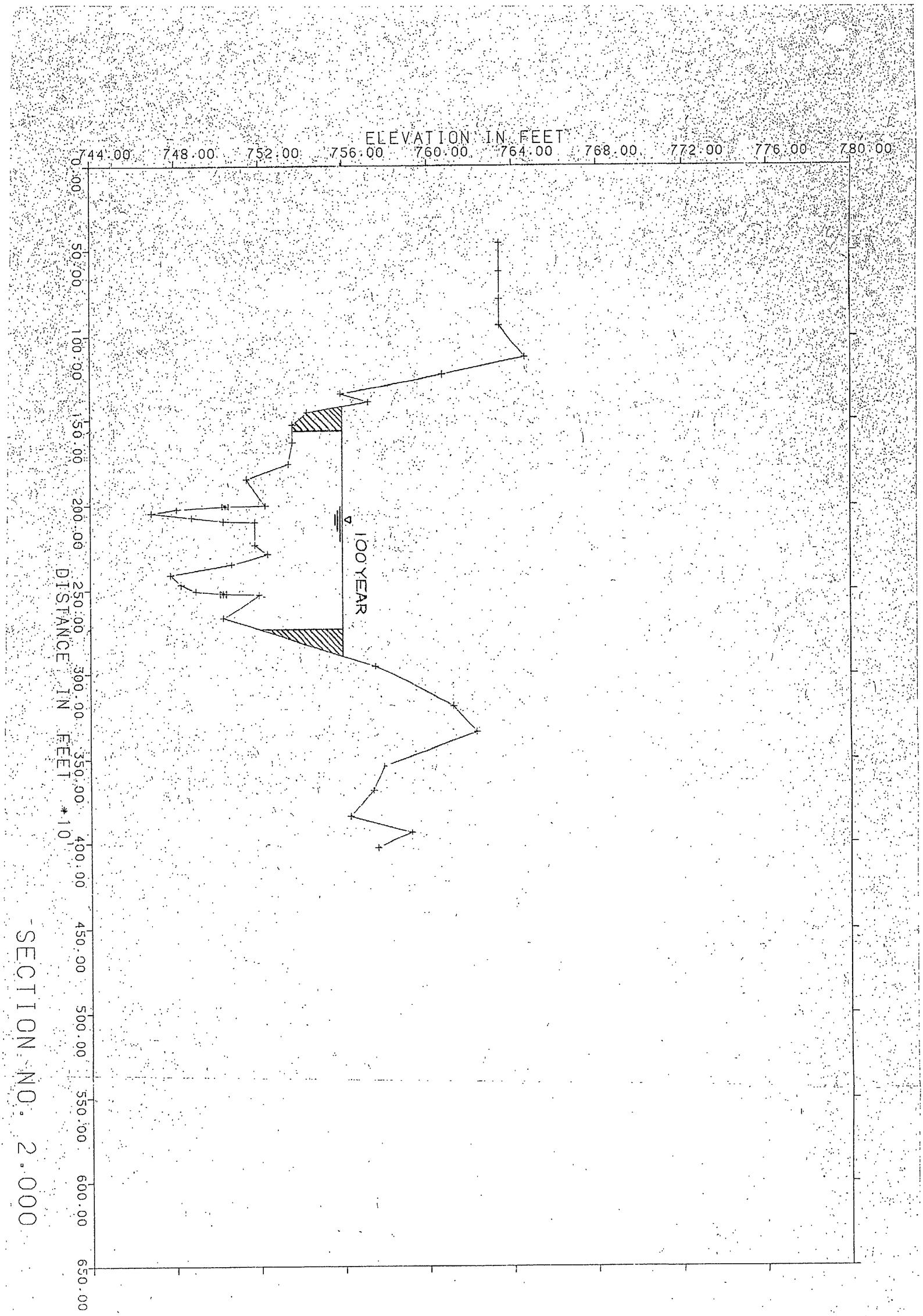
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 3.000

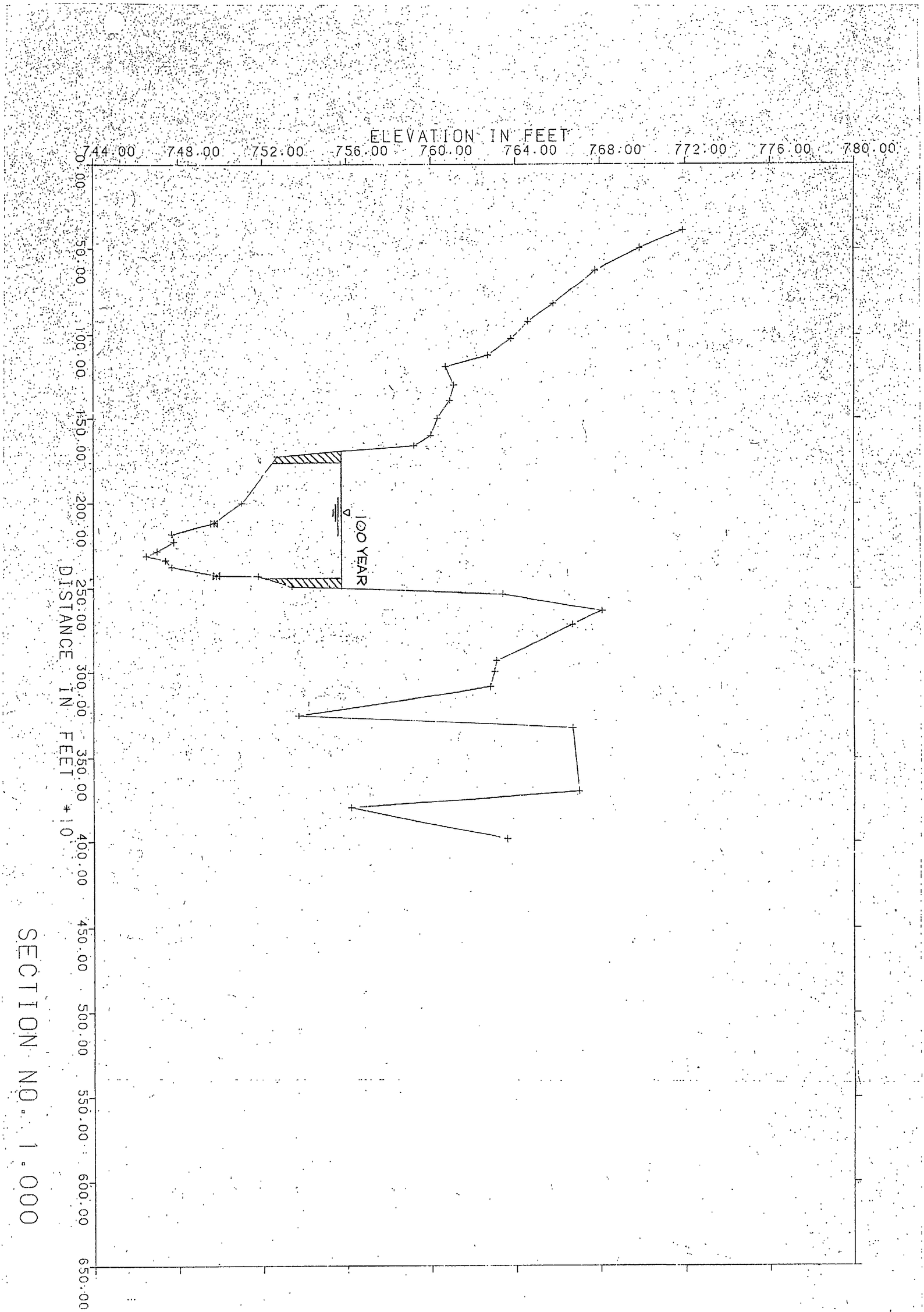
FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



FLOOD INSURANCE STUDY

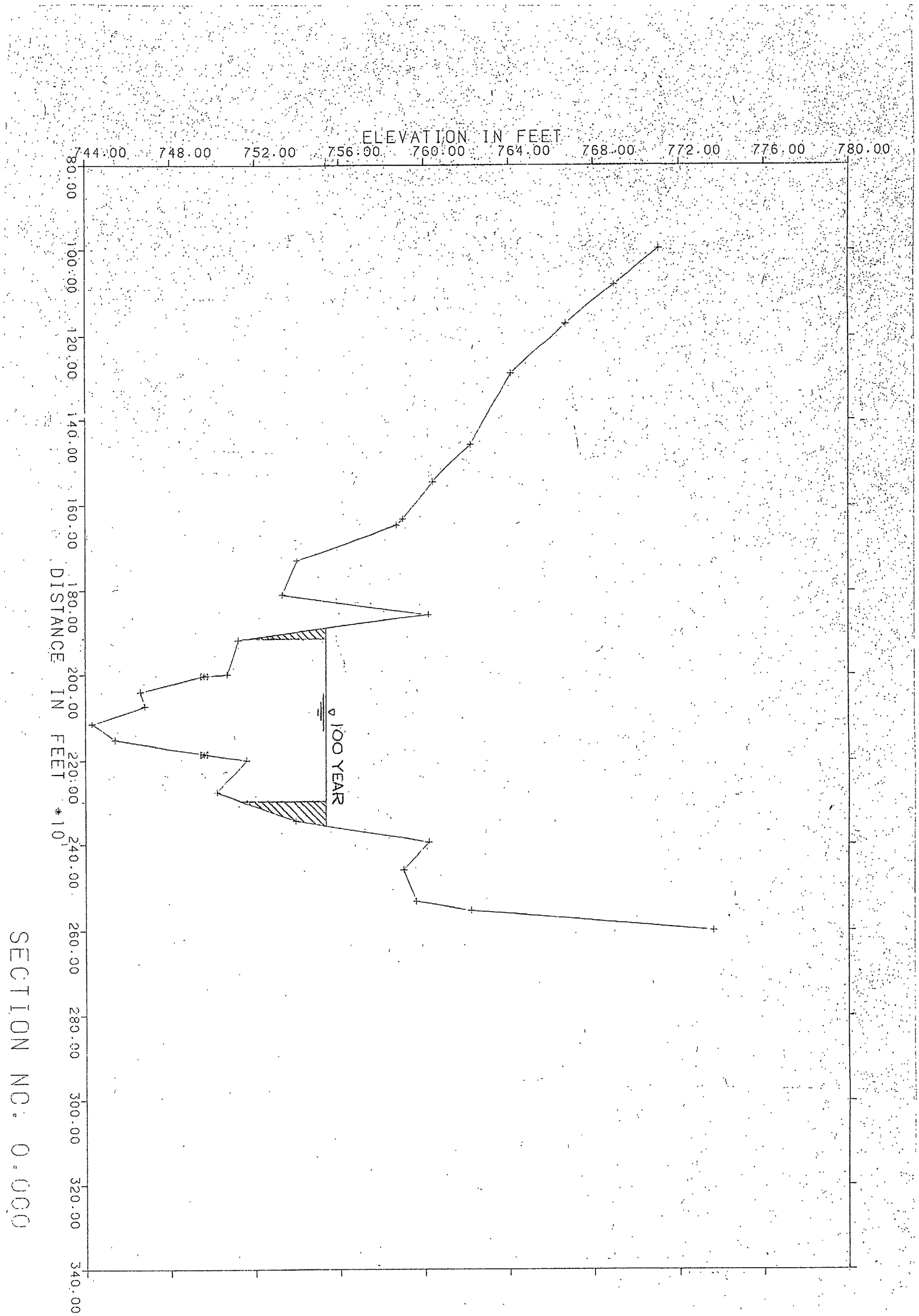
KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 1.000

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ



SECTION NO. 0.000

FLOOD INSURANCE STUDY

KALAMAZOO RIVER AT KALAMAZ

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED INPUT

00BREAK00

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**********************************************************
*  HEC2 WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED JULY 1979                                     *
*  ERROR CORR - 01,02,03                                 *
*  MODIFICATION - 50,51,52,53                            *
*                                                        *
*  RUN DATE  80/03/18. TIME  10.23.48.                   *
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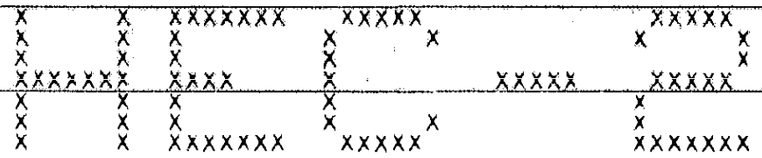

VILLAGE OF AUGUSTA

AUGUSTA CREEK

ENCROACHMENT RUN

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

C
T1      VILLAGE OF AUGUSTA
T2      100 YEAR LEVEL
T3      AUGUSTA CREEK AT AUGUSTA

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.        4.         0.         0.   0.000000       0.00       0.0         0.    790.400    0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    110.000    200.000    38.000     1.000      53.000     21.000     22.000     54.000     4.000      39.000

NC      .110       .110       .042       .300       .500      0.000      0.000      0.000      0.000      0.000
QT     5.000    260.000    385.000    445.000    590.000    445.000      0.000      0.000      0.000      0.000
ET     0.000      0.000      0.000      0.000      0.000      1.410      0.000      0.000      0.000      0.000

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

X1   120.800      8.000   1996.000   2027.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   790.000   1900.000    789.300   1996.000    786.300   2000.000    785.600   2006.000    785.000   2011.000
GR   785.800   2017.000    786.000   2023.500    789.200   2027.000      0.000      0.000      0.000      0.000

X1   120.900     30.000   2000.000   2023.500     30.000     30.000     30.000      0.000      0.000      0.000
GR   797.000   1230.000    797.000   1290.000    796.900   1412.000    797.000   1510.000    798.400   1606.000
GR   798.000   1702.000    797.900   1796.000    798.300   1900.000    798.100   2000.000    786.400   2000.000
GR   785.700   2006.000    785.100   2011.000    785.900   2017.000    786.100   2023.500    798.100   2023.500
GR   797.600   2094.000    797.600   2168.000    797.300   2280.000    797.200   2376.000    796.400   2472.000
GR   796.500   2542.000    796.100   2716.000    800.100   2756.000    800.400   2952.000    800.500   3074.000
GR   800.700   3272.000    801.400   3414.000    800.900   3504.000    800.900   3601.000    800.500   3688.000
NC     0.000      0.000       .014      0.000      0.000      0.000      0.000      0.000      0.000      0.000

X1   121.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
RT     6.000   1900.000    798.300      0.000   2000.000    798.100      0.000   2000.000    798.100    792.900
RT  2023.500    798.100    793.000   2023.500    798.100      0.000   2094.000    797.600      0.000      0.000

                UPSTREAM CROSS SECTION AT RR BRIDGE  (B)

X1   121.100     28.000   2000.000   2023.500     69.000     69.000     69.000      0.000      0.000      0.000
RT     6.000   1900.000    798.300      0.000   2000.000    798.100      0.000   2000.000    798.100    793.900
RT  2023.500    798.100    793.900   2023.500    798.100      0.000   2094.000    797.600      0.000      0.000
GR   797.000   1230.000    797.000   1290.000    796.900   1412.000    797.000   1510.000    798.400   1606.000
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GR	798.000	1702.000	797.900	1796.000	798.300	1900.000	798.100	2000.000	787.600	2000.000
GR	786.000	2012.000	785.200	2023.500	798.100	2023.500	797.600	2094.000	797.600	2188.000
GR	797.300	2280.000	797.200	2376.000	796.400	2472.000	796.500	2542.000	796.100	2716.000
GR	800.100	2756.000	800.400	2952.000	800.500	3074.000	800.700	3272.000	801.400	3414.000
GR	800.900	3504.000	800.900	3601.000	800.500	3688.000	0.000	0.000	0.000	0.000
X1	121.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 122.0 (C)

X1	122.000	7.000	2000.000	2066.000	95.000	102.000	98.000	0.000	0.000	0.000
GR	801.500	2000.000	793.500	2000.000	789.800	2009.000	786.000	2017.000	786.000	2030.000
GR	789.000	2048.000	800.000	2066.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

X1	123.000	8.000	2008.000	2038.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	792.000	792.000	0.000
GR	802.500	2000.000	797.200	2000.000	790.000	2008.000	786.600	2018.000	786.600	2028.000
GR	787.900	2038.000	790.000	2048.000	801.500	2066.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	123.900	9.000	2008.000	2038.000	45.000	45.000	45.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	800.000	1800.000	804.000	1980.000	804.600	2000.000	804.600	2008.000	795.500	2008.000
GR	795.500	2038.000	804.700	2038.000	804.000	2050.000	800.000	2100.000	0.000	0.000
SR	1.250	1.600	3.000	0.000	30.000	3.000	101.000	0.000	795.500	795.500

UPSTREAM CROSS SECTION AT DAM (E)

X1	124.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	800.000	804.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	9.000	1800.000	800.000	0.000	1980.000	804.000	0.000	2000.000	804.600	0.000
RT	2008.000	804.600	795.500	2008.000	804.600	800.000	2038.000	804.700	800.000	2038.000
RT	804.700	795.500	2050.000	804.000	0.000	2100.000	800.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 125.0 (F)

X1	125.000	7.000	1994.000	2064.000	25.000	25.000	25.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.100	1994.000	800.300	2000.000	796.900	2012.000	795.500	2024.000	796.300	2036.000
GR	797.800	2048.000	804.900	2064.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 126.0 (G)

X1	126.000	0.000	0.000	0.000	310.000	310.000	310.000	0.000	.700	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	126.900	27.000	2000.000	2026.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	799.300	2000.000	796.900	2006.000	796.700	2012.000
GR	796.500	2019.000	797.400	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	127.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.600
RT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

X1	127.100	27.000	2000.000	2026.000	55.000	55.000	55.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.700
RT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	798.000	2000.000	797.100	2006.000	796.000	2012.000
GR	796.000	2019.000	797.700	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	127.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 127.3 (I)

X1	127.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	796.500	2024.000	796.500	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 129.8 (J)

X1	129.800	6.000	1994.000	2064.000	169.000	169.000	169.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	797.000	2024.000	797.000	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	129.900	29.000	2000.000	2028.000	85.000	85.000	85.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	790.100	1240.000	790.000	1262.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
GR	769.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	798.400	2000.000	797.500	2009.000	797.400	2019.000
GR	798.600	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000

GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	130.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
BT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000

UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE (K)

X1	130.100	29.000	2000.000	2028.000	18.000	18.000	18.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
BT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000
GR	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
GR	789.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	799.800	2000.000	797.800	2009.000	797.500	2019.000
GR	797.700	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
X1	130.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 130.3 (L)

X1	130.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.500	1994.000	802.000	2012.000	797.600	2024.000	797.600	2036.000	802.000	2048.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 132.8 (M)

X1	132.800	6.000	1994.000	2064.000	525.000	525.000	525.000	0.000	0.000	0.000
GR	806.000	1994.000	802.500	2012.000	799.200	2024.000	799.200	2036.000	802.500	2048.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	132.900	22.000	2000.000	2027.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.200	2000.000
GR	799.600	2015.000	799.800	2027.000	806.500	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	133.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1558.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.200
FT	2027.000	806.500	804.200	2027.000	806.500	0.000	2098.000	808.700	0.000	0.000

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

X1	133.100	22.000	2000.000	2027.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1558.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.100
BT	2027.000	807.000	804.100	2027.000	807.000	0.000	2098.000	808.700	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.900	2000.000
GR	799.200	2013.000	801.000	2027.000	807.000	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.300	6.000	1994.000	2064.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	806.500	1994.000	799.200	2012.000	798.000	2024.000	798.000	2036.000	799.200	2048.000
GR	808.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 135.0 (O)

X1	135.000	25.000	1990.000	2066.000	274.000	274.000	271.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.700	388.000	797.500	490.000	801.400	598.000	807.100	702.000	808.100	804.000
GR	808.300	902.000	809.300	1062.000	808.600	1154.000	805.800	1328.000	806.200	1432.000
GR	805.200	1524.000	797.100	1564.000	794.300	1650.000	795.300	1756.000	795.600	1868.000
GR	797.400	1970.000	805.000	1990.000	801.100	2000.000	799.200	2004.000	797.300	2019.000
GR	797.700	2031.000	799.500	2043.000	811.800	2066.000	814.700	2112.000	823.000	2206.000

VALLEY SECTION 136.0 (P)

X1	136.000	15.000	1980.000	2056.000	800.000	800.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	810.000	1500.000	804.700	1600.000	804.600	1650.000	804.900	1700.000	805.600	1900.000
GR	805.000	1980.000	802.900	2000.000	799.900	2011.000	799.600	2023.000	796.100	2035.000
GR	797.900	2047.000	804.800	2056.000	809.300	2156.000	815.400	2240.000	817.900	2314.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 137.0 (Q)

X1	137.000	9.000	2000.000	2035.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	812.900	1750.000	802.100	1810.000	802.100	1900.000	803.200	2000.000	797.700	2010.000
GR	797.900	2025.000	800.200	2035.000	804.000	2100.000	808.000	2175.000	0.000	0.000

VALLEY SECTION 139.0. OLD RR GRADE (R)

X1	139.000	12.000	2000.000	2030.000	370.000	410.000	380.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.800	1850.000	811.500	1950.000	806.800	1965.000	803.200	1980.000	803.200	2000.000
GR	799.900	2010.000	799.900	2020.000	801.400	2030.000	802.900	2030.000	807.500	2038.000

GR	812.200	2046.000	813.100	2150.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	141.000	10.000	2000.000	2030.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.200	1850.000	811.300	1965.000	805.900	1980.000	803.300	1995.000	803.300	2000.000
GR	800.300	2010.000	800.300	2020.000	803.300	2030.000	809.500	2040.000	809.900	2200.000

VALLEY SECTION 142.0. NORTHERN LIMITS OF STUDY (S)

X1	142.000	8.000	2000.000	2030.000	310.000	280.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	816.000	1750.000	804.000	1820.000	803.200	2000.000	800.500	2010.000	800.500	2022.000
GR	803.300	2030.000	804.000	2118.000	810.900	2238.000	0.000	0.000	0.000	0.000
FJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED SUMMARY

00BREAK00

****
HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01.02.03
MODIFICATION - 50,51,52,53
****

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

AUGUSTA CREEK AT AUGUSTA

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	120.800	790.40	1900.00	1996.00	2027.00	2027.00	127.00	0.00
	120.800	790.50	1972.25	1996.00	2027.00	2027.00	54.75	0.00
	120.900	790.40	2000.00	2000.00	2023.50	2023.50	23.50	30.00
	120.900	790.51	2000.00	2000.00	2023.50	2023.50	23.50	30.00
	121.000	790.40	2000.00	2000.00	2023.50	2023.50	23.50	1.00
*	121.000	790.51	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	121.100	790.40	2000.00	2000.00	2023.50	2023.50	23.50	69.00
*	121.100	790.51	2000.00	2000.00	2023.50	2023.50	23.50	69.00
	121.200	790.40	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	121.200	790.51	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	122.000	790.69	2006.83	2000.00	2066.00	2050.77	43.94	98.00
	122.000	790.78	2006.61	2000.00	2066.00	2050.92	44.31	98.00
	123.000	790.77	2008.00	2008.00	2038.00	2038.00	30.00	70.00
	123.000	790.86	2008.00	2008.00	2038.00	2038.00	30.00	70.00
*	123.900	797.39	2008.00	2008.00	2038.00	2038.00	30.00	45.00
*	123.900	797.39	2008.00	2008.00	2038.00	2038.00	30.00	45.00
*	124.000	798.22	2008.00	2008.00	2038.00	2038.00	30.00	5.00
*	124.000	798.32	2008.00	2008.00	2038.00	2038.00	30.00	5.00
	125.000	798.18	2007.49	1994.00	2064.00	2048.85	41.36	25.00
	125.000	798.30	2007.04	1994.00	2064.00	2049.14	42.10	25.00
	126.000	800.33	2002.35	1994.00	2064.00	2052.14	49.79	310.00
	126.000	800.30	2002.49	1994.00	2064.00	2052.05	49.56	310.00
	126.900	800.53	2000.00	2000.00	2026.00	2026.00	26.00	90.00
	126.900	800.50	2000.00	2000.00	2026.00	2026.00	26.00	90.00
	127.000	800.53	2000.00	2000.00	2026.00	2026.00	26.00	1.00
*	127.000	800.50	2000.00	2000.00	2026.00	2026.00	26.00	1.00

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWTD	XLCH
	127.100	800.68	2000.00	2000.00	2026.00	2026.00	26.00	55.00
*	127.100	800.65	2000.00	2000.00	2026.00	2026.00	26.00	55.00
	127.200	800.68	2000.00	2000.00	2026.00	2026.00	26.00	1.00
	127.200	800.65	2000.00	2000.00	2026.00	2026.00	26.00	1.00
	127.300	800.68	2013.95	1994.00	2064.00	2046.05	32.09	40.00
	127.300	800.65	2014.04	1994.00	2064.00	2045.96	31.92	40.00
	129.800	801.46	2012.10	1994.00	2064.00	2047.90	35.81	169.00
	129.800	801.46	2012.11	1994.00	2064.00	2047.89	35.77	169.00
	129.900	801.75	2000.00	2000.00	2028.00	2028.00	28.00	85.00
	129.900	801.74	2000.00	2000.00	2028.00	2028.00	28.00	85.00
	130.000	801.75	2000.00	2000.00	2028.00	2028.00	28.00	1.00
*	130.000	801.75	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.100	801.74	2000.00	2000.00	2028.00	2028.00	28.00	18.00
*	130.100	801.74	2000.00	2000.00	2028.00	2028.00	28.00	18.00
	130.200	801.74	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.200	801.74	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.300	801.75	2012.66	1994.00	2064.00	2047.34	34.68	40.00
	130.300	801.75	2012.69	1994.00	2064.00	2047.31	34.63	40.00
	132.800	803.68	2005.94	1994.00	2064.00	2053.39	47.45	525.00
	132.800	803.68	2005.92	1994.00	2064.00	2053.40	47.48	525.00
	132.900	803.89	2000.00	2000.00	2027.00	2027.00	27.00	90.00
	132.900	803.89	2000.00	2000.00	2027.00	2027.00	27.00	90.00
	133.000	803.89	2000.00	2000.00	2027.00	2027.00	27.00	1.00
*	133.000	803.89	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.100	803.88	2000.00	2000.00	2027.00	2027.00	27.00	20.00
*	133.100	803.88	2000.00	2000.00	2027.00	2027.00	27.00	20.00
	133.200	803.88	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.200	803.88	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.300	804.22	1999.62	1994.00	2064.00	2057.13	57.51	50.00
	133.300	804.22	1999.62	1994.00	2064.00	2057.13	57.51	50.00
	135.000	804.31	1991.76	1990.00	2066.00	2052.00	60.24	271.00
	135.000	804.30	1991.80	1990.00	2066.00	2051.97	60.18	271.00
	136.000	804.51	1984.59	1980.00	2056.00	2055.63	71.04	800.00
	136.000	804.51	1984.75	1980.00	2056.00	2055.61	70.86	800.00
	137.000	804.59	1796.21	2000.00	2035.00	2110.91	314.69	290.00
	137.000	804.59	1817.20	2000.00	2035.00	2067.44	250.24	290.00
	139.000	804.65	1973.98	2000.00	2030.00	2033.04	59.06	380.00
	139.000	804.65	1993.97	2000.00	2030.00	2030.00	36.03	380.00

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
141.000	804.76	1986.58	2000.00	2030.00	2032.35	45.77	70.00
141.000	804.79	2000.00	2000.00	2030.00	2030.00	30.00	70.00
142.000	805.35	1812.13	2000.00	2030.00	2141.46	329.32	290.00
142.000	805.42	1842.73	2000.00	2030.00	2101.08	258.36	290.00

AUGUSTA CREEK AT AUGUSTA

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	120.800	790.40	0.00	790.54	127.00	29.30	415.70	0.00	0.00	0.00	1996.00	2027.00	0.00
	120.800	790.50	.10	790.65	54.75	13.65	431.35	0.00	.05	1972.25	1996.00	2027.00	2027.00
	120.900	790.40	0.00	790.66	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
	120.900	790.51	.11	790.75	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.000	790.40	0.00	790.66	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
*	121.000	790.51	.11	790.75	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.100	790.40	0.00	790.72	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
*	121.100	790.51	.11	790.81	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.200	790.40	0.00	790.72	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
	121.200	790.51	.11	790.81	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	122.000	790.69	0.00	790.84	43.94	0.00	445.00	0.00	0.00	0.00	2000.00	2066.00	0.00
	122.000	790.78	.09	790.92	44.31	0.00	445.00	0.00	0.00	2000.00	2000.00	2066.00	2066.00
	123.000	790.77	0.00	791.07	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
	123.000	790.86	.09	791.14	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
*	123.900	797.39	0.00	798.35	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
*	123.900	797.39	.00	798.35	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
*	124.000	798.22	0.00	798.66	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
*	124.000	798.32	.10	798.75	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
	125.000	798.18	0.00	798.85	41.36	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	125.000	798.30	.12	798.88	42.10	0.00	*445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	126.000	800.33	0.00	800.51	49.79	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	126.000	800.30	-.04	800.47	49.56	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	126.900	800.53	0.00	800.91	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
	126.900	800.50	-.03	800.89	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.000	800.53	0.00	800.91	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
*	127.000	800.50	-.03	800.89	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.100	800.68	0.00	800.97	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
*	127.100	800.65	-.03	800.94	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.200	800.68	0.00	800.97	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
	127.200	800.65	-.03	800.95	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.300	800.68	0.00	801.04	32.09	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	127.300	800.65	-.03	801.02	31.92	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	129.800	801.46	0.00	801.73	35.81	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	129.800	801.46	-.01	801.73	35.77	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	129.900	801.75	0.00	802.00	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00

129.900	801.74	-.00	801.99	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	130.000	801.75	0.00	802.00	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
*	130.000	801.75	-.00	802.00	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.100	801.74	0.00	802.02	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
*	130.100	801.74	-.00	802.02	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.200	801.74	0.00	802.02	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
	130.200	801.74	-.00	802.02	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.300	801.75	0.00	802.08	34.68	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	130.300	801.75	-.01	802.08	34.63	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	132.800	803.68	0.00	803.87	47.45	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	132.800	803.68	.00	803.87	47.48	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	132.900	803.89	0.00	804.15	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
	132.900	803.89	.00	804.15	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.000	803.89	0.00	804.15	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
*	133.000	803.89	.00	804.15	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.100	803.88	0.00	804.17	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
*	133.100	803.88	-.00	804.17	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.200	803.88	0.00	804.17	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
	133.200	803.88	-.00	804.17	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.300	804.22	0.00	804.27	57.51	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	133.300	804.22	-.00	804.26	57.51	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	135.000	804.31	0.00	804.34	60.24	0.00	445.00	0.00	0.00	0.00	1990.00	2066.00	0.00
	135.000	804.30	-.00	804.34	60.18	0.00	445.00	0.00	0.00	1990.00	1990.00	2066.00	2066.00
	136.000	804.51	0.00	804.54	71.04	0.00	445.00	0.00	0.00	0.00	1980.00	2056.00	0.00
	136.000	804.51	.00	804.54	70.86	0.00	445.00	0.00	0.00	1980.00	1980.00	2056.00	2056.00
	137.000	804.59	0.00	804.61	314.69	123.46	271.26	50.28	0.00	0.00	2000.00	2035.00	0.00
	137.000	804.59	.00	804.61	250.24	118.45	283.82	42.73	.05	1817.20	2000.00	2035.00	2067.45
	139.000	804.65	0.00	804.83	59.06	22.99	420.76	1.25	0.00	0.00	2000.00	2030.00	0.00
	139.000	804.65	.01	804.86	36.03	5.97	439.03	0.00	.05	1993.97	2000.00	2030.00	2030.00
	141.000	804.76	0.00	805.02	45.77	10.19	433.92	.89	0.00	0.00	2000.00	2030.00	0.00
	141.000	804.79	.04	805.07	30.00	0.00	445.00	0.00	.03	2000.00	2000.00	2030.00	2030.00
	142.000	805.35	0.00	805.38	329.32	139.36	237.61	68.02	0.00	0.00	2000.00	2030.00	0.00
	142.000	805.42	.07	805.45	258.36	136.41	249.23	59.36	.06	1842.73	2000.00	2030.00	2101.08

SUMMARY OF ERRORS

CAUTION SECNO= 121.000 PROFILE= 2 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 121.100 PROFILE= 2 BRIDGE DECK DEFINITION ERROR

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 CAUTION  SECNO=  123.900  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=  123.900  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=  123.900  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=  123.900  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=  123.900  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=  123.900  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=  124.000  PROFILE= 1  HYDRAULIC JUMP D.S.
 CAUTION  SECNO=  124.000  PROFILE= 2  HYDRAULIC JUMP D.S.

 CAUTION  SECNO=  127.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  127.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  130.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  130.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  133.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  133.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
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FLOODWAY DATA. AUGUSTA CREEK AT AUGUSTA
PROFILE NO. 2

STATION	FLOODWAY WIDTH (FT)	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
120.800	55.	161.	2.8	790.5	790.4	.1
120.900	24.	112.	4.0	790.5	790.4	.1
121.000	24.	112.	4.0	790.5	790.4	.1
121.100	24.	101.	4.4	790.5	790.4	.1
121.200	24.	101.	4.4	790.5	790.4	.1
122.000	44.	147.	3.0	790.8	790.7	.1
123.000	30.	104.	4.3	790.9	790.8	.1
123.900	30.	57.	7.8	797.4	797.4	0.0
124.000	30.	85.	5.3	798.3	798.2	.1
125.000	42.	73.	6.1	798.3	798.2	.1
126.000	50.	132.	3.4	800.3	800.3	0.0
126.900	26.	89.	5.0	800.5	800.5	0.0
127.000	26.	89.	5.0	800.5	800.5	0.0
127.100	26.	102.	4.3	800.7	800.7	0.0
127.200	26.	102.	4.3	800.7	800.7	0.0
127.300	22.	91.	4.9	800.7	800.7	0.0
129.800	36.	106.	4.2	801.5	801.5	0.0
129.900	28.	111.	4.0	801.7	801.7	0.0
130.000	28.	111.	4.0	801.7	801.7	0.0
130.100	28.	105.	4.2	801.7	801.7	0.0
130.200	28.	105.	4.3	801.7	801.7	0.0
130.300	35.	97.	4.6	801.8	801.8	0.0
132.800	47.	129.	3.5	803.7	803.7	0.0
132.900	27.	110.	4.0	803.9	803.9	0.0
133.000	27.	111.	4.0	803.9	803.9	0.0
133.100	27.	103.	4.3	803.9	803.9	0.0
133.200	27.	103.	4.3	803.9	803.9	0.0
133.300	58.	264.	1.7	804.2	804.2	0.0
135.000	60.	292.	1.5	804.3	804.3	0.0
136.000	71.	302.	1.5	804.5	804.5	0.0
137.000	250.	706.	.6	804.6	804.6	0.0
139.000	36.	127.	3.5	804.6	804.6	0.0
141.000	30.	105.	4.2	804.8	804.8	0.0
142.000	258.	547.	.8	805.4	805.3	.1

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50,51,52,53
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0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: MULTI - PROFILE INPUT DATA [redacted]

00BREAK00

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**************************************************
*  HEC2 WATER SURFACE PROFILES                   *
*  VERSION OF NOVEMBER 1976                      *
*  UPDATED JULY 1979                             *
*  ERROR CORR - 01,02,03                         *
*  MODIFICATION - 50,51,52,53                    *
*                                                *
*  RUN DATE  80/03/18. TIME  10.18.42.           *
**************************************************
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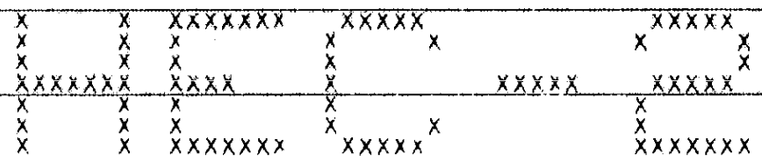

VILLAGE OF AUGUSTA

AUGUSTA CREEK

MULTI-PROFILE

MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

C
T1      AUGUSTA
T2      10 YEAR LEVEL
T3      AUGUSTA CREEK

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.        2.        0.        0.  0.000000      0.00      0.0       0.   790.400     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
  150.000   201.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
J5  LPRNT     NUMSEC                    ********REQUESTED SECTION NUMBERS********
   -10.000   -10.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC     .110      .110      .042      .300      .500     0.000     0.000     0.000     0.000     0.000
QT    5.000   260.000   385.000   445.000   590.000   445.000     0.000     0.000     0.000     0.000
ET    0.000     0.000     0.000     0.000     0.000     1.410     0.000     0.000     0.000     0.000

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

X1  120.800     8.000  1996.000  2027.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  790.000  1900.000   789.300  1996.000   786.300  2000.000   785.600  2006.000   785.000  2011.000
GR  785.800  2017.000   786.000  2023.500   789.200  2027.000     0.000     0.000     0.000     0.000

X1  120.900    30.000  2000.000  2023.500    30.000    30.000    30.000     0.000     0.000     0.000
GR  797.000  1230.000   797.000  1290.000   796.900  1412.000   797.000  1510.000   798.400  1606.000
GR  798.000  1702.000   797.900  1796.000   798.300  1900.000   798.100  2000.000   786.400  2000.000
GR  785.700  2006.000   785.100  2011.000   785.900  2017.000   786.100  2023.500   798.100  2023.500
GR  797.600  2094.000   797.600  2188.000   797.300  2280.000   797.200  2376.000   796.400  2472.000
GR  796.500  2542.000   796.100  2716.000   800.100  2756.000   800.400  2952.000   800.500  3074.000
GR  800.700  3272.000   801.400  3414.000   800.900  3504.000   800.900  3601.000   800.500  3688.000
NC    0.000     0.000      .014     0.000     0.000     0.000     0.000     0.000     0.000     0.000

X1  121.000     0.000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000
RT    0.000  1900.000   798.300     0.000  2000.000   798.100     0.000  2000.000   798.100   792.900
RT 2023.500   798.100   793.000  2023.500   798.100     0.000  2094.000   797.600     0.000     0.000

                UPSTREAM CROSS SECTION AT RR BRIDGE  (B)

X1  121.100    28.000  2000.000  2023.500    69.000    69.000    69.000     0.000     0.000     0.000
```

RT	5.000	1900.000	798.300	0.000	2000.000	798.100	0.000	2000.000	798.100	793.900
RT	2023.500	798.100	793.900	2023.500	798.100	0.000	2094.000	797.600	0.000	0.000
GR	797.000	1230.000	797.000	1290.000	796.900	1412.000	797.000	1510.000	798.400	1606.000
GR	798.000	1702.000	797.900	1796.000	798.300	1900.000	798.100	2000.000	787.600	2000.000
GR	786.000	2012.000	785.200	2023.500	798.100	2023.500	797.600	2094.000	797.600	2188.000
GR	797.300	2280.000	797.200	2376.000	796.400	2472.000	796.500	2542.000	796.100	2716.000
GR	800.100	2756.000	800.400	2952.000	800.500	3074.000	800.700	3272.000	801.400	3414.000
GR	800.900	3504.000	800.900	3601.000	800.500	3688.000	0.000	0.000	0.000	0.000
X1	121.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 122.0 (C)

X1	122.000	7.000	2000.000	2066.000	95.000	102.000	98.000	0.000	0.000	0.000
GR	801.500	2000.000	793.500	2000.000	789.800	2009.000	786.000	2017.000	786.000	2030.000
GR	789.000	2048.000	800.000	2066.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

X1	123.000	8.000	2008.000	2038.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	792.000	792.000	0.000
GR	802.500	2000.000	797.200	2000.000	790.000	2008.000	786.600	2018.000	786.600	2028.000
GR	767.900	2038.000	790.000	2048.000	801.500	2066.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	123.900	9.000	2008.000	2038.000	45.000	45.000	45.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	800.000	1600.000	804.000	1980.000	804.600	2000.000	804.600	2008.000	795.500	2008.000
GR	795.500	2038.000	804.700	2038.000	804.000	2050.000	800.000	2100.000	0.000	0.000
SR	1.250	1.600	3.000	0.000	30.000	3.000	101.000	0.000	795.500	795.500

UPSTREAM CROSS SECTION AT DAM (E)

X1	124.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	800.000	804.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	9.000	1800.000	800.000	0.000	1980.000	804.000	0.000	2000.000	804.600	0.000
RT	2008.000	804.600	795.500	2008.000	804.600	800.000	2038.000	804.700	800.000	2038.000
RT	804.700	795.500	2050.000	804.000	0.000	2100.000	800.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 125.0 (F)

X1	125.000	7.000	1994.000	2064.000	25.000	25.000	25.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.100	1994.000	800.300	2000.000	796.900	2012.000	795.500	2024.000	796.300	2036.000
GR	797.800	2048.000	804.900	2064.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 126.0 (G)

X1	126.000	0.000	0.000	0.000	310.000	310.000	310.000	0.000	.700	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	126.900	27.000	2000.000	2026.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	799.300	2000.000	796.900	2006.000	796.700	2012.000
GR	796.500	2019.000	797.400	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	127.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.600
PT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

X1	127.100	27.000	2000.000	2026.000	55.000	55.000	55.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.700
PT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	798.000	2000.000	797.100	2006.000	796.000	2012.000
GR	796.000	2019.000	797.700	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	127.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 127.3 (I)

X1	127.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	796.500	2024.000	796.500	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 129.8 (J)

X1	129.800	6.000	1994.000	2064.000	169.000	169.000	169.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	797.000	2024.000	797.000	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	129.900	29.000	2000.000	2028.000	85.000	85.000	85.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000

GR	784.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	798.400	2000.000	797.500	2009.000	797.400	2019.000
GR	798.600	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GP	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	130.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
RT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000

UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE (K)

X1	130.100	24.000	2000.000	2028.000	16.000	18.000	18.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
RT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000
GP	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
GR	789.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	799.800	2000.000	797.800	2009.000	797.500	2019.000
GR	797.700	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
X1	130.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 130.3 (L)

X1	130.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GP	805.500	1994.000	802.000	2012.000	797.600	2024.000	797.600	2036.000	802.000	2048.000
GR	806.600	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 132.8 (M)

X1	132.800	6.000	1994.000	2064.000	525.000	525.000	525.000	0.000	0.000	0.000
GR	806.000	1994.000	802.500	2012.000	799.200	2024.000	799.200	2036.000	802.500	2048.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	132.900	22.000	2000.000	2027.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.200	2000.000
GR	799.600	2015.000	799.800	2027.000	806.500	2027.000	808.700	2098.000	815.600	2236.000
GP	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	133.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000

X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1958.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.200
BT	2027.000	806.500	804.200	2027.000	806.500	0.000	2098.000	808.700	0.000	0.000

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

X1	133.100	22.000	2000.000	2027.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1956.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.100
BT	2027.000	807.000	804.100	2027.000	807.000	0.000	2098.000	808.700	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.900	2000.000
GR	799.200	2013.000	801.000	2027.000	807.000	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.300	6.000	1994.000	2064.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	806.500	1994.000	799.200	2012.000	798.000	2024.000	798.000	2036.000	799.200	2048.000
GR	808.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 135.0 (O)

X1	135.000	25.000	1990.000	2066.000	274.000	274.000	271.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.700	388.000	797.500	490.000	801.400	598.000	807.100	702.000	808.100	804.000
GR	808.300	902.000	809.300	1062.000	808.600	1154.000	805.800	1328.000	806.200	1432.000
GR	805.200	1524.000	797.100	1564.000	794.300	1650.000	795.300	1756.000	795.600	1868.000
GR	797.400	1970.000	805.000	1990.000	801.100	2000.000	799.200	2004.000	797.300	2019.000
GR	797.700	2031.000	799.500	2043.000	811.800	2066.000	814.700	2112.000	823.000	2206.000

VALLEY SECTION 136.0 (P)

X1	136.000	15.000	1980.000	2056.000	800.000	800.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	810.000	1500.000	804.700	1600.000	804.600	1650.000	804.900	1700.000	805.600	1900.000
GR	805.000	1980.000	802.900	2000.000	799.900	2011.000	799.600	2023.000	796.100	2035.000
GR	797.900	2047.000	804.800	2056.000	809.300	2156.000	815.400	2240.000	817.900	2314.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 137.0 (Q)

X1	137.000	9.000	2000.000	2035.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	812.900	1750.000	802.100	1810.000	802.100	1900.000	803.200	2000.000	797.700	2010.000
GR	797.900	2025.000	800.200	2035.000	804.000	2100.000	808.000	2175.000	0.000	0.000

VALLEY SECTION 139.0, OLD RR GRADE (R)

X1	139.000	12.000	2000.000	2030.000	370.000	410.000	380.000	0.000	0.000	0.000

X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.800	1850.000	811.500	1950.000	806.800	1965.000	803.200	1980.000	803.200	2000.000
GR	799.900	2010.000	799.900	2020.000	801.400	2030.000	802.900	2030.000	807.500	2038.000
GR	812.200	2046.000	813.100	2150.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	141.000	10.000	2000.000	2030.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.200	1850.000	811.300	1965.000	805.900	1980.000	803.300	1995.000	803.300	2000.000
GR	800.300	2010.000	800.300	2020.000	803.300	2030.000	809.500	2040.000	809.900	2200.000

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

X1	142.000	8.000	2000.000	2030.000	310.000	280.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	816.000	1750.000	804.000	1820.000	803.200	2000.000	800.500	2010.000	800.500	2022.000
GR	803.300	2030.000	804.000	2118.000	810.900	2238.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
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T1      AUGUSTA
T2      50 YEAR LEVEL
T3      AUGUSTA CREEK

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       -10.      3.        0.        0.  0.000000      0.00      0.0       0.    790.400     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLOC     IBW       CHNIM     ITRACE
     2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
*****************************************************

T1       AUGUSTA
T2       100 YEAR LEVEL
T3       AUGUSTA CREEK

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
     -10.        4.        0.        0.  0.000000      0.00       0.0        0.   790.400     0.000
J2  NPROF      IPLOT     PREVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

T1      AUGUSTA
T2      500 YEAR LEVEL
T3      AUGUSTA CREEK

J1  ICHECK    INQ     NINV     IDIR     STRT     METRIC    HVINS     Q        WSEL     FQ
      -10.      5.       0.       0.  0.000000     0.00      0.0       0.   790.400   0.000
J2  NPROF     IPLOT    PREVS    XSECV    XSECH    FN        ALLDC     IBW      CHNIM    ITRACE
    15.000    0.000   -1.000    0.000    0.000    0.000     0.000     0.000    0.000    0.000
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

****
HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01.02.03
MODIFICATION - 50.51.52.53
****

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

AUGUSTA CREEK

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	120.800	0.00	0.00	0.00	785.00	260.00	790.40	0.00	790.45	4.57	1.84	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	385.00	790.40	0.00	790.51	10.03	2.73	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	445.00	790.40	0.00	790.54	13.39	3.16	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	590.00	790.40	0.00	790.65	23.55	4.19	203.65	121.59
	120.900	30.00	0.00	0.00	785.10	260.00	790.40	0.00	790.49	8.78	2.38	109.25	87.75
	120.900	30.00	0.00	0.00	785.10	385.00	790.40	0.00	790.59	19.35	3.53	109.06	87.51
	120.900	30.00	0.00	0.00	785.10	445.00	790.40	0.00	790.66	25.87	4.08	109.04	87.50
	120.900	30.00	0.00	0.00	785.10	590.00	790.40	0.00	790.85	45.53	5.41	108.99	87.44
	121.000	1.00	797.60	793.00	785.10	260.00	790.40	0.00	790.49	1.33	2.38	109.10	225.19
	121.000	1.00	797.60	793.00	785.10	385.00	790.40	0.00	790.59	2.92	3.53	109.09	225.17
	121.000	1.00	797.60	793.00	785.10	445.00	790.40	0.00	790.66	3.91	4.08	109.09	225.16
	121.000	1.00	797.60	793.00	785.10	590.00	790.40	0.00	790.85	6.87	5.41	109.07	225.12
	121.100	69.00	797.60	793.90	785.20	260.00	790.40	0.00	790.51	1.84	2.64	98.40	191.51
	121.100	69.00	797.60	793.90	785.20	385.00	790.40	0.00	790.64	4.04	3.91	98.41	191.53
	121.100	69.00	797.60	793.90	785.20	445.00	790.40	0.00	790.72	5.40	4.52	98.41	191.54
	121.100	69.00	797.60	793.90	785.20	590.00	790.40	0.00	790.96	9.48	5.99	98.45	191.63
	121.200	1.00	0.00	0.00	785.20	260.00	790.40	0.00	790.51	1.36	2.64	98.40	222.58
	121.200	1.00	0.00	0.00	785.20	385.00	790.40	0.00	790.64	2.99	3.91	98.42	222.62
	121.200	1.00	0.00	0.00	785.20	445.00	790.40	0.00	790.72	3.99	4.52	98.42	222.64
	121.200	1.00	0.00	0.00	785.20	590.00	790.40	0.00	790.96	7.02	5.99	98.45	222.73
	122.000	98.00	0.00	0.00	786.00	260.00	790.49	0.00	790.55	6.74	1.92	135.40	100.17
	122.000	98.00	0.00	0.00	786.00	385.00	790.61	0.00	790.73	13.23	2.74	140.64	105.84
	122.000	98.00	0.00	0.00	786.00	445.00	790.69	0.00	790.84	16.45	3.09	144.16	109.71
	122.000	98.00	0.00	0.00	786.00	590.00	790.95	0.00	791.17	23.18	3.79	155.62	122.54
	123.000	70.00	0.00	0.00	786.60	260.00	790.53	0.00	790.65	13.66	2.76	94.11	70.36
	123.000	70.00	0.00	0.00	786.60	385.00	790.68	0.00	790.91	25.67	3.91	98.57	75.99
	123.000	70.00	0.00	0.00	786.60	445.00	790.77	0.00	791.07	31.21	4.39	101.39	79.66
	123.000	70.00	0.00	0.00	786.60	590.00	791.05	0.00	791.50	41.54	5.35	110.21	91.54
*	123.900	45.00	0.00	0.00	795.50	260.00	796.82	796.82	797.49	29.41	6.55	39.67	47.94
*	123.900	45.00	0.00	0.00	795.50	385.00	797.22	797.22	798.08	27.63	7.45	51.65	73.25
*	123.900	45.00	0.00	0.00	795.50	445.00	797.39	797.39	798.35	27.38	7.85	56.72	85.04
*	123.900	45.00	0.00	0.00	795.50	590.00	797.78	797.78	798.94	26.50	8.62	68.46	114.61

	SECNO	XLOC	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	124.000	5.00	804.60	800.00	795.50	260.00	797.40	0.00	797.72	9.16	4.55	57.09	85.92
*	124.000	5.00	804.60	800.00	795.50	385.00	797.97	0.00	798.39	8.80	5.20	74.07	129.76
*	124.000	5.00	804.60	800.00	795.50	445.00	798.22	0.00	798.68	8.66	5.45	81.68	151.26
*	124.000	5.00	804.60	800.00	795.50	590.00	798.79	0.00	799.34	8.48	5.99	98.58	202.66
*	125.000	25.00	0.00	0.00	795.50	260.00	797.52	797.52	798.12	252.84	6.20	41.92	16.35
*	125.000	25.00	0.00	0.00	795.50	385.00	797.91	797.91	798.62	232.36	6.79	56.72	25.26
	125.000	25.00	0.00	0.00	795.50	445.00	798.18	0.00	798.85	182.44	6.58	67.60	32.95
	125.000	25.00	0.00	0.00	795.50	590.00	798.82	0.00	799.41	113.20	6.16	95.83	55.45
	126.000	310.00	0.00	0.00	796.20	260.00	799.59	0.00	799.69	20.29	2.64	98.46	57.71
	126.000	310.00	0.00	0.00	796.20	385.00	800.14	0.00	800.29	22.28	3.09	124.67	81.56
	126.000	310.00	0.00	0.00	796.20	445.00	800.33	0.00	800.51	24.10	3.32	134.07	90.64
	126.000	310.00	0.00	0.00	796.20	590.00	800.76	0.00	800.98	27.68	3.80	155.36	112.14
	126.900	90.00	0.00	0.00	796.50	260.00	799.77	0.00	799.98	35.11	3.73	69.69	43.88
	126.900	90.00	0.00	0.00	796.50	385.00	800.33	0.00	800.65	42.86	4.56	84.34	58.81
	126.900	90.00	0.00	0.00	796.50	445.00	800.53	0.00	800.91	47.81	4.97	89.49	64.36
	126.900	90.00	0.00	0.00	796.50	590.00	800.96	0.00	801.49	58.89	5.86	100.66	76.88
	127.000	1.00	804.90	803.70	796.50	260.00	799.77	0.00	799.99	4.39	3.73	69.79	124.05
	127.000	1.00	804.90	803.70	796.50	385.00	800.33	0.00	800.65	5.61	4.57	84.33	162.60
	127.000	1.00	804.90	803.70	796.50	445.00	800.53	0.00	800.91	6.33	4.97	89.49	176.82
	127.000	1.00	804.90	803.70	796.50	590.00	800.96	0.00	801.49	8.00	5.86	100.72	208.54
	127.100	55.00	804.90	803.70	796.00	260.00	799.87	0.00	800.02	2.79	3.17	82.15	155.59
	127.100	55.00	804.90	803.70	796.00	385.00	800.46	0.00	800.70	3.78	3.95	97.44	197.91
	127.100	55.00	804.90	803.70	796.00	445.00	800.68	0.00	800.97	4.33	4.32	103.01	213.80
	127.100	55.00	804.90	803.70	796.00	590.00	801.16	0.00	801.57	5.58	5.11	115.35	249.85
	127.200	1.00	0.00	0.00	796.00	260.00	799.87	0.00	800.02	2.38	3.17	82.00	168.63
	127.200	1.00	0.00	0.00	796.00	385.00	800.46	0.00	800.70	3.09	3.95	97.39	218.98
	127.200	1.00	0.00	0.00	796.00	445.00	800.68	0.00	800.97	3.48	4.32	103.07	238.50
	127.200	1.00	0.00	0.00	796.00	590.00	801.16	0.00	801.57	4.34	5.10	115.61	283.13
	127.300	40.00	0.00	0.00	796.50	260.00	799.85	0.00	800.09	39.73	3.87	67.22	41.25
	127.300	40.00	0.00	0.00	796.50	385.00	800.45	0.00	800.77	45.75	4.53	84.90	56.92
	127.300	40.00	0.00	0.00	796.50	445.00	800.68	0.00	801.04	48.61	4.82	92.28	63.83
	127.300	40.00	0.00	0.00	796.50	590.00	801.18	0.00	801.64	54.45	5.42	108.80	79.96
	129.800	169.00	0.00	0.00	797.00	260.00	800.50	0.00	800.69	31.45	3.49	74.47	46.37
	129.800	169.00	0.00	0.00	797.00	385.00	801.19	0.00	801.43	33.28	3.96	97.10	66.74
	129.800	169.00	0.00	0.00	797.00	445.00	801.46	0.00	801.73	34.38	4.17	106.69	75.90
	129.800	169.00	0.00	0.00	797.00	590.00	802.09	0.00	802.40	37.14	4.51	130.93	96.82
	129.900	85.00	0.00	0.00	797.40	260.00	800.77	0.00	800.92	22.18	3.11	83.48	55.21
	129.900	85.00	0.00	0.00	797.40	385.00	801.47	0.00	801.69	25.39	3.73	103.16	76.40
	129.900	85.00	0.00	0.00	797.40	445.00	801.75	0.00	802.00	27.24	4.01	110.90	85.27
	129.900	85.00	0.00	0.00	797.40	590.00	802.37	0.00	802.70	30.94	4.60	128.21	106.07
	130.000	1.00	803.20	804.30	797.40	260.00	800.77	0.00	800.92	2.92	3.11	83.55	152.07
	130.000	1.00	803.20	804.30	797.40	385.00	801.47	0.00	801.69	3.49	3.73	103.24	206.13
	130.000	1.00	803.20	804.30	797.40	445.00	801.75	0.00	802.00	3.80	4.01	110.98	228.33
	130.000	1.00	803.20	804.30	797.40	590.00	802.37	0.00	802.70	4.45	4.60	128.34	279.77

SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CrSFL	CRIMS	EG	10K*S	VCH	AREA	.01K
130.100	16.00	803.20	804.30	797.50	260.00	800.76	0.00	800.94	3.67	3.37	77.26	135.76
130.100	16.00	803.20	804.30	797.50	385.00	801.47	0.00	801.71	4.17	3.97	96.93	188.50
130.100	16.00	803.20	804.30	797.50	445.00	801.74	0.00	802.02	4.48	4.25	104.66	210.26
130.100	16.00	803.20	804.30	797.50	590.00	802.36	0.00	802.72	5.12	4.84	122.00	260.86
130.200	1.00	0.00	0.00	797.50	260.00	800.76	0.00	800.94	3.13	3.36	77.27	146.86
130.200	1.00	0.00	0.00	797.50	385.00	801.47	0.00	801.71	3.42	3.97	96.94	208.31
130.200	1.00	0.00	0.00	797.50	445.00	801.74	0.00	802.02	3.61	4.25	104.67	234.15
130.200	1.00	0.00	0.00	797.50	590.00	802.36	0.00	802.72	3.99	4.84	122.01	295.24
130.300	40.00	0.00	0.00	797.60	260.00	800.76	0.00	801.01	45.45	3.97	65.41	38.57
130.300	40.00	0.00	0.00	797.60	385.00	801.47	0.00	801.77	44.54	4.39	87.65	57.69
130.300	40.00	0.00	0.00	797.60	445.00	801.75	0.00	802.08	45.03	4.59	97.05	66.32
130.300	40.00	0.00	0.00	797.60	590.00	802.39	0.00	802.77	46.15	4.91	120.18	86.85
132.800	525.00	0.00	0.00	799.20	260.00	802.65	0.00	802.79	26.25	3.07	84.63	50.75
132.800	525.00	0.00	0.00	799.20	385.00	803.38	0.00	803.55	26.42	3.36	114.56	74.90
132.800	525.00	0.00	0.00	799.20	445.00	803.68	0.00	803.87	26.27	3.47	128.37	86.82
132.800	525.00	0.00	0.00	799.20	590.00	804.34	0.00	804.54	25.43	3.65	161.43	117.01
132.900	50.00	0.00	0.00	799.60	260.00	802.87	0.00	803.02	23.20	3.15	82.43	53.98
132.900	50.00	0.00	0.00	799.60	385.00	803.59	0.00	803.81	26.39	3.77	102.14	74.95
132.900	50.00	0.00	0.00	799.60	445.00	803.89	0.00	804.15	28.02	4.04	110.18	84.07
132.900	50.00	0.00	0.00	799.60	590.00	804.53	0.00	804.86	31.87	4.63	127.38	104.52
133.000	1.00	803.00	804.20	799.60	260.00	802.87	0.00	803.02	3.18	3.15	82.55	145.73
133.000	1.00	803.00	804.20	799.60	385.00	803.60	0.00	803.82	3.77	3.77	102.21	198.19
133.000	1.00	803.00	804.20	799.60	445.00	803.89	0.00	804.15	4.07	4.04	110.26	220.64
133.000	1.00	803.00	804.20	799.60	590.00	804.50	0.00	804.89	11.07	4.98	118.50	177.29
133.100	20.00	803.00	804.10	799.20	260.00	802.86	0.00	803.04	3.82	3.46	75.12	133.04
133.100	20.00	803.00	804.10	799.20	385.00	803.59	0.00	803.84	4.30	4.06	94.76	185.71
133.100	20.00	803.00	804.10	799.20	445.00	803.88	0.00	804.17	4.56	4.33	102.79	208.33
133.100	20.00	803.00	804.10	799.20	590.00	804.49	0.00	804.95	13.69	5.43	108.65	159.46
133.200	1.00	0.00	0.00	799.20	260.00	802.86	0.00	803.04	3.27	3.46	75.13	143.76
133.200	1.00	0.00	0.00	799.20	385.00	803.59	0.00	803.84	3.52	4.06	94.77	205.32
133.200	1.00	0.00	0.00	799.20	445.00	803.88	0.00	804.17	3.67	4.33	102.80	232.31
133.200	1.00	0.00	0.00	799.20	590.00	804.62	0.00	804.98	3.78	4.81	122.78	303.36
133.300	50.00	0.00	0.00	798.00	260.00	803.08	0.00	803.11	2.36	1.30	200.75	169.42
133.300	50.00	0.00	0.00	798.00	385.00	803.88	0.00	803.92	2.93	1.57	244.49	224.94
133.300	50.00	0.00	0.00	798.00	445.00	804.22	0.00	804.27	3.16	1.69	263.58	250.43
133.300	50.00	0.00	0.00	798.00	590.00	805.03	0.00	805.09	3.45	1.89	311.78	317.84
135.000	271.00	0.00	0.00	797.30	260.00	803.14	0.00	803.16	1.69	1.15	225.70	199.71
135.000	271.00	0.00	0.00	797.30	385.00	803.96	0.00	803.99	2.18	1.41	272.27	261.01
135.000	271.00	0.00	0.00	797.30	445.00	804.31	0.00	804.34	2.36	1.52	292.88	289.44
135.000	271.00	0.00	0.00	794.30	590.00	805.11	0.00	805.11	.03	.19	5994.20	3493.99
136.000	800.00	0.00	0.00	796.10	260.00	803.28	0.00	803.31	1.89	1.16	223.90	189.19
136.000	800.00	0.00	0.00	796.10	385.00	804.15	0.00	804.18	2.46	1.39	277.89	245.66
136.000	800.00	0.00	0.00	796.10	445.00	804.51	0.00	804.54	2.66	1.47	302.74	273.01
136.000	800.00	0.00	0.00	796.10	590.00	805.09	0.00	805.14	3.22	1.69	393.39	328.68

SECNO	XLOB	ELTRD	ELLC	ELMIN	Q	CWSEL	CRITS	EG	10K*S	VCH	AREA	.01K
137.000	290.00	0.00	0.00	797.70	260.00	803.34	0.00	803.36	2.01	1.31	422.96	183.24
137.000	290.00	0.00	0.00	797.70	385.00	804.22	0.00	804.24	1.68	1.35	683.10	296.80
137.000	290.00	0.00	0.00	797.70	445.00	804.59	0.00	804.61	1.57	1.37	796.48	354.77
137.000	290.00	0.00	0.00	797.70	590.00	805.19	0.00	805.21	1.62	1.49	992.61	463.52
139.000	380.00	0.00	0.00	799.90	260.00	803.46	0.00	803.61	22.16	3.13	88.23	55.24
139.000	380.00	0.00	0.00	799.90	385.00	804.29	0.00	804.47	18.56	3.42	134.32	89.36
139.000	380.00	0.00	0.00	799.90	445.00	804.65	0.00	804.83	17.75	3.55	154.27	105.62
139.000	380.00	0.00	0.00	799.90	590.00	805.23	0.00	805.46	18.70	4.00	189.96	136.45
141.000	70.00	0.00	0.00	800.30	260.00	803.62	0.00	803.84	37.36	3.72	71.69	42.54
141.000	70.00	0.00	0.00	800.30	385.00	804.42	0.00	804.67	29.75	4.04	103.83	70.59
141.000	70.00	0.00	0.00	800.30	445.00	804.76	0.00	805.02	27.74	4.18	118.94	84.49
141.000	70.00	0.00	0.00	800.30	590.00	805.34	0.00	805.67	28.20	4.68	146.91	111.10
142.000	290.00	0.00	0.00	800.50	260.00	804.31	0.00	804.37	9.49	2.22	277.01	84.40
142.000	290.00	0.00	0.00	800.50	385.00	805.03	0.00	805.07	5.97	2.03	501.12	157.60
142.000	290.00	0.00	0.00	800.50	445.00	805.35	0.00	805.38	5.01	1.97	606.14	198.82
142.000	290.00	0.00	0.00	800.50	590.00	805.98	0.00	806.01	4.05	1.95	818.64	293.27

AUGUSTA CREEK

SUMMARY PRINTOUT TABLE 150

	SECNO	G	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	120.800	260.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	385.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	445.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	590.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.900	260.00	790.40	0.00	-.00	0.00	23.50	30.00
	120.900	385.00	790.40	-.00	-.00	0.00	23.50	30.00
	120.900	445.00	790.40	-.00	-.00	0.00	23.50	30.00
	120.900	590.00	790.40	-.00	-.00	0.00	23.50	30.00
	121.000	260.00	790.40	0.00	.00	0.00	23.50	1.00
	121.000	385.00	790.40	-.00	.00	0.00	23.50	1.00
	121.000	445.00	790.40	-.00	.00	0.00	23.50	1.00
	121.000	590.00	790.40	-.00	.00	0.00	23.50	1.00
	121.100	260.00	790.40	0.00	.00	0.00	23.50	69.00
	121.100	385.00	790.40	.00	.00	0.00	23.50	69.00
	121.100	445.00	790.40	.00	.00	0.00	23.50	69.00
	121.100	590.00	790.40	.00	.00	0.00	23.50	69.00
	121.200	260.00	790.40	0.00	.00	0.00	23.50	1.00
	121.200	385.00	790.40	.00	.00	0.00	23.50	1.00
	121.200	445.00	790.40	.00	.00	0.00	23.50	1.00
	121.200	590.00	790.40	.00	.00	0.00	23.50	1.00
	122.000	260.00	790.49	0.00	.09	0.00	43.13	98.00
	122.000	385.00	790.61	.12	.21	0.00	43.62	98.00
	122.000	445.00	790.69	.08	.29	0.00	43.94	98.00
	122.000	590.00	790.95	.26	.55	0.00	44.99	98.00
	123.000	260.00	790.53	0.00	.03	0.00	30.00	70.00
	123.000	385.00	790.68	.15	.07	0.00	30.00	70.00
	123.000	445.00	790.77	.09	.08	0.00	30.00	70.00
	123.000	590.00	791.05	.28	.10	0.00	30.00	70.00
*	123.900	260.00	796.82	0.00	6.30	0.00	30.00	45.00
*	123.900	385.00	797.22	.40	6.54	0.00	30.00	45.00
*	123.900	445.00	797.39	.17	6.62	0.00	30.00	45.00
*	123.900	590.00	797.78	.39	6.73	0.00	30.00	45.00
*	124.000	260.00	797.40	0.00	.58	0.00	30.00	5.00
*	124.000	385.00	797.97	.57	.75	0.00	30.00	5.00
*	124.000	445.00	798.22	.25	.83	0.00	30.00	5.00
*	124.000	590.00	798.79	.56	1.00	0.00	30.00	5.00
*	125.000	260.00	797.52	0.00	-.12	0.00	35.95	25.00
*	125.000	385.00	797.91	.39	-.06	0.00	39.80	25.00
	125.000	445.00	798.18	.27	-.05	0.00	41.36	25.00
	125.000	590.00	798.82	.65	.04	0.00	45.13	25.00
	126.000	260.00	799.59	0.00	2.07	0.00	45.47	310.00
	126.000	385.00	800.14	.56	2.24	0.00	48.69	310.00

126.000	445.00	800.33	.19	2.16	0.00	49.79	310.00
126.000	590.00	800.78	.43	1.94	0.00	52.20	310.00

SECNO	W	CHSEL	DIFMSP	DIFMSX	DIFKMS	TOPWID	XLCH
126.900	260.00	799.77	0.00	.18	0.00	26.00	90.00
126.900	385.00	800.33	.56	.18	0.00	26.00	90.00
126.900	445.00	800.53	.20	.19	0.00	26.00	90.00
126.900	590.00	800.96	.43	.20	0.00	26.00	90.00
127.000	260.00	799.77	0.00	.00	0.00	26.00	1.00
127.000	385.00	800.33	.56	.00	0.00	26.00	1.00
127.000	445.00	800.53	.20	.00	0.00	26.00	1.00
127.000	590.00	800.96	.43	.00	0.00	26.00	1.00
127.100	260.00	799.87	0.00	.10	0.00	26.00	55.00
127.100	385.00	800.46	.59	.13	0.00	26.00	55.00
127.100	445.00	800.68	.22	.15	0.00	26.00	55.00
127.100	590.00	801.16	.48	.20	0.00	26.00	55.00
127.200	260.00	799.87	0.00	-.00	0.00	26.00	1.00
127.200	385.00	800.46	.59	.00	0.00	26.00	1.00
127.200	445.00	800.68	.22	.00	0.00	26.00	1.00
127.200	590.00	801.16	.48	.00	0.00	26.00	1.00
127.300	260.00	799.85	0.00	-.01	0.00	28.10	40.00
127.300	385.00	800.45	.60	-.01	0.00	30.97	40.00
127.300	445.00	800.68	.23	-.00	0.00	32.09	40.00
127.300	590.00	801.18	.50	.02	0.00	34.47	40.00
129.800	260.00	800.50	0.00	.64	0.00	30.63	169.00
129.800	385.00	801.19	.69	.74	0.00	34.35	169.00
129.800	445.00	801.46	.27	.79	0.00	35.81	169.00
129.800	590.00	802.09	.62	.91	0.00	41.58	169.00
129.900	260.00	800.77	0.00	.27	0.00	28.00	85.00
129.900	385.00	801.47	.70	.28	0.00	28.00	85.00
129.900	445.00	801.75	.28	.29	0.00	28.00	85.00
129.900	590.00	802.37	.62	.28	0.00	28.00	85.00
130.000	260.00	800.77	0.00	.00	0.00	28.00	1.00
130.000	385.00	801.47	.70	.00	0.00	28.00	1.00
130.000	445.00	801.75	.28	.00	0.00	28.00	1.00
130.000	590.00	802.37	.62	.00	0.00	28.00	1.00
130.100	260.00	800.76	0.00	-.01	0.00	28.00	18.00
130.100	385.00	801.47	.70	-.01	0.00	28.00	18.00
130.100	445.00	801.74	.28	-.01	0.00	28.00	18.00
130.100	590.00	802.36	.62	-.01	0.00	28.00	18.00
130.200	260.00	800.76	0.00	.00	0.00	28.00	1.00
130.200	385.00	801.47	.70	.00	0.00	28.00	1.00
130.200	445.00	801.74	.28	.00	0.00	28.00	1.00
130.200	590.00	802.36	.62	.00	0.00	28.00	1.00
130.300	260.00	800.76	0.00	-.00	0.00	29.28	40.00
130.300	385.00	801.47	.71	.01	0.00	33.17	40.00
130.300	445.00	801.75	.28	.01	0.00	34.68	40.00
130.300	590.00	802.39	.64	.03	0.00	39.53	40.00

SECND	U	CrSEL	DIFrSP	DIFrSX	DIFr-S	TOPWID	XLCH
132.800	260.00	802.65	0.00	1.89	0.00	37.44	525.00
132.800	385.00	803.38	.73	1.91	0.00	44.53	525.00
132.800	445.00	803.68	.30	1.93	0.00	47.45	525.00
132.800	590.00	804.34	.66	1.94	0.00	53.79	525.00
132.900	260.00	802.87	0.00	.22	0.00	27.00	90.00
132.900	385.00	803.59	.73	.22	0.00	27.00	90.00
132.900	445.00	803.89	.30	.21	0.00	27.00	90.00
132.900	590.00	804.53	.64	.19	0.00	27.00	90.00
133.000	260.00	802.87	0.00	.00	0.00	27.00	1.00
133.000	385.00	803.60	.73	.00	0.00	27.00	1.00
133.000	445.00	803.89	.30	.00	0.00	27.00	1.00
133.000	590.00	804.50	.61	-.02	0.00	27.00	1.00
133.100	260.00	802.86	0.00	-.01	0.00	27.00	20.00
133.100	385.00	803.59	.73	-.01	0.00	27.00	20.00
133.100	445.00	803.88	.30	-.01	0.00	27.00	20.00
133.100	590.00	804.49	.61	-.01	0.00	27.00	20.00
133.200	260.00	802.86	0.00	.00	0.00	27.00	1.00
133.200	385.00	803.59	.73	.00	0.00	27.00	1.00
133.200	445.00	803.88	.30	.00	0.00	27.00	1.00
133.200	590.00	804.62	.74	.13	0.00	27.00	1.00
133.300	260.00	803.08	0.00	.22	0.00	52.62	50.00
133.300	385.00	803.88	.80	.30	0.00	56.07	50.00
133.300	445.00	804.22	.34	.34	0.00	57.51	50.00
133.300	590.00	805.03	.81	.41	0.00	61.00	50.00
135.000	260.00	803.14	0.00	.06	0.00	55.08	271.00
135.000	385.00	803.96	.82	.08	0.00	58.71	271.00
135.000	445.00	804.31	.34	.08	0.00	60.24	271.00
135.000	590.00	805.11	.80	.07	0.00	806.71	271.00
136.000	260.00	803.28	0.00	.14	0.00	57.78	800.00
136.000	385.00	804.15	.87	.19	0.00	67.14	800.00
136.000	445.00	804.51	.36	.20	0.00	71.04	800.00
136.000	590.00	805.09	.59	-.01	0.00	258.29	800.00
137.000	260.00	803.34	0.00	.06	0.00	285.51	290.00
137.000	385.00	804.22	.88	.07	0.00	305.81	290.00
137.000	445.00	804.59	.37	.08	0.00	314.69	290.00
137.000	590.00	805.19	.60	.10	0.00	329.49	290.00
139.000	260.00	803.46	0.00	.12	0.00	52.04	380.00
139.000	385.00	804.29	.84	.07	0.00	57.03	380.00
139.000	445.00	804.65	.35	.06	0.00	59.06	380.00
139.000	590.00	805.23	.59	.04	0.00	62.52	380.00
141.000	260.00	803.62	0.00	.17	0.00	37.38	70.00
141.000	385.00	804.42	.80	.12	0.00	43.27	70.00
141.000	445.00	804.76	.34	.11	0.00	45.77	70.00
141.000	590.00	805.34	.58	.11	0.00	50.08	70.00

SECNO	Q	C.SEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
142.000	260.00	804.31	0.00	.69	0.00	305.23	290.00
142.000	385.00	805.03	.71	.61	0.00	321.83	290.00
142.000	445.00	805.35	.32	.59	0.00	329.32	290.00
142.000	590.00	805.98	.63	.64	0.00	343.98	290.00

SUMMARY OF ERRORS

CAUTION SECNO= 123.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 124.000 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 125.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 125.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 125.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 125.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

FLOOD INSURANCE ZONE DATA FOR AUGUSTA CREEK

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND 10_	2_	0.2_
120.800	0.	0.00	0.00	0.00
120.900	30.	.00	.00	-.00
121.000	31.	.00	.00	-.00
121.100	100.	-.00	-.00	.00
121.200	101.	-.00	-.00	.00
122.000	199.	-.20	-.08	.26
123.000	269.	-.24	-.09	.28
123.960	314.	-.57	-.17	.39
124.000	319.	-.82	-.25	.56
125.000	344.	-.65	-.27	.65
126.000	654.	-.75	-.19	.43
126.900	744.	-.76	-.20	.43
127.000	745.	-.76	-.20	.43
127.100	800.	-.81	-.22	.48
127.200	801.	-.81	-.22	.48
127.300	841.	-.82	-.23	.50
129.800	1010.	-.97	-.27	.62
129.900	1095.	-.98	-.28	.62
130.000	1096.	-.98	-.28	.62
130.100	1114.	-.98	-.28	.62
130.200	1115.	-.98	-.28	.62
130.300	1155.	-.99	-.28	.64
132.800	1680.	-1.03	-.30	.66
132.900	1770.	-1.03	-.30	.64
133.000	1771.	-1.03	-.30	.61
133.100	1791.	-1.02	-.30	.61
133.200	1792.	-1.02	-.30	.74
133.300	1842.	-1.14	-.34	.81
135.000	2113.	-1.16	-.34	.80
136.000	2913.	-1.22	-.36	.59
137.000	3203.	-1.25	-.37	.60
139.000	3583.	-1.10	-.35	.59
141.000	3653.	-1.14	-.34	.58
142.000	3943.	-1.04	-.32	.63
WEIGHTED AVG FOR REACH		-.99	-.29	.59

FHF FOR THE REACH = 010 WITH 92.0_ OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 2

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  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -   01,02,03
  MODIFICATION -  50,51,52,53
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0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: NATURAL RUN

00BREAK00

*PROF 1

CCHV= .300 CEHV= .500
*SECNO 120.800
3280 CROSS SECTION 120.80 EXTENDED 1.20 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
	VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER. (A)								
120.80	5.40	790.40	0.00	790.40	790.54	.14	0.00	0.00	789.30
445.	29.	416.	0.	72.	132.	0.	0.	0.	789.20
0.00	.41	3.16	0.00	.110	.042	.110	0.000	785.00	1900.00
.001339	0.	0.	0.	0	0	0	0.00	127.00	2027.00
*SECNO 120.900									
120.90	5.30	790.40	0.00	0.00	790.66	.26	.05	.06	798.10
445.	0.	445.	0.	0.	109.	0.	0.	0.	798.10
.00	0.00	4.08	0.00	.110	.042	.110	.041	785.10	2000.00
.002587	30.	30.	30.	2	0	0	0.00	23.50	2023.50
*SECNO 121.000									
3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 797.60 MAX ELLC= 793.00									
121.00	5.30	790.40	0.00	0.00	790.66	.26	.00	.00	798.10
445.	0.	445.	0.	0.	109.	0.	0.	0.	798.10
.00	0.00	4.08	0.00	.110	.014	.110	.039	785.10	2000.00
.000391	1.	1.	1.	0	0	0	0.00	23.50	2023.50
*SECNO 121.100									
3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 797.60 MAX ELLC= 793.90									
	UPSTREAM CROSS SECTION AT RR BRIDGE (B)								
121.10	5.20	790.40	0.00	0.00	790.72	.32	.03	.03	798.10
445.	0.	445.	0.	0.	98.	0.	0.	0.	798.10
.01	0.00	4.52	0.00	.110	.014	.110	.022	785.20	2000.00
.000540	69.	69.	69.	2	0	0	0.00	23.50	2023.50
*SECNO 121.200									
SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

121.20	5.20	790.40	0.00	0.00	790.72	.32	.00	.00	798.10
445.	0.	445.	0.	0.	98.	0.	0.	0.	798.10
.01	0.00	4.52	0.00	.110	.014	.110	.021	785.20	2000.00
.000399	1.	1.	1.	0	0	0	0.00	23.50	2023.50

*SECNO 122.000

VALLEY SECTION 122.0 (C)

122.00	4.69	790.69	0.00	0.00	790.84	.15	.07	.05	801.50
445.	0.	445.	0.	0.	144.	0.	1.	0.	800.00
.02	0.00	3.09	0.00	.110	.042	.110	.031	786.00	2006.83
.001645	95.	98.	102.	2	0	0	0.00	43.94	2050.77

CCHV= .300 CEHV= .500
*SECNO 123.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 792.00 ELREA= 792.00

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

123.00	4.17	790.77	0.00	0.00	791.07	.30	.15	.08	790.00
445.	0.	445.	0.	0.	101.	0.	1.	0.	787.90
.02	0.00	4.39	0.00	.110	.042	.110	.034	786.60	2008.00
.003121	70.	70.	70.	0	0	0	0.00	30.00	2038.00

CCHV= .300 CEHV= .500
*SECNO 123.900

3301 HV CHANGED MORE THAN HVINS

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

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 804.60 ELREA= 804.70

123.50	1.89	797.39	797.39	0.00	798.35	.96	.13	.33	804.60
445.	0.	445.	0.	0.	57.	0.	1.	0.	804.70
.02	0.00	7.85	0.00	.110	.014	.110	.031	795.50	2008.00
.002738	45.	45.	45.	20	14	0	0.00	30.00	2038.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 796.98 .NOT 797.39 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SK	XK	XKOR	COFG	RDLEN	RWC	RWP	RAREA	SS	FLCHU	FLCHD
	1.25	1.60	3.00	0.00	30.00	3.00	101.00	0.00	795.50	795.50

*SECNO 124.000
CLASS B LOW FLOW

3420 BRIDGE W.S.= 797.54 BRIDGE VELOCITY=. 8.09 CALCULATED CHANNEL AREA=. 55.

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	798.68	0.00	0.	445.	101.	122.	800.00	804.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

UPSTREAM CROSS SECTION AT DAM (E)

124.00	2.72	798.22	0.00	0.00	798.68	.46	.34	0.00	804.60
445.	0.	445.	0.	0.	82.	0.	1.	0.	804.70
.02	0.00	5.45	0.00	.110	.014	.110	.031	795.50	2008.00
.000866	5.	5.	5.	0	0	0	0.00	30.00	2038.00

*SECNO 125.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.10 ELREA= 804.90

VALLEY SECTION 125.0 (F)

125.00	2.68	798.18	0.00	0.00	798.85	.67	.06	.11	802.10
445.	0.	445.	0.	0.	68.	0.	1.	0.	804.90
.02	0.00	6.58	0.00	.110	.042	.110	.031	795.50	2007.49
.018244	25.	25.	25.	2	0	0	0.00	41.36	2048.85

CCHV= .100 CEHV= .300
*SECNO 126.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.80 ELREA= 805.60

VALLEY SECTION 126.0 (G)

126.00	4.13	800.33	0.00	0.00	800.51	.17	1.61	.05	802.80
445.	0.	445.	0.	0.	134.	0.	2.	1.	805.60
.05	0.00	3.32	0.00	.110	.042	.110	.036	796.20	2002.35
.002410	310.	310.	310.	3	0	0	0.00	49.79	2052.14

CCHV= .300 CEHV= .500

*SECNO 126.900
3280 CROSS SECTION 126.90 EXTENDED 4.23 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

126.90	4.03	800.53	0.00	0.00	800.91	.38	.30	.11	805.10
445.	0.	445.	0.	0.	89.	0.	2.	1.	805.10
.05	0.00	4.97	0.00	.110	.042	.110	.037	796.50	2000.00
.004781	90.	90.	90.	2	0	0	0.00	26.00	2026.00

*SECNO 127.000
3280 CROSS SECTION 127.00 EXTENDED 4.23 FEET

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 804.90 MAX ELLC= 803.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

127.00	4.03	800.53	0.00	0.00	800.91	.38	.00	.00	805.10
445.	0.	445.	0.	0.	89.	0.	2.	1.	805.10
.05	0.00	4.97	0.00	.110	.014	.110	.037	796.50	2000.00
.000633	1.	1.	1.	0	0	0	0.00	26.00	2026.00

*SECNO 127.100
3280 CROSS SECTION 127.10 EXTENDED 4.38 FEET

wall between 2 cells not included

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 804.90 MAX ELLC= 803.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

127.10	4.68	800.68	0.00	0.00	800.97	.29	.03	.03	805.10
445.	0.	445.	0.	0.	103.	0.	2.	1.	805.10
.06	0.00	4.32	0.00	.110	.014	.110	.035	796.00	2000.00
.000433	55.	55.	55.	0	0	0	0.00	26.00	2026.00

*SECNO 127.200
3280 CROSS SECTION 127.20 EXTENDED 4.38 FEET

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

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   127.20      4.68    800.68      0.00      0.00    800.97      .29       .00       .00    805.10
   445.          0.    445.          0.        0.    103.          0.        2.        1.    805.10
     .06      0.00      4.32      0.00      .110      .014      .110      .035    796.00   2000.00
.000348         1.         1.        1.         0         0         0      0.00     26.00   2026.00

*SECNO 127.300

                VALLEY SECTION 127.3  (I)

   127.30      4.18    800.68      0.00      0.00    801.04      .36       .03       .04    805.10
   445.          0.    445.          0.        0.     92.          0.        2.        1.    805.10
     .06      0.00      4.82      0.00      .110      .042      .110      .035    796.50   2013.95
.004861        40.        40.       40.         1         0         0      0.00     32.09   2046.05

CCHV=     .100 CEHV=     .300
*SECNO 129.800

                VALLEY SECTION 129.8  (J)

   129.80      4.46    801.46      0.00      0.00    801.73      .27       .69       .01    805.10
   445.          0.    445.          0.        0.    107.          0.        2.        1.    805.10
     .07      0.00      4.17      0.00      .110      .042      .110      .036    797.00   2012.10
.003438        169.       169.      169.         2         0         0      0.00     35.81   2047.90

CCHV=     .300 CEHV=     .500
*SECNO 129.900
3280 CROSS SECTION     129.90 EXTENDED     11.65 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLFA=      805.10 ELRFA=      805.10

   129.90      4.35    801.75      0.00      0.00    802.00      .25       .26       .01    805.10
   445.          0.    445.          0.        0.    111.          0.        3.        1.    805.10
     .08      0.00      4.01      0.00      .110      .042      .110      .037    797.40   2000.00
.002724         85.        85.       85.         2         0         0      0.00     28.00   2028.00

*SECNO 130.000
3280 CROSS SECTION     130.00 EXTENDED     11.65 FEET

3370 NORMAL BRIDGE.NRD=   6 MIN ELTRD=   803.20 MAX ELLC=   804.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLFA=      805.10 ELRFA=      805.10

   130.00      4.35    801.75      0.00      0.00    802.00      .25       .00       .00    805.10
   445.          0.    445.          0.        0.    111.          0.        3.        1.    805.10
     .08      0.00      4.01      0.00      .110      .014      .110      .037    797.40   2000.00
.000380         1.         1.        1.         0         0         0      0.00     28.00   2028.00

*SECNO 130.100
3280 CROSS SECTION     130.10 EXTENDED     11.64 FEET
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LOW area in extreme LOB, not utilized thus XSEC not really extended

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

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 803.20 MAX ELLC= 804.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE (K)

130.10	4.24	801.74	0.00	0.00	802.02	.28	.01	.02	805.10
445.	0.	445.	0.	0.	105.	0.	3.	1.	805.10
.08	0.00	4.25	0.00	.110	.014	.110	.036	797.50	2000.00
.000448	18.	18.	18.	2	0	0	0.00	28.00	2028.00

*SECNO 130.200
3280 CROSS SECTION 130.20 EXTENDED 11.64 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

130.20	4.24	801.74	0.00	0.00	802.02	.28	.00	.00	805.10
445.	0.	445.	0.	0.	105.	0.	3.	1.	805.10
.08	0.00	4.25	0.00	.110	.014	.110	.036	797.50	2000.00
.000361	1.	1.	1.	0	0	0	0.00	28.00	2028.00

*SECNO 130.300

VALLEY SECTION 130.3 (L)

130.30	4.15	801.75	0.00	0.00	802.08	.33	.04	.02	805.50
445.	0.	445.	0.	0.	97.	0.	3.	1.	806.00
.08	0.00	4.59	0.00	.110	.042	.110	.037	797.60	2012.66
.004503	40.	40.	40.	0	0	0	0.00	34.68	2047.34

CCHV= .100 CEHV= .300
*SECNO 132.800

VALLEY SECTION 132.8 (M)

132.80	4.48	803.68	0.00	0.00	803.87	.19	1.77	.01	806.00
445.	0.	445.	0.	0.	128.	0.	4.	1.	806.00
.12	0.00	3.47	0.00	.110	.042	.110	.038	799.20	2005.94
.002627	525.	525.	525.	2	0	0	0.00	47.45	2053.39

CCHV= .300 CEHV= .500
*SECNO 132.900
3280 CROSS SECTION 132.90 EXTENDED 10.89 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 806.50

132.90	4.29	803.89	0.00	0.00	804.15	.25	.24	.03	806.50
445.	0.	445.	0.	0.	110.	0.	4.	2.	806.50
.13	0.00	4.04	0.00	.110	.042	.110	.038	799.60	2000.00
.002802	90.	90.	90.	2	0	0	0.00	27.00	2027.00

*SECNO 133.000
3280 CROSS SECTION 133.00 EXTENDED 10.69 FEET

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

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 806.50

133.00	4.29	803.89	0.00	0.00	804.15	.25	.00	.00	806.50
445.	0.	445.	0.	0.	110.	0.	4.	2.	806.50
.13	0.00	4.04	0.00	.110	.014	.110	.038	799.60	2000.00
.000407	1.	1.	1.	0	0	0	0.00	27.00	2027.00

*SECNO 133.100
3280 CROSS SECTION 133.10 EXTENDED 10.88 FEET

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

133.10	4.68	803.88	0.00	0.00	804.17	.29	.01	.02	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.33	0.00	.110	.014	.110	.038	799.20	2000.00
.000456	20.	20.	20.	2	0	0	0.00	27.00	2027.00

*SECNO 133.200
3280 CROSS SECTION 133.20 EXTENDED 10.88 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

133.20	4.68	803.88	0.00	0.00	804.17	.29	.00	.00	806.50

445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.33	0.00	.110	.014	.110	.038	799.20	2000.00
.000367	1.	1.	1.	0	0	0	0.00	27.00	2027.00

*SECNO 133.300

133.30	6.22	804.22	0.00	0.00	804.27	.04	.02	.07	806.50
445.	0.	445.	0.	0.	264.	0.	5.	2.	808.00
.14	0.00	1.69	0.00	.110	.042	.110	.038	798.00	1999.62
.000316	50.	50.	50.	2	0	0	0.00	57.51	2057.13

*SECNO 135.000
3280 CROSS SECTION 135.00 EXTENDED 7.61 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.00 ELREA= 811.80

VALLEY SECTION 135.0 (O)

135.00	7.01	804.31	0.00	0.00	804.34	.04	.07	.00	805.00
445.	0.	445.	0.	0.	293.	0.	6.	2.	811.80
.19	0.00	1.52	0.00	.110	.042	.110	.039	797.30	1991.76
.000236	274.	271.	274.	0	0	0	0.00	60.24	2052.00

*SECNO 136.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.00 ELREA= 804.80

VALLEY SECTION 136.0 (P)

136.00	8.41	804.51	0.00	0.00	804.54	.03	.20	.00	805.00
445.	0.	445.	0.	0.	303.	0.	12.	3.	804.80
.34	0.00	1.47	0.00	.110	.042	.110	.039	796.10	1984.59
.000266	800.	800.	800.	1	0	0	0.00	71.04	2055.63

CCHV= .300 CEHV= .500
*SECNO 137.000

VALLEY SECTION 137.0 (Q)

137.00	6.89	804.59	0.00	0.00	804.61	.02	.06	.00	803.20
445.	123.	271.	50.	434.	198.	164.	16.	4.	800.20
.42	.28	1.37	.31	.110	.042	.110	.040	797.70	1796.21
.000157	290.	290.	290.	0	0	0	0.00	314.69	2110.91

*SECNO 139.000

VALLEY SECTION 139.0, OLD RR GRADE (R)

139.00	4.75	804.65	0.00	0.00	804.83	.19	.14	.08	803.20
445.	23.	421.	1.	33.	118.	3.	20.	6.	802.90
.46	.69	3.55	.47	.110	.042	.110	.040	799.90	1973.98
.001775	370.	380.	410.	2	0	0	0.00	59.06	2033.04

*SECNO 141.000

141.00	4.46	804.76	0.00	0.00	805.02	.26	.15	.04	803.30
445.	10.	434.	1.	13.	104.	2.	20.	6.	803.30
.46	.76	4.18	.52	.110	.042	.110	.040	800.30	1986.58
.002774	70.	70.	70.	2	0	0	0.00	45.77	2032.35

*SECNO 142.000

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

142.00	4.85	805.35	0.00	0.00	805.38	.03	.29	.07	803.20
445.	139.	238.	68.	320.	121.	165.	22.	7.	803.30
.52	.44	1.97	.41	.110	.042	.110	.040	800.50	1812.13
.000501	310.	290.	280.	2	0	0	0.00	329.32	2141.46

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED RUN

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

T1      VILLAGE OF AUGUSTA
T2      ENCROACHMENT RUN
T3      AUGUSTA CREEK AT AUGUSTA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.      6.        0.        0.  0.000000      0.00      0.0       0.    790.500     0.000
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000    0.000    -1.000    0.000     0.000     0.000     0.000     0.000     0.000     0.000
*PROF 2

CCHV=    .300  CEHV=    .500
*SECNO 120.800
 2800 NAT Q1=    121.59  WSEL=    790.40  ENC Q1=    121.59  WSEL=    790.50  RATIO=  0.0000
  NAT Q1=    128.  RATIOS LOB,CH,ROB=    .0772    .9228  0.0000  WSEL=    790.50
 3280 CROSS SECTION     120.80 EXTENDED       1.30 FEET

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


3470 ENCROACHMENT STATIONS=    1972.3    2027.0  TYPE=     4  TARGET=        .048

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

    120.80      5.50    790.50      0.00    790.40    790.65      .15      0.00      0.00    789.30
       445.       14.      431.        0.      26.      135.        0.        0.        0.    789.20
      0.00       .52      3.20      0.00      .110      .042      .110     0.000    785.00   1972.25
   .001340        0.        0.        0.         0         0         0      0.00     54.75   2027.00

*SECNO 120.900
 2800 NAT Q1=     87.50  WSEL=    790.40  ENC Q1=     90.28  WSEL=    790.50  RATIO=  -.0319
  NAT Q1=     90.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.50

3470 ENCROACHMENT STATIONS=    2000.0    2023.5  TYPE=     4  TARGET=      0.000
    120.90      5.41    790.51      0.00    790.40    790.75      .25       .05       .05    798.10
       445.       0.      445.        0.       0.      112.        0.        0.        0.    798.10
       .00      0.00      3.99      0.00      .110      .042      .110      .041    785.10   2000.00
   .002416       30.       30.       30.         2         0         0      0.00     23.50   2023.50

*SECNO 121.000
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     3700.   BRIDGE STENCL=   2000.00    STENCR=   2023.50
 2800 NAT Q1=    225.16  WSEL=    790.40  ENC Q1=    248.73  WSEL=    790.50  RATIO=  -.1047
 NAT Q1=    249.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.50

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  797.60 MAX ELLC=  793.00

3470 ENCROACHMENT STATIONS=    2000.0    2023.5  TYPE=     4  TARGET=       0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2006.0
   121.00      5.41   790.51      0.00   790.40   790.75      .25      .00      .00   798.10
     445.        0.     445.        0.       0.     112.       0.       0.       0.   798.10
      .00      0.00     3.99      0.00     .110     .014     .110     .039   785.10  2000.00
  .000318        1.       1.        1.        0        0        0     0.00    23.50  2023.50

*SECNO 121.100
     3700.   BRIDGE STENCL=   2000.00    STENCR=   2023.50
 2800 NAT Q1=    191.54  WSEL=    790.40  ENC Q1=    208.07  WSEL=    790.50  RATIO=  -.0863
 NAT Q1=    208.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.50

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  797.60 MAX ELLC=  793.90

3470 ENCROACHMENT STATIONS=    2000.0    2023.5  TYPE=     4  TARGET=       0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2012.0

                UPSTREAM CROSS SECTION AT RR BRIDGE   (B)

   121.10      5.31   790.51      0.00   790.40   790.81      .30      .03      .03   798.10
     445.        0.     445.        0.       0.     101.       0.       0.       0.   798.10
      .01      0.00     4.41      0.00     .110     .014     .110     .022   785.20  2000.00
  .000456       69.      69.       69.        2        0        0     0.00    23.50  2023.50

*SECNO 121.200
 2800 NAT Q1=    222.64  WSEL=    790.40  ENC Q1=    230.61  WSEL=    790.50  RATIO=  -.0358
 NAT Q1=    231.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.50
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         CLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

3470 ENCROACHMENT STATIONS=    2000.0    2023.5  TYPE=     4  TARGET=       0.000
   121.20      5.31   790.51      0.00   790.40   790.81      .30      .00      .00   798.10
     445.        0.     445.        0.       0.     101.       0.       0.       0.   798.10
      .01      0.00     4.41      0.00     .110     .014     .110     .021   785.20  2000.00
  .000371        1.       1.        1.        0        0        0     0.00    23.50  2023.50

*SECNO 122.000
 2800 NAT Q1=    109.71  WSEL=    790.69  ENC Q1=    114.52  WSEL=    790.79  RATIO=  -.0438
 NAT Q1=    115.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.79

3470 ENCROACHMENT STATIONS=    2000.0    2066.0  TYPE=     4  TARGET=       0.000

                VALLEY SECTION 122.0   (C)
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122.00	4.78	790.78	0.00	790.69	790.92	.14	.07	.05	801.50
445.	0.	445.	0.	0.	148.	0.	1.	0.	800.00
.02	0.00	3.00	0.00	.110	.042	.110	.031	786.00	2006.61
.001522	95.	98.	102.	2	0	0	0.00	44.31	2050.92

CCHV= .300 CEHV= .500
*SECNO 123.000
2800 NAT Q1= 79.66 WSEL= 790.77 ENC Q1= 83.92 WSEL= 790.87 RATIO= -.0536
NAT Q1= 84. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 790.67

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 792.00 ELREA= 792.00

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

123.00	4.26	790.86	0.00	790.77	791.14	.28	.15	.07	790.00
445.	0.	445.	0.	0.	104.	0.	1.	0.	787.90
.02	0.00	4.27	0.00	.110	.042	.110	.034	786.60	2008.00
.003211	70.	70.	70.	2	0	0	0.00	30.00	2038.00

CCHV= .300 CEHV= .500
*SECNO 123.900
2800 NAT Q1= 85.04 WSEL= 797.39 ENC Q1= 92.31 WSEL= 797.49 RATIO= -.0854
NAT Q1= 92. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 797.49

3301 HV CHANGED MORE THAN HVINS

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

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

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

123.90	1.89	797.39	797.39	797.39	798.35	.96	.13	.34	804.60
445.	0.	445.	0.	0.	57.	0.	1.	0.	804.70
.02	0.00	7.84	0.00	.110	.014	.110	.031	795.50	2008.00
.002736	45.	45.	45.	20	14	0	0.00	30.00	2038.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 796.98 ,NOT 797.39 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	HWC	AWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.60	3.00	0.00	30.00	3.00	101.00	0.00	795.50	795.50

*SECNO 124.000
3700. BRIDGE STENCL= 2008.00 STENCR= 2038.00

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.= 797.54 BRIDGE VELOCITY= 8.09 CALCULATED CHANNEL AREA= 55.

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	798.75	0.00	0.	445.	101.	122.	800.00	804.60

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000
ELENCL= 0.00 ELENCR= 0.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

UPSTREAM CROSS SECTION AT DAM (E)

124.00	2.82	798.32	0.00	798.22	798.75	.43	.41	0.00	804.60
445.	0.	445.	0.	0.	85.	0.	1.	0.	804.70
.02	0.00	5.26	0.00	.110	.014	.110	.031	795.50	2008.00
.000773	5.	5.	5.	0	0	0	0.00	30.00	2038.00

*SECNO 125.000
2R00 NAT Q1= 32.95 WSEL= 798.18 ENC Q1= 35.99 WSEL= 798.28 RATIO= -.0924
NAT Q1= 36. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 798.28

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

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.10 ELREA= 804.90

VALLEY SECTION 125.0 (F)

125.00	2.80	798.30	0.00	798.18	798.88	.58	.05	.07	802.10
445.	0.	445.	0.	0.	73.	0.	1.	0.	804.90
.02	0.00	6.10	0.00	.110	.042	.110	.031	795.50	2007.04
.014495	25.	25.	25.	2	0	0	0.00	42.10	2049.14

CCHV= .100 CEHV= .300
*SECNO 126.000
2R00 NAT Q1= 90.64 WSEL= 800.33 ENC Q1= 95.56 WSEL= 800.43 RATIO= -.0543
NAT Q1= 96. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 800.43

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.80 ELREA= 805.60

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                    VALLEY SECTION 126.0  (G)

     126.00      4.10    800.30      0.00    800.33    800.47      .18      1.55      .04    802.80
       445.        0.      445.        0.        0.      132.       0.        2.       1.    805.60
        .05       0.00     3.37       0.00      .110      .042     .110      .036   796.20   2002.49
    .002516       310.     310.       310.         3         0        0      0.00    49.56   2052.05


 CCHV=    .300 CEHV=    .500
 *SECNO 126.900
  2800 NAT Q1=      64.36  WSEL=     800.53  ENC Q1=      67.12  WSEL=     800.63  RATIO=  -.0428
  NAT Q1=     67.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.63
 3290 CROSS SECTION     126.90 EXTENDED       4.20 FEET


 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=        0.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       805.10 ELREA=       805.10

     126.90      4.00    800.50      0.00    800.53    800.89      .39       .31       .11    805.10
       445.        0.      445.        0.        0.      89.        0.        2.       1.    805.10
        .05       0.00     5.02       0.00      .110      .042     .110      .037   796.50   2000.00
    .004921        90.      90.        90.         2         0        0      0.00    26.00   2026.00


 *SECNO 127.000
      3700.    BRIDGE STENCL=    2000.00     STENCR=    2026.00
  2800 NAT Q1=     176.82  WSEL=     800.53  ENC Q1=     188.63  WSEL=     800.63  RATIO=  -.0668
  NAT Q1=    189.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.63
 3280 CROSS SECTION     127.00 EXTENDED       4.20 FEET


 3370 NORMAL BRIDGE,NRD=   6 MIN ELTRD=   804.90 MAX ELLC=   803.70

 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=        0.000

 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2006.0

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       805.10 ELREA=       805.10

     127.00      4.00    800.50      0.00    800.53    800.89      .39       .00       .00    805.10
       445.        0.      445.        0.        0.      89.        0.        2.       1.    805.10
        .05       0.00     5.02       0.00      .110      .014     .110      .037   796.50   2000.00
    .000620         1.       1.         1.         0         0        0      0.00    26.00   2026.00


 *SECNO 127.100
      3700.    BRIDGE STENCL=    2000.00     STENCR=    2026.00
  2800 NAT Q1=     213.80  WSEL=     800.68  ENC Q1=     232.93  WSEL=     800.78  RATIO=  -.0895
  NAT Q1=    233.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.78
 3280 CROSS SECTION     127.10 EXTENDED       4.35 FEET


 3370 NORMAL BRIDGE,NRD=   6 MIN ELTRD=   804.90 MAX ELLC=   803.70
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 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=         0.000
 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2006.0
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

                 UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE  (H)

     127.10       4.65     800.65       0.00     800.68     800.94       .29       .03       .03     805.10
      445.          0.       445.         0.         0.       102.         0.        2.        1.      805.10
        .06       0.00       4.34       0.00       .110       .014       .110      .035    796.00    2000.00
    .000399        55.        55.        55.          2          0          0      0.00     26.00    2026.00

 *SECNO 127.200
  2800 NAT Q1=      238.50  WSEL=      800.68  ENC Q1=      247.61  WSEL=      800.78  RATIO=   -.0382
  NAT Q1=      248.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=      800.78
 3280 CROSS SECTION     127.20 EXTENDED        4.35 FEET

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


 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=         0.000
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

     127.20       4.65     800.65       0.00     800.68     800.95       .29       .00       .00     805.10
      445.          0.       445.         0.         0.       102.         0.        2.        1.      805.10
        .06       0.00       4.35       0.00       .110       .014       .110      .035    796.00    2000.00
    .000355          1.         1.         1.          0          0          0      0.00     26.00    2026.00

 *SECNO 127.300
  2800 NAT Q1=       63.83  WSEL=      800.68  ENC Q1=       66.63  WSEL=      800.78  RATIO=   -.0440
  NAT Q1=       67.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=      800.78
 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000

                 VALLEY SECTION 127.3  (I)

     127.30       4.15     800.65       0.00     800.68     801.02       .37       .04       .04     805.10
      445.          0.       445.         0.         0.        91.         0.        2.        1.      805.10
        .06       0.00       4.88       0.00       .110       .042       .110      .035    796.50    2014.04
    .005034         40.        40.        40.          2          0          0      0.00     31.92    2045.96

 CCHV=     .100 CEHV=     .300
 *SECNO 129.800
  2800 NAT Q1=       75.90  WSEL=      801.46  ENC Q1=       79.06  WSEL=      801.56  RATIO=   -.0416
  NAT Q1=       79.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=      801.56
 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000
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                VALLEY SECTION 129.8  (J)

    129.80      4.46    801.46      0.00    801.46    801.73       .27       .70       .01    805.10
      445.         0.      445.         0.       0.      106.        0.        2.        1.    805.10
       .07      0.00      4.18      0.00      .110      .042      .110      .036    797.00   2012.11
  .003458       169.      169.      169.         2         0         0      0.00     35.77   2047.89

 CCHV=     .300 CEHV=     .500
*SECNO 129.900
 2800 NAT Q1=      85.27  WSEL=     801.75  ENC Q1=      88.54  WSEL=     801.85  RATIO=   -.0384
 NAT Q1=      89.  RATIOS LOB,CH,ROB=   0.0000  1.0000  0.0000  WSEL=     801.85
3280 CROSS SECTION     129.90 EXTENDED      11.64 FEET

3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=        0.000
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      805.10 ELREA=      805.10

    129.90      4.34    801.74      0.00    801.75    801.99       .25       .26       .01    805.10
      445.         0.      445.         0.       0.      111.        0.        3.        1.    805.10
       .08      0.00      4.02      0.00      .110      .042      .110      .037    797.40   2000.00
  .002732        85.       85.       85.         2         0         0      0.00     28.00   2028.00

*SECNO 130.000
      3700.   BRIDGE STENCL=    2000.00     STENCR=    2028.00
 2800 NAT Q1=     228.33  WSEL=     801.75  ENC Q1=     250.40  WSEL=     801.85  RATIO=   -.0967
 NAT Q1=     250.  RATIOS LOB,CH,ROB=   0.0000  1.0000  0.0000  WSEL=     801.85
3280 CROSS SECTION     130.00 EXTENDED      11.65 FEET

3370 NORMAL BRIDGE,NRD=  6 MIN FLTRD=   803.20 MAX ELLC=   804.30

3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=        0.000
4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2009.0
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      805.10 ELREA=      805.10

    130.00      4.35    801.75      0.00    801.75    802.00       .25       .00       .00    805.10
      445.         0.      445.         0.       0.      111.        0.        3.        1.    805.10
       .08      0.00      4.01      0.00      .110      .014      .110      .037    797.40   2000.00
  .000340          1.        1.        1.         0         0         0      0.00     28.00   2028.00

*SECNO 130.100
      3700.   BRIDGE STENCL=    2000.00     STENCR=    2028.00
 2800 NAT Q1=     210.26  WSEL=     801.74  ENC Q1=     225.91  WSEL=     801.84  RATIO=   -.0744
 NAT Q1=     226.  RATIOS LOB,CH,ROB=   0.0000  1.0000  0.0000  WSEL=     801.84
3280 CROSS SECTION     130.10 EXTENDED      11.64 FEET

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

 3370 NORMAL BRIDGE.NRD=  6 MIN ELTRD=  803.20 MAX ELLC=  804.30

 3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=         0.000
 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2009.0
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       805.10 ELREA=       805.10

                  UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE  (K)

     130.10      4.24    801.74      0.00    801.74    802.02       .28       .01       .01    805.10
       445.         0.      445.        0.        0.       105.        0.        3.        1.    805.10
        .08      0.00      4.25      0.00      .110      .014      .110      .036    797.50   2000.00
   .000418       18.       18.       18.         1         0         0      0.00     28.00   2028.00

 *SECNO 130.200
  2800 NAT Q1=     234.15  WSEL=     801.74  ENC Q1=     243.74  WSEL=     801.84  RATIO=  -.0410
  NAT Q1=     244.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.84
 3280 CROSS SECTION     130.20 EXTENDED      11.64 FEET

 3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=         0.000
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       805.10 ELREA=       805.10

     130.20      4.24    801.74      0.00    801.74    802.02       .28       .00       .00    805.10
       445.         0.      445.        0.        0.       105.        0.        3.        1.    805.10
        .08      0.00      4.26      0.00      .110      .014      .110      .036    797.50   2000.00
   .000362         1.        1.        1.         0         0         0      0.00     28.00   2028.00

 *SECNO 130.300
  2800 NAT Q1=      66.32  WSEL=     801.75  ENC Q1=      69.47  WSEL=     801.85  RATIO=  -.0475
  NAT Q1=      69.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.85
 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000

                  VALLEY SECTION 130.3  (L)

     130.30      4.15    801.75      0.00    801.75    802.08       .33       .04       .02    805.50
       445.         0.      445.        0.        0.        97.       0.        3.        1.    806.00
        .08      0.00      4.60      0.00      .110      .042      .110      .037    797.60   2012.69
   .004543        40.       40.       40.         2         0         0      0.00     34.63   2047.31

 CCHV=     .100 CEHV=     .300
 *SECNO 132.800
  2800 NAT Q1=      86.82  WSEL=     803.68  ENC Q1=      91.17  WSEL=     803.78  RATIO=  -.0501
  NAT Q1=      91.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.78
 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000
```

```
                VALLEY SECTION 132.8   (M)

   132.80      4.48    803.68      0.00    803.68    803.87       .19      1.78       .01    806.00
     445.        0.      445.        0.        0.      129.        0.        4.        1.    806.00
      .12      0.00      3.46      0.00      .110      .042      .110      .038    799.20   2005.92
  .002618      525.      525.      525.         2         0         0      0.00     47.48   2053.40

CCHV=     .300 CEHV=     .500
*SECNO 132.900
 2800 NAT Q1=      84.07  WSEL=     803.89  ENC Q1=      87.19  WSEL=     803.99  RATIO=  -.0372
 NAT Q1=      87.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.99
3280 CROSS SECTION     132.90 EXTENDED      10.89 FEET

3470 ENCROACHMENT STATIONS=     2000.0     2027.0  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       806.50 ELREA=       806.50

   132.90      4.29    803.89      0.00    803.89    804.15       .25       .24       .03    806.50
     445.        0.      445.        0.        0.      110.        0.        4.        2.    806.50
      .13      0.00      4.04      0.00      .110      .042      .110      .038    799.60   2000.00
  .002801       90.       90.       90.         2         0         0      0.00     27.00   2027.00

*SECNO 133.000
     3700.   BRIDGE STENCL=    2000.00     STENCR=    2027.00
 2800 NAT Q1=     220.64  WSEL=     803.89  ENC Q1=     242.68  WSEL=     803.99  RATIO=  -.0999
 NAT Q1=     243.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.99
3280 CROSS SECTION     133.00 EXTENDED      10.89 FEET

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

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  803.00 MAX ELLC=  804.20

3470 ENCROACHMENT STATIONS=     2000.0     2027.0  TYPE=      4  TARGET=        0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2015.0

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       806.50 ELREA=       806.50

   133.00      4.29    803.89      0.00    803.89    804.15       .25       .00       .00    806.50
     445.        0.      445.        0.        0.      110.        0.        4.        2.    806.50
      .13      0.00      4.04      0.00      .110      .014      .110      .038    799.60   2000.00
  .000361        1.        1.        1.         0         0         0      0.00     27.00   2027.00

*SECNO 133.100
     3700.   BRIDGE STENCL=    2000.00     STENCR=    2027.00
 2800 NAT Q1=     208.33  WSEL=     803.88  ENC Q1=     228.12  WSEL=     803.98  RATIO=  -.0950
 NAT Q1=     228.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.98
3280 CROSS SECTION     133.10 EXTENDED      10.89 FEET
```

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3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.10

3470 ENCROACHMENT STATIONS= 2000.0 2027.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.0 2013.0

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

133.10	4.68	803.88	0.00	803.88	804.17	.29	.01	.02	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.32	0.00	.110	.014	.110	.038	799.20	2000.00
.000407	20.	20.	20.	1	0	0	0.00	27.00	2027.00

*SECNO 133.200
2800 NAT Q1= 232.31 WSEL= 803.88 ENC Q1= 241.60 WSEL= 803.98 RATIO= -.0400
NAT Q1= 242. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 803.98
3280 CROSS SECTION 133.20 EXTENDED 10.88 FEET

3470 ENCROACHMENT STATIONS= 2000.0 2027.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

133.20	4.68	803.88	0.00	803.88	804.17	.29	.00	.00	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.33	0.00	.110	.014	.110	.038	799.20	2000.00
.000367	1.	1.	1.	0	0	0	0.00	27.00	2027.00

*SECNO 133.300
2800 NAT Q1= 250.43 WSEL= 804.22 ENC Q1= 258.25 WSEL= 804.32 RATIO= -.0312
NAT Q1= 258. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.32

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

133.30	6.22	804.22	0.00	804.22	804.26	.04	.02	.07	806.50
445.	0.	445.	0.	0.	264.	0.	5.	2.	808.00
.14	0.00	1.69	0.00	.110	.042	.110	.038	798.00	1999.62
.000316	50.	50.	50.	2	0	0	0.00	57.51	2057.13

*SECNO 135.000
2800 NAT Q1= 289.44 WSEL= 804.31 ENC Q1= 297.19 WSEL= 804.41 RATIO= -.0268
NAT Q1= 297. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.41
3280 CROSS SECTION 135.00 EXTENDED 7.60 FEET

3470 ENCROACHMENT STATIONS= 1990.0 2066.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.00 ELREA= 811.20

VALLEY SECTION 135.0 (O)

135.00	7.00	804.30	0.00	804.31	804.34	.04	.07	.00	805.00
445.	0.	445.	0.	0.	292.	0.	6.	2.	811.80
.19	0.00	1.52	0.00	.110	.042	.110	.039	797.30	1991.80
.000238	274.	271.	274.	1	0	0	0.00	60.18	2051.97

*SECNO 136.000
2800 NAT Q1= 273.01 *SEL= 804.51 ENC Q1= 280.34 *SEL= 804.61 RATIO= -.0268
NAT Q1= 240. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.61

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

3470 ENCROACHMENT STATIONS= 1980.0 2056.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.00 ELREA= 804.80

VALLEY SECTION 136.0 (R)

136.00	8.41	804.51	0.00	804.51	804.54	.03	.20	.00	805.00
445.	0.	445.	0.	0.	302.	0.	12.	3.	804.80
.34	0.00	1.48	0.00	.110	.042	.110	.039	796.10	1984.75
.000268	800.	600.	800.	0	0	0	0.00	70.86	2055.61

CCHV= .300 CEHV= .500
*SECNO 137.000
2800 NAT Q1= 354.77 *SEL= 804.59 ENC Q1= 354.77 *SEL= 804.69 RATIO= 0.0000
NAT Q1= 373. RATIOS LOB,CH,ROB= .2858 .5986 .1156 WSEL= 804.69

3470 ENCROACHMENT STATIONS= 1817.2 2067.4 TYPE= 4 TARGET= .048

VALLEY SECTION 137.0 (O)

137.00	6.89	804.59	0.00	804.59	804.61	.02	.06	.00	803.20
445.	118.	284.	43.	396.	198.	111.	15.	4.	800.20
.42	.30	1.43	.38	.110	.042	.110	.040	797.70	1817.20
.000173	290.	290.	290.	1	0	0	0.00	250.24	2067.44

*SECNO 139.000
2800 NAT Q1= 105.62 *SEL= 804.65 ENC Q1= 105.62 *SEL= 804.75 RATIO= 0.0000
NAT Q1= 111. RATIOS LOB,CH,ROB= .0555 .9414 .0031 WSEL= 804.75

3470 ENCROACHMENT STATIONS= 1994.0 2030.0 TYPE= 4 TARGET= .045

VALLEY SECTION 139.0, OLD RR GRADE (R)

139.00	4.75	804.65	0.00	804.65	804.86	.21	.16	.09	803.20
445.	6.	439.	0.	9.	119.	0.	19.	5.	802.90
.45	.68	3.70	0.00	.110	.042	.110	.040	799.90	1993.97
.002062	370.	380.	410.	2	0	0	0.00	36.03	2030.00

```
*SECNO 141.000
 2800 NAT Q1=      84.49  wSEL=     804.76  ENC Q1=      86.39  wSEL=     804.86  RATIO=  -.0225
 NAT Q1=     89.  RATIOS LOB,CH,ROB=    .0249    .9728    .0023  WSEL=     804.86

3470 ENCROACHMENT STATIONS=     2000.0     2030.0  TYPE=      4  TARGET=          .027
  141.00      4.49    804.79      0.00    804.76    805.07       .28       .18       .03    803.30
    445.        0.      445.        0.        0.      105.        0.       19.        5.    803.30
     .45       0.00      4.23      0.00      .110      .042      .110      .040    800.30   2000.00
 .003167        70.       70.       70.         1         0         0      0.00     30.00   2030.00

*SECNO 142.000
 2800 NAT Q1=     198.82  wSEL=     805.35  ENC Q1=     198.82  wSEL=     805.45  RATIO=  0.0000
 NAT Q1=    213.  RATIOS LOB,CH,ROB=    .3217    .5202    .1581  WSEL=     805.45

3470 ENCROACHMENT STATIONS=     1842.7     2101.1  TYPE=      4  TARGET=          .065

                VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY  (S)

  142.00      4.92    805.42      0.00    805.35    805.45       .04       .31       .07    803.20
    445.       136.      249.       59.      294.      123.      130.       21.        7.    803.30
     .51        .46      2.03       .46      .110      .042      .110      .040    800.50   1842.73
 .000521       310.      290.      260.         2         0         0      0.00    258.36   2101.08
```

MOORE BUSINESS FORMS, INC.



1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: REPORT



39

HYDRAULIC ANALYSIS REPORT

AUGUSTA CREEK AT AUGUSTA

KALAMAZOO COUNTY

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 East Washington Avenue
Jackson, Michigan 49201

March, 1980

HEC-2 i/o

Summary Printout - 10, 50, 100, 500 yr - Augusta Cr.
Augusta Creek - 100 yr natural channel & encroach

Packet

Flood Boundary Floodway Map
Augusta Cr. & Kalamazoo R.
@ Augusta

INTRODUCTION

The Flood Insurance Study for the Village of Augusta consists of analyzing the Kalamazoo River and one of its tributaries, Augusta Creek. This report will describe the hydraulic calculations performed in analyzing Augusta Creek from its confluence with the Kalamazoo River north to the northern limit of Ross Township. Within this study area, two types of analysis were utilized. From the Kalamazoo River through the village of Augusta to its northern corporate limits a detailed study was performed. An approximate method of analysis was used to study the area north of Augusta's corporate limits where little development potential exists.

Structure data and stream cross sections were taken by Commonwealth survey crews in January of 1979. The flood discharge values (10, 50, 100, and 500-year recurrence intervals) were obtained from the hydrology report for Augusta Creek. This report was prepared by Commonwealth Associates in July of 1979, and approved by the DNR on August 1, 1979. Contour information was obtained from the U.S.G.S. topographic map for Augusta, Michigan and an aerial topographic survey map with 4-foot contour intervals prepared by Gove Associates.

The above data was analyzed by Commonwealth Associates Inc., Jackson, Michigan under the supervision of Project Manager R. F. Nilsen, P.E.

METHOD OF ANALYSIS

The water surface profile was computed and plotted at various cross sections using the HEC-2 computer program. The cross sections were taken at hydraulic structures and at representative locations along the river reach where changes occurred in slope or cross sectional area. Where an abrupt change occurred in the channel several cross sections were taken to accurately describe the transition. Hydraulic structures were analyzed using the Normal Bridge Routine Option of the HEC-2 program.

VARIABLES AND COEFFICIENTS

Manning's coefficient of roughness "n" depends on several factors such as: 1) type and amount of vegetation, 2) channel configuration and stage, 3) material through which the channel is constructed, and 4) channel meandering. Without an in-depth study of these factors, an "n" value can only be estimated. The method used in estimating the roughness coefficient for this study is described in the preface, Supplement B of the "Guide for Selecting Roughness Coefficient "n" Values for Channels," United States Department of Agriculture - Soil Conservation

Service, December, 1963. To confirm that the calculated coefficients were reasonable, the values obtained were compared with photographs taken at the time of the field survey.

Manning's Roughness Coefficient

For natural channel	0.042
For bridge channels	0.014
For overbanks (Sec. 120.8-135)	0.060
For overbanks (Sec. 135-142)	0.11

The loss coefficients (contraction and expansion and special bridge routine) were all obtained from the Application of the HEC-2 Bridge Routines. The calculations for the value XKOR are included with this report.

Coefficients for Natural Channels

Contraction	0.10
Expansion	0.30

Coefficients for Bridges

Contraction	0.30
Expansion	0.50

Special Bridge Coefficients

Pier shape coefficient	XK	1.25
Loss coefficient*	XKOR	1.63

*See Calculations Appendix B

HIGH-WATER MARKS

Although the highest recorded flood discharge (560 cfs) on Augusta Creek occurred in 1978, there were no recorded high-water marks. This may have been due to the fact that the water did not leave the channel except for the upstream reach of the detailed study.

STARTING CONDITIONS

The starting water surface elevation for all four flows on Augusta Creek was taken as the mean annual flood elevation for the Kalamazoo River. A review of the U.S.G.S. "Water Resources Data for Michigan" indicated Augusta Creek

and the Kalamazoo River were not in coincidence and peak flows on Augusta Creek were not matched by corresponding high flows on the Kalamazoo River. In fact, the largest discharge recorded on Augusta Creek (560 cfs in April of 1978) corresponded to a discharge on the Kalamazoo River equal only to the mean annual level (see Appendix A).

It should be pointed out that the effect of the starting water surface elevation will only last 270 feet upstream to the Knappen Mill Dam. Upstream of the dam, the water surface elevation will depend on the rating curve for the dam.

SPECIAL PROBLEMS AND CONSIDERATIONS

1. In analyzing the Knappen Mill Dam (Section 124.0) the special bridge program was used to determine the stage and discharge down the spillway. The dam operator indicated the seven gates would be open during major storms and the analysis was performed with the gates open. The results obtained from the HEC-2 program were verified within 1/10 foot by hand calculations (See Appendix B).

2. For the 100-year flood levels the computer results indicate all the flow will remain in the channel at Cross Section 136.0. This portion of Augusta Creek was rerouted to its present man-made channel in the 1800's. A result of the channel relocation was the use of levees to prevent the creek from following its old course. At Section 136.0 the water surface elevation is within .25 foot of the surveyed elevation for the levee (or bank) top. Since the levee elevation varies from point to point and the channel "n" value is estimated, the water surface may top the levee at some point. If any water does overflow the man-made channel, it will follow the old channel. This was confirmed in 1978 when the highest water elevation and flows recorded (560 cfs at the gaging station upstream of Augusta) caused the water to overflow the bank and follow the old channel. It is CAI's opinion that the volume of water overflowing the man-made channel would have minimal effect on the flood plain when compared to the backwater effects of the Kalamazoo River up the old channel.

3. In the area between Cross Sections 135.0 and 136.0 the field survey revealed two wooden gates between the man-made channel and the old channel. Although the gates are well maintained, they are bolted in place (closed) and do not seem to be for any particular function. CAI determined the gates would be removed only if the water surface was threatening

the top of the levee in the village of Augusta. The removal of these gates would bypass a large portion of the flood water down the old channel and prevent flooding in the densely populated areas. Since the hydraulic analysis indicates it is unlikely the levee will be topped in the village of Augusta (Cross Section 124-133), CAI analyzed the dam with the gates closed.

REFERENCES

1. Guide for Selecting Roughness Coefficient "n" Values for Channels, United States Department of Agriculture, Soil Conservation Service, December, 1963.

2. Design of Small Dams, Bureau of Reclamation, 1973.

3. Applied Hydraulics in Engineering, Morris and Wiggert, Second Edition, 1972.

APPENDIX A

Starting water surface elevation calculations.

APPENDIX B

Calculations for "n," bridge factors and dam hydraulics along with bridge sketches.

APPENDIX C

Water surface profiles indicating 10, 50, 100 and 500-year floods.

APPENDIX D

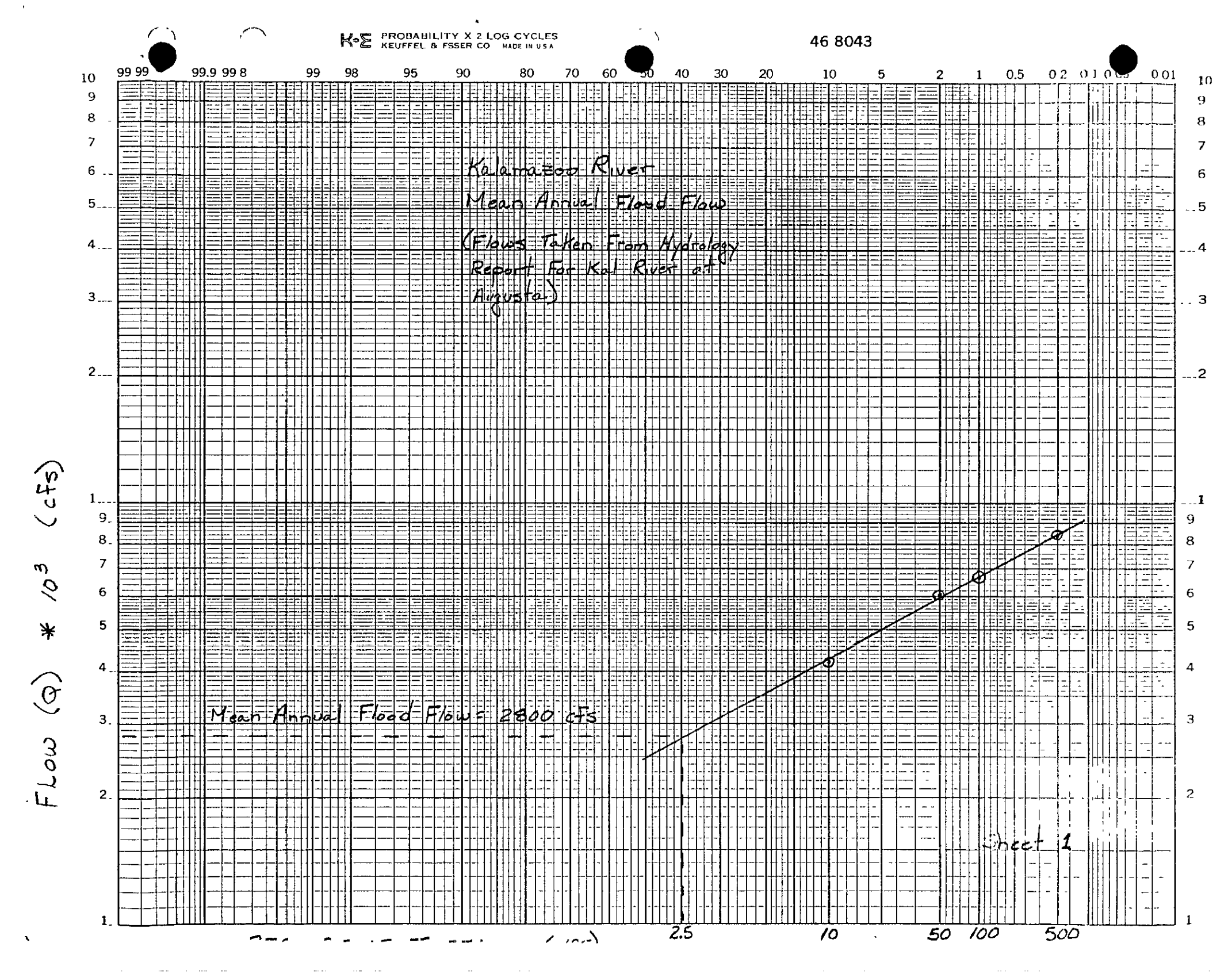
Cross section reference and plots

APPENDIX E

The final HEC-2 printouts for the multiprofile run, 100-year natural and encroachment run. Also, a map indicating the 100-year flood plain, floodway, and location of the cross sections.

APPENDIX A

(STARTING WATER SURFACE ELEVATION)


K-E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO MADE IN U.S.A.
46 8043
99 99 99.9 99 8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0 2 0 1 0 05 0 01
Kalamazoo River
Mean Annual Flood Flow
(Flows Taken From Hydrology
Report For Kal River at
Augusta)
Mean Annual Flood Flow = 2800 cfs
FLOW (Q) * 10^3 (cfs)
2.5 10 50 100 500
Sheet 1

Gilbert/Commonwealth
209 E. Washington Avenue Jackson, MI 49201

CALCULATION SHEET REV.

CLIENT/OWNER	FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE) M E Lodewyk CHECKED BY/DATE (SIGNATURE)	SUBJECT STARTING WATER SURFACE - AUGUSTA CREEK	SHEET 2 OF BOOK NO.

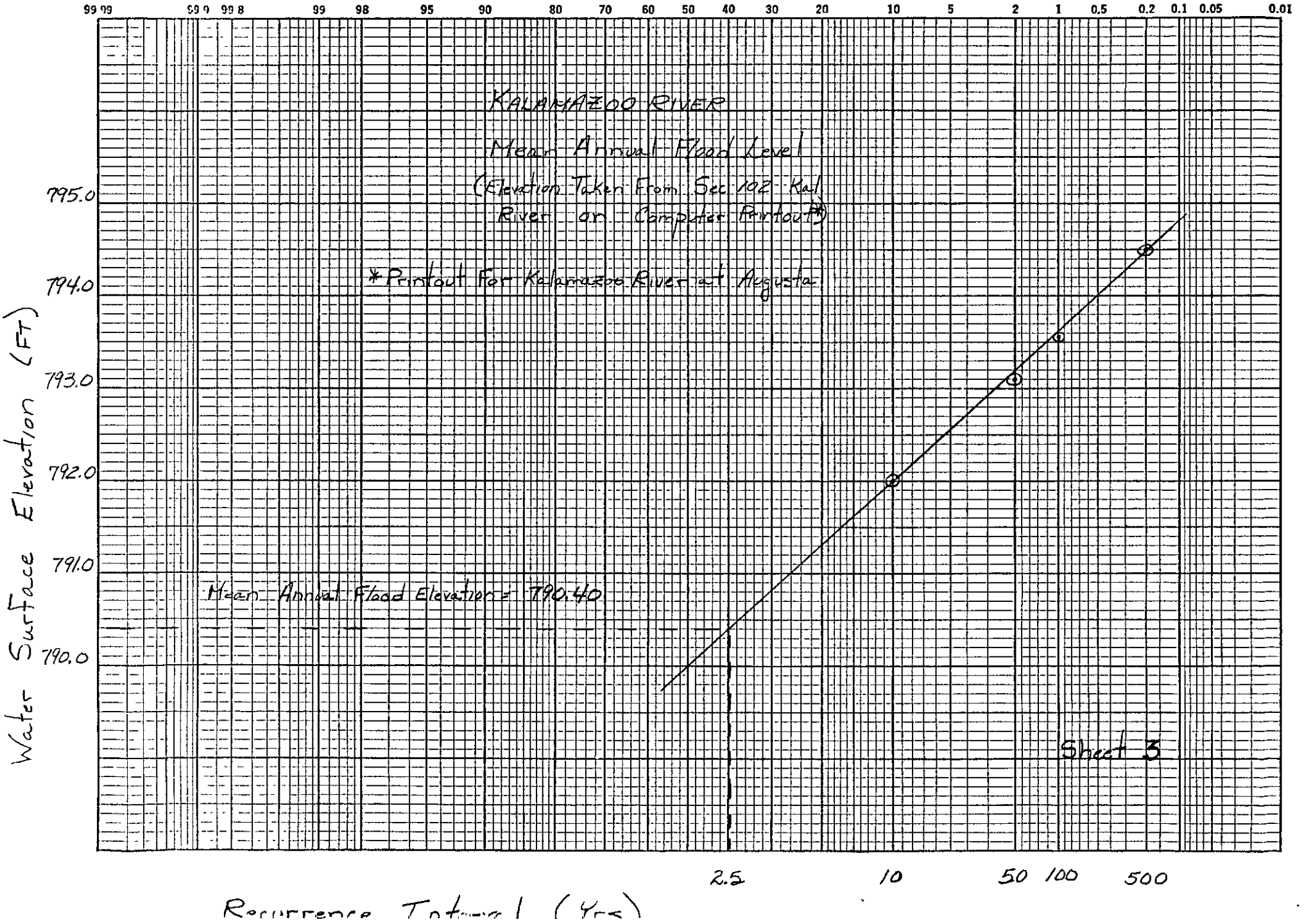
	FLOWS (cfs)	
	Augusta Creek at Mouth DA = 40.3 mi²	Kalamazoo River
Mean Annual		2800 *
10 year	260	4430
50 year	385	6030
100 year	445	6720
500 year	590	8420

From the "Water Resources Data For Michigan", USGS Water Data Reports MI-75-1 and MI-78-1 Water Year 1975 and 1978, the peak recorded flow on the Augusta Creek is 560 cfs. in June of 1978 This was approx equal to the 500 year storm flow. The corresponding flows on the Kalamazoo River can be estimated at or below the mean annual flood level for the Kalamazoo River. For this reason the mean annual flood level For the Kalamazoo River will be used as the starting water surface for all the profiles on Augusta Creek.

	Flow (cfs)		
Date	Augusta Creek	Kalamazoo @ Comstock	Kalamazoo @ Battle Creek
June 26, 1978	312	1860	1700
27, 1978	560	2820	2200
28, 1978	414	3400	2020
29, 1978	225	3140	1820
30, 1978	131	2660	1570

* estimated from graph (sheet 1)

K&E PROBABILITY X 90 DIVISIONS 46 8003 MADE IN U.S.A.
KEUFFEL & ESSER CO



APPENDIX B

(CALCULATIONS AND BRIDGE SKETCHES)

Gilbert/Commonwealth
209 E Washington Avenue Jackson, MI 49201

CALCULATION SHEET REV.

CLIENT/OWNER	FILING CODE
Augusta Creek at Augusta	JOB NO.
CALC. BY/DATE (SIGNATURE) ME Ladewig	SUBJECT Estimating "n" value
CHECKED BY/DATE (SIGNATURE)	SHEET 1 OF 1
	BOOK NO.

From "Guide For Selecting Roughness Coefficient "n" Values For Channels" U.S.D.A., Soil Conservation Service, December 1963, Supplement B.

(1) Basic "n" for channel channel in earth	0.02
(2) Surface irregularity minor to moderate – fair to poor dredged channels	0.0075
(3) Variation in shape & size of cross sections changes in shape are gradual	0.00
(4) Obstructions Minor - Negligible	0.005
(5) Vegetation no vegetation on bottom brushy growth on side slopes	0.01
Total =	0.0425

Use n = 0.042

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE
Augusta Creek at Augusta	JOB NO.
CALC. BY/DATE (SIGNATURE) M Lodewyk	SUBJECT Loss Coefficient (xKOR)
CHECKED BY/DATE (SIGNATURE)	SHEET 1 OF 1
	BOOK NO.

Loss Coefficient (xKOR) (From HEC-2 water Surface Profiles 723-02A)

Intake .10 to .90
Int. piers .05
Friction K_f

$xKOR = 1.0 + \Sigma K$

Intake $K_e = .5$ From Bureau of Public Roads Appendix B, Table 1, Ent. Loss Coefficients pg 5-49

Intermediate .05

Friction $K_f = \frac{29.1\, n^2 L}{R^{4/3}}$ $R = A/P = 102.5/56 = 1.83$

$= \frac{(29.1)(.014^2)(30)}{(1.83)^{4/3}}$

$= .08$

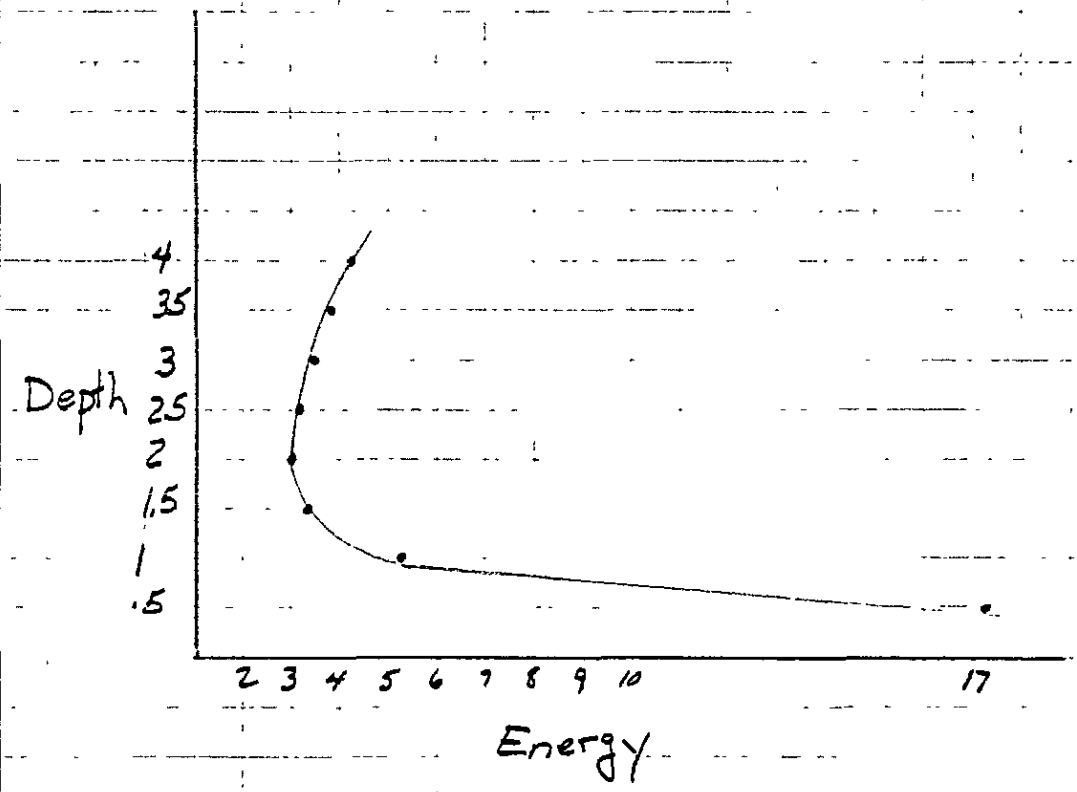
$xKOR = 1 + (.5 + .05 + .08) = \boxed{1.63}$

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET REV.

CLIENT/OWNER	FILING CODE
Augusta Creek @ Augusta	JOB NO.
CALC. BY/DATE (SIGNATURE) M E Lozowyk	SUBJECT Knappen Dam Water Surface
CHECKED BY/DATE (SIGNATURE)	SHEET 1 OF 1 BOOK NO.

Specific Energy Diagram at Dam



Depth	Vel	$V^2/2g$	D+$V^2/2g$
.5	32.96	16.86	17.36
1.0	16.48	4.21	5.21
1.5	10.98	1.87	3.37
2.0	8.24	1.05	3.05
2.5	6.59	.67	3.17
3.0	5.49	.47	3.47
3.5	4.71	.34	3.84
4.0	4.12	.26	4.26

27 feet wide
445 cfs flow
(100 yr flood)

Critical Depth ≈ 20 feet

Upstream face of dam

445 cfs

$n = .014$

assume slope From section 125 - 126.9 $\approx .001$

$Q = \frac{1.49}{n} A R_h^{2/3} S^{1/2}$ (Mannings Formula ref (3), pg 134)

Area = 27D

$R = 27D/(27+2D)$

$445 = (1.49/0.14)(27D)[27D/(27+2D)]^{2/3}(.001)^{1/2}$

$132.2 = 27D[27D/(27+2D)]^{2/3}$

$D = 2.80 = D_N$

$Q^2 B = g A^3$ (Critical Flow Formula, Ref (3) pg. 141)

$445^2(27) = 32.2(27D)^3$

$D_c = 2.03$ checks with graph

$D_N > D_c$ mild slope

On Spillway

$D_c = \frac{Q^2 B}{g A^3}$ $\quad A = 30D$

$D_c = \frac{(445)^2 (30)}{(32.2)(30D)^3}$

$D_c = 1.90$ ft.

Normal Depth

use Mannings formula $\quad Q = \frac{1.49}{n} A R_h^{2/3} S^{1/2}$

$Q = 445$
$n = .014$
$S = (795.5 - 786.6)/50 = .178$

$A = 30D$
$R = 30D/(30+2D)$

$445 = (1.49/.014)(30D)[30D/(30+2D)]^{2/3} (.178)^{1/2}$

$9.91 = 30D[30D/(30+2D)]^{2/3}$

$D_N = .5'$

$D_N < D_c \rightarrow$ supercritical flow on spillway

Downstream of Spillway

Assume Spillway has an apron equal to slope of downstream channel

$D_c = Q^2 B = g A^3$ $A = 30D$

$D_c = 1.9$ ft

Normal Depth

$Q = \frac{1.49}{n} A R_h^{2/3} S^{1/2}$

$Q = 445$ cfs
$n = .014$
$A = 30D$
$R = 30D/(30+2D)$

$S = 786.6 - 785.2/170$
$= .008$

$445 = (1.49/.014)(30D)[30D/(30+2D)]^{2/3}(.008)^{1/2}$

$46.75 = 30D[30D/(30+2D)]$

$D \approx 1.4$ ft

still supercritical have a hydraulic jumb downstream

Note: printout now giving Supercritical flow on spillway

Since the computer printout is not indicating supercritical flow the upstream portion of the stream will be analyzed independently. The depth at Section 123 will be taken

From the program. An upstream elevation will be calculated and inserted as a starting elevation for the upstream portion of Augusta Creek

Calculated D_N (pg 2) = 2.80'
Energy ≈ 3.30 ft (From pg 1)

Check:
From "Design of Small Dams", Bur. of Reclamation 1973 pg 373 ref (2)

Discharge over an ogee crest (Flat, no crest)

$$Q = C L H_e^{3/2}$$

Q = discharge = 445 cfs
C = variable coef of discharge = 3.087 (pg 373)
L = effective length
H_e = total head on the crest (including velocity head)

With piers

$$L = L' - 2(N K_p + K_a) H_e$$

L = effective length
L' = net length
N = number of piers
K_p = pier contraction coefficient = .02
K_a = abut " " = .20

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE) M E Lodewyk CHECKED BY/DATE (SIGNATURE)	SUBJECT	SHEET 6 OF 7 BOOK NO.

$L = 27 - 2[2(.02) + .2]\ He$

$L = 27 - .48\ He$

$445 = (3.087)(27 - .48\ He)\ He^{3/2}$

$445 = 83.35\ He^{3/2} - 1.48\ He^{5/2}$

$He = 3.18$ (Total energy)

3.18' vs 3.30'. O.K. check is close

2.8' (Normal Depth) + 795.5 = 798.3 — Water Surface Elevation 100 year Storm

Note: This elevation compares with the Final computer calculated elevation of 798.22. The slight difference could be a result of approximations and estimates i.e. slope used in calculations (Mannings Formula)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE) M.E. Lodewyk CHECKED BY/DATE (SIGNATURE)	SUBJECT	SHEET 7 OF 7 BOOK NO.

Calculate D_N For 10, 50 & 500 year Levels using Manning

10 yr = 260 cfs n = .014
50 yr = 385 cfs assume slope ≈ .001
500 yr = 590 cfs

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$ (Mannings Formula)

Area = 27D
R = 27D/(27+2D)

$$Q = (1.49/.014)(27D)[27D/(27+2D)]^{2/3}(.001)^{1/2}$$
$$= (3.365)(27D)[27D/(27+2D)]^{2/3}$$

10 yr Q = 260
D_N = 2.00 + 795.5 W.S. El. 797.5

50 yr Q = 385
D_N = 2.65 + 795.5 798.05

33

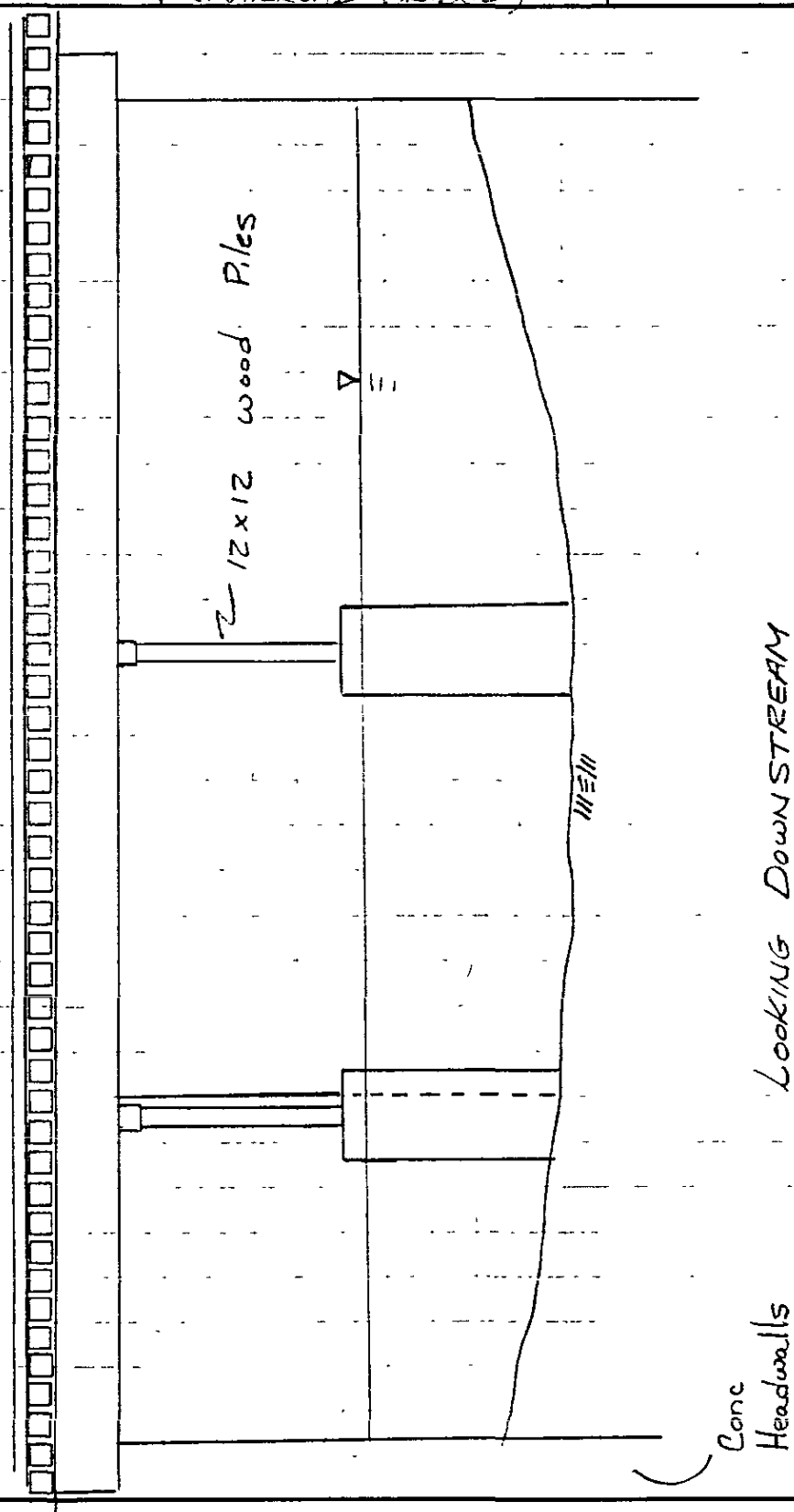
500 yr Q = 590
D_N = 3.35 + 795.5 798.85

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT CROSS SECTION 121	SHEET OF
CHECKED BY/DATE (SIGNATURE)	(RAILROAD BRIDGE)	BOOK NO.



General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-18-79

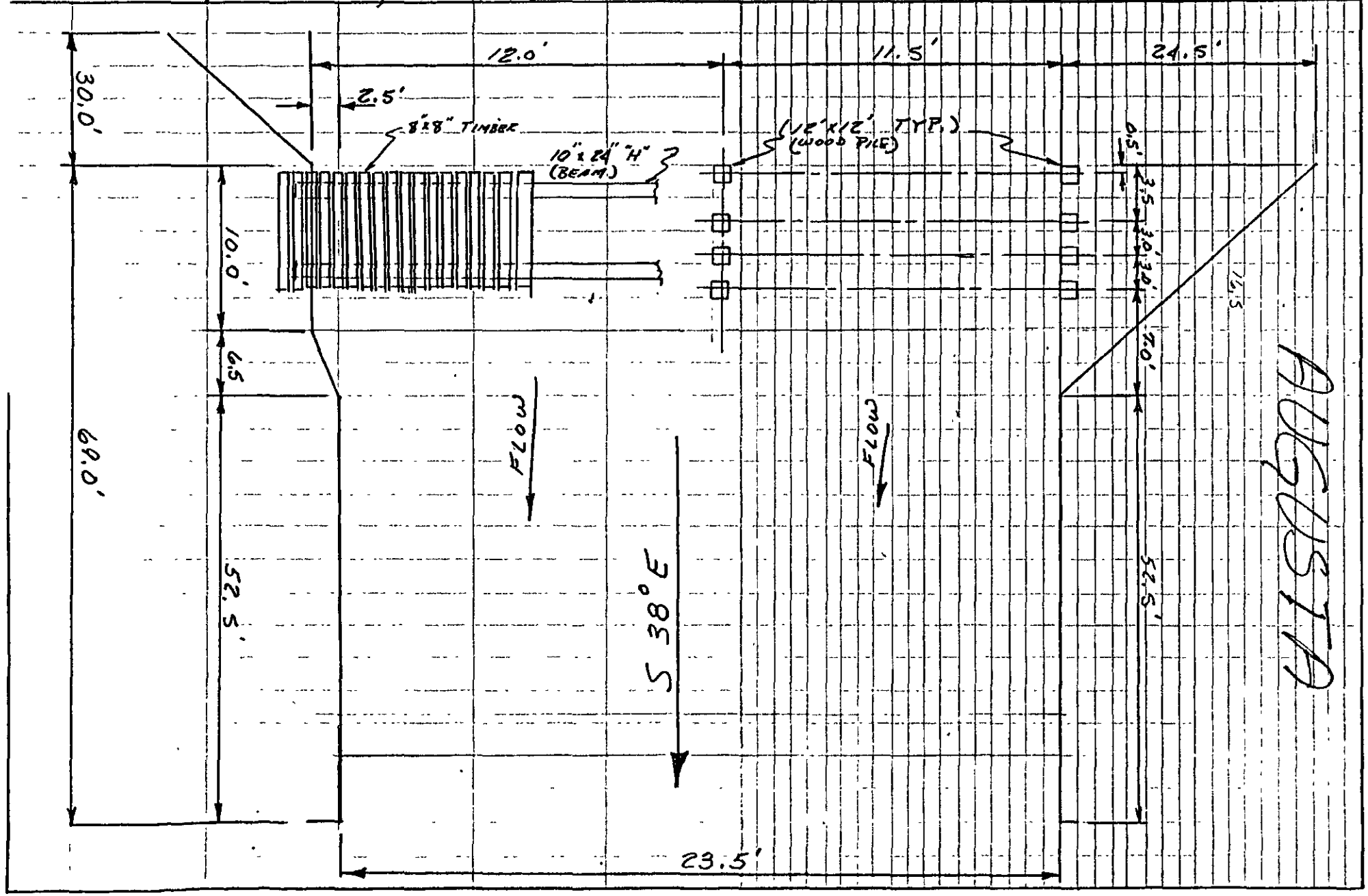
INSTRUMENTS:

TEMP (DRY BULB) | WET BULB | RH % | BAR.

PROJECT: HUD

LOCATION: AUGUSTA, MI. CROSS SECTION 121 CUTAWAY

CHECKED BY DATE



ACTIVITY Cross Section 121 BOOK 21-01 PAGE 113

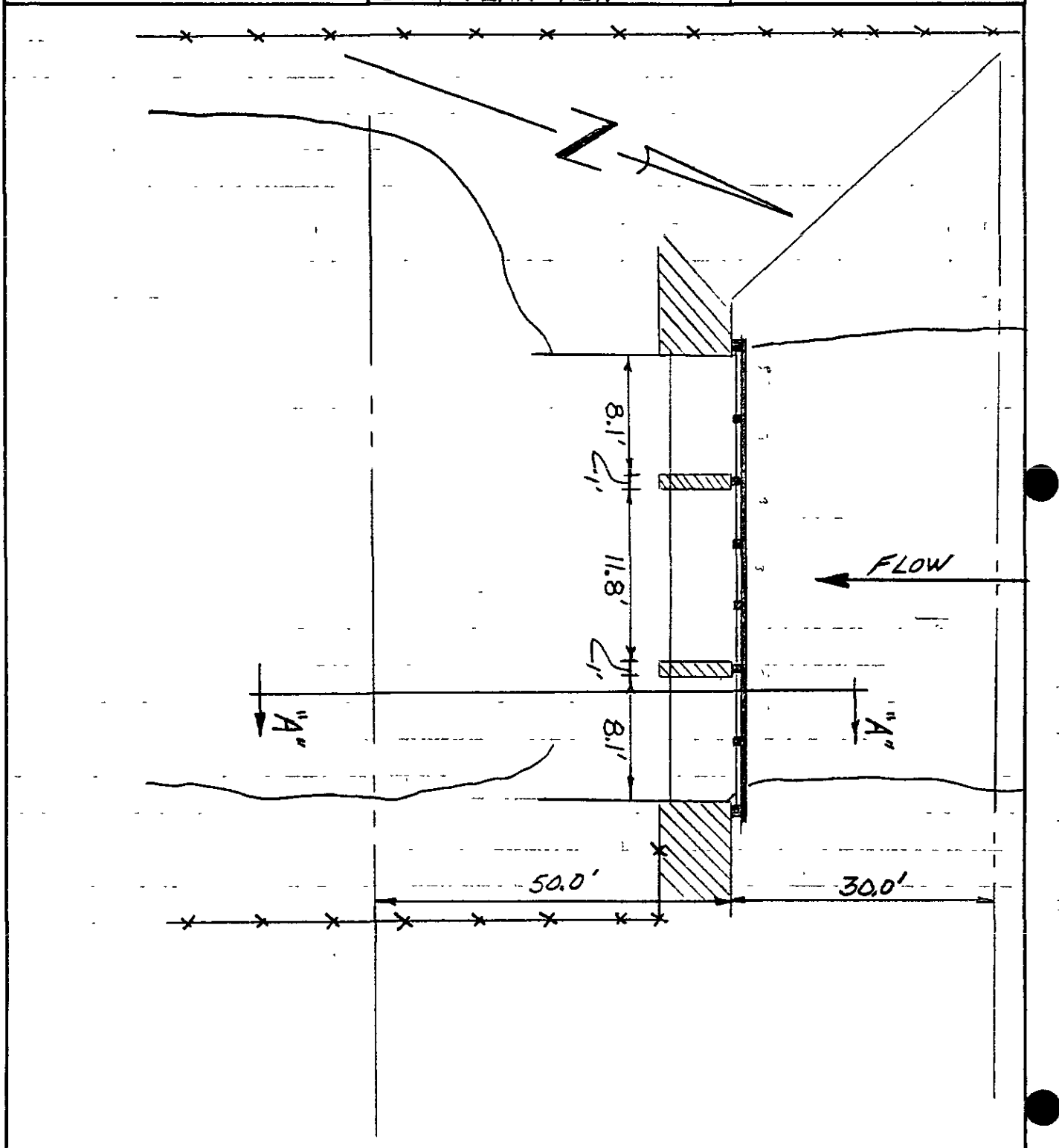
STA. CUTAWAY

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE) / CHECKED BY/DATE (SIGNATURE)	SUBJECT: AUGUSTA, KNAPPEN MILL DAM, PLAN VIEW	SHEET OF / BOOK NO.



General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-18-79

INSTRUMENTS:

TEMP (DRY BULB)

WET BULB

RH %

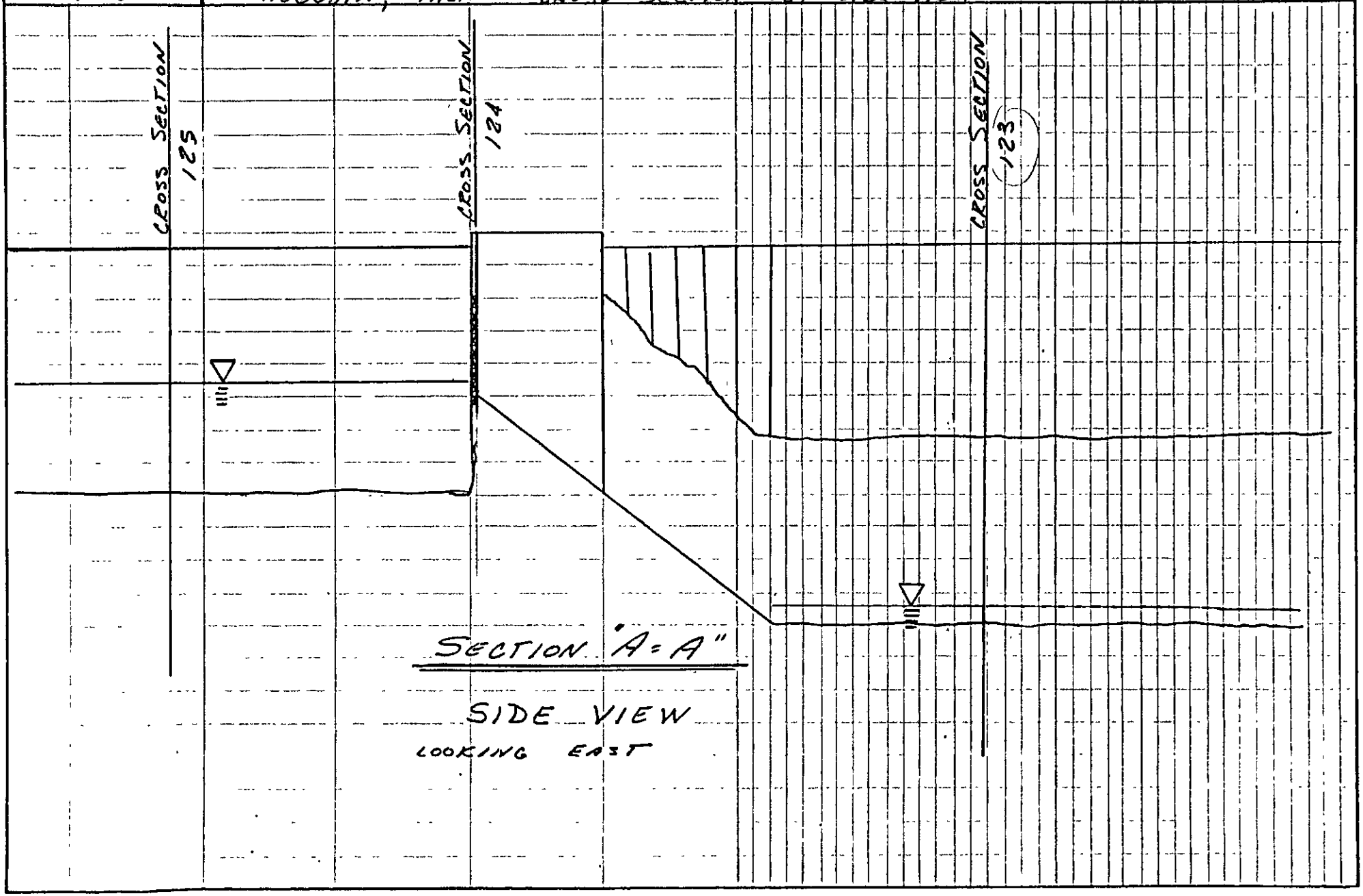
BAR.

PROJECT: HUD

LOCATION: AUGUSTA, MICH CROSS SECTION 124 SIDE VIEW

CHECKED BY

DATE



SECTION "A-A"

SIDE VIEW

LOOKING EAST

ACTIVITY CROSS SECTION 124 SIDE VIEW BOOK 21-01 PAGE 124

STA.

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

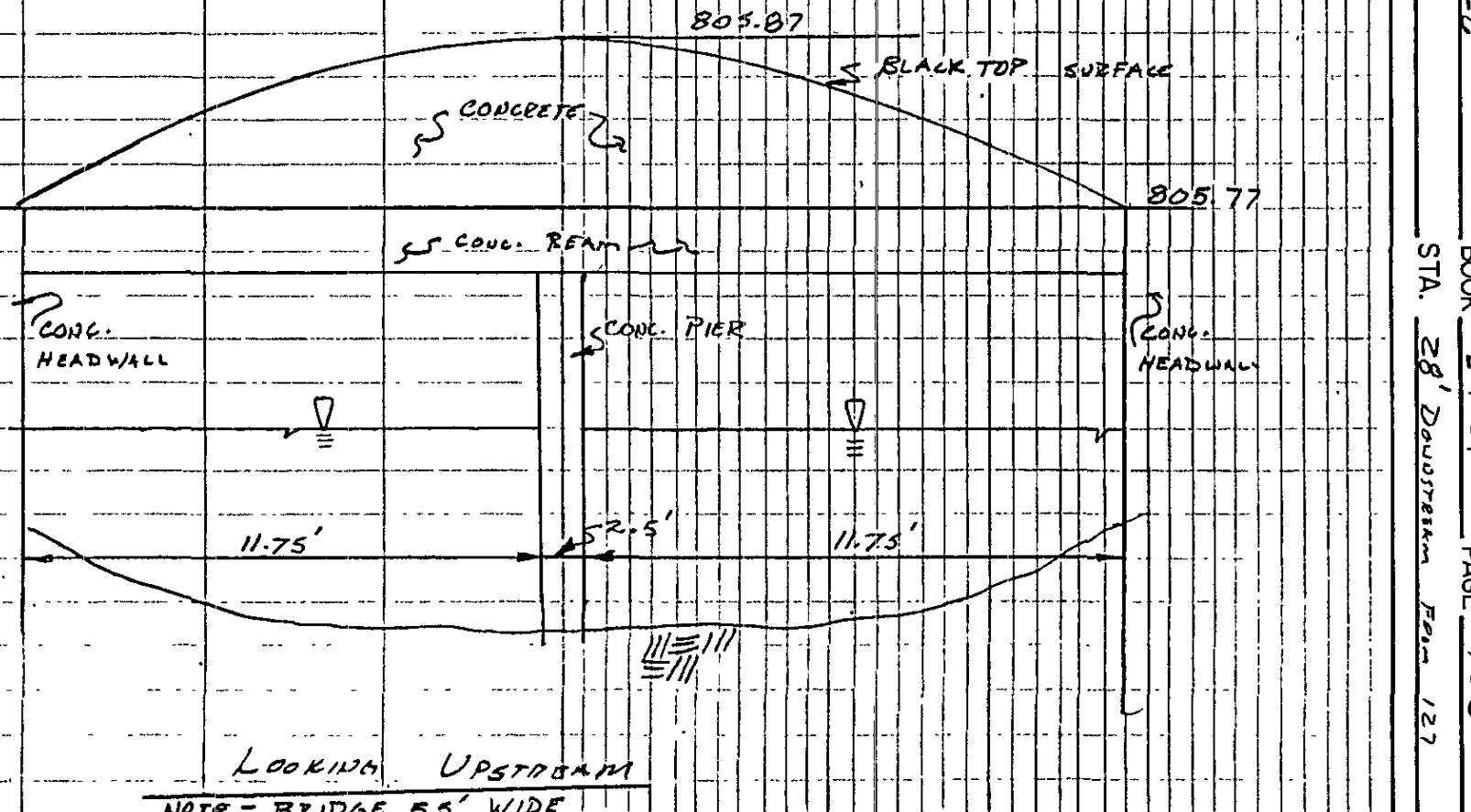
CREW: FOUTY, BEARINGER, HERR

DATE: 1-16-79 | INSTRUMENTS: NAZ | TEMP (DRY BULB) | WET BULB | RH % | BAR.

PROJECT: HUD | LOCATION: AUGUSTA, MICH. CROSS SECTION 12.6 | CHECKED BY | DATE

ACTIVITY Cross Section 12.6 BOOK 2-1-01 PAGE 126

STA. 28' Downstream From 127



LOOKING UPSTREAM

NOTE - BRIDGE 55' WIDE

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

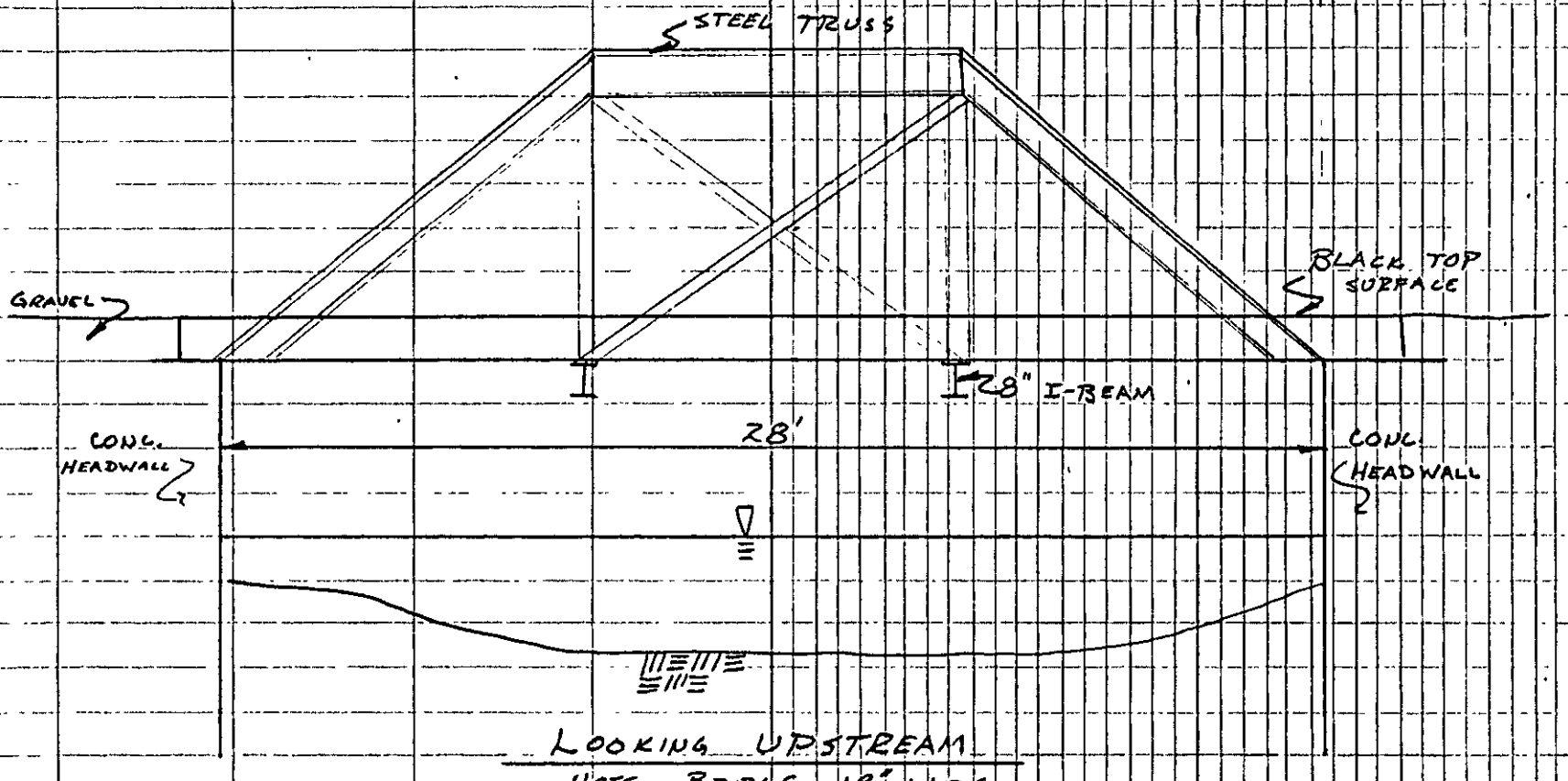
CREW: FOUTY, BEARINGER, HEPK

DATE: 1-17-79 | INSTRUMENTS: NA 2 | TEMP (DRY BULB) | WET BULB | RH % | BAR.

PROJECT: HUD | LOCATION: AUGUSTA, MICH. CROSS SECTION 129 | CHECKED BY | DATE

ACTIVITY Cross Section 129 BOOK 2-1-01 PAGE 133

STA.



LOOKING UPSTREAM

NOTE - BRIDGE 18' WIDE

General Fieldnote Form S-127A

COMMONWEALTH ASSOCIATES INC.

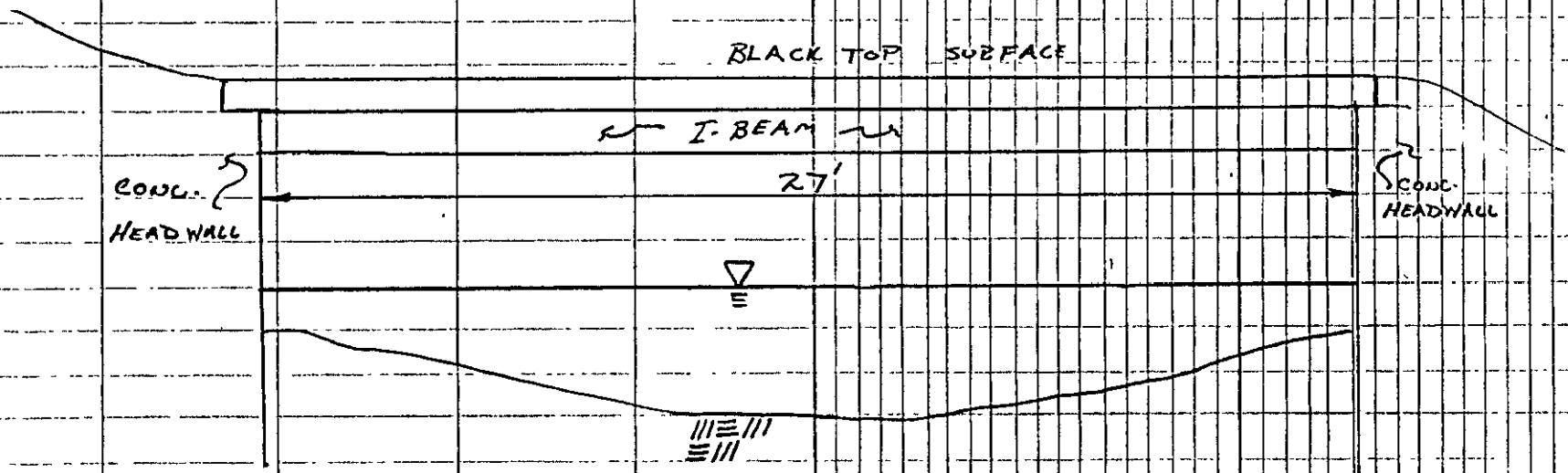
CREW: Fouty, Beadinger, Heer

DATE: 1-17-79 | INSTRUMENTS: NA 2 | TEMP (DRY BULB) 20 | WET BULB | RH % | BAR.

PROJECT: HUD | LOCATION: Augusta, Mich. Cross Section 132 | CHECKED BY | DATE

ACTIVITY Cross Section 132 BOOK 2-1-01 PAGE 140

STA.



LOOKING UPSTREAM

NOTE- BRIDGE IS 20' WIDE

APPENDIX C

(PROFILES)

APPENDIX D

(CROSS SECTION PLOTS)

CROSS SECTION REFERENCE

Cross Section ID on Profile	Sec. No. in HEC-2	Description
A	120.8	Valley Section at mouth of river
B	121.1	Upstream face of RR bridge
C	122.0	Valley Section
D	123.0	Valley Section at bottom of dam spillway
E	124.0	Upstream face of Knappen Mill Dam
F	125.0	Valley Section
G	126.0	Valley Section
H	127.1	Upstream face of W. Michigan St. bridge
I	127.3	Valley Section
J	129.8	Valley Section
K	130.1	Upstream face of VanBuren St. bridge
L	130.3	Valley Section
M	132.8	Valley Section
N	133.1	Upstream face of Washington St. bridge
O	135.0	Valley Section
P	136.0	Valley Section, levee on left bank
Q	137.0	Valley Section
R	139.0	Valley Section, old RR grade
S	142.0	Valley Section, northern limit of detailed study

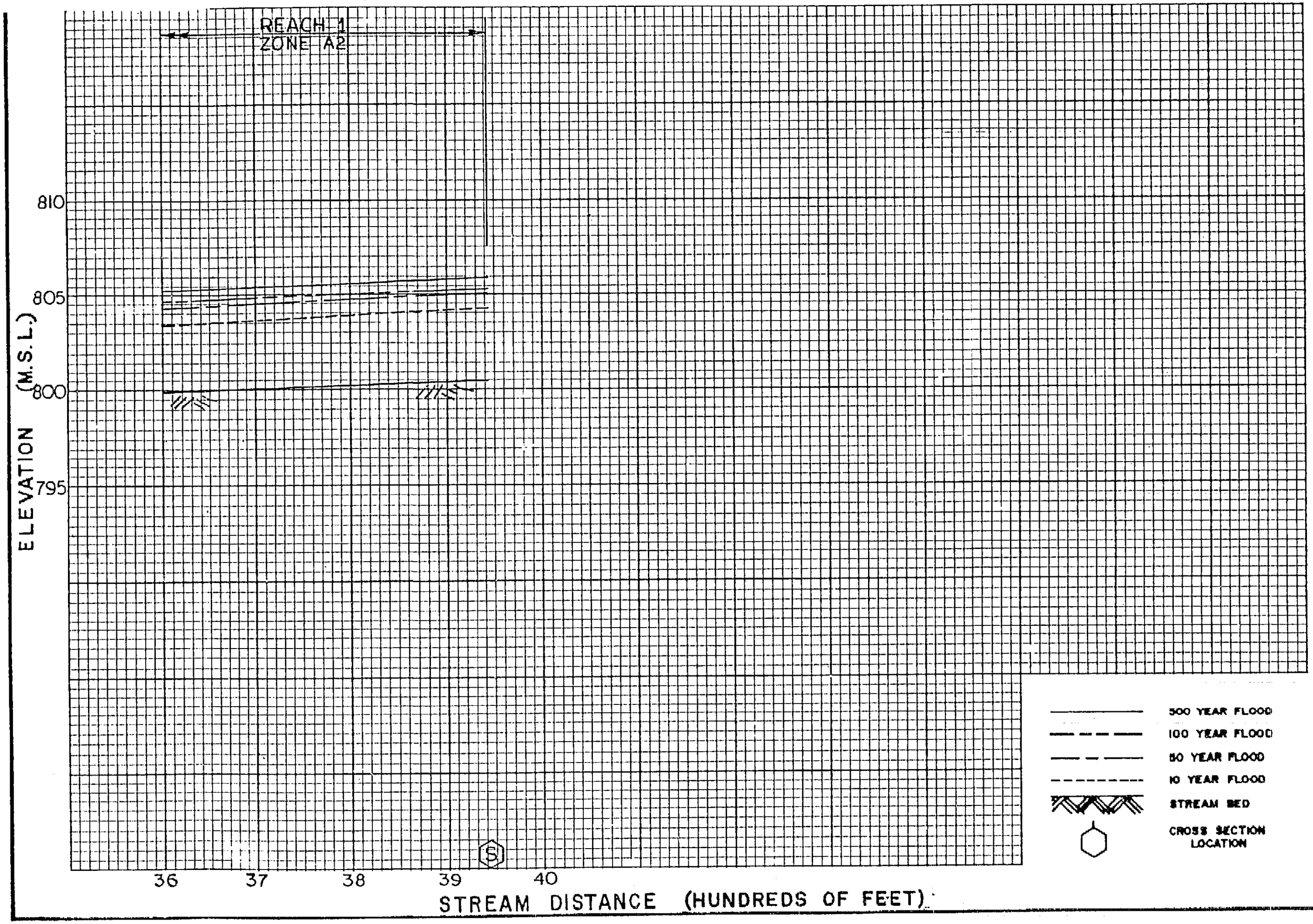
APPENDIX E

(MAP AND COMPUTER RUNS)

AUGUSTA CREEK

FLOOD PROFILE

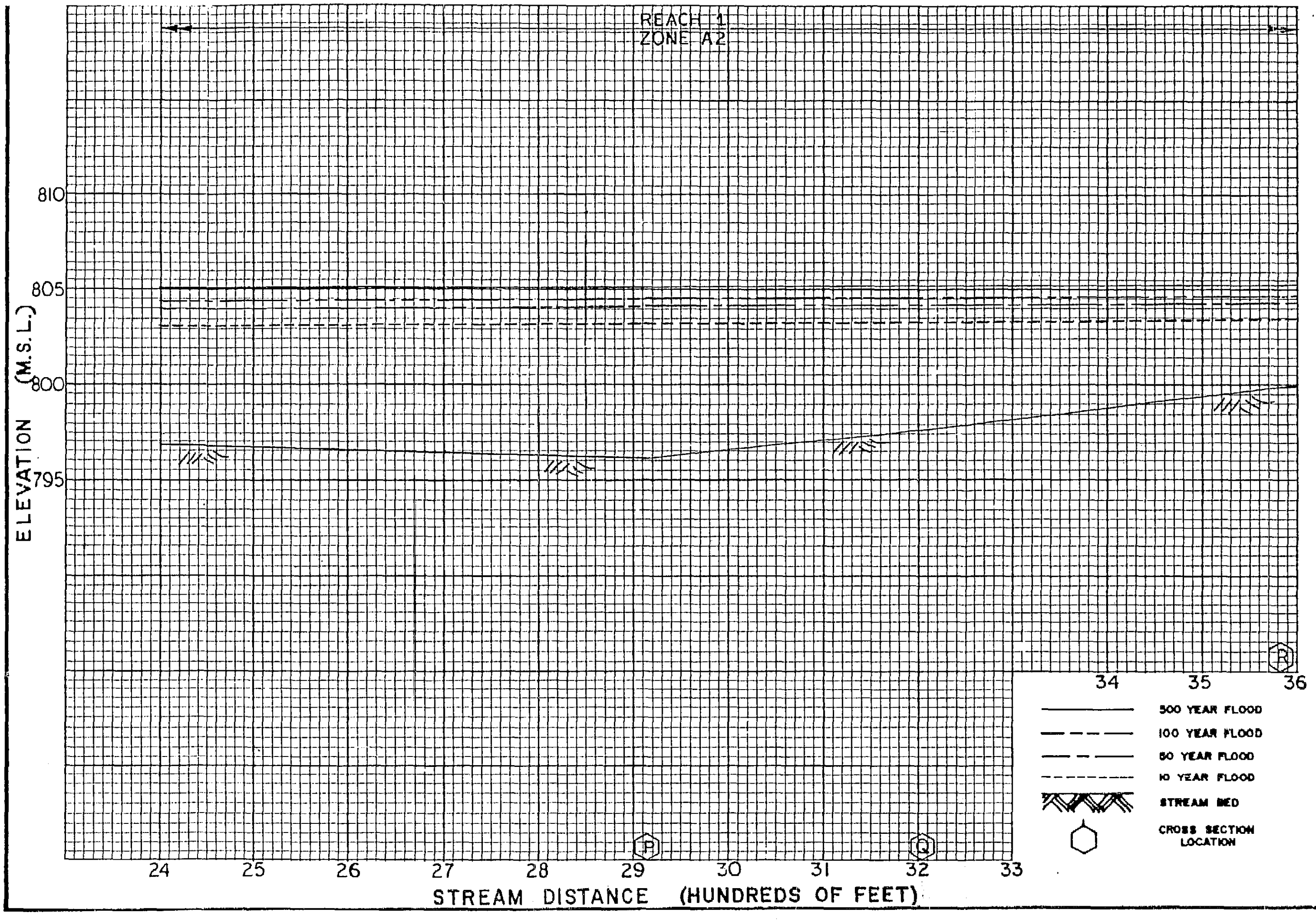
VILLAGE OF AUGUSTA



AUGUSTA CREEK

FLOOD PROFILE

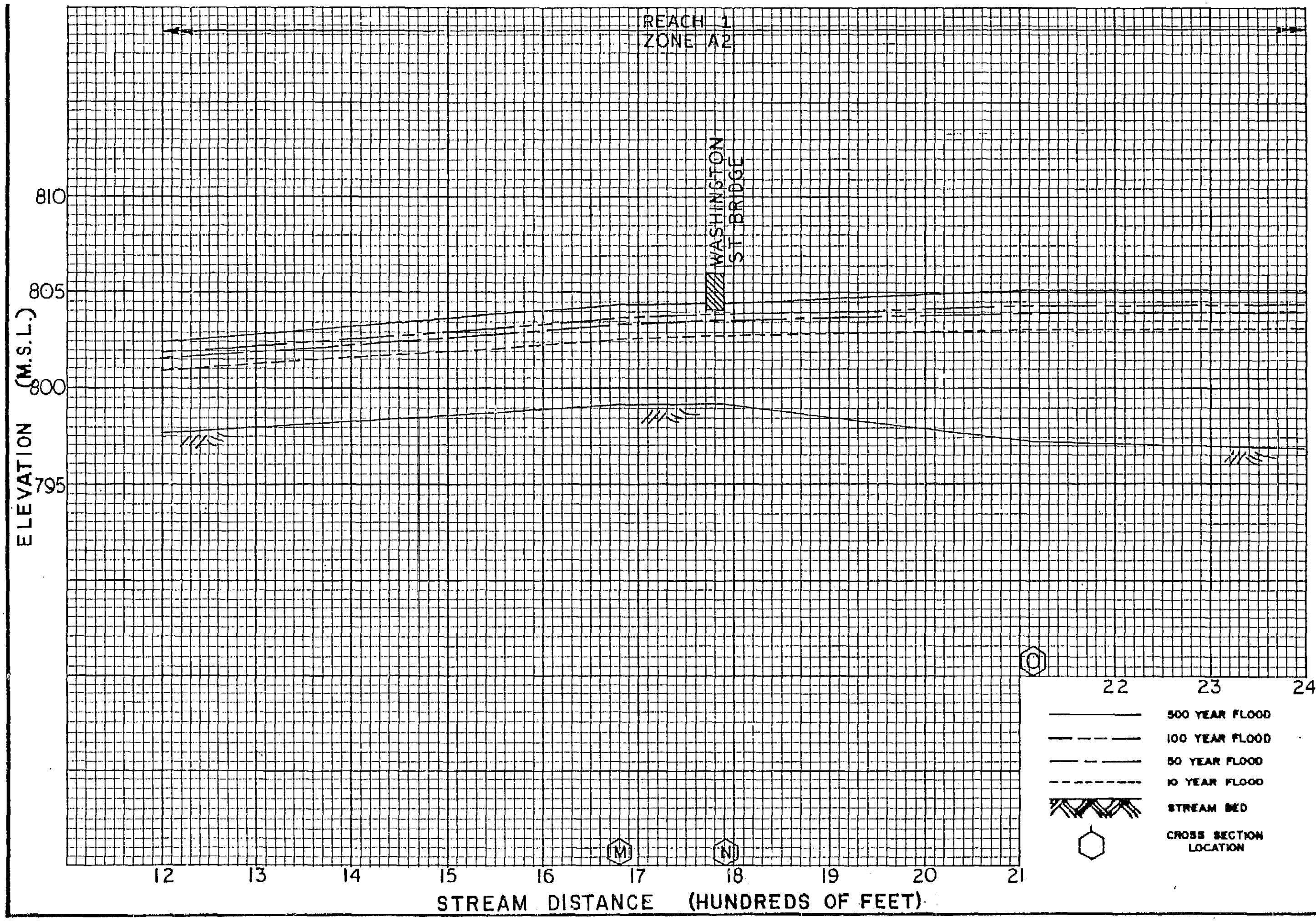
VILLAGE OF AUGUSTA

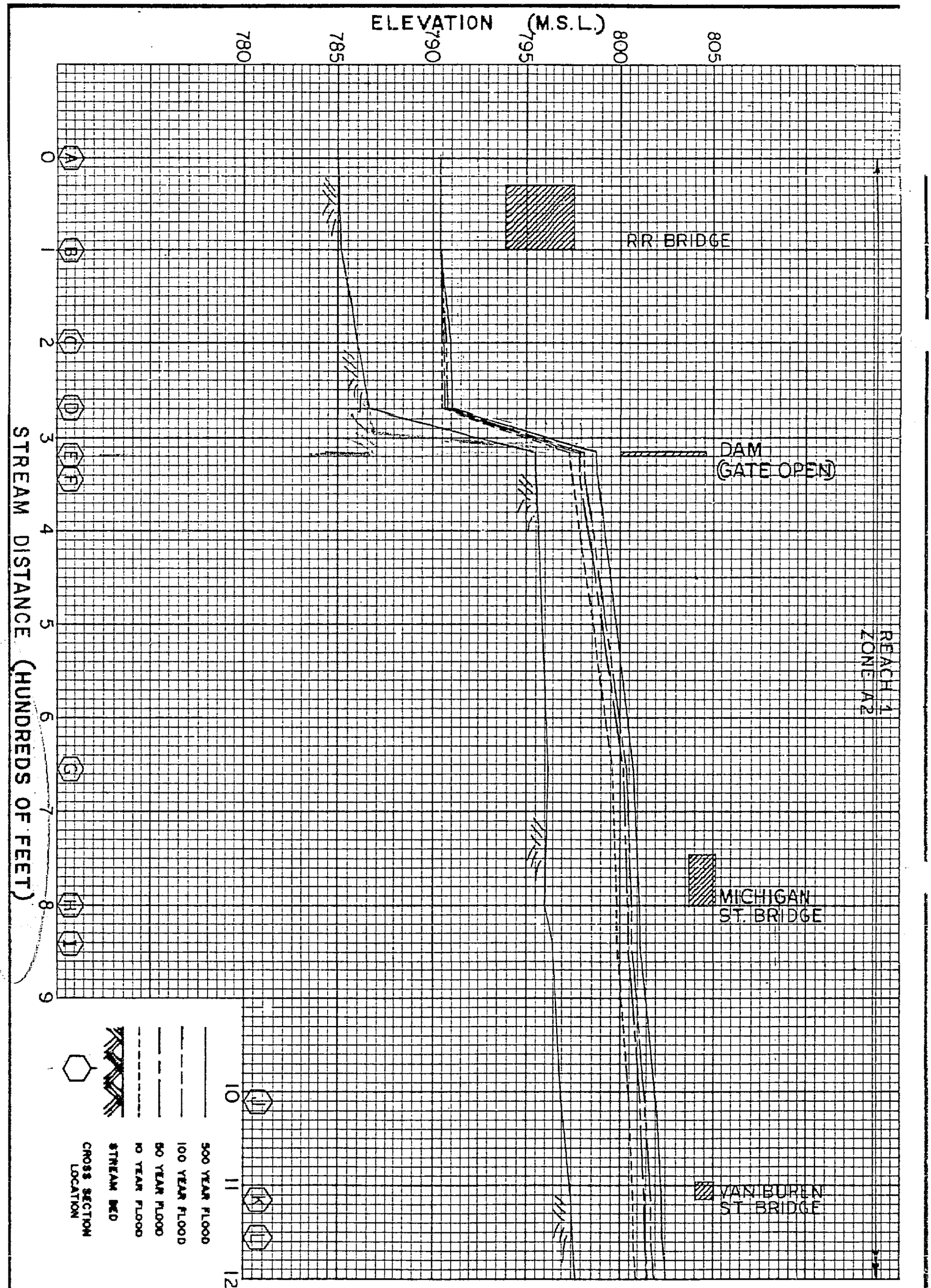


VILLAGE OF AUGUSTA

AUGUSTA CREEK

FLOOD PROFILE





VILLAGE OF AUGUSTA

AUGUSTA CREEK

FLOOD PROFILE

DID NOT

MEAN ANNUAL FLOOD LEVEL FOR KALAMAZOO RIVER

ELEVATION IN FEET
794.00
793.00
792.00
791.00
790.00
789.00
788.00
787.00
786.00
785.00

1900.00 1920.00 1940.00 1960.00 1980.00 2000.00 2020.00 2040.00 2060.00 2080.00 2100.00 2120.00 2140.00 2160.00

DISTANCE IN FEET

SECTION NO. 120.800

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET

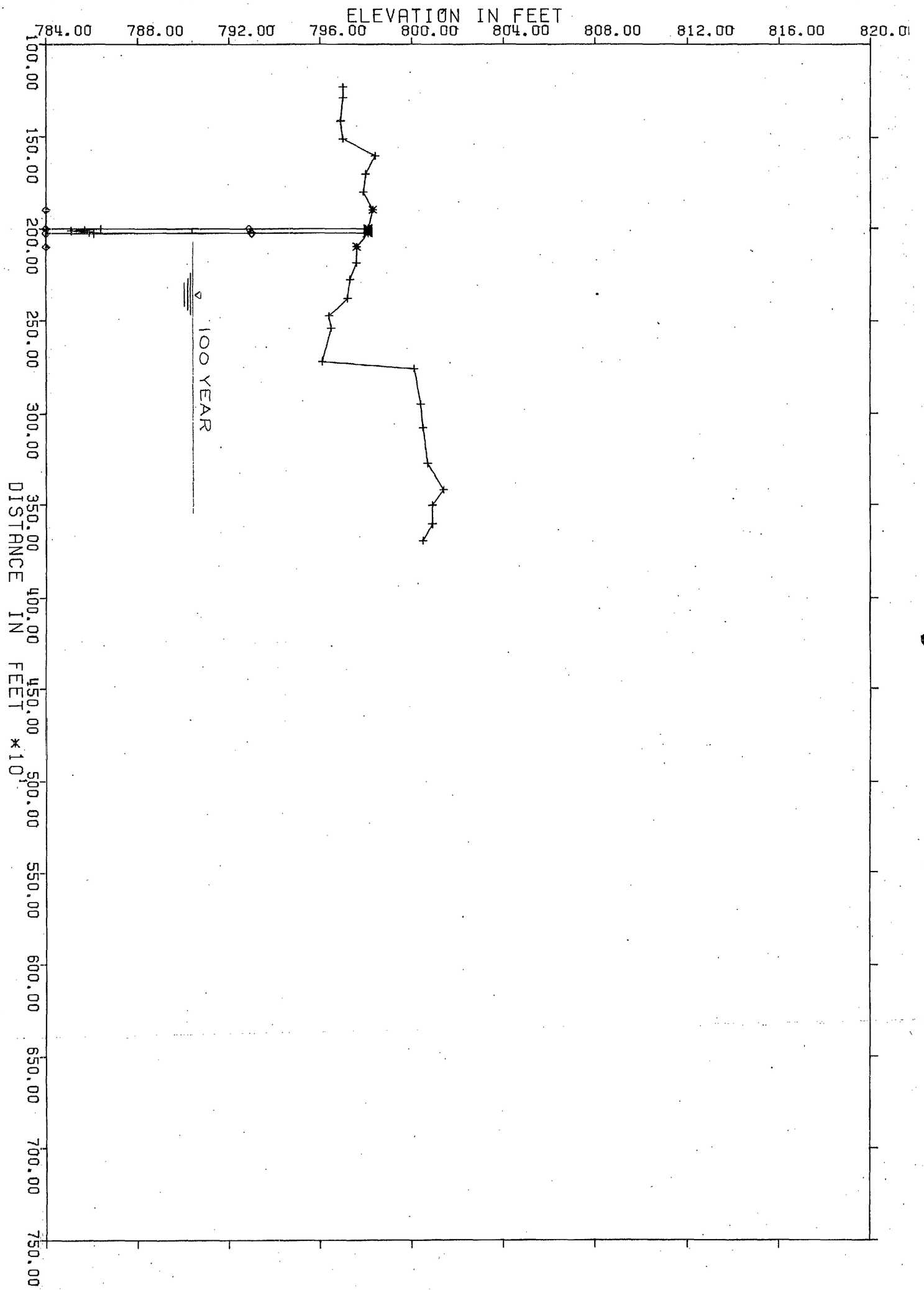
784.00
788.00
792.00
796.00
800.00
804.00
808.00
812.00
816.00
820.00

100 YEAR

100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00 700.00 750.00

DISTANCE IN FEET *10

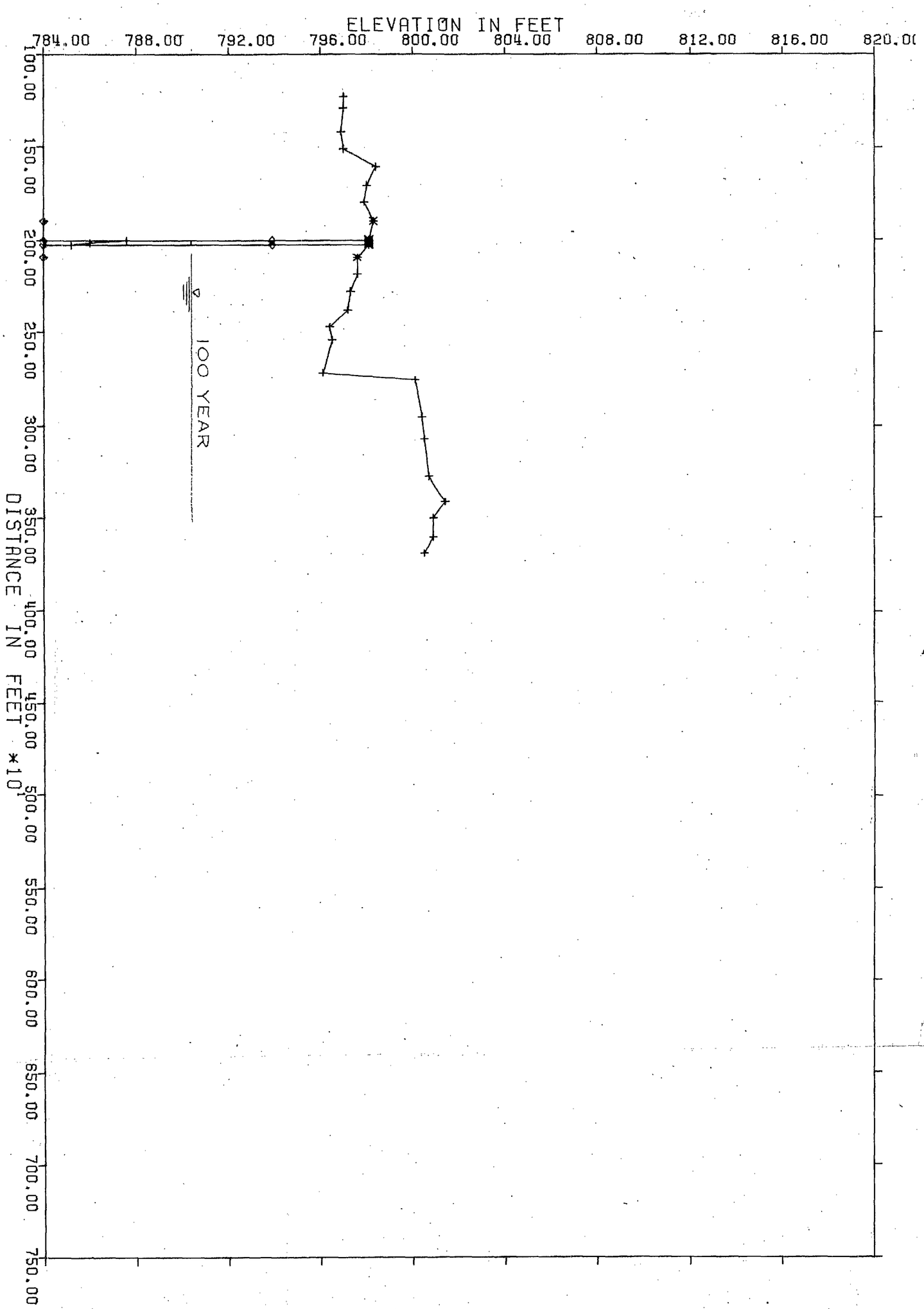
SECTION NO. 120.900



SECTION NO. 121.000

FLOOD INSURANCE STUDY

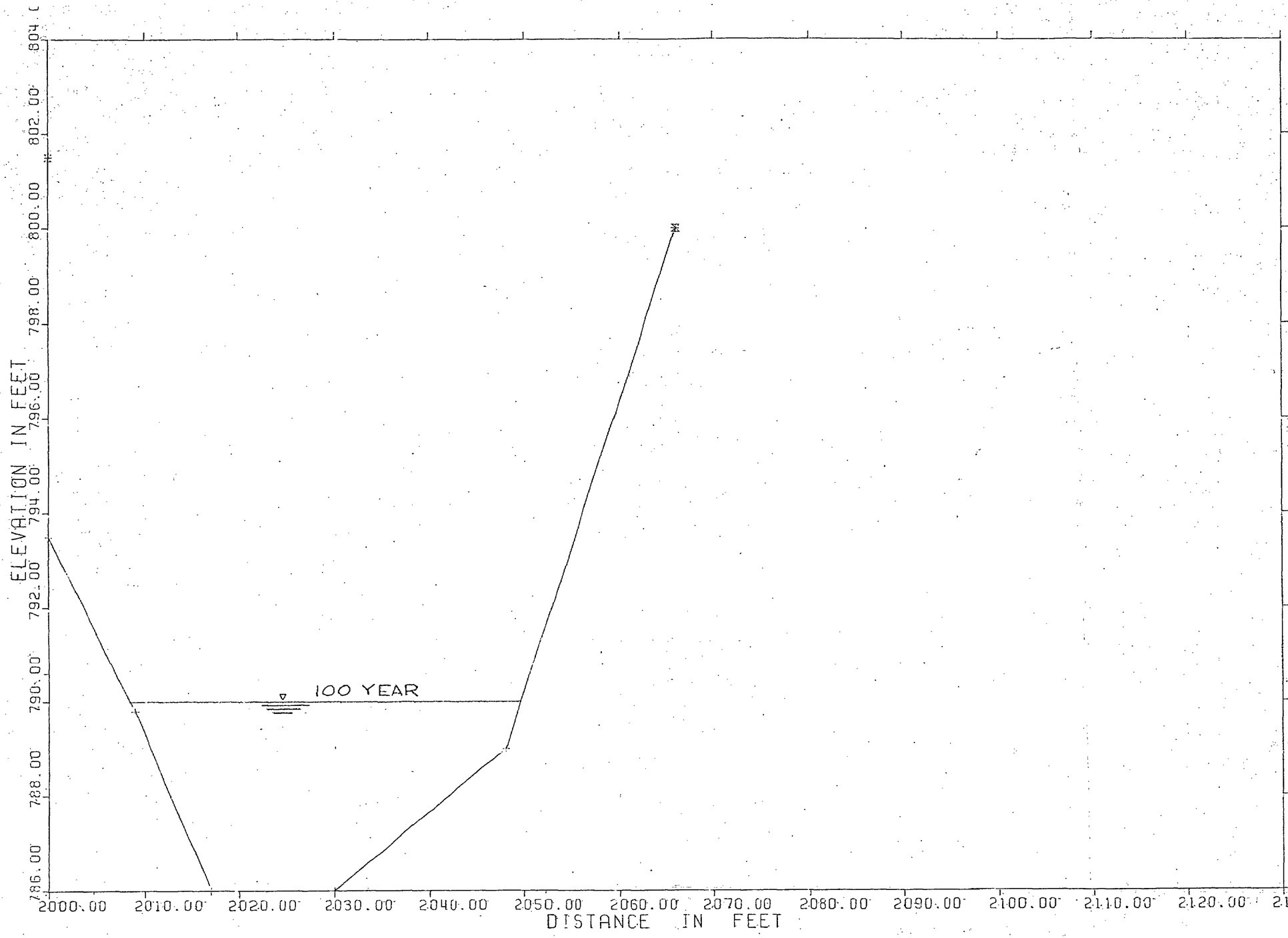
AUGUSTA CREEK AT AUGUSTA



SECTION NO. 121.100

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA



FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

SECTION NO. 122.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET
804.00
802.00
800.00
798.00
796.00
794.00
792.00
790.00
788.00
786.00

100 YEAR

2000.00 2010.00 2020.00 2030.00 2040.00 2050.00 2060.00 2070.00 2080.00 2090.00 2100.00 2110.00 2120.00 2130.00
DISTANCE IN FEET

SECTION NO. 123.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

794.00
796.00
796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00

100 YEAR

1800.00 1850.00 1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00 2450.00

DISTANCE IN FEET

SECTION NO. 123.900

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

794.00
796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00

100 YEAR

1990.00 2000.00 2010.00 2020.00 2030.00 2040.00 2050.00 2060.00 2070.00 2080.00 2090.00 2100.00 2110.00 2120.00

DISTANCE IN FEET

SECTION NO. 125.000



AERIAL TOPOGRAPHIC SURVEY
VILLAGE OF AUGUSTA,
MICHIGAN

PREPARED FOR
GOVE ENGINEERS
KALAMAZOO, MICHIGAN

DATE OF PHOTOGRAPHY 2-9-73 CONTOUR INTERVAL 4
SCALE IN FEET
200 0 200 400 600 800

KEY TO SYMBOLS
FLOOD BOUNDARY AND
FLOODWAY DATA

500 Yr. Flood Boundary
100 Yr. Flood Boundary
FLOODWAY FRINGE
FLOODWAY
500 Yr. Flood Boundary
Approximate 100 Yr. Flood Boundary
Cross Section Line

FLOOD BOUNDARY AND FLOODWAY MAP
MAP INDEX

VILLAGE OF AUGUSTA

COMPILED BY PHOTOGRAMMETRIC METHODS BY
AIR MAPS, INC.
336 JAY DEE STREET ELKHART, INDIANA 46514

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED INPUT

00BREAK00

```
**********************************************************
*  HEC2 WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED JULY 1979                                     *
*  ERROR CORR - 01,02,03                                 *
*  MODIFICATION - 50,51,52,53                            *
*                                                        *
*  RUN DATE  80/03/18. TIME  10.23.48.                   *
**********************************************************
```

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

VILLAGE OF AUGUSTA

AUGUSTA CREEK

ENCROACHMENT RUN

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

C
T1      VILLAGE OF AUGUSTA
T2      100 YEAR LEVEL
T3      AUGUSTA CREEK AT AUGUSTA

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       4.        0.        0.  0.000000      0.00      0.0       0.   790.400     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    110.000   200.000    38.000     1.000    53.000    21.000    22.000    54.000     4.000    39.000

NC       .110      .110      .042      .300      .500     0.000     0.000     0.000     0.000     0.000
QT      5.000   260.000   385.000   445.000   590.000   445.000     0.000     0.000     0.000     0.000
ET      0.000     0.000     0.000     0.000     0.000     1.410     0.000     0.000     0.000     0.000

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

X1    120.800     8.000  1996.000  2027.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    790.000  1900.000   789.300  1996.000   786.300  2000.000   785.600  2006.000   785.000  2011.000
GR    785.800  2017.000   786.000  2023.500   789.200  2027.000     0.000     0.000     0.000     0.000

X1    120.900    30.000  2000.000  2023.500    30.000    30.000    30.000     0.000     0.000     0.000
GR    797.000  1230.000   797.000  1290.000   796.900  1412.000   797.000  1510.000   798.400  1606.000
GR    798.000  1702.000   797.900  1796.000   798.300  1900.000   798.100  2000.000   786.400  2000.000
GR    785.700  2006.000   785.100  2011.000   785.900  2017.000   786.100  2023.500   798.100  2023.500
GR    797.600  2094.000   797.600  2168.000   797.300  2280.000   797.200  2376.000   796.400  2472.000
GR    796.500  2542.000   796.100  2716.000   800.100  2756.000   800.400  2952.000   800.500  3074.000
GR    800.700  3272.000   801.400  3414.000   800.900  3504.000   800.900  3601.000   800.500  3688.000
NC      0.000     0.000      .014     0.000     0.000     0.000     0.000     0.000     0.000     0.000

X1    121.000     0.000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000
RT      6.000  1900.000   798.300     0.000  2000.000   798.100     0.000  2000.000   798.100   792.900
RT   2023.500   798.100   793.000  2023.500   798.100     0.000  2094.000   797.600     0.000     0.000

                UPSTREAM CROSS SECTION AT RR BRIDGE  (B)

X1    121.100    28.000  2000.000  2023.500    69.000    69.000    69.000     0.000     0.000     0.000
RT      6.000  1900.000   798.300     0.000  2000.000   798.100     0.000  2000.000   798.100   793.900
RT   2023.500   798.100   793.900  2023.500   798.100     0.000  2094.000   797.600     0.000     0.000
GR    797.000  1230.000   797.000  1290.000   796.900  1412.000   797.000  1510.000   798.400  1606.000
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GR	798.000	1702.000	797.900	1796.000	798.300	1900.000	798.100	2000.000	787.600	2000.000
GR	786.000	2012.000	785.200	2023.500	798.100	2023.500	797.600	2094.000	797.600	2188.000
GR	797.300	2280.000	797.200	2376.000	796.400	2472.000	796.500	2542.000	796.100	2716.000
GR	800.100	2756.000	800.400	2952.000	800.500	3074.000	800.700	3272.000	801.400	3414.000
GR	800.900	3504.000	800.900	3601.000	800.500	3688.000	0.000	0.000	0.000	0.000
X1	121.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 122.0 (C)

X1	122.000	7.000	2000.000	2066.000	95.000	102.000	98.000	0.000	0.000	0.000
GR	801.500	2000.000	793.500	2000.000	789.800	2009.000	786.000	2017.000	786.000	2030.000
GR	789.000	2048.000	800.000	2066.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

X1	123.000	8.000	2008.000	2038.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	792.000	792.000	0.000
GR	802.500	2000.000	797.200	2000.000	790.000	2008.000	786.600	2018.000	786.600	2028.000
GR	787.900	2038.000	790.000	2048.000	801.500	2066.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	123.900	9.000	2008.000	2038.000	45.000	45.000	45.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	800.000	1800.000	804.000	1980.000	804.600	2000.000	804.600	2008.000	795.500	2008.000
GR	795.500	2038.000	804.700	2038.000	804.000	2050.000	800.000	2100.000	0.000	0.000
SR	1.250	1.600	3.000	0.000	30.000	3.000	101.000	0.000	795.500	795.500

UPSTREAM CROSS SECTION AT DAM (E)

X1	124.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	800.000	804.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	9.000	1800.000	800.000	0.000	1980.000	804.000	0.000	2000.000	804.600	0.000
BT	2008.000	804.600	795.500	2008.000	804.600	800.000	2038.000	804.700	800.000	2038.000
BT	804.700	795.500	2050.000	804.000	0.000	2100.000	800.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 125.0 (F)

X1	125.000	7.000	1994.000	2064.000	25.000	25.000	25.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.100	1994.000	800.300	2000.000	796.900	2012.000	795.500	2024.000	796.300	2036.000
GR	797.800	2048.000	804.900	2064.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 126.0 (G)

X1	126.000	0.000	0.000	0.000	310.000	310.000	310.000	0.000	.700	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	126.900	27.000	2000.000	2026.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	799.300	2000.000	796.900	2006.000	796.700	2012.000
GR	796.500	2019.000	797.400	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	127.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.600
BT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

X1	127.100	27.000	2000.000	2026.000	55.000	55.000	55.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.700
BT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	798.000	2000.000	797.100	2006.000	796.000	2012.000
GR	796.000	2019.000	797.700	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	127.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 127.3 (I)

X1	127.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	796.500	2024.000	796.500	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 129.8 (J)

X1	129.800	6.000	1994.000	2064.000	169.000	169.000	169.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	797.000	2024.000	797.000	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	129.900	29.000	2000.000	2028.000	85.000	85.000	85.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	790.100	1240.000	790.000	1262.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
GR	769.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	798.400	2000.000	797.500	2009.000	797.400	2019.000
GR	798.600	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000

VALLEY SECTION 130.3 (L)

NC	0.000	0.000	0.000	0.000	.300	.100	0.000	0.000	0.000	0.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	805.500	1994.000	802.000	2012.000	797.600	797.600	2024.000	2036.000	802.000	2048.000
X1	130.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000

VALLEY SECTION 132.8 (M)

NC	0.000	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	806.000	1994.000	802.500	2012.000	799.200	799.200	2024.000	2036.000	802.500	2048.000
X1	132.800	6.000	1994.000	2064.000	525.000	525.000	525.000	0.000	0.000	0.000

NC	0.000	0.000	0.000	0.000	0.000	0.000	2027.000	90.000	90.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1754.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.200	2000.000
GR	799.600	2015.000	799.800	2027.000	806.500	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.000	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R1	6.000	1556.000	603.000	806.500	0.000	2000.000	0.000	2000.000	806.500	804.200
F1	2027.000	606.500	804.200	806.500	2027.000	0.000	2098.000	808.700	0.000	0.000

UPSTREAM CROSS SECTION AT VANHOKEN ST. BRIDGE (K)

NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	130.200	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000

GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	798.900	7978.000
GR	R03.100	2492.000	R06.100	2648.000	R07.200	2730.000	808.800	2830.000	798.900	7978.000
GR	797.700	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	R03.500	1962.000	805.100	2000.000	799.800	2000.000	797.800	2009.000	797.500	2019.000
GR	799.800	1730.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
HT	2028.000	605.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000
HT	6.000	1962.000	R03.500	0.000	805.100	2000.000	0.000	2000.000	805.100	R04.300
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	130.100	29.000	2000.000	202R.000	18.000	18.000	18.000	0.000	0.000	0.000

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

X1	133.100	22.000	2000.000	2027.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1558.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.100
BT	2027.000	807.000	804.100	2027.000	807.000	0.000	2098.000	808.700	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.900	2000.000
GR	799.200	2013.000	801.000	2027.000	807.000	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.300	6.000	1994.000	2064.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	806.500	1994.000	799.200	2012.000	798.000	2024.000	798.000	2036.000	799.200	2048.000
GR	808.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 135.0 (O)

X1	135.000	25.000	1990.000	2066.000	274.000	274.000	271.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.700	388.000	797.500	490.000	801.400	598.000	807.100	702.000	808.100	804.000
GR	808.300	902.000	809.300	1062.000	808.600	1154.000	805.800	1328.000	806.200	1432.000
GR	805.200	1524.000	797.100	1564.000	794.300	1650.000	795.300	1756.000	795.600	1868.000
GR	797.400	1970.000	805.000	1990.000	801.100	2000.000	799.200	2004.000	797.300	2019.000
GR	797.700	2031.000	799.500	2043.000	811.800	2066.000	814.700	2112.000	823.000	2206.000

VALLEY SECTION 136.0 (P)

X1	136.000	15.000	1980.000	2056.000	800.000	800.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	810.000	1500.000	804.700	1600.000	804.600	1650.000	804.900	1700.000	805.600	1900.000
GR	805.000	1980.000	802.900	2000.000	799.900	2011.000	799.600	2023.000	796.100	2035.000
GR	797.900	2047.000	804.800	2056.000	809.300	2156.000	815.400	2240.000	817.900	2314.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 137.0 (Q)

X1	137.000	9.000	2000.000	2035.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	812.900	1750.000	802.100	1810.000	802.100	1900.000	803.200	2000.000	797.700	2010.000
GR	797.900	2025.000	800.200	2035.000	804.000	2100.000	808.000	2175.000	0.000	0.000

VALLEY SECTION 139.0. OLD RR GRADE (R)

X1	139.000	12.000	2000.000	2030.000	370.000	410.000	380.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.800	1850.000	811.500	1950.000	806.800	1965.000	803.200	1980.000	803.200	2000.000
GR	799.900	2010.000	799.900	2020.000	801.400	2030.000	802.900	2030.000	807.500	2038.000

GR	812.200	2046.000	813.100	2150.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	141.000	10.000	2000.000	2030.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.200	1850.000	811.300	1965.000	805.900	1980.000	803.300	1995.000	803.300	2000.000
GR	800.300	2010.000	800.300	2020.000	803.300	2030.000	809.500	2040.000	809.900	2200.000

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

X1	142.000	8.000	2000.000	2030.000	310.000	280.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	816.000	1750.000	804.000	1820.000	803.200	2000.000	800.500	2010.000	800.500	2022.000
GR	803.300	2030.000	804.000	2118.000	810.900	2238.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED SUMMARY

00BREAK00

JOB NO 105 RECLAMATION MAY 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR =  01.02.03
  MODIFICATION -  50.51.52.53
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

AUGUSTA CREEK AT AUGUSTA

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	120.800	790.40	1900.00	1996.00	2027.00	2027.00	127.00	0.00
	120.800	790.50	1972.25	1996.00	2027.00	2027.00	54.75	0.00
	120.900	790.40	2000.00	2000.00	2023.50	2023.50	23.50	30.00
	120.900	790.51	2000.00	2000.00	2023.50	2023.50	23.50	30.00
	121.000	790.40	2000.00	2000.00	2023.50	2023.50	23.50	1.00
*	121.000	790.51	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	121.100	790.40	2000.00	2000.00	2023.50	2023.50	23.50	69.00
*	121.100	790.51	2000.00	2000.00	2023.50	2023.50	23.50	69.00
	121.200	790.40	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	121.200	790.51	2000.00	2000.00	2023.50	2023.50	23.50	1.00
	122.000	790.69	2006.83	2000.00	2066.00	2050.77	43.94	98.00
	122.000	790.78	2006.61	2000.00	2066.00	2050.92	44.31	98.00
	123.000	790.77	2008.00	2008.00	2038.00	2038.00	30.00	70.00
	123.000	790.86	2008.00	2008.00	2038.00	2038.00	30.00	70.00
*	123.900	797.39	2008.00	2008.00	2038.00	2038.00	30.00	45.00
*	123.900	797.39	2008.00	2008.00	2038.00	2038.00	30.00	45.00
*	124.000	798.22	2008.00	2008.00	2038.00	2038.00	30.00	5.00
*	124.000	798.32	2008.00	2008.00	2038.00	2038.00	30.00	5.00
	125.000	798.18	2007.49	1994.00	2064.00	2048.85	41.36	25.00
	125.000	798.30	2007.04	1994.00	2064.00	2049.14	42.10	25.00
	126.000	800.33	2002.35	1994.00	2064.00	2052.14	49.79	310.00
	126.000	800.30	2002.49	1994.00	2064.00	2052.05	49.56	310.00
	126.900	800.53	2000.00	2000.00	2026.00	2026.00	26.00	90.00
	126.900	800.50	2000.00	2000.00	2026.00	2026.00	26.00	90.00
	127.000	800.53	2000.00	2000.00	2026.00	2026.00	26.00	1.00
*	127.000	800.50	2000.00	2000.00	2026.00	2026.00	26.00	1.00

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	127.100	800.68	2000.00	2000.00	2026.00	2026.00	26.00	55.00
*	127.100	800.65	2000.00	2000.00	2026.00	2026.00	26.00	55.00
	127.200	800.68	2000.00	2000.00	2026.00	2026.00	26.00	1.00
	127.200	800.65	2000.00	2000.00	2026.00	2026.00	26.00	1.00
	127.300	800.68	2013.95	1994.00	2064.00	2046.05	32.09	40.00
	127.300	800.65	2014.04	1994.00	2064.00	2045.96	31.92	40.00
	129.800	801.46	2012.10	1994.00	2064.00	2047.90	35.81	169.00
	129.800	801.46	2012.11	1994.00	2064.00	2047.89	35.77	169.00
	129.900	801.75	2000.00	2000.00	2028.00	2028.00	28.00	85.00
	129.900	801.74	2000.00	2000.00	2028.00	2028.00	28.00	85.00
	130.000	801.75	2000.00	2000.00	2028.00	2028.00	28.00	1.00
*	130.000	801.75	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.100	801.74	2000.00	2000.00	2028.00	2028.00	28.00	18.00
*	130.100	801.74	2000.00	2000.00	2028.00	2028.00	28.00	18.00
	130.200	801.74	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.200	801.74	2000.00	2000.00	2028.00	2028.00	28.00	1.00
	130.300	801.75	2012.66	1994.00	2064.00	2047.34	34.68	40.00
	130.300	801.75	2012.69	1994.00	2064.00	2047.31	34.63	40.00
	132.800	803.68	2005.94	1994.00	2064.00	2053.39	47.45	525.00
	132.800	803.68	2005.92	1994.00	2064.00	2053.40	47.48	525.00
	132.900	803.89	2000.00	2000.00	2027.00	2027.00	27.00	90.00
	132.900	803.89	2000.00	2000.00	2027.00	2027.00	27.00	90.00
	133.000	803.89	2000.00	2000.00	2027.00	2027.00	27.00	1.00
*	133.000	803.89	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.100	803.88	2000.00	2000.00	2027.00	2027.00	27.00	20.00
*	133.100	803.88	2000.00	2000.00	2027.00	2027.00	27.00	20.00
	133.200	803.88	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.200	803.88	2000.00	2000.00	2027.00	2027.00	27.00	1.00
	133.300	804.22	1999.62	1994.00	2064.00	2057.13	57.51	50.00
	133.300	804.22	1999.62	1994.00	2064.00	2057.13	57.51	50.00
	135.000	804.31	1991.76	1990.00	2066.00	2052.00	60.24	271.00
	135.000	804.30	1991.80	1990.00	2066.00	2051.97	60.18	271.00
	136.000	804.51	1984.59	1980.00	2056.00	2055.63	71.04	800.00
	136.000	804.51	1984.75	1980.00	2056.00	2055.61	70.86	800.00
	137.000	804.59	1796.21	2000.00	2035.00	2110.91	314.69	290.00
	137.000	804.59	1817.20	2000.00	2035.00	2067.44	250.24	290.00
	139.000	804.65	1973.98	2000.00	2030.00	2033.04	59.06	380.00
	139.000	804.65	1993.97	2000.00	2030.00	2030.00	36.03	380.00

SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
141.000	804.76	1986.58	2000.00	2030.00	2032.35	45.77	70.00
141.000	804.79	2000.00	2000.00	2030.00	2030.00	30.00	70.00
142.000	805.35	1812.13	2000.00	2030.00	2141.46	329.32	290.00
142.000	805.42	1842.73	2000.00	2030.00	2101.08	258.36	290.00

AUGUSTA CREEK AT AUGUSTA

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	120.800	790.40	0.00	790.54	127.00	29.30	415.70	0.00	0.00	0.00	1996.00	2027.00	0.00
	120.800	790.50	.10	790.65	54.75	13.65	431.35	0.00	.05	1972.25	1996.00	2027.00	2027.00
	120.900	790.40	0.00	790.66	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
	120.900	790.51	.11	790.75	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.000	790.40	0.00	790.66	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
*	121.000	790.51	.11	790.75	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.100	790.40	0.00	790.72	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
*	121.100	790.51	.11	790.81	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	121.200	790.40	0.00	790.72	23.50	0.00	445.00	0.00	0.00	0.00	2000.00	2023.50	0.00
	121.200	790.51	.11	790.81	23.50	0.00	445.00	0.00	0.00	2000.00	2000.00	2023.50	2023.50
	122.000	790.69	0.00	790.84	43.94	0.00	445.00	0.00	0.00	0.00	2000.00	2066.00	0.00
	122.000	790.78	.09	790.92	44.31	0.00	445.00	0.00	0.00	2000.00	2000.00	2066.00	2066.00
	123.000	790.77	0.00	791.07	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
	123.000	790.86	.09	791.14	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
*	123.900	797.39	0.00	798.35	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
*	123.900	797.39	.00	798.35	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
*	124.000	798.22	0.00	798.68	30.00	0.00	445.00	0.00	0.00	0.00	2008.00	2038.00	0.00
*	124.000	798.32	.10	798.75	30.00	0.00	445.00	0.00	0.00	2008.00	2008.00	2038.00	2038.00
	125.000	798.18	0.00	798.85	41.36	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	125.000	798.30	.12	798.88	42.10	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	126.000	800.33	0.00	800.51	49.79	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	126.000	800.30	-.04	800.47	49.56	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	126.900	800.53	0.00	800.91	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
	126.900	800.50	-.03	800.89	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.000	800.53	0.00	800.91	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
*	127.000	800.50	-.03	800.89	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.100	800.68	0.00	800.97	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
*	127.100	800.65	-.03	800.94	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.200	800.68	0.00	800.97	26.00	0.00	445.00	0.00	0.00	0.00	2000.00	2026.00	0.00
	127.200	800.65	-.03	800.95	26.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2026.00	2026.00
	127.300	800.68	0.00	801.04	32.09	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	127.300	800.65	-.03	801.02	31.92	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	129.800	801.46	0.00	801.73	35.81	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	129.800	801.46	-.01	801.73	35.77	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	129.900	801.75	0.00	802.00	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00

	129.900	801.74	-.00	801.99	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00

	SECNO	CWSEL	DIFKPS	EG	TOPWID	QLOH	QCH	QROH	PERENC	STENCL	STCHL	STCHR	STENCR
	130.000	801.75	0.00	802.00	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
*	130.000	801.75	-.00	802.00	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.100	801.74	0.00	802.02	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
*	130.100	801.74	-.00	802.02	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.200	801.74	0.00	802.02	28.00	0.00	445.00	0.00	0.00	0.00	2000.00	2028.00	0.00
	130.200	801.74	-.00	802.02	28.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2028.00	2028.00
	130.300	801.75	0.00	802.08	34.68	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	130.300	801.75	-.01	802.08	34.63	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	132.800	803.68	0.00	803.87	47.45	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	132.800	803.68	.00	803.87	47.48	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	132.900	803.89	0.00	804.15	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
	132.900	803.89	.00	804.15	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.000	803.89	0.00	804.15	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
*	133.000	803.89	.00	804.15	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.100	803.88	0.00	804.17	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
*	133.100	803.88	-.00	804.17	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.200	803.88	0.00	804.17	27.00	0.00	445.00	0.00	0.00	0.00	2000.00	2027.00	0.00
	133.200	803.88	-.00	804.17	27.00	0.00	445.00	0.00	0.00	2000.00	2000.00	2027.00	2027.00
	133.300	804.22	0.00	804.27	57.51	0.00	445.00	0.00	0.00	0.00	1994.00	2064.00	0.00
	133.300	804.22	-.00	804.26	57.51	0.00	445.00	0.00	0.00	1994.00	1994.00	2064.00	2064.00
	135.000	804.31	0.00	804.34	60.24	0.00	445.00	0.00	0.00	0.00	1990.00	2066.00	0.00
	135.000	804.30	-.00	804.34	60.18	0.00	445.00	0.00	0.00	1990.00	1990.00	2066.00	2066.00
	136.000	804.51	0.00	804.54	71.04	0.00	445.00	0.00	0.00	0.00	1980.00	2056.00	0.00
	136.000	804.51	.00	804.54	70.86	0.00	445.00	0.00	0.00	1980.00	1980.00	2056.00	2056.00
	137.000	804.59	0.00	804.61	314.69	123.46	271.26	50.28	0.00	0.00	2000.00	2035.00	0.00
	137.000	804.59	.00	804.61	250.24	118.45	283.82	42.73	.05	1817.20	2000.00	2035.00	2067.45
	139.000	804.65	0.00	804.83	59.06	22.99	420.76	1.25	0.00	0.00	2000.00	2030.00	0.00
	139.000	804.65	.01	804.86	36.03	5.97	439.03	0.00	.05	1993.97	2000.00	2030.00	2030.00
	141.000	804.76	0.00	805.02	45.77	10.19	433.92	.89	0.00	0.00	2000.00	2030.00	0.00
	141.000	804.79	.04	805.07	30.00	0.00	445.00	0.00	.03	2000.00	2000.00	2030.00	2030.00
	142.000	805.35	0.00	805.38	329.32	139.36	237.61	68.02	0.00	0.00	2000.00	2030.00	0.00
	142.000	805.42	.07	805.45	258.36	136.41	249.23	59.36	.06	1842.73	2000.00	2030.00	2101.08

SUMMARY OF ERRORS

CAUTION SECNO= 121.000 PROFILE= 2 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 121.100 PROFILE= 2 BRIDGE DECK DEFINITION ERROR

```
 CAUTION  SECNO=  123.900  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=  123.900  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=  123.900  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=  123.900  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=  123.900  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=  123.900  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=  124.000  PROFILE= 1  HYDRAULIC JUMP D.S.
 CAUTION  SECNO=  124.000  PROFILE= 2  HYDRAULIC JUMP D.S.

 CAUTION  SECNO=  127.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  127.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  130.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  130.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  133.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR

 CAUTION  SECNO=  133.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
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FLOODWAY DATA. AUGUSTA CREEK AT AUGUSTA
PROFILE NO. 2

STATION	FLOODWAY WIDTH (FT)	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
120.800	55.	161.	2.8	790.5	790.4	.1
120.900	24.	112.	4.0	790.5	790.4	.1
121.000	24.	112.	4.0	790.5	790.4	.1
121.100	24.	101.	4.4	790.5	790.4	.1
121.200	24.	101.	4.4	790.5	790.4	.1
122.000	44.	145.	3.0	790.8	790.7	.1
123.000	30.	104.	4.3	790.9	790.8	.1
123.900	30.	57.	7.8	797.4	797.4	0.0
124.000	30.	85.	5.3	798.3	798.2	.1
125.000	42.	73.	6.1	798.3	798.2	.1
126.000	50.	132.	3.4	800.3	800.3	0.0
126.900	26.	89.	5.0	800.5	800.5	0.0
127.000	26.	89.	5.0	800.5	800.5	0.0
127.100	36.	102.	4.3	800.7	800.7	0.0
127.200	36.	102.	4.3	800.7	800.7	0.0
127.300	32.	91.	4.9	800.7	800.7	0.0
129.800	36.	106.	4.2	801.5	801.5	0.0
129.900	28.	111.	4.0	801.7	801.7	0.0
130.000	28.	111.	4.0	801.7	801.7	0.0
130.100	28.	105.	4.2	801.7	801.7	0.0
130.200	28.	105.	4.3	801.7	801.7	0.0
130.300	35.	97.	4.6	801.8	801.8	0.0
132.600	47.	129.	3.5	803.7	803.7	0.0
132.900	27.	110.	4.0	803.9	803.9	0.0
133.000	27.	110.	4.0	803.9	803.9	0.0
133.100	27.	103.	4.3	803.9	803.9	0.0
133.200	27.	103.	4.3	803.9	803.9	0.0
133.300	58.	264.	1.7	804.2	804.2	0.0
135.000	60.	292.	1.5	804.3	804.3	0.0
136.000	71.	302.	1.5	804.5	804.5	0.0
137.000	450.	708.	.6	804.6	804.6	0.0
139.000	36.	127.	3.5	804.6	804.6	0.0
141.000	30.	105.	4.2	804.8	804.8	0.0
142.000	258.	547.	.8	805.4	805.3	.1

****
HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01.02.03
MODIFICATION - 50,51,52,53
****

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: MULTI - PROFILE INPUT DATA

00BREAK00

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**********************************************************
*  HEC2 WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED JULY 1979                                     *
*  ERROR CORR - 01,02,03                                 *
*  MODIFICATION - 50,51,52,53                            *
*                                                        *
*  RUN DATE  80/03/18. TIME  10.18.42.                   *
**********************************************************
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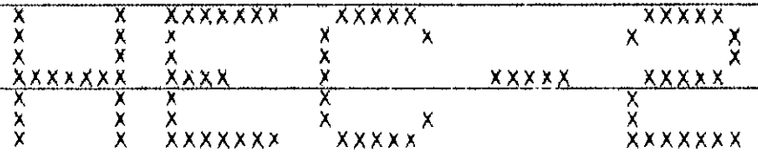

VILLAGE OF AUGUSTA

AUGUSTA CREEK

MULTI-PROFILE

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

C
T1      AUGUSTA
T2      10 YEAR LEVEL
T3      AUGUSTA CREEK

J1  ICHECK     INQ        NINV       IDIR       STPT       METRIC     HVINS      Q          WSEL       FQ
        0.        2.         0.         0.   0.000000       0.00       0.0         0.     790.400    0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    150.000    201.000    0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
J5  LPRNT      NUMSEC                          ********REQUESTED SECTION NUMBERS*********
    -10.000    -10.000    0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
NC      .110       .110       .042       .300       .500       0.000      0.000      0.000      0.000      0.000
WT     5.000    260.000    385.000    445.000    590.000    445.000      0.000      0.000      0.000      0.000
FT     0.000      0.000      0.000      0.000      0.000      1.410      0.000      0.000      0.000      0.000

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

X1   120.800      8.000   1996.000   2027.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   790.000   1500.000    789.300   1996.000    786.300   2000.000    785.600   2006.000    785.000   2011.000
GR   785.800   2017.000    786.000   2023.500    789.200   2027.000      0.000      0.000      0.000      0.000

X1   120.900     36.000   2000.000   2023.500     30.000     30.000     30.000      0.000      0.000      0.000
GR   797.000   1230.000    797.000   1290.000    796.900   1412.000    797.000   1510.000    798.400   1606.000
GR   798.000   1702.000    797.900   1796.000    798.300   1900.000    798.100   2000.000    786.400   2000.000
GR   785.700   2006.000    785.100   2011.000    785.900   2017.000    786.100   2023.500    798.100   2023.500
GR   797.600   2094.000    797.600   2188.000    797.300   2280.000    797.200   2376.000    796.400   2472.000
GR   796.500   2542.000    796.100   2716.000    800.100   2756.000    800.400   2952.000    800.500   3074.000
GR   800.700   3272.000    801.400   3414.000    800.900   3504.000    800.900   3601.000    800.500   3688.000
NC     0.000      0.000       .014      0.000      0.000      0.000      0.000      0.000      0.000      0.000

X1   121.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
HT     5.000   1500.000    798.300      0.000   2000.000    798.100      0.000   2000.000    798.100    792.900
HT  2023.500    798.100    793.000   2023.500    796.100      0.000   2094.000    797.600      0.000      0.000

                UPSTREAM CROSS SECTION AT RR BRIDGE  (B)

X1   121.100     28.000   2000.000   2023.500     69.000     69.000     69.000      0.000      0.000      0.000
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RT	5.000	1900.000	798.300	0.000	2000.000	798.100	0.000	2000.000	798.100	793.900
RT	2023.500	798.100	793.900	2023.500	798.100	0.000	2094.000	797.600	0.000	0.000
GR	797.000	1230.000	797.000	1290.000	796.900	1412.000	797.000	1510.000	798.400	1606.000
GR	796.000	1702.000	797.900	1796.000	798.300	1900.000	798.100	2000.000	787.600	2000.000
GR	786.000	2012.000	785.200	2023.500	798.100	2023.500	797.600	2094.000	797.600	2188.000
GR	797.300	2280.000	797.200	2376.000	796.400	2472.000	796.500	2542.000	796.100	2716.000
GR	800.100	2756.000	800.400	2952.000	800.500	3074.000	800.700	3272.000	801.400	3414.000
GR	800.900	3504.000	800.900	3601.000	800.500	3688.000	0.000	0.000	0.000	0.000
X1	121.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 122.0 (C)

X1	122.000	7.000	2000.000	2066.000	95.000	102.000	98.000	0.000	0.000	0.000
GR	801.500	2000.000	793.500	2000.000	789.800	2009.000	786.000	2017.000	786.000	2030.000
GR	789.000	2048.000	800.000	2066.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

X1	123.000	8.000	2008.000	2038.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	792.000	792.000	0.000
GR	802.500	2000.000	797.200	2000.000	790.000	2008.000	786.600	2018.000	786.600	2028.000
GR	787.900	2038.000	790.000	2048.000	801.500	2066.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	123.900	9.000	2008.000	2038.000	45.000	45.000	45.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	800.000	1800.000	804.000	1980.000	804.600	2000.000	804.600	2008.000	795.500	2008.000
GR	795.500	2038.000	804.700	2038.000	804.000	2050.000	800.000	2100.000	0.000	0.000
SB	1.250	1.600	3.000	0.000	30.000	3.000	101.000	0.000	795.500	795.500

UPSTREAM CROSS SECTION AT DAM (E)

X1	124.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	800.000	804.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	9.000	1800.000	800.000	0.000	1980.000	804.000	0.000	2000.000	804.600	0.000
RT	2008.000	804.600	795.500	2008.000	804.600	800.000	2038.000	804.700	800.000	2038.000
RT	804.700	795.500	2050.000	804.000	0.000	2100.000	800.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 125.0 (F)

X1	125.000	7.000	1994.000	2064.000	25.000	25.000	25.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.100	1994.000	800.300	2000.000	796.900	2012.000	795.500	2024.000	796.300	2036.000
GR	797.800	2048.000	804.900	2064.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 126.0 (G)

X1	126.000	0.000	0.000	0.000	310.000	310.000	310.000	0.000	.700	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	129.900	27.000	2000.000	2026.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	799.300	2000.000	796.900	2006.000	796.700	2012.000
GR	796.500	2019.000	797.400	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2840.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	127.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.600
PT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

X1	127.100	27.000	2000.000	2026.000	55.000	55.000	55.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1970.000	805.000	0.000	2000.000	805.100	0.000	2000.000	805.100	803.700
PT	2026.000	805.100	803.700	2026.000	805.100	0.000	2062.000	804.900	0.000	0.000
GR	796.300	1310.000	798.400	1548.000	799.100	1646.000	801.100	1796.000	802.800	1892.000
GR	805.000	1970.000	805.100	2000.000	798.000	2000.000	797.100	2006.000	796.000	2012.000
GR	796.000	2019.000	797.700	2026.000	805.100	2026.000	804.900	2062.000	802.400	2172.000
GR	800.900	2317.000	800.800	2414.000	801.000	2516.000	801.700	2648.000	799.400	2746.000
GR	800.500	2640.000	802.300	2982.000	803.000	3080.000	803.500	3178.000	804.600	3316.000
GR	805.000	3416.000	806.100	3596.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	127.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 127.3 (I)

X1	127.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	796.500	2024.000	796.500	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 129.8 (J)

X1	129.800	6.000	1994.000	2064.000	169.000	169.000	169.000	0.000	0.000	0.000
GR	805.100	1994.000	801.500	2012.000	797.000	2024.000	797.000	2036.000	801.500	2048.000
GR	805.100	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	129.900	29.000	2000.000	2028.000	85.000	85.000	85.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000

GR	784.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	798.400	2000.000	797.500	2009.000	797.400	2019.000
GR	798.600	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	130.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
BT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000

UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE (K)

X1	130.100	24.000	2000.000	2028.000	18.000	18.000	18.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	1962.000	803.500	0.000	2000.000	805.100	0.000	2000.000	805.100	804.300
BT	2028.000	805.100	804.300	2028.000	805.100	0.000	2060.000	803.200	0.000	0.000
GP	790.100	1240.000	790.000	1282.000	795.800	1306.000	795.800	1328.000	790.500	1358.000
GR	789.800	1430.000	791.900	1498.000	799.400	1542.000	801.600	1644.000	802.600	1834.000
GR	803.500	1962.000	805.100	2000.000	799.800	2000.000	797.800	2009.000	797.500	2019.000
GR	797.700	2028.000	805.100	2028.000	803.200	2060.000	802.500	2172.000	803.500	2316.000
GR	803.100	2492.000	806.100	2648.000	807.200	2730.000	808.800	2830.000	798.900	2978.000
GR	799.900	3156.000	802.900	3308.000	805.100	3450.000	807.000	3572.000	0.000	0.000
X1	130.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 130.3 (L)

X1	130.300	6.000	1994.000	2064.000	40.000	40.000	40.000	0.000	0.000	0.000
GR	805.500	1994.000	802.000	2012.000	797.600	2024.000	797.600	2036.000	802.000	2048.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 132.8 (M)

X1	132.800	6.000	1994.000	2064.000	525.000	525.000	525.000	0.000	0.000	0.000
GR	806.000	1994.000	802.500	2012.000	799.200	2024.000	799.200	2036.000	802.500	2048.000
GR	806.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	132.900	22.000	2000.000	2027.000	90.000	90.000	90.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.200	2000.000
GR	799.600	2015.000	799.800	2027.000	806.500	2027.000	808.700	2098.000	815.600	2236.000
GP	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	133.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000

X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1958.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.200
BT	2027.000	806.500	804.200	2027.000	806.500	0.000	2098.000	808.700	0.000	0.000

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

X1	133.100	22.000	2000.000	2027.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	6.000	1958.000	803.000	0.000	2000.000	806.500	0.000	2000.000	806.500	804.100
BT	2027.000	807.000	804.100	2027.000	807.000	0.000	2098.000	808.700	0.000	0.000
GR	793.000	996.000	796.600	1006.000	791.800	1054.000	793.200	1152.000	800.600	1186.000
GR	801.300	1252.000	801.700	1358.000	800.500	1444.000	797.800	1546.000	797.500	1650.000
GR	797.800	1752.000	798.300	1854.000	803.000	1958.000	806.500	2000.000	800.900	2000.000
GR	799.200	2013.000	801.000	2027.000	807.000	2027.000	808.700	2098.000	815.600	2236.000
GR	821.800	2356.000	824.400	2442.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	133.300	6.000	1994.000	2064.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	806.500	1994.000	799.200	2012.000	798.000	2024.000	798.000	2036.000	799.200	2048.000
GR	808.000	2064.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 135.0 (O)

X1	135.000	25.000	1990.000	2066.000	274.000	274.000	271.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	796.700	388.000	797.500	490.000	801.400	598.000	807.100	702.000	808.100	804.000
GR	808.300	902.000	809.300	1062.000	808.600	1154.000	805.800	1328.000	806.200	1432.000
GR	805.200	1524.000	797.100	1564.000	794.300	1650.000	795.300	1756.000	795.600	1868.000
GR	797.400	1970.000	805.000	1990.000	801.100	2000.000	799.200	2004.000	797.300	2019.000
GR	797.700	2031.000	799.500	2043.000	811.800	2066.000	814.700	2112.000	823.000	2206.000

VALLEY SECTION 136.0 (P)

X1	136.000	15.000	1980.000	2056.000	800.000	800.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	810.000	1500.000	804.700	1600.000	804.600	1650.000	804.900	1700.000	805.600	1900.000
GR	805.000	1980.000	802.900	2000.000	799.900	2011.000	799.600	2023.000	796.100	2035.000
GR	797.900	2047.000	804.800	2056.000	809.300	2156.000	815.400	2240.000	817.900	2314.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION 137.0 (Q)

X1	137.000	9.000	2000.000	2035.000	290.000	290.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	812.900	1750.000	802.100	1810.000	802.100	1900.000	803.200	2000.000	797.700	2010.000
GR	797.900	2025.000	800.200	2035.000	804.000	2100.000	808.000	2175.000	0.000	0.000

VALLEY SECTION 139.0. OLD RR GRADE (R)

X1	139.000	12.000	2000.000	2030.000	370.000	410.000	380.000	0.000	0.000	0.000

X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.800	1850.000	811.500	1950.000	806.800	1965.000	803.200	1980.000	803.200	2000.000
GR	799.900	2010.000	799.900	2020.000	801.400	2030.000	802.900	2030.000	807.500	2038.000
GR	812.200	2046.000	813.100	2150.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	141.000	10.000	2000.000	2030.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	811.200	1850.000	811.300	1965.000	805.900	1980.000	803.300	1995.000	803.300	2000.000
GR	800.300	2010.000	800.300	2020.000	803.300	2030.000	809.500	2040.000	809.900	2200.000

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

X1	142.000	8.000	2000.000	2030.000	310.000	280.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	816.600	1750.000	804.000	1820.000	803.200	2000.000	800.500	2010.000	800.500	2022.000
GR	803.300	2030.000	804.000	2118.000	810.900	2238.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************

T1      AUGUSTA
T2      50 YEAR LEVEL
T3      AUGUSTA CREEK
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	-10.	3.	1.	0.	0.000000	0.00	0.0	0.	790.400	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
*****************************************************

T1       AUGUSTA
T2       100 YEAR LEVEL
T3       AUGUSTA CREEK
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	-10.	4.	0.	0.	0.000000	0.00	0.0	0.	790.400	0.000

J2	NPROF	IPLOT	PREVS	XSECV	XSECH	EN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01.02.03
  MODIFICATION -  50.51.52.53
**************************************************


T1      AUGUSTA
T2      500 YEAR LEVEL
T3      AUGUSTA CREEK
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       -10.      5.        0.        0.  0.000000      0.00      0.0       0.   790.400     0.000
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: MULTI-PROFILE SUMMARY

00BREAK00

****
HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
ERROR CORR - 01.02.03
MODIFICATION - 50.51.52.53
****

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

AUGUSTA CREEK

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	120.800	0.00	0.00	0.00	785.00	260.00	790.40	0.00	790.45	4.57	1.84	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	385.00	790.40	0.00	790.51	10.03	2.73	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	445.00	790.40	0.00	790.54	13.39	3.16	203.65	121.59
	120.800	0.00	0.00	0.00	785.00	590.00	790.40	0.00	790.65	23.55	4.19	203.65	121.59
	120.900	30.00	0.00	0.00	785.10	260.00	790.40	0.00	790.49	8.78	2.38	109.25	87.75
	120.900	30.00	0.00	0.00	785.10	385.00	790.40	0.00	790.59	19.35	3.53	109.06	87.51
	120.900	30.00	0.00	0.00	785.10	445.00	790.40	0.00	790.66	25.87	4.08	109.04	87.50
	120.900	30.00	0.00	0.00	785.10	590.00	790.40	0.00	790.85	45.53	5.41	108.99	87.44
	121.000	1.00	797.60	793.00	785.10	260.00	790.40	0.00	790.49	1.33	2.38	109.10	225.19
	121.000	1.00	797.60	793.00	785.10	385.00	790.40	0.00	790.59	2.92	3.53	109.09	225.17
	121.000	1.00	797.60	793.00	785.10	445.00	790.40	0.00	790.66	3.91	4.08	109.09	225.16
	121.000	1.00	797.60	793.00	785.10	590.00	790.40	0.00	790.85	6.87	5.41	109.07	225.12
	121.100	69.00	797.60	793.90	785.20	260.00	790.40	0.00	790.51	1.84	2.64	98.40	191.51
	121.100	69.00	797.60	793.90	785.20	385.00	790.40	0.00	790.64	4.04	3.91	98.41	191.53
	121.100	69.00	797.60	793.90	785.20	445.00	790.40	0.00	790.72	5.40	4.52	98.41	191.54
	121.100	69.00	797.60	793.90	785.20	590.00	790.40	0.00	790.96	9.48	5.99	98.45	191.63
	121.200	1.00	0.00	0.00	785.20	260.00	790.40	0.00	790.51	1.36	2.64	98.40	222.58
	121.200	1.00	0.00	0.00	785.20	385.00	790.40	0.00	790.64	2.99	3.91	98.42	222.62
	121.200	1.00	0.00	0.00	785.20	445.00	790.40	0.00	790.72	3.99	4.52	98.42	222.64
	121.200	1.00	0.00	0.00	785.20	590.00	790.40	0.00	790.96	7.02	5.99	98.45	222.73
	122.000	98.00	0.00	0.00	786.00	260.00	790.49	0.00	790.55	6.74	1.92	135.40	100.17
	122.000	98.00	0.00	0.00	786.00	385.00	790.61	0.00	790.73	13.23	2.74	140.64	105.84
	122.000	98.00	0.00	0.00	786.00	445.00	790.69	0.00	790.84	16.45	3.09	144.16	109.71
	122.000	98.00	0.00	0.00	786.00	590.00	790.95	0.00	791.17	23.18	3.79	155.62	122.54
	123.000	70.00	0.00	0.00	786.60	260.00	790.53	0.00	790.65	13.66	2.76	94.11	70.36
	123.000	70.00	0.00	0.00	786.60	385.00	790.68	0.00	790.91	25.67	3.91	98.57	75.99
	123.000	70.00	0.00	0.00	786.60	445.00	790.77	0.00	791.07	31.21	4.39	101.39	79.66
	123.000	70.00	0.00	0.00	786.60	590.00	791.05	0.00	791.50	41.54	5.35	110.21	91.54
*	123.500	45.00	0.00	0.00	795.50	260.00	796.82	796.82	797.49	29.41	6.55	39.67	47.94
*	123.500	45.00	0.00	0.00	795.50	385.00	797.22	797.22	798.08	27.63	7.45	51.65	73.25
*	123.500	45.00	0.00	0.00	795.50	445.00	797.39	797.39	798.35	27.38	7.85	56.72	85.04
*	123.500	45.00	0.00	0.00	795.50	590.00	797.78	797.78	798.94	26.50	8.62	68.46	114.61

	SECNO	XLOB	ELTRD	ELLOB	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	124.000	5.00	804.60	800.00	795.50	260.00	797.40	0.00	797.72	9.16	4.55	57.09	85.92
*	124.000	5.00	804.60	800.00	795.50	385.00	797.97	0.00	798.39	8.80	5.20	74.07	129.76
*	124.000	5.00	804.60	800.00	795.50	445.00	798.22	0.00	798.68	8.66	5.45	81.68	151.26
*	124.000	5.00	804.60	800.00	795.50	590.00	798.79	0.00	799.34	8.48	5.99	98.58	202.66
*	125.000	25.00	0.00	0.00	795.50	260.00	797.52	797.52	798.12	252.84	6.20	41.92	16.35
*	125.000	25.00	0.00	0.00	795.50	385.00	797.91	797.91	798.62	232.36	6.79	56.72	25.26
	125.000	25.00	0.00	0.00	795.50	445.00	798.18	0.00	798.85	182.44	6.58	67.60	32.95
	125.000	25.00	0.00	0.00	795.50	590.00	798.82	0.00	799.41	113.20	6.16	95.83	55.45
	126.000	310.00	0.00	0.00	796.20	260.00	799.59	0.00	799.69	20.29	2.64	98.46	57.71
	126.000	310.00	0.00	0.00	796.20	385.00	800.14	0.00	800.29	22.28	3.09	124.67	81.56
	126.000	310.00	0.00	0.00	796.20	445.00	800.33	0.00	800.51	24.10	3.32	134.07	90.64
	126.000	310.00	0.00	0.00	796.20	590.00	800.76	0.00	800.98	27.68	3.80	155.36	112.14
	126.900	90.00	0.00	0.00	796.50	260.00	799.77	0.00	799.98	35.11	3.73	69.69	43.88
	126.900	90.00	0.00	0.00	796.50	385.00	800.33	0.00	800.65	42.86	4.56	84.34	58.81
	126.900	90.00	0.00	0.00	796.50	445.00	800.53	0.00	800.91	47.81	4.97	89.49	64.36
	126.900	90.00	0.00	0.00	796.50	590.00	800.96	0.00	801.49	58.89	5.86	100.66	76.88
	127.000	1.00	804.90	803.70	796.50	260.00	799.77	0.00	799.99	4.39	3.73	69.79	124.05
	127.000	1.00	804.90	803.70	796.50	385.00	800.33	0.00	800.65	5.61	4.57	84.33	162.60
	127.000	1.00	804.90	803.70	796.50	445.00	800.53	0.00	800.91	6.33	4.97	89.49	176.82
	127.000	1.00	804.90	803.70	796.50	590.00	800.96	0.00	801.49	8.00	5.86	100.72	208.54
	127.100	55.00	804.90	803.70	796.00	260.00	799.87	0.00	800.02	2.79	3.17	82.15	155.59
	127.100	55.00	804.90	803.70	796.00	385.00	800.46	0.00	800.70	3.78	3.95	97.44	197.91
	127.100	55.00	804.90	803.70	796.00	445.00	800.68	0.00	800.97	4.33	4.32	103.01	213.80
	127.100	55.00	804.90	803.70	796.00	590.00	801.16	0.00	801.57	5.58	5.11	115.35	249.85
	127.200	1.00	0.00	0.00	796.00	260.00	799.87	0.00	800.02	2.38	3.17	82.00	168.63
	127.200	1.00	0.00	0.00	796.00	385.00	800.46	0.00	800.70	3.09	3.95	97.39	218.98
	127.200	1.00	0.00	0.00	796.00	445.00	800.68	0.00	800.97	3.48	4.32	103.07	238.50
	127.200	1.00	0.00	0.00	796.00	590.00	801.16	0.00	801.57	4.34	5.10	115.61	283.13
	127.300	40.00	0.00	0.00	796.50	260.00	799.85	0.00	800.09	39.73	3.87	67.22	41.25
	127.300	40.00	0.00	0.00	796.50	385.00	800.45	0.00	800.77	45.75	4.53	84.90	56.92
	127.300	40.00	0.00	0.00	796.50	445.00	800.68	0.00	801.04	48.61	4.82	92.28	63.83
	127.300	40.00	0.00	0.00	796.50	590.00	801.18	0.00	801.64	54.45	5.42	108.80	79.96
	129.800	169.00	0.00	0.00	797.00	260.00	800.50	0.00	800.69	31.45	3.49	74.47	46.37
	129.800	169.00	0.00	0.00	797.00	385.00	801.19	0.00	801.43	33.28	3.96	97.10	66.74
	129.800	169.00	0.00	0.00	797.00	445.00	801.46	0.00	801.73	34.38	4.17	106.69	75.90
	129.800	169.00	0.00	0.00	797.00	590.00	802.09	0.00	802.40	37.14	4.51	130.93	96.82
	129.900	85.00	0.00	0.00	797.40	260.00	800.77	0.00	800.92	22.18	3.11	83.48	55.21
	129.900	85.00	0.00	0.00	797.40	385.00	801.47	0.00	801.69	25.39	3.73	103.16	76.40
	129.900	85.00	0.00	0.00	797.40	445.00	801.75	0.00	802.00	27.24	4.01	110.90	85.27
	129.900	85.00	0.00	0.00	797.40	590.00	802.37	0.00	802.70	30.94	4.60	128.21	106.07
	130.000	1.00	803.20	804.30	797.40	260.00	800.77	0.00	800.92	2.92	3.11	83.55	152.07
	130.000	1.00	803.20	804.30	797.40	385.00	801.47	0.00	801.69	3.49	3.73	103.24	206.13
	130.000	1.00	803.20	804.30	797.40	445.00	801.75	0.00	802.00	3.80	4.01	110.98	228.33
	130.000	1.00	803.20	804.30	797.40	590.00	802.37	0.00	802.70	4.45	4.60	128.34	279.77

SECNO	XLOC	ELTRO	ELLC	FLMIN	Q	CrSFL	CRIWS	EG	10K*S	VCH	AREA	.01K
130.100	18.00	803.20	804.30	797.50	260.00	800.76	0.00	800.94	3.67	3.37	77.26	135.76
130.100	18.00	803.20	804.30	797.50	385.00	801.47	0.00	801.71	4.17	3.97	96.93	188.50
130.100	18.00	803.20	804.30	797.50	445.00	801.74	0.00	802.02	4.48	4.25	104.66	210.26
130.100	18.00	803.20	804.30	797.50	590.00	802.36	0.00	802.72	5.12	4.84	122.00	260.86
130.200	1.00	0.00	0.00	797.50	260.00	800.76	0.00	800.94	3.13	3.36	77.27	146.86
130.200	1.00	0.00	0.00	797.50	385.00	801.47	0.00	801.71	3.42	3.97	96.94	208.31
130.200	1.00	0.00	0.00	797.50	445.00	801.74	0.00	802.02	3.61	4.25	104.67	234.15
130.200	1.00	0.00	0.00	797.50	590.00	802.36	0.00	802.72	3.99	4.84	122.01	295.24
130.300	40.00	0.00	0.00	797.60	260.00	800.76	0.00	801.01	45.45	3.97	65.41	38.57
130.300	40.00	0.00	0.00	797.60	385.00	801.47	0.00	801.77	44.54	4.39	87.65	57.69
130.300	40.00	0.00	0.00	797.60	445.00	801.75	0.00	802.08	45.03	4.59	97.05	66.32
130.300	40.00	0.00	0.00	797.60	590.00	802.39	0.00	802.77	46.15	4.91	120.18	86.85
132.800	525.00	0.00	0.00	799.20	260.00	802.65	0.00	802.79	26.25	3.07	84.63	50.75
132.800	525.00	0.00	0.00	799.20	385.00	803.38	0.00	803.55	26.42	3.36	114.56	74.90
132.800	525.00	0.00	0.00	799.20	445.00	803.68	0.00	803.87	26.27	3.47	128.37	86.82
132.800	525.00	0.00	0.00	799.20	590.00	804.34	0.00	804.54	25.43	3.65	161.43	117.01
132.900	50.00	0.00	0.00	799.60	260.00	802.87	0.00	803.02	23.20	3.15	82.43	53.98
132.900	50.00	0.00	0.00	799.60	385.00	803.59	0.00	803.81	26.39	3.77	102.14	74.95
132.900	50.00	0.00	0.00	799.60	445.00	803.89	0.00	804.15	28.02	4.04	110.18	84.07
132.900	50.00	0.00	0.00	799.60	590.00	804.53	0.00	804.86	31.87	4.63	127.38	104.52
133.000	1.00	803.00	804.20	799.60	260.00	802.87	0.00	803.02	3.18	3.15	82.55	145.73
133.000	1.00	803.00	804.20	799.60	385.00	803.60	0.00	803.82	3.77	3.77	102.21	198.19
133.000	1.00	803.00	804.20	799.60	445.00	803.89	0.00	804.15	4.07	4.04	110.26	220.64
133.000	1.00	803.00	804.20	799.60	590.00	804.50	0.00	804.89	11.07	4.98	118.50	177.29
133.100	20.00	803.00	804.10	799.20	260.00	802.86	0.00	803.04	3.82	3.46	75.12	133.04
133.100	20.00	803.00	804.10	799.20	385.00	803.59	0.00	803.84	4.30	4.06	94.76	185.71
133.100	20.00	803.00	804.10	799.20	445.00	803.88	0.00	804.17	4.56	4.33	102.79	208.33
133.100	20.00	803.00	804.10	799.20	590.00	804.49	0.00	804.95	13.69	5.43	108.65	159.46
133.200	1.00	0.00	0.00	799.20	260.00	802.86	0.00	803.04	3.27	3.46	75.13	143.76
133.200	1.00	0.00	0.00	799.20	385.00	803.59	0.00	803.84	3.52	4.06	94.77	205.32
133.200	1.00	0.00	0.00	799.20	445.00	803.88	0.00	804.17	3.67	4.33	102.80	232.31
133.200	1.00	0.00	0.00	799.20	590.00	804.62	0.00	804.98	3.78	4.81	122.78	303.36
133.300	50.00	0.00	0.00	798.00	260.00	803.08	0.00	803.11	2.36	1.30	200.75	169.42
133.300	50.00	0.00	0.00	798.00	385.00	803.88	0.00	803.92	2.93	1.57	244.49	224.94
133.300	50.00	0.00	0.00	798.00	445.00	804.22	0.00	804.27	3.16	1.69	263.58	250.43
133.300	50.00	0.00	0.00	798.00	590.00	805.03	0.00	805.09	3.45	1.89	311.78	317.84
135.000	271.00	0.00	0.00	797.30	260.00	803.14	0.00	803.16	1.69	1.15	225.70	199.71
135.000	271.00	0.00	0.00	797.30	385.00	803.96	0.00	803.99	2.18	1.41	272.27	261.01
135.000	271.00	0.00	0.00	797.30	445.00	804.31	0.00	804.34	2.36	1.52	292.88	289.44
135.000	271.00	0.00	0.00	794.30	590.00	805.11	0.00	805.11	.03	.19	5994.20	3493.99
136.000	800.00	0.00	0.00	796.10	260.00	803.28	0.00	803.31	1.89	1.16	223.90	189.19
136.000	800.00	0.00	0.00	796.10	385.00	804.15	0.00	804.18	2.46	1.39	277.89	245.66
136.000	800.00	0.00	0.00	796.10	445.00	804.51	0.00	804.54	2.66	1.47	302.74	273.01
136.000	800.00	0.00	0.00	796.10	590.00	805.09	0.00	805.14	3.22	1.69	393.39	328.68

SECNO	XLOC	ELTHD	ELLC	FLMIN	Q	CWSEL	CRI%S	EG	10K*S	VCH	AREA	.01K
137.000	290.00	0.00	0.00	797.70	260.00	803.34	0.00	803.36	2.01	1.31	422.96	183.24
137.000	290.00	0.00	0.00	797.70	385.00	804.22	0.00	804.24	1.68	1.35	683.10	296.80
137.000	290.00	0.00	0.00	797.70	445.00	804.59	0.00	804.61	1.57	1.37	796.48	354.77
137.000	290.00	0.00	0.00	797.70	590.00	805.19	0.00	805.21	1.62	1.49	992.61	463.52
139.000	380.00	0.00	0.00	799.90	260.00	803.46	0.00	803.61	22.16	3.13	88.23	55.24
139.000	380.00	0.00	0.00	799.90	385.00	804.29	0.00	804.47	18.56	3.42	134.32	89.36
139.000	380.00	0.00	0.00	799.90	445.00	804.65	0.00	804.83	17.75	3.55	154.27	105.62
139.000	380.00	0.00	0.00	799.90	590.00	805.23	0.00	805.46	18.70	4.00	189.96	136.45
141.000	70.00	0.00	0.00	800.30	260.00	803.62	0.00	803.84	37.36	3.72	71.69	42.54
141.000	70.00	0.00	0.00	800.30	385.00	804.42	0.00	804.67	29.75	4.04	103.83	70.59
141.000	70.00	0.00	0.00	800.30	445.00	804.76	0.00	805.02	27.74	4.18	118.94	84.49
141.000	70.00	0.00	0.00	800.30	590.00	805.34	0.00	805.67	28.20	4.68	146.91	111.10
142.000	290.00	0.00	0.00	800.50	260.00	804.31	0.00	804.37	9.49	2.22	277.01	84.40
142.000	290.00	0.00	0.00	800.50	385.00	805.03	0.00	805.07	5.97	2.03	501.12	157.60
142.000	290.00	0.00	0.00	800.50	445.00	805.35	0.00	805.38	5.01	1.97	606.14	198.82
142.000	290.00	0.00	0.00	800.50	590.00	805.98	0.00	806.01	4.05	1.95	818.64	293.27

AUGUSTA CREEK

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	120.800	260.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	385.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	445.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.800	590.00	790.40	0.00	0.00	0.00	127.00	0.00
	120.900	260.00	790.40	0.00	-.00	0.00	23.50	30.00
	120.900	385.00	790.40	-.00	-.00	0.00	23.50	30.00
	120.900	445.00	790.40	-.00	-.00	0.00	23.50	30.00
	120.900	590.00	790.40	-.00	-.00	0.00	23.50	30.00
	121.000	260.00	790.40	0.00	.00	0.00	23.50	1.00
	121.000	385.00	790.40	-.00	.00	0.00	23.50	1.00
	121.000	445.00	790.40	-.00	.00	0.00	23.50	1.00
	121.000	590.00	790.40	-.00	.00	0.00	23.50	1.00
	121.100	260.00	790.40	0.00	.00	0.00	23.50	69.00
	121.100	385.00	790.40	.00	.00	0.00	23.50	69.00
	121.100	445.00	790.40	.00	.00	0.00	23.50	69.00
	121.100	590.00	790.40	.00	.00	0.00	23.50	69.00
	121.200	260.00	790.40	0.00	.00	0.00	23.50	1.00
	121.200	385.00	790.40	.00	.00	0.00	23.50	1.00
	121.200	445.00	790.40	.00	.00	0.00	23.50	1.00
	121.200	590.00	790.40	.00	.00	0.00	23.50	1.00
	122.000	260.00	790.49	0.00	.09	0.00	43.13	98.00
	122.000	385.00	790.61	.12	.21	0.00	43.62	98.00
	122.000	445.00	790.69	.08	.29	0.00	43.94	98.00
	122.000	590.00	790.95	.26	.55	0.00	44.99	98.00
	123.000	260.00	790.53	0.00	.03	0.00	30.00	70.00
	123.000	385.00	790.68	.15	.07	0.00	30.00	70.00
	123.000	445.00	790.77	.09	.08	0.00	30.00	70.00
	123.000	590.00	791.05	.28	.10	0.00	30.00	70.00
*	123.900	260.00	796.82	0.00	6.30	0.00	30.00	45.00
*	123.900	385.00	797.22	.40	6.54	0.00	30.00	45.00
*	123.900	445.00	797.39	.17	6.62	0.00	30.00	45.00
*	123.900	590.00	797.78	.39	6.73	0.00	30.00	45.00
*	124.000	260.00	797.40	0.00	.58	0.00	30.00	5.00
*	124.000	385.00	797.97	.57	.75	0.00	30.00	5.00
*	124.000	445.00	798.22	.25	.83	0.00	30.00	5.00
*	124.000	590.00	798.79	.56	1.00	0.00	30.00	5.00
*	125.000	260.00	797.52	0.00	.12	0.00	35.95	25.00
*	125.000	385.00	797.91	.39	-.06	0.00	39.80	25.00
	125.000	445.00	798.18	.27	-.05	0.00	41.36	25.00
	125.000	590.00	798.82	.65	.04	0.00	45.13	25.00
	126.000	260.00	799.59	0.00	2.07	0.00	45.47	310.00
	126.000	385.00	800.14	.56	2.24	0.00	48.69	310.00

126.000	445.00	800.33	.19	2.16	0.00	49.79	310.00
126.000	590.00	800.76	.43	1.94	0.00	52.20	310.00

SECNO	W	C.SEL	DIF.SP	DIF.SX	DIF.S	TOPWID	XLCH
126.900	260.00	799.77	0.00	.18	0.00	26.00	90.00
126.900	385.00	800.33	.56	.18	0.00	26.00	90.00
126.900	445.00	800.53	.20	.19	0.00	26.00	90.00
126.900	590.00	800.96	.43	.20	0.00	26.00	90.00
127.000	260.00	799.77	0.00	.00	0.00	26.00	1.00
127.000	385.00	800.33	.56	.00	0.00	26.00	1.00
127.000	445.00	800.53	.20	.00	0.00	26.00	1.00
127.000	590.00	800.96	.43	.00	0.00	26.00	1.00
127.100	260.00	799.87	0.00	.10	0.00	26.00	55.00
127.100	385.00	800.46	.59	.13	0.00	26.00	55.00
127.100	445.00	800.68	.22	.15	0.00	26.00	55.00
127.100	590.00	801.16	.48	.20	0.00	26.00	55.00
127.200	260.00	799.87	0.00	-.00	0.00	26.00	1.00
127.200	385.00	800.46	.59	.00	0.00	26.00	1.00
127.200	445.00	800.68	.22	.00	0.00	26.00	1.00
127.200	590.00	801.16	.48	.00	0.00	26.00	1.00
127.300	260.00	799.85	0.00	-.01	0.00	28.10	40.00
127.300	385.00	800.45	.60	-.01	0.00	30.97	40.00
127.300	445.00	800.68	.23	-.00	0.00	32.09	40.00
127.300	590.00	801.18	.50	.02	0.00	34.47	40.00
129.800	260.00	800.50	0.00	.64	0.00	30.63	169.00
129.800	385.00	801.19	.69	.74	0.00	34.35	169.00
129.800	445.00	801.46	.27	.79	0.00	35.81	169.00
129.800	590.00	802.09	.62	.91	0.00	41.58	169.00
129.900	260.00	800.77	0.00	.27	0.00	28.00	85.00
129.900	385.00	801.47	.70	.28	0.00	28.00	85.00
129.900	445.00	801.75	.28	.29	0.00	28.00	85.00
129.900	590.00	802.37	.62	.28	0.00	28.00	85.00
130.000	260.00	800.77	0.00	.00	0.00	28.00	1.00
130.000	385.00	801.47	.70	.00	0.00	28.00	1.00
130.000	445.00	801.75	.28	.00	0.00	28.00	1.00
130.000	590.00	802.37	.62	.00	0.00	28.00	1.00
130.100	260.00	800.76	0.00	-.01	0.00	28.00	18.00
130.100	385.00	801.47	.70	-.01	0.00	28.00	18.00
130.100	445.00	801.74	.28	-.01	0.00	28.00	18.00
130.100	590.00	802.36	.62	-.01	0.00	28.00	18.00
130.200	260.00	800.76	0.00	.00	0.00	28.00	1.00
130.200	385.00	801.47	.70	.00	0.00	28.00	1.00
130.200	445.00	801.74	.28	.00	0.00	28.00	1.00
130.200	590.00	802.36	.62	.00	0.00	28.00	1.00
130.300	260.00	800.76	0.00	-.00	0.00	29.28	40.00
130.300	385.00	801.47	.71	.01	0.00	33.17	40.00
130.300	445.00	801.75	.28	.01	0.00	34.68	40.00
130.300	590.00	802.39	.64	.03	0.00	39.53	40.00

SECNO	G	CHSEL	DIFWSP	DIFWSX	DIFWS	TOPWID	XLCH
132.800	260.00	802.65	0.00	1.89	0.00	37.44	525.00
132.800	385.00	803.38	.73	1.91	0.00	44.53	525.00
132.800	445.00	803.68	.30	1.93	0.00	47.45	525.00
132.800	590.00	804.34	.66	1.94	0.00	53.79	525.00
132.900	260.00	802.87	0.00	.22	0.00	27.00	90.00
132.900	385.00	803.59	.73	.22	0.00	27.00	90.00
132.900	445.00	803.89	.30	.21	0.00	27.00	90.00
132.900	590.00	804.53	.64	.19	0.00	27.00	90.00
133.000	260.00	802.87	0.00	.00	0.00	27.00	1.00
133.000	385.00	803.60	.73	.00	0.00	27.00	1.00
133.000	445.00	803.89	.30	.00	0.00	27.00	1.00
133.000	590.00	804.50	.61	-.02	0.00	27.00	1.00
133.100	260.00	802.86	0.00	-.01	0.00	27.00	20.00
133.100	385.00	803.59	.73	-.01	0.00	27.00	20.00
133.100	445.00	803.88	.30	-.01	0.00	27.00	20.00
133.100	590.00	804.49	.61	-.01	0.00	27.00	20.00
133.200	260.00	802.86	0.00	.00	0.00	27.00	1.00
133.200	385.00	803.59	.73	.00	0.00	27.00	1.00
133.200	445.00	803.88	.30	.00	0.00	27.00	1.00
133.200	590.00	804.62	.74	.13	0.00	27.00	1.00
133.300	260.00	803.08	0.00	.22	0.00	52.62	50.00
133.300	385.00	803.88	.80	.30	0.00	56.07	50.00
133.300	445.00	804.22	.34	.34	0.00	57.51	50.00
133.300	590.00	805.03	.81	.41	0.00	61.00	50.00
135.000	260.00	803.14	0.00	.06	0.00	55.08	271.00
135.000	385.00	803.96	.82	.08	0.00	58.71	271.00
135.000	445.00	804.31	.34	.08	0.00	60.24	271.00
135.000	590.00	805.11	.80	.07	0.00	806.71	271.00
136.000	260.00	803.28	0.00	.14	0.00	57.78	800.00
136.000	385.00	804.15	.87	.19	0.00	67.14	800.00
136.000	445.00	804.51	.36	.20	0.00	71.04	800.00
136.000	590.00	805.04	.59	-.01	0.00	258.29	800.00
137.000	260.00	803.34	0.00	.06	0.00	285.51	290.00
137.000	385.00	804.22	.88	.07	0.00	305.81	290.00
137.000	445.00	804.59	.37	.08	0.00	314.69	290.00
137.000	590.00	805.19	.60	.10	0.00	329.49	290.00
139.000	260.00	803.46	0.00	.12	0.00	52.04	380.00
139.000	385.00	804.29	.84	.07	0.00	57.03	380.00
139.000	445.00	804.65	.35	.06	0.00	59.06	380.00
139.000	590.00	805.23	.59	.04	0.00	62.52	380.00
141.000	260.00	803.62	0.00	.17	0.00	37.38	70.00
141.000	385.00	804.42	.80	.12	0.00	43.27	70.00
141.000	445.00	804.78	.34	.11	0.00	45.77	70.00
141.000	590.00	805.34	.58	.11	0.00	50.08	70.00

SECNO	Q	C.SEL	DIFWSP	DIFWSX	DIFWMS	TOPWID	XLCH
142.000	260.00	804.31	0.00	.69	0.00	305.23	290.00
142.000	385.00	805.03	.71	.61	0.00	321.83	290.00
142.000	445.00	805.35	.32	.59	0.00	329.32	290.00
142.000	590.00	805.98	.63	.64	0.00	343.98	290.00

SUMMARY OF ERRORS

CAUTION SECNO= 123.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 123.900 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.900 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 123.900 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 124.000 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 124.000 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 125.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 125.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 125.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 125.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

FLOOD INSURANCE ZONE DATA FOR AUGUSTA CREEK

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND 10_	2_	0.2_
120.800	0.	0.00	0.00	0.00
120.900	30.	.00	.00	-.00
121.000	31.	.00	.00	-.00
121.100	100.	-.00	-.00	.00
121.200	101.	-.00	-.00	.00
122.000	199.	-.20	-.08	.26
123.000	269.	-.24	-.09	.28
123.900	314.	-.57	-.17	.39
124.000	319.	-.62	-.25	.56
125.000	344.	-.65	-.27	.65
126.000	654.	-.75	-.19	.43
126.900	744.	-.76	-.20	.43
127.000	745.	-.76	-.20	.43
127.100	800.	-.81	-.22	.48
127.200	801.	-.81	-.22	.48
127.300	841.	-.82	-.23	.50
129.800	1010.	-.97	-.27	.62
129.900	1095.	-.98	-.28	.62
130.000	1096.	-.98	-.28	.62
130.100	1114.	-.98	-.28	.62
130.200	1115.	-.98	-.28	.62
130.300	1155.	-.99	-.28	.64
132.800	1680.	-1.03	-.30	.66
132.900	1770.	-1.03	-.30	.64
133.000	1771.	-1.03	-.30	.61
133.100	1791.	-1.02	-.30	.61
133.200	1792.	-1.02	-.30	.74
133.300	1842.	-1.14	-.34	.81
135.000	2113.	-1.16	-.34	.80
136.000	2913.	-1.22	-.36	.59
137.000	3203.	-1.25	-.37	.60
139.000	3583.	-1.19	-.35	.59
141.000	3653.	-1.14	-.34	.58
142.000	3943.	-1.04	-.32	.63
WEIGHTED AVG FOR REACH		-.99	-.29	.59

FHF FOR THE REACH = 010 WITH 92.0_ OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 2

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
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0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: NATURAL RUN



*PROF 1

CCHV= .300 CEHV= .500
*SECNO 120.800
3280 CROSS SECTION 120.80 EXTENDED 1.20 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
	VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER (A)								
120.80	5.40	790.40	0.00	790.40	790.54	.14	0.00	0.00	789.30
445.	29.	416.	0.	72.	132.	0.	0.	0.	789.20
0.00	.41	3.16	0.00	.110	.042	.110	0.000	785.00	1900.00
.001339	0.	0.	0.	0	0	0	0.00	127.00	2027.00
*SECNO 120.900									
120.90	5.30	790.40	0.00	0.00	790.66	.26	.05	.06	798.10
445.	0.	445.	0.	0.	109.	0.	0.	0.	798.10
.00	0.00	4.08	0.00	.110	.042	.110	.041	785.10	2000.00
.002587	30.	30.	30.	2	0	0	0.00	23.50	2023.50
*SECNO 121.000									
3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 797.60 MAX ELLC= 793.00									
121.00	5.30	790.40	0.00	0.00	790.66	.26	.00	.00	798.10
445.	0.	445.	0.	0.	109.	0.	0.	0.	798.10
.00	0.00	4.08	0.00	.110	.014	.110	.039	785.10	2000.00
.000391	1.	1.	1.	0	0	0	0.00	23.50	2023.50
*SECNO 121.100									
3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 797.60 MAX ELLC= 793.90									
	UPSTREAM CROSS SECTION AT RR BRIDGE (B)								
121.10	5.20	790.40	0.00	0.00	790.72	.32	.03	.03	798.10
445.	0.	445.	0.	0.	98.	0.	0.	0.	798.10
.01	0.00	4.52	0.00	.110	.014	.110	.022	785.20	2000.00
.000540	69.	69.	69.	2	0	0	0.00	23.50	2023.50
*SECNO 121.200									
SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

121.20	5.20	790.40	0.00	0.00	790.72	.32	.00	.00	798.10
445.	0.	445.	0.	0.	98.	0.	0.	0.	798.10
.01	0.00	4.52	0.00	.110	.014	.110	.021	785.20	2000.00
.000399	1.	1.	1.	0	0	0	0.00	23.50	2023.50

*SECNO 122.000

VALLEY SECTION 122.0 (C)

122.00	4.69	790.69	0.00	0.00	790.84	.15	.07	.05	801.50
445.	0.	445.	0.	0.	144.	1.	0.	0.	800.00
.02	0.00	3.09	0.00	.110	.042	.110	.031	786.00	2006.83
.001645	95.	98.	102.	2	0	0	0.00	43.94	2050.77

CCHV= .300 CEHV= .500
*SECNO 123.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 792.00 ELREA= 792.00

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

123.00	4.17	790.77	0.00	0.00	791.07	.30	.15	.08	790.00
445.	0.	445.	0.	0.	101.	0.	1.	0.	787.90
.02	0.00	4.39	0.00	.110	.042	.110	.034	786.60	2008.00
.003121	70.	70.	70.	0	0	0	0.00	30.00	2038.00

CCHV= .300 CEHV= .500
*SECNO 123.900

3301 HV CHANGED MORE THAN HVINS

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

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

123.50	1.89	797.39	797.39	0.00	798.35	.96	.13	.33	804.60
445.	0.	445.	0.	0.	57.	0.	1.	0.	804.70
.02	0.00	7.85	0.00	.110	.014	.110	.031	795.50	2008.00
.002738	45.	45.	45.	20	14	0	0.00	30.00	2038.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 796.98 .NOT 797.39 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SK	XK	XKOR	COFC	RDLEN	PWC	HWP	BAREA	SS	FLCHU	FLCHD
	1.25	1.60	3.00	0.00	30.00	3.00	101.00	0.00	795.50	795.50

*SECNO 124.000
CLASS B LOW FLOW

3420 BRIDGE W.S.= 797.54 BRIDGE VELOCITY=. 8.09 CALCULATED CHANNEL AREA=. 55.

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	798.68	0.00	0.	445.	101.	122.	800.00	804.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

UPSTREAM CROSS SECTION AT DAM (E)

124.00	2.72	796.22	0.00	0.00	798.68	.46	.34	0.00	804.60
445.	0.	445.	0.	0.	82.	0.	1.	0.	804.70
.02	0.00	5.45	0.00	.110	.014	.110	.031	795.50	2008.00
.000866	5.	5.	5.	0	0	0	0.00	30.00	2038.00

*SECNO 125.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.10 ELREA= 804.90

VALLEY SECTION 125.0 (F)

125.00	2.68	798.18	0.00	0.00	798.85	.67	.06	.11	802.10
445.	0.	445.	0.	0.	68.	0.	1.	0.	804.90
.02	0.00	6.58	0.00	.110	.042	.110	.031	795.50	2007.49
.018244	25.	25.	25.	2	0	0	0.00	41.36	2048.85

CCHV= .100 CEHV= .300
*SECNO 126.000
3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.80 ELREA= 805.60

VALLEY SECTION 126.0 (G)

126.00	4.13	800.33	0.00	0.00	800.51	.17	1.61	.05	802.80
445.	0.	445.	0.	0.	134.	0.	2.	1.	805.60
.05	0.00	3.32	0.00	.110	.042	.110	.036	796.20	2002.35
.002410	310.	310.	310.	3	0	0	0.00	49.79	2052.14

CCHV= .300 CEHV= .500

*SECNO 126.900
3280 CROSS SECTION 126.90 EXTENDED 4.23 FFET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

126.90	4.03	800.53	0.00	0.00	800.91	.38	.30	.11	805.10
445.	0.	445.	0.	0.	89.	0.	2.	1.	805.10
.05	0.00	4.97	0.00	.110	.042	.110	.037	796.50	2000.00
.004781	50.	90.	90.	2	0	0	0.00	26.00	2026.00

*SECNO 127.000
3280 CROSS SECTION 127.00 EXTENDED 4.23 FEET

3370 NORMAL BRIDGE,NRD= 6 MIN FLTRD= 804.90 MAX ELLC= 803.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

127.00	4.03	800.53	0.00	0.00	800.91	.38	.00	.00	805.10
445.	0.	445.	0.	0.	89.	0.	2.	1.	805.10
.05	0.00	4.97	0.00	.110	.014	.110	.037	796.50	2000.00
.000633	1.	1.	1.	0	0	0	0.00	26.00	2026.00

*SECNO 127.100
3280 CROSS SECTION 127.10 EXTENDED 4.38 FEET

wall between 2 cells not included

3370 NORMAL BRIDGE,NRD= 6 MIN FLTRD= 804.90 MAX ELLC= 803.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

127.10	4.68	800.68	0.00	0.00	800.97	.29	.03	.03	805.10
445.	0.	445.	0.	0.	103.	0.	2.	1.	805.10
.06	0.00	4.32	0.00	.110	.014	.110	.035	796.00	2000.00
.000433	55.	55.	55.	0	0	0	0.00	26.00	2026.00

*SECNO 127.200
3280 CROSS SECTION 127.20 EXTENDED 4.38 FEET

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.10 ELREA= 805.10

127.20	4.68	800.68	0.00	0.00	800.97	.29	.00	.00	805.10
445.	0.	445.	0.	0.	103.	0.	2.	1.	805.10
.06	0.00	4.32	0.00	.110	.014	.110	.035	796.00	2000.00
.000348	1.	1.	1.	0	0	0	0.00	26.00	2026.00

*SECNO 127.300

VALLEY SECTION 127.3 (I)

127.30	4.18	800.68	0.00	0.00	801.04	.36	.03	.04	805.10
445.	0.	445.	0.	0.	92.	0.	2.	1.	805.10
.06	0.00	4.82	0.00	.110	.042	.110	.035	796.50	2013.95
.004861	40.	40.	40.	1	0	0	0.00	32.09	2046.05

CCHV= .100 CEHV= .300

*SECNO 129.800

VALLEY SECTION 129.8 (J)

129.80	4.46	801.46	0.00	0.00	801.73	.27	.69	.01	805.10
445.	0.	445.	0.	0.	107.	0.	2.	1.	805.10
.07	0.00	4.17	0.00	.110	.042	.110	.036	797.00	2012.10
.003438	169.	169.	169.	2	0	0	0.00	35.81	2047.90

CCHV= .300 CEHV= .500

*SECNO 129.900

3280 CROSS SECTION 129.90 EXTENDED 11.65 FEET

Low area in extreme LOB, not utilized, thus XSEC not really extended

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

129.90	4.35	801.75	0.00	0.00	802.00	.25	.26	.01	805.10
445.	0.	445.	0.	0.	111.	0.	3.	1.	805.10
.08	0.00	4.01	0.00	.110	.042	.110	.037	797.40	2000.00
.002724	85.	85.	85.	2	0	0	0.00	28.00	2028.00

*SECNO 130.000

3280 CROSS SECTION 130.00 EXTENDED 11.65 FEET

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.20 MAX ELLC= 804.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

130.00	4.35	801.75	0.00	0.00	802.00	.25	.00	.00	805.10
445.	0.	445.	0.	0.	111.	0.	3.	1.	805.10
.08	0.00	4.01	0.00	.110	.014	.110	.037	797.40	2000.00
.000380	1.	1.	1.	0	0	0	0.00	28.00	2028.00

*SECNO 130.100

3280 CROSS SECTION 130.10 EXTENDED 11.64 FEET

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

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.20 MAX ELLC= 804.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE (K)

130.10	4.24	801.74	0.00	0.00	802.02	.28	.01	.02	805.10
445.	0.	445.	0.	0.	105.	0.	3.	1.	805.10
.08	0.00	4.25	0.00	.110	.014	.110	.036	797.50	2000.00
.000448	18.	18.	18.	2	0	0	0.00	28.00	2028.00

*SECNO 130.200
3280 CROSS SECTION 130.20 EXTENDED 11.64 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

130.20	4.24	801.74	0.00	0.00	802.02	.28	.00	.00	805.10
445.	0.	445.	0.	0.	105.	0.	3.	1.	805.10
.08	0.00	4.25	0.00	.110	.014	.110	.036	797.50	2000.00
.000361	1.	1.	1.	0	0	0	0.00	28.00	2028.00

*SECNO 130.300

VALLEY SECTION 130.3 (L)

130.30	4.15	801.75	0.00	0.00	802.08	.33	.04	.02	805.50
445.	0.	445.	0.	0.	97.	0.	3.	1.	806.00
.08	0.00	4.59	0.00	.110	.042	.110	.037	797.60	2012.66
.004503	40.	40.	40.	0	0	0	0.00	34.68	2047.34

CCHV= .100 CEHV= .300
*SECNO 132.800

VALLEY SECTION 132.8 (M)

132.80	4.48	803.68	0.00	0.00	803.87	.19	1.77	.01	806.00
445.	0.	445.	0.	0.	128.	0.	4.	1.	806.00
.12	0.00	3.47	0.00	.110	.042	.110	.038	799.20	2005.94
.002627	525.	525.	525.	2	0	0	0.00	47.45	2053.39

CCHV= .300 CEHV= .500
*SECNO 132.900
3280 CROSS SECTION 132.90 EXTENDED 10.89 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 806.50

132.90	4.29	803.89	0.00	0.00	804.15	.25	.24	.03	806.50
445.	0.	445.	0.	0.	110.	0.	4.	2.	806.50
.13	0.00	4.04	0.00	.110	.042	.110	.038	799.60	2000.00
.002802	90.	90.	90.	2	0	0	0.00	27.00	2027.00

*SECNO 133.000
3280 CROSS SECTION 133.00 EXTENDED 10.89 FEET

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

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 806.50

133.00	4.29	803.89	0.00	0.00	804.15	.25	.00	.00	806.50
445.	0.	445.	0.	0.	110.	0.	4.	2.	806.50
.13	0.00	4.04	0.00	.110	.014	.110	.038	799.60	2000.00
.000407	1.	1.	1.	0	0	0	0.00	27.00	2027.00

*SECNO 133.100
3280 CROSS SECTION 133.10 EXTENDED 10.88 FEET

3370 NORMAL BRIDGE.NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

133.10	4.68	803.88	0.00	0.00	804.17	.29	.01	.02	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.33	0.00	.110	.014	.110	.038	799.20	2000.00
.000456	20.	20.	20.	2	0	0	0.00	27.00	2027.00

*SECNO 133.200
3280 CROSS SECTION 133.20 EXTENDED 10.88 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 806.50 ELREA= 807.00

133.20	4.68	803.88	0.00	0.00	804.17	.29	.00	.00	806.50

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      445.        0.      445.        0.        0.      103.        0.        4.        2.     807.00
      .13       0.00      4.33      0.00      .110      .014      .110      .038    799.20    2000.00
  .000367         1.        1.        1.         0         0         0      0.00     27.00    2027.00

*SECNO 133.300
   133.30       6.22    804.22      0.00      0.00    804.27       .04       .02       .07    806.50
      445.        0.      445.        0.        0.      264.        0.        5.        2.     808.00
      .14       0.00      1.69      0.00      .110      .042      .110      .038    798.00    1999.62
  .000316        50.       50.       50.         2         0         0      0.00     57.51    2057.13

*SECNO 135.000
3280 CROSS SECTION     135.00 EXTENDED       7.61 FEET

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.00 ELREA=       811.80

                VALLEY SECTION 135.0   (O)

   135.00       7.01    804.31      0.00      0.00    804.34       .04       .07       .00    805.00
      445.        0.      445.        0.        0.      293.        0.        6.        2.     811.80
      .19       0.00      1.52      0.00      .110      .042      .110      .039    797.30    1991.76
  .000236        274.      271.      274.         0         0         0      0.00     60.24    2052.00

*SECNO 136.000
    SECNO      DEPTH      CWSEL      CRIWS      WSELR         EG         HV         HL       OLOSS    BANK ELEV
        Q       QLOB       QCH       QROB       ALOB        ACH       AROB        VOL         TWA   LEFT/RIGHT
     TIME       VLOB       VCH       VROB        XNL       XNCH        XNR        WTN      ELMIN        SSTA
    SLOPE      XLOBL      XLCH      XLOBR     ITRIAL        IDC     ICONT     CORAR      TOPWID       ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.00 ELREA=       804.80

                VALLEY SECTION 136.0   (P)

   136.00       8.41    804.51      0.00      0.00    804.54       .03       .20       .00    805.00
      445.        0.      445.        0.        0.      303.        0.       12.        3.     804.80
      .34       0.00      1.47      0.00      .110      .042      .110      .039    796.10    1984.59
  .000266        800.      800.      800.         1         0         0      0.00     71.04    2055.63

CCHV=     .300 CEHV=     .500
*SECNO 137.000

                VALLEY SECTION 137.0   (Q)

   137.00       6.89    804.59      0.00      0.00    804.61       .02       .06       .00    803.20
      445.        123.      271.      50.       434.      198.      164.       16.        4.     800.20
      .42        .28       1.37      .31       .110      .042      .110      .040    797.70    1796.21
  .000157        290.      290.      290.         0         0         0      0.00     314.69   2110.91

*SECNO 139.000
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VALLEY SECTION 139.0. OLD RR GRADE (R)

139.00	4.75	804.65	0.00	0.00	804.83	.19	.14	.08	803.20
445.	23.	421.	1.	33.	118.	3.	20.	6.	802.90
.46	.69	3.55	.47	.110	.042	.110	.040	799.90	1973.98
.001775	370.	380.	410.	2	0	0	0.00	59.06	2033.04

*SECNO 141.000

141.00	4.46	804.76	0.00	0.00	805.02	.26	.15	.04	803.30
445.	10.	434.	1.	13.	104.	2.	20.	6.	803.30
.46	.76	4.18	.52	.110	.042	.110	.040	800.30	1986.58
.002774	70.	70.	70.	2	0	0	0.00	45.77	2032.35

*SECNO 142.000

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

142.00	4.85	805.35	0.00	0.00	805.38	.03	.29	.07	803.20
445.	139.	238.	68.	320.	121.	165.	22.	7.	803.30
.52	.44	1.97	.41	.110	.042	.110	.040	800.50	1812.13
.000501	310.	290.	280.	2	0	0	0.00	329.32	2141.46

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGE OF AUGUSTA

3) WATERCOURSE: AUGUSTA CREEK

4) DOCUMENT TYPE: ENCROACHED RUN

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  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
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T1      VILLAGE OF AUGUSTA
T2      ENCROACHMENT RUN
T3      AUGUSTA CREEK AT AUGUSTA

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
      -10.       6.         0.         0.  0.000000       0.00       0.0          0.    790.500      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    15.000     0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

*PROF 2

CCHV=    .300 CEHV=    .500
*SECNO 120.800
 2800 NAT Q1=    121.59  WSEL=    790.40  ENC Q1=    121.59  WSEL=    790.50  RATIO=  0.0000
 NAT Q1=    128.  RATIOS LOB,CH,ROB=    .0772    .9228  0.0000  WSEL=    790.50
3280 CROSS SECTION    120.80 EXTENDED       1.30 FEET

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


3470 ENCROACHMENT STATIONS=    1972.3    2027.0  TYPE=      4  TARGET=          .048

                VALLEY SECTION 120.8, MERGES WITH KALAMAZOO RIVER  (A)

   120.80      5.50    790.50      0.00    790.40    790.65       .15       0.00      0.00    789.30
      445.       14.      431.        0.        26.      135.        0.         0.        0.    789.20
     0.00       .52      3.20      0.00      .110      .042      .110     0.000    785.00   1972.25
  .001340        0.        0.        0.         0         0         0      0.00     54.75   2027.00

*SECNO 120.900
 2800 NAT Q1=     87.50  WSEL=    790.40  ENC Q1=     90.28  WSEL=    790.50  RATIO=  -.0319
 NAT Q1=     90.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    790.50

3470 ENCROACHMENT STATIONS=    2000.0    2023.5  TYPE=      4  TARGET=        0.000
   120.90      5.41    790.51      0.00    790.40    790.75       .25       .05       .05    798.10
      445.       0.      445.        0.        0.      112.        0.        0.        0.    798.10
      .00       0.0      3.99      0.00      .110      .042      .110      .041    785.10   2000.00
  .002416        30.       30.       30.         2         0         0      0.00     23.50   2023.50

*SECNO 121.000
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```
    3700.   BRIDGE STENCL=   2000.00     STENCR=   2023.50
 2800 NAT Q1=     225.16  WSEL=     790.40  ENC Q1=     248.73  WSEL=     790.50  RATIO=  -.1047
 NAT Q1=     249.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     790.50

 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  797.60 MAX ELLC=  793.00

 3470 ENCROACHMENT STATIONS=     2000.0     2023.5  TYPE=      4  TARGET=        0.000

 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2006.0
    121.00      5.41   790.51      0.00   790.40   790.75      .25       .00       .00   798.10
       445.        0.      445.        0.      0.      112.        0.        0.        0.   798.10
       .00       0.00     3.99       0.00    .110     .014      .110      .039   785.10  2000.00
  .000318         1.       1.         1.       0        0         0      0.00    23.50  2023.50

 *SECNO 121.100
    3700.   BRIDGE STENCL=   2000.00     STENCR=   2023.50
 2800 NAT Q1=     191.54  WSEL=     790.40  ENC Q1=     208.07  WSEL=     790.50  RATIO=  -.0863
 NAT Q1=     208.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     790.50

 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  797.60 MAX ELLC=  793.90

 3470 ENCROACHMENT STATIONS=     2000.0     2023.5  TYPE=      4  TARGET=        0.000

 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2012.0

                UPSTREAM CROSS SECTION AT RR BRIDGE   (B)

    121.10      5.31   790.51      0.00   790.40   790.81      .30       .03       .03   798.10
       445.        0.      445.        0.      0.      101.        0.        0.        0.   798.10
       .01       0.00     4.41       0.00    .110     .014      .110      .022   785.20  2000.00
  .000456        69.      69.        69.       2        0         0      0.00    23.50  2023.50

 *SECNO 121.200
 2800 NAT Q1=     222.64  WSEL=     790.40  ENC Q1=     230.61  WSEL=     790.50  RATIO=  -.0358
 NAT Q1=     231.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     790.50
    SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL        OLOSS     BANK ELEV
    Q         OLOB      QCH       QROB      ALOB       ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL        XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR     TOPWID      ENDST

 3470 ENCROACHMENT STATIONS=     2000.0     2023.5  TYPE=      4  TARGET=        0.000
    121.20      5.31   790.51      0.00   790.40   790.81      .30       .00       .00   798.10
       445.        0.      445.        0.      0.      101.        0.        0.        0.   798.10
       .01       0.00     4.41       0.00    .110     .014      .110      .021   785.20  2000.00
  .000371         1.       1.         1.       0        0         0      0.00    23.50  2023.50

 *SECNO 122.000
 2800 NAT Q1=     109.71  WSEL=     790.69  ENC Q1=     114.52  WSEL=     790.79  RATIO=  -.0438
 NAT Q1=     115.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     790.79

 3470 ENCROACHMENT STATIONS=     2000.0     2066.0  TYPE=      4  TARGET=        0.000

                VALLEY SECTION 122.0   (C)
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122.00	4.78	790.78	0.00	790.69	790.92	.14	.07	.05	801.50
445.	0.	445.	0.	0.	148.	0.	1.	0.	800.00
.02	0.00	3.00	0.00	.110	.042	.110	.031	786.00	2006.61
.001522	55.	98.	102.	2	0	0	0.00	44.31	2050.92

CCHV= .300 CEHV= .500
*SECNO 123.000
2800 NAT Q1= 79.66 WSEL= 790.77 ENC Q1= 83.92 WSEL= 790.87 RATIO= -.0536
NAT Q1= 84. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 790.67

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 792.00 ELREA= 792.00

VALLEY SECTION 123.0, BOTTOM OF DAM SPILLWAY (D)

123.00	4.26	790.86	0.00	790.77	791.14	.28	.15	.07	790.00
445.	0.	445.	0.	0.	104.	0.	1.	0.	787.90
.02	0.00	4.27	0.00	.110	.042	.110	.034	786.60	2008.00
.003211	70.	70.	70.	2	0	0	0.00	30.00	2038.00

CCHV= .300 CEHV= .500
*SECNO 123.900
2800 NAT Q1= 85.04 WSEL= 797.39 ENC Q1= 92.31 WSEL= 797.49 RATIO= -.0854
NAT Q1= 92. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 797.49

3301 HV CHANGED MORE THAN HVINS

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

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

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

123.90	1.89	797.39	797.39	797.39	798.35	.96	.13	.34	804.60
445.	0.	445.	0.	0.	57.	0.	1.	0.	804.70
.02	0.00	7.84	0.00	.110	.014	.110	.031	795.50	2008.00
.002736	45.	45.	45.	20	14	0	0.00	30.00	2038.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 796.98 ,NOT 797.39 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	AKOR	COFQ	RDLEN	HWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.60	3.00	0.00	30.00	3.00	101.00	0.00	795.50	795.50

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*SECNO 124.000
3700. BRIDGE STENCL= 2008.00 STENCR= 2038.00

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 PRIDGE W.S.= 797.54 PRIDGE VELOCITY=, 8.09 CALCULATED CHANNEL AREA=, 55.

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	798.75	0.00	0.	445.	101.	122.	800.00	804.60

3470 ENCROACHMENT STATIONS= 2008.0 2038.0 TYPE= 4 TARGET= 0.000
ELENCL= 0.00 ELENCR= 0.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 804.60 ELREA= 804.70

UPSTREAM CROSS SECTION AT DAM (E)

124.00	2.82	798.32	0.00	798.22	798.75	.43	.41	0.00	804.60
445.	0.	445.	0.	0.	85.	0.	1.	0.	804.70
.02	0.00	5.26	0.00	.110	.014	.110	.031	795.50	2008.00
.000773	5.	5.	5.	0	0	0	0.00	30.00	2038.00

*SECNO 125.000
2800 NAT Q1= 32.95 WSEL= 798.18 ENC Q1= 35.99 WSEL= 798.28 RATIO= -.0924
NAT Q1= 36. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 798.28

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

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.10 ELREA= 804.90

VALLEY SECTION 125.0 (F)

125.00	2.80	798.30	0.00	798.18	798.88	.58	.05	.07	802.10
445.	0.	445.	0.	0.	73.	0.	1.	0.	804.90
.02	0.00	6.10	0.00	.110	.042	.110	.031	795.50	2007.04
.014495	25.	25.	25.	2	0	0	0.00	42.10	2049.14

CCHV= .100 CEHV= .300
*SECNO 126.000
2800 NAT Q1= 90.64 WSEL= 800.33 ENC Q1= 95.56 WSEL= 800.43 RATIO= -.0543
NAT Q1= 96. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 800.43

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 802.80 ELREA= 805.60

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                    VALLEY SECTION 126.0  (G)

     126.00      4.10    800.30      0.00    800.33    800.47      .18      1.55      .04    802.80
       445.        0.      445.        0.        0.      132.       0.        2.       1.     805.60
        .05       0.00     3.37       0.00      .110      .042     .110      .036   796.20   2002.49
     .002516      310.     310.       310.         3         0        0      0.00    49.56   2052.05


 CCHV=     .300 CEHV=     .500
 *SECNO 126.900
  2800 NAT Q1=      64.36  WSEL=     800.53  ENC Q1=      67.12  WSEL=     800.63  RATIO=   -.0428
  NAT Q1=      67.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.63
 3280 CROSS SECTION     126.90 EXTENDED      4.20 FEET


 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=        0.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

     126.90      4.00    800.50      0.00    800.53    800.89      .39       .31       .11    805.10
       445.        0.      445.        0.        0.       89.       0.        2.       1.     805.10
        .05       0.00     5.02       0.00      .110      .042     .110      .037   796.50   2000.00
     .004921       90.      90.        90.         2         0        0      0.00    26.00   2026.00

 *SECNO 127.000
      3700.    BRIDGE STENCL=    2000.00     STENCR=    2026.00
  2800 NAT Q1=     176.82  WSEL=     800.53  ENC Q1=     188.63  WSEL=     800.63  RATIO=   -.0668
  NAT Q1=     189.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.63
 3280 CROSS SECTION     127.00 EXTENDED      4.20 FEET


 3370 NORMAL BRIDGE.NRD=  6 MIN ELTRD=  804.90 MAX ELLC=  803.70

 3470 ENCROACHMENT STATIONS=     2000.0     2026.0  TYPE=      4  TARGET=        0.000

 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2006.0

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

     127.00      4.00    800.50      0.00    800.53    800.89      .39       .00       .00    805.10
       445.        0.      445.        0.        0.       89.       0.        2.       1.     805.10
        .05       0.00     5.02       0.00      .110      .014     .110      .037   796.50   2000.00
     .000620        1.       1.         1.         0         0        0      0.00    26.00   2026.00


 *SECNO 127.100
      3700.    BRIDGE STENCL=    2000.00     STENCR=    2026.00
  2800 NAT Q1=     213.80  WSEL=     800.68  ENC Q1=     232.93  WSEL=     800.78  RATIO=   -.0895
  NAT Q1=     233.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     800.78
 3280 CROSS SECTION     127.10 EXTENDED      4.35 FEET


 3370 NORMAL BRIDGE.NRD=  6 MIN ELTRD=  804.90 MAX ELLC=  803.70
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3470 ENCROACHMENT STATIONS= 2000.0 2026.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.0 2006.0

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

UPSTREAM CROSS SECTION AT W. MICHIGAN ST. BRIDGE (H)

127.10	4.65	800.65	0.00	800.68	800.94	.29	.03	.03	805.10
445.	0.	445.	0.	0.	102.	0.	2.	1.	805.10
.06	0.00	4.34	0.00	.110	.014	.110	.035	796.00	2000.00
.000359	55.	55.	55.	2	0	0	0.00	26.00	2026.00

*SECNO 127.200
2800 NAT Q1= 238.50 WSEL= 800.68 ENC Q1= 247.61 WSEL= 800.78 RATIO= -.0382
NAT Q1= 248. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 800.78
3280 CROSS SECTION 127.20 EXTENDED 4.35 FEET

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

3470 ENCROACHMENT STATIONS= 2000.0 2026.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

127.20	4.65	800.65	0.00	800.68	800.95	.29	.00	.00	805.10
445.	0.	445.	0.	0.	102.	0.	2.	1.	805.10
.06	0.00	4.35	0.00	.110	.014	.110	.035	796.00	2000.00
.000355	1.	1.	1.	0	0	0	0.00	26.00	2026.00

*SECNO 127.300
2800 NAT Q1= 63.83 WSEL= 800.68 ENC Q1= 66.63 WSEL= 800.78 RATIO= -.0440
NAT Q1= 67. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 800.78

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

VALLEY SECTION 127.3 (1)

127.30	4.15	800.65	0.00	800.68	801.02	.37	.04	.04	805.10
445.	0.	445.	0.	0.	91.	0.	2.	1.	805.10
.06	0.00	4.68	0.00	.110	.042	.110	.035	796.50	2014.04
.005034	40.	40.	40.	2	0	0	0.00	31.92	2045.96

CCHV= .100 CEHV= .300
*SECNO 129.800
2800 NAT Q1= 75.90 WSEL= 801.46 ENC Q1= 79.06 WSEL= 801.56 RATIO= -.0416
NAT Q1= 79. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 801.56

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

VALLEY SECTION 129.8 (J)

129.80	4.46	801.46	0.00	801.46	801.73	.27	.70	.01	805.10
445.	0.	445.	0.	0.	106.	0.	2.	1.	805.10
.07	0.00	4.18	0.00	.110	.042	.110	.036	797.00	2012.11
.003458	169.	169.	169.	2	0	0	0.00	35.77	2047.89

CCHV= .300 CEHV= .500
*SECNO 129.900
2800 NAT Q1= 85.27 WSEL= 801.75 ENC Q1= 88.54 WSEL= 801.85 RATIO= -.0384
NAT Q1= 89. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 801.85
3280 CROSS SECTION 129.90 EXTENDED 11.64 FEET

3470 ENCROACHMENT STATIONS= 2000.0 2028.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

129.90	4.34	801.74	0.00	801.75	801.99	.25	.26	.01	805.10
445.	0.	445.	0.	0.	111.	0.	3.	1.	805.10
.08	0.00	4.02	0.00	.110	.042	.110	.037	797.40	2000.00
.002732	85.	85.	85.	2	0	0	0.00	28.00	2028.00

*SECNO 130.000
3700. BRIDGE STENCL= 2000.00 STENCR= 2028.00
2800 NAT Q1= 226.33 WSEL= 801.75 ENC Q1= 250.40 WSEL= 801.85 RATIO= -.0967
NAT Q1= 250. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 801.85
3280 CROSS SECTION 130.00 EXTENDED 11.65 FEET

3370 NORMAL BRIDGE,NRD= 6 MIN FLTRD= 803.20 MAX ELLC= 804.30

3470 ENCROACHMENT STATIONS= 2000.0 2028.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.0 2009.0

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.10 ELREA= 805.10

130.00	4.35	801.75	0.00	801.75	802.00	.25	.00	.00	805.10
445.	0.	445.	0.	0.	111.	0.	3.	1.	805.10
.08	0.00	4.01	0.00	.110	.014	.110	.037	797.40	2000.00
.000340	1.	1.	1.	0	0	0	0.00	28.00	2028.00

*SECNO 130.100
3700. BRIDGE STENCL= 2000.00 STENCR= 2028.00
2800 NAT Q1= 210.26 WSEL= 801.74 ENC Q1= 225.91 WSEL= 801.84 RATIO= -.0744
NAT Q1= 226. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 801.84
3280 CROSS SECTION 130.10 EXTENDED 11.64 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	VLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

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     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      FNDST

 3370 NORMAL BRIDGE.NPO=   6 MIN ELTRD=  803.20 MAX ELLC=  804.30

 3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=         0.000
 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2009.0
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

                  UPSTREAM CROSS SECTION AT VANBUREN ST. BRIDGE  (K)

      130.10      4.24    801.74      0.00    801.74    802.02       .28       .01       .01    805.10
        445.        0.      445.        0.        0.       105.        0.        3.        1.     805.10
         .08      0.00      4.25      0.00      .110      .014      .110      .036    797.50   2000.00
      .000418       18.       18.       18.         I         0         0      0.00     28.00   2028.00

 *SECNO 130.200
  2800 NAT Q1=     234.15  WSEL=     801.74  ENC Q1=     243.74  WSEL=     801.84  RATIO=  -.0410
  NAT Q1=     244.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.84
 3280 CROSS SECTION     130.20 EXTENDED      11.64 FEET
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 3470 ENCROACHMENT STATIONS=     2000.0     2028.0  TYPE=      4  TARGET=         0.000
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=       805.10 ELREA=       805.10

      130.20      4.24    801.74      0.00    801.74    802.02       .28       .00       .00    805.10
        445.        0.      445.        0.        0.       105.        0.        3.        1.     805.10
         .06      0.00      4.26      0.00      .110      .014      .110      .036    797.50   2000.00
      .000362         1.        1.        1.         0         0         0      0.00     28.00   2028.00

 *SECNO 130.300
  2800 NAT Q1=      66.32  WSEL=     801.75  ENC Q1=      69.47  WSEL=     801.85  RATIO=  -.0475
  NAT Q1=      69.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     801.85
 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000

                  VALLEY SECTION 130.3  (L)

      130.30      4.15    801.75      0.00    801.75    802.08       .33       .04       .02    805.50
        445.        0.      445.        0.        0.        97.       0.        3.        1.     806.00
         .02      0.00      4.60      0.00      .110      .042      .110      .037    797.60   2012.69
      .004543       40.       40.       40.         2         0         0      0.00     34.63   2047.31

 CCHV=     .100 CEHV=     .300
 *SECNO 132.800
  2800 NAT Q1=      86.82  WSEL=     803.68  ENC Q1=      91.17  WSEL=     803.78  RATIO=  -.0501
  NAT Q1=      91.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.78

 3470 ENCROACHMENT STATIONS=     1994.0     2064.0  TYPE=      4  TARGET=         0.000
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                VALLEY SECTION 132.8   (M)
   132.80      4.48    803.68      0.00    803.68    803.87       .19      1.78       .01    806.00
     445.        0.      445.        0.        0.      129.        0.        4.        1.    806.00
      .12      0.00      3.46      0.00      .110      .042      .110      .038    799.20   2005.92
  .002618      525.      525.      525.         2         0         0      0.00     47.48   2053.40

CCHV=     .300 CEHV=     .500
*SECNO 132.900
 2800 NAT Q1=      84.07  WSEL=     803.89  ENC Q1=      87.19  WSEL=     803.99  RATIO=  -.0372
 NAT Q1=      87.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.99
3280 CROSS SECTION     132.90 EXTENDED      10.89 FEET

3470 ENCROACHMENT STATIONS=     2000.0     2027.0  TYPE=      4  TARGET=        0.000
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       806.50 ELREA=       806.50
   132.90      4.29    803.89      0.00    803.89    804.15       .25       .24       .03    806.50
     445.        0.      445.        0.        0.      110.        0.        4.        2.    806.50
      .13      0.00      4.04      0.00      .110      .042      .110      .038    799.60   2000.00
  .002801       90.       90.       90.         2         0         0      0.00     27.00   2027.00

*SECNO 133.000
     3700.   BRIDGE STENCL=    2000.00     STENCR=    2027.00
 2800 NAT Q1=     220.64  WSEL=     803.89  ENC Q1=     242.68  WSEL=     803.99  RATIO=  -.0999
 NAT Q1=     243.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.99
3280 CROSS SECTION     133.00 EXTENDED      10.89 FEET

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

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  803.00 MAX ELLC=  804.20

3470 ENCROACHMENT STATIONS=     2000.0     2027.0  TYPE=      4  TARGET=        0.000
4677 BRIDGE DECK DEFINITION ERROR AT STATIONS  2000.0  2015.0
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       806.50 ELREA=       806.50
   133.00      4.29    803.89      0.00    803.89    804.15       .25       .00       .00    806.50
     445.        0.      445.        0.        0.      110.        0.        4.        2.    806.50
      .13      0.00      4.04      0.00      .110      .014      .110      .038    799.60   2000.00
  .000361        1.        1.        1.         0         0         0      0.00     27.00   2027.00

*SECNO 133.100
     3700.   BRIDGE STENCL=    2000.00     STENCR=    2027.00
 2800 NAT Q1=     208.33  WSEL=     803.88  ENC Q1=     228.12  WSEL=     803.98  RATIO=  -.0950
 NAT Q1=     228.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     803.98
3280 CROSS SECTION     133.10 EXTENDED      10.89 FEET
```

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3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 803.00 MAX ELLC= 804.10

3470 ENCROACHMENT STATIONS= 2000.0 2027.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.0 2013.0

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 806.50 ELREA= 807.00

UPSTREAM CROSS SECTION AT WASHINGTON ST. BRIDGE (N)

133.10	4.68	803.88	0.00	803.88	804.17	.29	.01	.02	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.32	0.00	.110	.014	.110	.038	799.20	2000.00
.000407	20.	20.	20.	1	0	0	0.00	27.00	2027.00

*SECNO 133.200
2800 NAT Q1= 232.31 WSEL= 803.88 ENC Q1= 241.60 WSEL= 803.98 RATIO= -.0400
NAT Q1= 242. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 803.98
3280 CROSS SECTION 133.20 EXTENDED 10.68 FEET

3470 ENCROACHMENT STATIONS= 2000.0 2027.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 806.50 ELREA= 807.00

133.20	4.68	803.88	0.00	803.88	804.17	.29	.00	.00	806.50
445.	0.	445.	0.	0.	103.	0.	4.	2.	807.00
.13	0.00	4.33	0.00	.110	.014	.110	.038	799.20	2000.00
.000367	1.	1.	1.	0	0	0	0.00	27.00	2027.00

*SECNO 133.300
2800 NAT Q1= 250.43 WSEL= 804.22 ENC Q1= 258.25 WSEL= 804.32 RATIO= -.0312
NAT Q1= 258. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.32

3470 ENCROACHMENT STATIONS= 1994.0 2064.0 TYPE= 4 TARGET= 0.000

133.30	6.22	804.22	0.00	804.22	804.26	.04	.02	.07	806.50
445.	0.	445.	0.	0.	264.	0.	5.	2.	808.00
.14	0.00	1.69	0.00	.110	.042	.110	.038	798.00	1999.62
.000316	50.	50.	50.	2	0	0	0.00	57.51	2057.13

*SECNO 135.000
2800 NAT Q1= 289.44 WSEL= 804.31 ENC Q1= 297.19 WSEL= 804.41 RATIO= -.0268
NAT Q1= 297. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.41
3280 CROSS SECTION 135.00 EXTENDED 7.60 FEET

3470 ENCROACHMENT STATIONS= 1990.0 2066.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 805.00 ELREA= 811.80

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VALLEY SECTION 135.0 (O)

135.00	7.00	804.30	0.00	804.31	804.34	.04	.07	.00	805.00
445.	0.	445.	0.	0.	292.	0.	6.	2.	811.80
.19	0.00	1.52	0.00	.110	.042	.110	.039	797.30	1991.80
.000238	274.	271.	274.	1	0	0	0.00	60.18	2051.97

*SECNO 136.000
2800 NAT Q1= 273.01 WSEL= 804.51 ENC Q1= 280.34 WSEL= 804.61 RATIO= -.0268
NAT Q1= 280. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 804.61

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

3470 ENCROACHMENT STATIONS= 1980.0 2056.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 805.00 ELREA= 804.80

VALLEY SECTION 136.0 (R)

136.00	8.41	804.51	0.00	804.51	804.54	.03	.20	.00	805.00
445.	0.	445.	0.	0.	302.	0.	12.	3.	804.80
.34	0.00	1.48	0.00	.110	.042	.110	.039	796.10	1984.75
.000268	800.	600.	800.	0	0	0	0.00	70.86	2055.61

CCHV= .300 CEHV= .500
*SECNO 137.000
2800 NAT Q1= 354.77 WSEL= 804.59 ENC Q1= 354.77 WSEL= 804.69 RATIO= 0.0000
NAT Q1= 373. RATIOS LOB,CH,ROB= .2858 .5986 .1156 WSEL= 804.69

3470 ENCROACHMENT STATIONS= 1817.2 2067.4 TYPE= 4 TARGET= .048

VALLEY SECTION 137.0 (O)

137.00	6.89	804.59	0.00	804.59	804.61	.02	.06	.00	803.20
445.	118.	284.	43.	398.	198.	111.	15.	4.	800.20
.42	.30	1.43	.38	.110	.042	.110	.040	797.70	1817.20
.000173	290.	290.	290.	1	0	0	0.00	250.24	2067.44

*SECNO 139.000
2800 NAT Q1= 105.62 WSEL= 804.65 ENC Q1= 105.62 WSEL= 804.75 RATIO= 0.0000
NAT Q1= 111. RATIOS LOB,CH,ROB= .0555 .9414 .0031 WSEL= 804.75

3470 ENCROACHMENT STATIONS= 1994.0 2030.0 TYPE= 4 TARGET= .045

VALLEY SECTION 139.0. OLD RR GRADE (R)

139.00	4.75	804.65	0.00	804.65	804.86	.21	.16	.09	803.70
445.	6.	439.	0.	9.	119.	0.	19.	5.	802.90
.45	.68	3.70	0.00	.110	.042	.110	.040	799.90	1993.97
.002042	370.	380.	410.	2	0	0	0.00	36.03	2030.00

*SECNO 141.000
2800 NAT Q1= 84.49 WSEL= 804.76 ENC Q1= 86.39 WSEL= 804.86 RATIO= -.0225
NAT Q1= 89. RATIOS LOB,CH,ROB= .0249 .9728 .0023 WSEL= 804.86

3470 ENCROACHMENT STATIONS= 2000.0 2030.0 TYPE= 4 TARGET= .027

141.00	4.49	804.79	0.00	804.76	805.07	.28	.18	.03	803.30
445.	0.	445.	0.	0.	105.	0.	19.	5.	803.30
.45	0.00	4.23	0.00	.110	.042	.110	.040	800.30	2000.00
.003167	70.	70.	70.	1	0	0	0.00	30.00	2030.00

*SECNO 142.000
2800 NAT Q1= 198.82 WSEL= 805.35 ENC Q1= 198.82 WSEL= 805.45 RATIO= 0.0000
NAT Q1= 213. RATIOS LOB,CH,ROB= .3217 .5202 .1581 WSEL= 805.45

3470 ENCROACHMENT STATIONS= 1842.7 2101.1 TYPE= 4 TARGET= .065

VALLEY SECTION 142.0, NORTHERN LIMITS OF STUDY (S)

142.00	4.92	805.42	0.00	805.35	805.45	.04	.31	.07	803.20
445.	136.	249.	59.	294.	123.	130.	21.	7.	803.30
.51	.46	2.03	.46	.110	.042	.110	.040	800.50	1842.73
.000521	310.	290.	280.	2	0	0	0.00	258.36	2101.08



1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGES OF GALESBURG AND AUGUSTA

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 10 yr run



MOORE BUSINESS FORMS, INC 23

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**********************************************************
*  WATER SURFACE PROFILES                                *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED APRIL 1980                                    *
*                                                        *
*  RUN DATE  80/09/17. TIME  08.13.51.                   *
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RECEIVED
SEP 26 1980
WATER MANAGEMENT

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

*HEC-2 MESSAGE

** HEC-2 MESSAGE **

MAY 13 -- THE STANDARD VERSION OF HEC-2 HAS BEEN UPDATE TO INCLUDE MODIFICATION 54 AND ERROR CORRECTION 04. DOCUMENTATION DESCRIBING THESE CHANGE WILL BE FURNISHED TO PROGRAM USERS IN JUNE. PLEASE CALL AL MONTALVO OR RICHARD HAYES AT (FTS) 448-2105 IF YOU HAVE QUESTIONS REGARDING THESE CHANGES.

**** SUMMARY OF MODIFICATION 54 ****

1. HEC-2 OUTPUT HAS BEEN MADE MORE READABLE BY THE ADDITION OF A PAGING ROUTINE TO CONTROL PRINTING AND PAGING. THE ROUTINE ALSO PROVIDES A PAGE NUMBER AND DATE AT THE TOP OF EACH PAGE OF OUTPUT. THIS ENHANCEMENT WAS REQUESTED BY THE FORT WORTH DISTRICT.

2. THE PROGRAM WILL NOW AUTOMATICALLY CALCULATE FLOOD HAZARD FACTORS FOR STREAMS WHICH REQUIRE MULTIPLE FIA ZONES.

3. THE CHANNEL IMPROVEMENT (CHIMP) ROUTINE HAS BEEN ENHANCED TO PROVIDE THE CAPABILITY TO MODEL PILOT CHANNELS, TO FILL THE OLD CHANNEL AREA PRIOR TO EXCAVATION, AND TO CHANGE THE CHANNEL REACH LENGTH.

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC. 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**************************************************

C
T1      VILLAGES OF GALESBURG AND AUGUSTA
T2      10 YEAR LEVEL
T3      KALAMAZOO RIVER
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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ	
	0.	2.	0.	0.	0.000000	0.00	0.0	0.	777.460	0.000	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE	
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
J3	VARIABLE CODES FOR SUMMARY PRINTOUT										
	150.000	201.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
J5	LPRNT	NUMSEC	********REQUESTED SECTION NUMBERS********								
	-10.000	-10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
NC	.100	.100	.014	.300	.500	0.000	0.000	0.000	0.000	0.000	
QT	5.000	4500.000	6070.000	6750.000	8420.000	6750.000	0.000	0.000	0.000	0.000	
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000	

DOWNSTREAM FACE OF 35TH STREET BRIDGE (A)

DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

X1	81.000	50.000	2000.000	2178.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1808.000	783.700	0.000	2000.000	785.700	0.000	2000.000	785.700	782.400
BT	2058.000	786.400	783.100	2058.100	786.400	775.000	2060.000	786.400	774.700	2060.100
BT	786.400	783.100	2118.000	787.200	783.900	2118.100	787.200	771.600	2120.000	787.200
BT	771.800	2120.100	787.200	783.900	2178.000	787.900	784.600	2178.000	787.900	0.000
BT	2279.000	788.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	789.200	370.000	787.800	502.000	786.800	604.000	784.800	786.000	784.200	889.000
GR	784.000	986.000	783.800	1088.000	783.400	1188.000	783.500	1290.000	783.500	1392.000
GR	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
GR	785.700	2000.000	780.300	2000.000	774.500	2023.000	774.600	2039.000	775.600	2054.000
GR	775.000	2058.000	775.000	2058.100	774.700	2060.000	774.700	2060.100	772.200	2077.000
GR	770.900	2109.000	771.600	2118.000	771.600	2118.100	771.800	2120.000	771.800	2120.100
GR	772.300	2126.000	772.000	2145.000	776.700	2156.000	782.600	2178.000	787.900	2178.000
GR	788.200	2279.000	789.600	2379.000	791.100	2481.000	791.900	2581.000	793.100	2685.000
GR	793.700	2789.000	794.000	2885.000	794.500	2993.000	794.600	3095.000	794.700	3195.000
GR	795.100	3295.000	795.200	3395.000	795.300	3491.000	795.500	3575.000	795.800	3691.000

X1	81.100	50.000	2000.000	2178.000	31.000	31.000	31.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1808.000	783.700	0.000	2000.000	785.700	0.000	2000.000	785.700	782.400
BT	2058.000	786.400	783.100	2058.100	786.400	773.200	2060.000	786.400	773.000	2060.100
BT	786.400	783.100	2118.000	787.200	783.900	2118.100	787.200	771.400	2120.000	787.200
BT	771.400	2120.100	787.200	783.900	2178.000	787.900	784.600	2178.000	787.900	0.000
BT	2279.000	788.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	789.200	370.000	787.800	502.000	786.800	604.000	784.800	786.000	784.200	889.000
GR	784.000	986.000	783.800	1088.000	783.400	1188.000	783.500	1290.000	783.500	1392.000
GR	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
GR	785.700	2000.000	780.300	2000.000	774.700	2023.000	774.300	2039.000	773.700	2052.000
GR	773.200	2058.000	773.200	2058.100	773.000	2060.000	773.000	2060.100	771.500	2076.000
GR	770.700	2088.000	771.400	2118.000	771.400	2118.100	771.400	2120.000	771.400	2120.100
GR	770.300	2130.000	771.100	2146.000	776.500	2162.000	782.200	2178.000	787.900	2178.000
GR	788.200	2279.000	789.600	2379.000	791.100	2481.000	791.900	2581.000	793.100	2685.000
GR	793.700	2789.000	794.000	2885.000	794.500	2993.000	794.600	3095.000	794.700	3195.000
GR	795.100	3295.000	795.200	3393.000	795.300	3491.000	795.500	3575.000	795.800	3691.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	81.200	0.000	0.000	178.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	785.700	787.900	0.000

SURVEYED VALLEY SECTION (B)

X1	83.000	44.000	3082.000	3269.000	3350.000	3100.000	3375.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.600	1718.000	792.500	1788.000	796.000	1896.000	795.200	2000.000	793.200	2132.000
GR	792.500	2228.000	792.600	2324.000	792.600	2420.000	791.700	2514.000	791.100	2634.000
GR	790.400	2728.000	790.200	2822.000	790.300	2908.000	789.800	2972.000	787.500	3066.000
GR	780.800	3082.000	778.400	3093.000	775.100	3118.000	773.500	3143.000	772.000	3168.000
GR	773.700	3193.000	774.400	3224.000	777.900	3266.000	779.800	3269.000	779.400	3316.000
GR	778.300	3316.000	775.200	3338.000	776.800	3354.000	779.600	3362.000	779.900	3480.000
GR	779.200	3574.000	780.200	3708.000	778.800	3806.000	778.900	3900.000	781.600	3988.000
GR	781.700	4074.000	783.600	4218.000	782.000	4326.000	780.800	4422.000	780.400	4498.000
GR	782.800	4592.000	783.000	4654.000	789.300	4676.000	790.100	4774.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1170.000	3594.000	0.000	0.000

SURVEYED VALLEY SECTION (C)

CHARLESTON TOWNSHIP DOWNSTREAM STUDY LIMIT (SEC A)

X1	84.800	39.000	2000.000	2195.000	4525.000	4463.000	4500.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	790.600	864.000	789.000	1160.000	788.100	1170.000	784.600	1200.000	783.600	1400.000
GR	783.800	1600.000	783.400	1800.000	783.500	2000.000	780.800	2011.000	774.500	2034.000
GR	773.700	2051.000	773.900	2086.000	772.400	2124.000	772.900	2142.000	774.900	2176.000
GR	775.700	2186.000	781.200	2195.000	781.000	2224.000	781.300	2260.000	787.100	2298.000

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GR	787.800	2402.000	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000
GR	790.400	2828.000	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000
GR	789.800	3312.000	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	84.900	43.000	2000.000	2176.000	2400.000	2400.000	2400.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	788.150	788.250	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	786.300	864.000	783.700	1160.000	788.100	1170.000	787.000	1300.000	786.800	1402.000
GR	786.700	1502.000	786.700	1603.000	787.000	1702.000	787.200	1800.000	787.200	1898.000
GR	788.800	2000.000	777.800	2000.000	774.500	2034.000	773.700	2051.000	773.900	2086.000
GR	773.900	2086.100	773.800	2090.000	773.800	2090.100	772.700	2124.000	772.900	2142.000
GR	774.900	2176.000	788.900	2176.000	787.100	2260.000	787.100	2298.000	787.800	2402.000
GR	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000	790.400	2828.000
GR	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000	789.800	3312.000
GR	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF CONDEMNED BRIDGE (D)

CHARLESTON SEC B

X1	85.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1898.000	787.200	0.000	2000.000	788.800	0.000	2000.000	788.800	787.500
BT	2086.000	788.800	787.500	2086.100	788.800	773.900	2090.000	788.800	773.800	2090.100
BT	788.800	787.500	2176.000	788.900	787.600	2176.000	788.900	0.000	2260.000	787.100
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	85.100	44.000	2000.000	2176.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1898.000	787.200	0.000	2000.000	788.800	0.000	2000.000	788.800	787.500
BT	2086.000	788.800	787.500	2086.100	788.800	773.900	2090.000	788.800	773.800	2090.100
BT	788.800	787.500	2176.000	788.900	787.600	2176.000	788.900	0.000	2260.000	787.100
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	786.300	864.000	783.700	1160.000	788.100	1170.000	787.000	1300.000	786.900	1402.000
GR	786.900	1502.000	786.900	1603.000	787.000	1702.000	787.200	1800.000	787.200	1898.000
GR	788.800	2000.000	777.900	2000.000	775.200	2016.000	774.700	2034.000	773.200	2051.000
GR	773.800	2086.000	773.800	2086.100	772.900	2090.000	772.900	2090.100	772.700	2124.000
GR	772.800	2142.000	775.700	2176.000	788.900	2176.000	787.100	2260.000	787.100	2298.000
GR	787.800	2402.000	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000
GR	790.400	2828.000	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000
GR	789.800	3312.000	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1170.000	3594.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC 23

X1	85.200	0.000	0.000	176.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	788.800	787.500	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1800.000	2788.000	1835.000	2700.000

SURVEYED VALLEY SECTION (E)

CHARLESTON SEC C

X1	87.800	38.000	2000.000	2190.000	870.000	880.000	875.000	0.000	0.000	0.000
GR	799.000	600.000	792.800	800.000	789.800	1000.000	786.800	1200.000	785.500	1400.000
GR	783.400	1600.000	788.100	1800.000	783.200	2000.000	781.800	2000.000	781.600	2002.000
GR	780.900	2017.000	779.400	2029.000	778.200	2057.000	778.100	2060.000	777.700	2074.000
GR	776.100	2089.000	773.300	2104.000	773.600	2119.000	775.000	2134.000	776.500	2149.000
GR	776.300	2164.000	780.500	2184.000	783.400	2190.000	782.100	2289.000	781.500	2425.000
GR	782.000	2554.000	782.400	2654.000	783.100	2706.000	791.000	2788.000	786.400	2890.000
GR	786.700	2976.000	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000
GR	787.700	3456.000	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	1.410	478.000	2496.000	0.000	0.000

X1	87.900	52.000	2000.000	2210.000	1480.000	1520.000	1500.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	790.150	790.150	0.000
GR	802.300	478.000	799.400	596.000	797.800	672.000	795.400	771.000	793.200	870.000
GR	791.400	972.000	790.200	1072.000	789.500	1176.000	788.800	1278.000	789.000	1380.000
GR	789.000	1482.000	788.900	1582.000	789.600	1698.000	790.200	1800.000	790.900	1904.000
GR	791.600	2000.000	783.300	2000.000	783.400	2002.000	782.500	2017.000	781.000	2029.000
GR	779.800	2057.500	779.800	2057.600	779.700	2060.500	779.700	2060.600	779.300	2074.000
GR	777.700	2089.000	775.300	2104.000	775.600	2119.000	777.000	2134.000	778.500	2149.000
GR	778.300	2152.500	778.300	2152.600	778.200	2155.500	778.200	2155.600	777.900	2164.000
GR	782.100	2184.000	785.500	2210.000	791.600	2210.000	791.300	2310.000	790.900	2394.000
GR	789.000	2496.000	788.200	2596.000	785.600	2788.000	786.400	2890.000	786.700	2976.000
GR	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000	787.700	3456.000
GR	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF MICHIGAN STREET BRIDGE (F)

CHARLESTON SEC D

X1	88.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1904.000	790.900	0.000	2000.000	791.600	0.000	2000.000	791.600	788.700
BT	2057.500	791.600	788.700	2057.600	791.600	779.800	2060.500	791.600	779.700	2060.600
BT	791.600	788.700	2152.500	791.600	788.600	2152.600	791.600	778.300	2155.500	791.600
BT	778.200	2155.600	791.600	788.600	2210.000	791.600	788.600	2210.000	791.600	0.000
BT	2310.000	791.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

X1	88.100	52.000	2000.000	2210.000	29.000	29.000	29.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1904.000	790.900	0.000	2000.000	791.600	0.000	2000.000	791.600	788.100
BT	2057.500	791.600	788.100	2057.600	791.600	776.900	2060.500	791.600	776.900	2060.600
BT	791.600	788.100	2152.500	791.600	788.100	2152.600	791.600	778.000	2155.500	791.600
BT	778.000	2155.600	791.600	788.100	2210.000	791.600	788.100	2210.000	791.600	0.000
BT	2310.000	791.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.300	478.000	799.400	596.000	797.800	672.000	795.400	771.000	793.200	870.000
GR	791.400	972.000	790.200	1072.000	789.500	1176.000	788.800	1278.000	789.000	1380.000
GR	789.000	1482.000	788.900	1582.000	789.600	1698.000	790.200	1800.000	790.900	1904.000
GR	791.600	2000.000	782.800	2000.000	781.200	2016.000	780.100	2036.000	776.900	2056.000
GR	776.900	2057.500	776.900	2057.600	776.900	2060.500	776.900	2060.600	777.000	2076.000
GR	775.400	2098.000	775.200	2113.000	779.900	2131.000	778.000	2148.000	778.000	2152.500
GR	778.000	2152.600	778.000	2155.500	778.000	2155.600	777.900	2171.000	780.800	2191.000
GR	781.400	2204.000	784.300	2210.000	791.600	2210.000	791.300	2310.000	790.900	2394.000
GR	787.000	2496.000	788.200	2596.000	785.600	2788.000	786.400	2890.000	786.700	2976.000
GR	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000	787.700	3456.000
GR	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	88.200	0.000	0.000	210.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.600	791.600	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (G)

UPSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

CHARLESTON APPROXIMATE STUDY DOWNSTREAM LIMIT (SEC E)

X1	88.300	13.000	2000.000	2180.000	800.000	800.000	800.000	0.000	0.000	0.000
GR	800.000	1000.000	790.000	1200.000	783.800	2000.000	781.400	2016.000	780.300	2036.000
GR	777.100	2056.000	777.200	2076.000	778.200	2152.000	781.000	2176.000	784.500	2180.000
GR	790.000	3050.000	790.000	3600.000	797.000	5000.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

FABRICATED VALLEY SECTION

X1	90.000	14.000	2000.000	2172.000	6700.000	6700.000	6700.000	0.000	0.000	0.000
GR	800.000	200.000	790.000	300.000	785.000	2000.000	783.900	2000.000	782.000	2026.000
GR	777.000	2050.000	776.900	2080.000	777.100	2102.000	777.500	2126.000	780.600	2150.000
GR	784.000	2164.000	784.400	2172.000	790.000	2650.000	800.000	4250.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1300.000	4200.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

FABRICATED VALLEY SECTION

X1	91.000	15.000	2000.000	2172.000	7500.000	7500.000	7500.000	0.000	0.000	0.000
GR	800.000	1300.000	790.000	1700.000	787.100	2000.000	783.700	2026.000	778.600	2050.000
GR	779.000	2126.000	782.200	2150.000	785.700	2164.000	786.000	2172.000	787.000	2500.000
GR	790.000	4172.000	793.000	4200.000	790.000	4275.000	790.000	4500.000	800.000	4600.000
QT	5.000	4430.000	6030.000	6720.000	8420.000	6720.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1716.000	2710.000	1805.000	2700.000

CHARLESTON APPROXIMATE STUDY UPSTREAM LIMIT (SEC F)

DOWNSTREAM LIMIT OF AUGUSTA DETAILED STUDY

SURVEYED VALLEY SECTION (A)

X1	99.000	40.000	2010.000	2172.000	7150.000	7150.000	7150.000	0.000	0.000	0.000
GR	811.100	1004.000	808.300	1044.000	805.300	1096.000	801.300	1190.000	798.400	1288.000
GR	794.000	1382.000	795.800	1496.000	796.000	1625.000	796.700	1708.000	796.900	1716.000
GR	793.300	1806.000	788.100	1848.000	788.900	1928.000	788.800	2000.000	787.100	2010.000
GR	785.200	2026.000	780.200	2050.000	780.100	2080.000	780.300	2102.000	780.600	2126.000
GR	783.700	2150.000	787.200	2164.000	787.500	2172.000	785.800	2262.000	789.400	2288.000
GR	789.400	2380.000	788.300	2466.000	787.400	2558.000	787.600	2662.000	794.300	2710.000
GR	793.000	2740.000	789.400	2758.000	787.200	2900.000	787.200	2982.000	787.200	3060.000
GR	787.400	3144.000	789.200	3316.000	789.200	3508.000	791.500	3608.000	791.900	3700.000
ET	0.000	7.100	7.100	7.100	7.100	1.410	1898.000	2704.000	0.000	0.000

SURVEYED VALLEY SECTION (B)

CHARLESTON SEC G

X1	100.000	42.000	2003.000	2162.000	560.000	590.000	575.000	0.000	0.000	0.000
GR	805.200	698.000	805.400	796.000	804.300	852.000	800.900	936.000	797.400	1020.000
GR	795.200	1102.000	801.400	1278.000	801.800	1363.000	797.500	1450.000	790.200	1608.000
GR	794.600	1760.000	795.100	1898.000	792.400	1982.000	786.900	2000.000	786.300	2003.000
GR	780.600	2046.000	781.300	2084.000	782.100	2112.000	782.800	2140.000	785.200	2162.000
GR	786.900	2165.000	789.800	2200.000	788.000	2298.000	789.300	2372.000	789.500	2492.000
GR	789.500	2582.000	788.100	2646.000	792.100	2658.000	795.200	2688.000	795.500	2704.000
GR	793.800	2720.000	789.200	2756.000	791.000	2890.000	797.300	2986.000	802.300	3066.000
GR	800.400	3160.000	800.400	3160.000	800.200	3250.000	799.600	3342.000	799.700	3434.000
GR	801.200	3528.000	800.600	3678.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1606.000	2346.000	0.000	0.000

SURVEYED VALLEY SECTION (C)

CHARLESTON SEC H

X1	101.000	44.000	2006.000	2156.000	1360.000	1330.000	1345.000	0.000	0.000	0.000
GR	799.500	498.000	799.200	604.000	797.900	694.000	797.400	750.000	798.900	836.000
GR	800.700	922.000	800.400	952.000	798.300	1010.000	796.800	1102.000	796.600	1162.000
GR	793.300	1276.000	793.300	1364.000	793.800	1446.000	793.900	1524.000	794.600	1606.000
GR	793.800	1686.000	793.500	1712.000	789.500	1790.000	786.400	1858.000	788.700	1930.000
GR	787.400	2000.000	785.400	2006.000	781.200	2024.000	781.100	2064.000	781.300	2104.000
GR	781.700	2128.000	785.400	2156.000	793.100	2182.000	794.000	2224.000	794.000	2320.000
GR	795.700	2334.000	796.000	2346.000	793.100	2388.000	794.500	2478.000	798.100	2568.000
GR	799.600	2654.000	799.900	2754.000	800.700	2874.000	800.800	2980.000	800.200	3068.000
GR	801.000	3234.000	800.600	3334.000	806.800	3418.000	808.700	3474.000	0.000	0.000

SURVEYED VALLEY SECTION (D)

CHARLESTON SEC I

X1	102.000	45.000	2008.000	2176.000	820.000	1015.000	865.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	797.800	448.000	799.200	562.000	799.300	658.000	797.800	796.000	794.100	944.000
GR	793.300	1034.000	793.200	1126.000	792.300	1212.000	793.000	1294.000	792.700	1406.000
GR	789.500	1494.000	788.900	1566.000	790.800	1648.000	790.100	1744.000	788.700	1804.000
GR	787.600	1900.000	791.600	2000.000	785.600	2008.000	782.400	2048.000	782.600	2070.000
GR	782.500	2100.000	782.600	2116.000	783.800	2140.000	785.400	2176.000	787.600	2179.000
GR	788.100	2256.000	785.800	2276.000	785.800	2290.000	795.800	2306.000	797.000	2334.000
GR	797.200	2350.000	796.800	2386.000	799.800	2488.000	801.200	2564.000	801.600	2662.000
GR	801.700	2764.000	802.300	2890.000	801.900	2996.000	801.800	3094.000	801.000	3222.000
GR	801.900	3320.000	802.600	3422.000	803.600	3576.000	805.000	3640.000	806.800	3740.000
QT	5.000	4390.000	6000.000	6700.000	8420.000	6700.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (E)

CHARLESTON TOWNSHIP UPSTREAM STUDY LIMIT (SEC J)

ROSS TOWNSHIP DOWNSHIP STUDY LIMIT (SEC A)

X1	103.000	47.000	2005.000	2166.000	1020.000	1150.000	1020.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	806.100	468.000	807.800	516.000	806.500	564.000	800.500	604.000	799.000	716.000
GR	798.500	808.000	799.200	902.000	800.700	1002.000	800.600	1124.000	796.800	1218.000
GR	795.600	1312.000	794.800	1406.000	794.800	1466.000	794.200	1558.000	793.700	1650.000
GR	793.300	1736.000	792.300	1858.000	787.800	1886.000	787.000	1924.000	788.200	2000.000
GR	787.500	2004.000	784.700	2005.000	784.400	2030.000	783.400	2074.000	782.600	2100.000
GR	782.200	2136.000	786.300	2166.000	788.400	2172.000	788.900	2282.000	788.500	2378.000
GR	790.200	2410.000	796.300	2430.000	798.000	2440.000	798.400	2456.000	796.600	2502.000
GR	796.800	2604.000	797.200	2710.000	797.000	2710.000	797.000	2810.000	796.200	2936.000
GR	796.200	3037.000	795.900	3118.000	796.000	3220.000	796.200	3318.000	796.600	3420.000
GR	796.900	3518.000	797.800	3682.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	900.000	2313.000	1825.000	2270.000

MOORE BUSINESS FORMS, INC 23

SURVEYED VALLEY SECTION (F)

ROSS SEC (B)

X1	104.000	45.000	2014.000	2144.000	1060.000	920.000	995.000	0.000	0.000	0.000
GR	808.000	900.000	807.300	980.000	806.700	1030.000	806.000	1122.000	804.500	1250.000
GR	804.800	1340.000	805.800	1430.000	806.300	1452.000	798.000	1550.000	802.500	1610.000
GR	797.600	1700.000	799.700	1800.000	790.400	1848.000	789.300	2000.000	788.700	2012.000
GR	786.200	2014.000	782.700	2038.000	783.000	2068.000	781.700	2098.000	783.400	2126.000
GR	786.400	2144.000	788.300	2148.000	789.900	2178.000	788.200	2254.000	797.000	2276.000
GR	798.300	2292.000	798.300	2313.000	796.400	2328.000	787.600	2356.000	788.000	2428.000
GR	794.900	2452.000	798.300	2544.000	796.700	2648.000	796.200	2808.000	796.500	2864.000
GR	794.700	2964.000	794.700	3048.000	794.500	3144.000	796.000	3250.000	796.000	3274.000
GR	789.400	3306.000	789.500	3396.000	790.200	3496.000	790.600	3580.000	791.200	3668.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000

X1	104.900	49.000	2000.000	2152.000	189.000	89.000	139.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.000	342.000	802.600	494.000	800.600	590.000	798.400	676.000	798.400	778.000
GR	798.200	876.000	800.100	972.000	799.600	1080.000	802.400	1192.000	801.300	1252.000
GR	798.300	1324.000	801.200	1456.000	799.100	1582.000	799.100	1656.000	798.700	1800.000
GR	798.620	1900.000	798.650	1936.000	798.700	2000.000	790.400	2000.000	786.600	2012.000
GR	783.500	2024.000	785.200	2042.000	785.800	2060.000	788.500	2072.000	788.500	2072.100
GR	786.300	2079.000	786.300	2079.100	782.100	2089.000	780.600	2104.000	781.300	2119.000
GR	786.600	2144.000	789.600	2152.000	799.900	2152.000	799.700	2166.000	798.000	2262.000
GR	797.500	2360.000	797.500	2456.000	798.200	2552.000	800.600	2610.000	801.600	2664.000
GR	802.800	2756.000	800.000	2822.000	798.200	2920.000	797.800	2974.000	798.200	3094.000
GR	806.100	3172.000	807.800	3230.000	808.300	3358.000	806.900	3450.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	342.000	3450.000	0.000	0.000

DOWNSTREAM FACE OF RR BRIDGE (G)

ROSS SEC (C)

X1	105.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1936.000	789.500	0.000	2000.000	799.900	0.000	2000.000	799.900	793.900
BT	2072.000	799.900	793.900	2072.100	799.900	788.500	2079.000	799.900	786.300	2079.100
BT	799.900	793.800	2152.000	799.900	793.800	2152.000	799.900	0.000	2166.000	789.900
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	342.000	3474.000	0.000	0.000

X1	105.100	41.000	2000.000	2152.000	33.000	33.000	33.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1900.000	798.600	0.000	2000.000	799.400	0.000	2000.000	799.400	793.100
BT	2072.000	799.400	793.100	2072.100	799.400	785.300	2079.000	799.400	785.200	2079.100
BT	799.400	793.200	2152.000	799.400	793.300	2152.000	799.400	0.000	2324.000	798.300

MOORE BUSINESS FORMS, INC 23

BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.000	342.000	802.600	494.000	800.600	590.000	798.400	676.000	798.400	778.000
GR	798.200	876.000	800.100	972.000	799.600	1080.000	802.400	1192.000	801.300	1252.000
GR	798.300	1324.000	799.500	1462.000	799.300	1590.000	799.000	1688.000	798.700	1792.000
GR	798.600	1900.000	799.400	2000.000	788.900	2000.000	785.800	2010.000	783.800	2024.000
GR	783.800	2024.000	782.600	2056.000	785.300	2072.000	785.300	2072.100	785.200	2079.000
GR	785.200	2079.100	780.000	2090.000	780.400	2104.000	780.800	2118.000	781.100	2130.000
GR	783.400	2142.000	785.600	2150.000	786.100	2152.000	799.400	2152.000	798.300	2324.000
GR	798.300	2548.000	798.000	2768.000	798.100	2896.000	797.900	3016.000	797.900	3230.000
GR	797.700	3474.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000
X1	105.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1897.000	2386.000	1905.000	2290.000

SURVEYED VALLEY SECTION (H)

ROSS SEC (D)

X1	108.000	39.000	2022.000	2194.000	199.000	239.000	219.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	789.000	2000.000	786.500	2022.000	785.800	2040.000	783.100	2070.000	783.000	2100.000
GR	782.900	2124.000	783.800	2162.000	785.700	2194.000	788.700	2195.000	788.800	2220.000
GR	794.000	2244.000	794.900	2294.000	799.700	2386.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000
X1	108.900	49.000	2083.000	2277.000	89.000	74.000	79.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	796.500	2000.000	797.900	2083.000	791.300	2083.000	786.800	2099.000	785.100	2123.000
GR	784.400	2143.000	783.900	2148.000	783.900	2148.100	783.700	2150.500	783.700	2150.600
GR	782.700	2163.000	782.300	2183.000	781.900	2203.000	781.400	2212.000	781.400	2212.100
GR	781.300	2214.500	781.300	2214.600	780.900	2223.000	781.300	2243.000	786.700	2262.000
GR	791.100	2277.000	797.700	2277.000	797.000	2384.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC. 20

DOWNSTREAM FACE OF M-96 BRIDGE (I)

ROSS SEC (E)

X1	109.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	2000.000	796.500	0.000	2083.000	797.900	0.000	2083.000	797.900	794.000
BT	2148.000	797.900	793.900	2148.100	797.900	783.900	2150.500	797.900	783.700	2150.600
BT	797.900	793.900	2212.000	797.800	793.800	2212.100	797.800	781.400	2214.500	797.800
BT	781.300	2214.600	797.800	793.800	2277.000	797.700	793.700	2277.000	797.700	0.000
BT	2384.000	797.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	109.100	49.000	2097.000	2291.000	30.500	30.500	30.500	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	2000.000	796.500	0.000	2097.000	797.900	0.000	2097.000	797.900	794.000
BT	2162.000	797.800	793.900	2162.100	797.800	783.100	2164.500	797.800	783.100	2164.600
BT	797.800	793.900	2226.000	797.700	793.800	2226.100	797.700	781.400	2228.500	797.700
BT	781.700	2228.600	797.700	793.800	2291.000	797.600	793.800	2291.000	797.600	0.000
BT	2384.000	797.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	796.500	2000.000	797.900	2097.000	791.000	2097.000	786.800	2116.000	785.500	2137.000
GR	783.000	2157.000	783.100	2162.000	783.100	2162.100	783.100	2164.500	783.100	2164.600
GR	783.200	2177.000	781.700	2197.000	780.000	2217.000	781.400	2226.000	781.400	2226.100
GR	781.700	2228.500	781.700	2228.600	782.900	2237.000	784.100	2257.000	787.100	2277.000
GR	790.900	2291.000	797.600	2291.000	797.000	2384.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	109.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1600.000	3656.000	0.000	0.000

SURVEYED VALLEY SECTION (J)

ROSS SEC (F)

X1	112.000	47.000	2010.000	2110.000	950.000	1170.000	1050.000	0.000	0.000	0.000
GR	806.700	392.000	806.000	498.000	807.200	594.000	806.500	688.000	804.500	778.000
GR	803.700	874.000	803.000	974.000	801.900	1072.000	795.300	1158.000	799.500	1200.000
GR	800.000	1294.000	798.500	1384.000	796.800	1476.000	795.800	1566.000	798.900	1600.000
GR	798.800	1620.000	796.400	1634.000	796.900	1724.000	790.600	1760.000	794.400	1790.000
GR	794.800	1834.000	792.100	1860.000	793.800	1926.000	793.900	2000.000	786.700	2010.000
GR	781.200	2030.000	779.400	2050.000	782.800	2076.000	786.600	2110.000	788.900	2114.000
GR	788.000	2246.000	788.500	2372.000	788.300	2482.000	787.900	2576.000	788.000	2672.000
GR	788.900	2772.000	788.200	2872.000	789.200	2972.000	788.700	3110.000	794.900	3124.000
GR	795.200	3188.000	789.300	3205.000	788.700	3331.000	789.900	3421.000	794.100	3491.000
GR	794.200	3559.000	798.500	3656.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC. 23

SURVEYED VALLEY SECTION (K)

ROSS SEC (G)

X1	113.000	39.000	2014.000	2260.000	1070.000	960.000	1010.000	0.000	0.000	0.000
GR	807.700	492.000	807.800	592.000	807.600	678.000	807.800	772.000	807.000	906.000
GR	807.800	1002.000	807.300	1032.000	807.400	1100.000	806.500	1204.000	803.300	1296.000
GR	804.600	1394.000	805.400	1488.000	805.300	1548.000	799.800	1576.000	805.600	1622.000
GR	804.800	1686.000	801.400	1710.000	798.600	1732.000	800.500	1760.000	800.800	1772.000
GR	798.500	1794.000	799.600	1810.000	799.100	1822.000	790.500	1850.000	788.400	1910.000
GR	789.400	2000.000	788.300	2014.000	784.800	2052.000	784.400	2084.000	783.800	2110.000
GR	783.200	2136.000	782.600	2166.000	783.200	2194.000	786.600	2222.000	784.800	2244.000
GR	788.300	2260.000	790.000	2264.000	790.000	3400.000	800.000	3500.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1732.000	3800.000	1740.000	3760.000

SURVEYED VALLEY SECTION (L)

ROSS SEC (H)

X1	114.000	47.000	2004.000	2130.000	1200.000	1165.000	1175.000	0.000	0.000	0.000
GR	808.800	878.000	805.200	1014.000	804.400	1110.000	806.600	1206.000	800.900	1284.000
GR	793.300	1380.000	794.800	1436.000	790.100	1452.000	790.000	1466.000	793.200	1528.000
GR	794.700	1620.000	791.600	1634.000	793.400	1650.000	792.100	1674.000	797.200	1720.000
GR	797.400	1732.000	794.600	1750.000	792.500	1814.000	791.700	1908.000	788.700	2000.000
GR	786.000	2004.000	781.900	2018.000	781.300	2040.000	782.900	2098.000	783.300	2116.000
GR	786.000	2130.000	788.200	2134.000	788.500	2196.000	788.500	2290.000	789.600	2398.000
GR	789.500	2422.000	786.200	2428.000	785.400	2446.000	781.900	2458.000	783.300	2476.000
GR	786.100	2500.000	788.500	2516.000	787.800	2598.000	788.500	2695.000	790.600	2790.000
GR	790.200	2900.000	790.100	3016.000	788.900	3172.000	790.200	3392.000	790.300	3594.000
GR	790.400	3700.000	800.000	3800.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (M)

UPSTREAM LIMIT OF AUGUSTA DETAILED STUDY

UPSTREAM LIMIT OF ROSS TOWNSHIP DETAILED STUDY (SEC I)

X1	115.000	40.000	2018.000	2146.000	2190.000	1380.000	2020.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	1.000	793.200	450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	799.000	300.000	788.400	520.000	790.600	616.000	791.500	718.000	791.500	718.000
GR	791.700	804.000	791.700	880.000	790.700	922.000	789.000	988.000	789.000	1092.000
GR	789.700	1194.000	789.100	1296.000	789.600	1498.000	788.800	1602.000	788.900	1702.000
GR	789.400	1806.000	789.600	1904.000	790.400	2000.000	786.400	2018.000	782.000	2052.000
GR	780.000	2082.000	780.700	2110.000	782.500	2130.000	786.300	2146.000	791.000	2148.000
GR	790.800	2326.000	789.900	2430.000	788.500	2572.000	788.200	2672.000	788.400	2772.000
GR	788.400	2862.000	788.300	2964.000	788.400	3090.000	789.100	3194.000	789.000	3290.000
GR	789.300	3382.000	789.200	3474.000	789.000	3570.000	789.000	3672.000	800.000	3750.000

EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

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  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**********************************************************

T1      VILLAGES OF GALESBURG AND AUGUSTA
T2      50 YEAR LEVEL
T3      KALAMAZOO RIVER

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
      -10.       3.         0.         0.  0.000000       0.00       0.0        0.   778.160      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     2.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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MOORE BUSINESS FORMS, INC. 23

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  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**************************************************

T1      VILLAGES OF GALESBURG AND AUGUSTA
T2      100 YEAR LEVEL
T3      KALAMAZOO RIVER

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.       4.        0.        0.  0.000000      0.00      0.0       0.   778.510     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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T1      VILLAGES OF GALESBURG AND AUGUSTA
T2      500 YEAR LEVEL
T3      KALAMAZOO RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10.      5.        0.        0.  0.000000      0.00      0.0       0.   779.000     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    15.000    0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC. 23

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HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
ERROR CORR - 01,02,03,04
MODIFICATION - 50,51,52,53,54
****

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

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
81.000	1.00	783.70	784.60	770.90	4500.00	777.46	0.00	778.36	9.23	7.62	590.17	1481.45
81.000	1.00	783.70	784.60	770.90	6070.00	778.16	0.00	779.35	10.53	8.76	692.57	1870.48
81.000	1.00	783.70	784.60	770.90	6750.00	778.51	0.00	779.78	10.54	9.06	745.18	2079.40
81.000	1.00	783.70	784.60	770.90	8420.00	779.00	0.00	780.64	12.43	10.26	820.41	2387.89
81.100	31.00	783.70	784.60	770.30	4500.00	778.02	0.00	778.50	3.75	5.61	802.44	2325.24
81.100	31.00	783.70	784.60	770.30	6070.00	778.88	0.00	779.54	4.35	6.47	937.64	2909.18
81.100	31.00	783.70	784.60	770.30	6750.00	779.26	0.00	779.97	4.50	6.76	998.34	3181.94
81.100	31.00	783.70	784.60	770.30	8420.00	780.01	0.00	780.89	5.06	7.52	1119.56	3744.62
81.200	1.00	0.00	0.00	770.30	4500.00	778.06	0.00	778.52	23.31	5.41	832.13	931.96
81.200	1.00	0.00	0.00	770.30	6070.00	778.95	0.00	779.55	26.44	6.23	974.20	1180.54
81.200	1.00	0.00	0.00	770.30	6750.00	779.33	0.00	779.99	27.08	6.50	1037.71	1297.09
81.200	1.00	0.00	0.00	770.30	8420.00	780.10	0.00	780.91	29.75	7.22	1166.94	1543.74
83.000	3375.00	0.00	0.00	772.00	4500.00	781.59	0.00	781.69	4.87	2.87	2923.88	2038.34
83.000	3375.00	0.00	0.00	772.00	6070.00	782.59	0.00	782.69	4.47	3.02	4187.79	2871.89
83.000	3375.00	0.00	0.00	772.00	6750.00	782.98	0.00	783.09	4.30	3.07	4742.28	3255.80
83.000	3375.00	0.00	0.00	772.00	8420.00	783.85	0.00	783.95	3.97	3.16	6088.81	4227.70
84.800	4500.00	0.00	0.00	772.40	4500.00	783.30	0.00	783.41	3.06	2.68	1807.08	2571.81
84.800	4500.00	0.00	0.00	772.40	6070.00	784.35	0.00	784.50	3.58	3.13	2616.32	3207.71
84.800	4500.00	0.00	0.00	772.40	6750.00	784.74	0.00	784.90	3.72	3.27	3028.90	3500.61
84.800	4500.00	0.00	0.00	772.40	8420.00	785.58	0.00	785.76	3.96	3.57	3943.14	4228.59
84.900	2400.00	0.00	0.00	772.70	4500.00	783.98	0.00	784.08	2.56	2.59	1739.20	2812.61
84.900	2400.00	0.00	0.00	772.70	6070.00	785.17	0.00	785.32	3.24	3.11	1948.74	3371.88
84.900	2400.00	0.00	0.00	772.70	6750.00	785.60	0.00	785.78	3.54	3.33	2025.41	3585.16
84.900	2400.00	0.00	0.00	772.70	8420.00	786.54	0.00	786.77	4.31	3.85	2189.83	4057.32
85.000	1.00	787.10	787.60	772.70	4500.00	783.97	0.00	784.08	.42	2.65	1699.04	6980.68
85.000	1.00	787.10	787.60	772.70	6070.00	785.16	0.00	785.32	.54	3.19	1903.73	8262.50
85.000	1.00	787.10	787.60	772.70	6750.00	785.60	0.00	785.78	.60	3.41	1978.63	8745.33
85.000	1.00	787.10	787.60	772.70	8420.00	786.54	0.00	786.78	.74	3.93	2140.29	9810.55

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
85.100	20.00	787.10	787.60	772.70	4500.00	783.98	0.00	784.09	.40	2.60	1733.65	7086.94
85.100	20.00	787.10	787.60	772.70	6070.00	785.17	0.00	785.32	.53	3.13	1938.28	8362.65
85.100	20.00	787.10	787.60	772.70	6750.00	785.61	0.00	785.78	.58	3.35	2013.15	8842.94
85.100	20.00	787.10	787.60	772.70	8420.00	786.55	0.00	786.78	.72	3.87	2174.75	9902.32
85.200	1.00	0.00	0.00	772.70	4500.00	783.99	0.00	784.09	2.38	2.54	1774.51	2914.70
85.200	1.00	0.00	0.00	772.70	6070.00	785.18	0.00	785.33	3.04	3.06	1984.16	3482.06
85.200	1.00	0.00	0.00	772.70	6750.00	785.62	0.00	785.79	3.33	3.27	2061.81	3700.87
85.200	1.00	0.00	0.00	772.70	8420.00	786.56	0.00	786.79	4.05	3.78	2227.77	4183.52
87.800	875.00	0.00	0.00	773.30	4500.00	784.27	0.00	784.39	5.02	2.97	2432.13	2009.06
87.800	875.00	0.00	0.00	773.30	6070.00	785.53	0.00	785.65	4.36	3.10	3433.70	2906.82
87.800	875.00	0.00	0.00	773.30	6750.00	786.00	0.00	786.13	4.21	3.16	3830.49	3290.88
87.800	875.00	0.00	0.00	773.30	8420.00	787.04	0.00	787.17	3.98	3.32	4738.23	4219.38
87.900	1500.00	0.00	0.00	775.30	4500.00	785.27	0.00	785.49	10.32	3.78	1190.88	1400.80
87.900	1500.00	0.00	0.00	775.30	6070.00	786.42	0.00	786.70	10.39	4.24	1432.65	1883.16
87.900	1500.00	0.00	0.00	775.30	6750.00	786.86	0.00	787.16	10.47	4.42	1525.84	2085.98
87.900	1500.00	0.00	0.00	775.30	8420.00	787.85	0.00	788.21	10.79	4.86	1732.84	2563.10
88.000	1.00	790.90	788.70	775.30	4500.00	785.26	0.00	785.49	1.59	3.90	1154.10	3563.47
88.000	1.00	790.90	788.70	775.30	6070.00	786.41	0.00	786.70	1.66	4.37	1388.72	4709.63
88.000	1.00	790.90	788.70	775.30	6750.00	786.85	0.00	787.17	1.70	4.57	1478.12	5176.07
88.000	1.00	790.90	788.70	775.30	8420.00	787.83	0.00	788.22	1.81	5.02	1678.84	6267.06
88.100	29.00	790.90	788.10	775.20	4500.00	785.35	0.00	785.52	.97	3.29	1367.15	4565.34
88.100	29.00	790.90	788.10	775.20	6070.00	786.51	0.00	786.73	1.09	3.79	1603.31	5808.47
88.100	29.00	790.90	788.10	775.20	6750.00	786.96	0.00	787.20	1.14	3.98	1694.43	6310.02
88.100	29.00	790.90	788.10	775.20	8420.00	787.95	0.00	788.25	1.27	4.44	1896.90	7463.52
88.200	1.00	0.00	0.00	775.20	4500.00	785.36	0.00	785.52	.73	3.18	1415.66	5268.68
88.200	1.00	0.00	0.00	775.20	6070.00	786.53	0.00	786.74	.79	3.66	1659.35	6816.67
88.200	1.00	0.00	0.00	775.20	6750.00	786.98	0.00	787.21	.82	3.84	1755.90	7469.43
88.200	1.00	0.00	0.00	775.20	8420.00	787.98	0.00	788.26	.88	4.28	1965.61	8960.29
88.300	800.00	0.00	0.00	777.10	4500.00	785.48	0.00	785.69	8.29	3.73	1440.21	1563.11
88.300	800.00	0.00	0.00	777.10	6070.00	786.66	0.00	786.89	7.78	4.03	2293.31	2176.28
88.300	800.00	0.00	0.00	777.10	6750.00	787.12	0.00	787.36	7.48	4.11	2734.93	2468.17
88.300	800.00	0.00	0.00	777.10	8420.00	788.20	0.00	788.43	6.55	4.18	4011.44	3290.41
90.000	6700.00	0.00	0.00	776.90	4500.00	788.28	0.00	788.35	2.31	2.41	4001.86	2963.96
90.000	6700.00	0.00	0.00	776.90	6070.00	789.37	0.00	789.45	2.23	2.56	6033.85	4061.25
90.000	6700.00	0.00	0.00	776.90	6750.00	789.78	0.00	789.85	2.20	2.61	6916.00	4548.50
90.000	6700.00	0.00	0.00	776.90	8420.00	790.64	0.00	790.71	2.05	2.66	8977.72	5878.75
91.000	7500.00	0.00	0.00	778.60	4500.00	789.87	0.00	789.93	1.93	2.18	5315.43	3242.41
91.000	7500.00	0.00	0.00	778.60	6070.00	790.87	0.00	790.91	1.72	2.21	7792.69	4628.80
91.000	7500.00	0.00	0.00	778.60	6750.00	791.24	0.00	791.29	1.66	2.23	8730.10	5234.56
91.000	7500.00	0.00	0.00	778.60	8420.00	792.02	0.00	792.06	1.61	2.30	10717.82	6642.05

MOORE BUSINESS FORMS, INC. 23

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
99.000	7150.00	0.00	0.00	780.10	4430.00	791.31	0.00	791.37	2.12	2.33	3605.54	3045.17
99.000	7150.00	0.00	0.00	780.10	6030.00	792.29	0.00	792.37	2.42	2.67	4460.97	3873.03
99.000	7150.00	0.00	0.00	780.10	6720.00	792.66	0.00	792.75	2.54	2.80	4792.68	4217.83
99.000	7150.00	0.00	0.00	780.10	8420.00	793.47	0.00	793.58	2.82	3.11	5515.97	5012.62
100.000	575.00	0.00	0.00	780.60	4430.00	791.43	0.00	791.53	2.86	2.71	2653.21	2618.67
100.000	575.00	0.00	0.00	780.60	6030.00	792.42	0.00	792.55	3.32	3.13	3322.34	3307.44
100.000	575.00	0.00	0.00	780.60	6720.00	792.80	0.00	792.94	3.50	3.29	3579.21	3590.68
100.000	575.00	0.00	0.00	780.60	8420.00	793.62	0.00	793.78	3.90	3.66	4169.75	4264.47
101.000	1345.00	0.00	0.00	781.10	4430.00	791.78	0.00	791.88	2.39	2.63	2456.97	2867.80
101.000	1345.00	0.00	0.00	781.10	6030.00	792.84	0.00	792.97	2.94	3.13	2927.27	3513.97
101.000	1345.00	0.00	0.00	781.10	6720.00	793.24	0.00	793.39	3.17	3.32	3111.91	3775.94
101.000	1345.00	0.00	0.00	781.10	8420.00	794.12	0.00	794.30	3.67	3.76	3574.46	4392.80
102.000	865.00	0.00	0.00	782.40	4430.00	792.01	0.00	792.09	2.37	2.40	3417.45	2880.10
102.000	865.00	0.00	0.00	782.40	6030.00	793.13	0.00	793.21	2.50	2.67	4501.42	3813.47
102.000	865.00	0.00	0.00	782.40	6720.00	793.55	0.00	793.64	2.53	2.76	5029.15	4227.54
102.000	865.00	0.00	0.00	782.40	8420.00	794.48	0.00	794.57	2.56	2.95	6282.94	5261.24
103.000	1020.00	0.00	0.00	782.20	4390.00	792.26	0.00	792.34	2.57	2.51	2893.61	2740.85
103.000	1020.00	0.00	0.00	782.20	6000.00	793.39	0.00	793.49	2.88	2.89	3597.96	3533.61
103.000	1020.00	0.00	0.00	782.20	6700.00	793.82	0.00	793.93	3.00	3.03	3917.57	3867.31
103.000	1020.00	0.00	0.00	782.20	8420.00	794.75	0.00	794.88	3.24	3.34	4734.59	4677.07
104.000	995.00	0.00	0.00	781.70	4390.00	792.53	0.00	792.67	3.81	3.19	2088.82	2248.32
104.000	995.00	0.00	0.00	781.70	6000.00	793.69	0.00	793.87	4.37	3.70	2589.49	2870.87
104.000	995.00	0.00	0.00	781.70	6700.00	794.12	0.00	794.32	4.60	3.90	2780.56	3125.00
104.000	995.00	0.00	0.00	781.70	8420.00	795.07	0.00	795.31	5.13	4.36	3202.51	3715.98
104.900	139.00	0.00	0.00	780.60	4390.00	792.56	0.00	792.77	6.80	3.68	1192.36	1683.86
104.900	139.00	0.00	0.00	780.60	6000.00	793.71	0.00	794.01	8.23	4.39	1365.67	2091.55
104.900	139.00	0.00	0.00	780.60	6700.00	794.14	0.00	794.48	8.85	4.68	1430.89	2252.77
104.900	139.00	0.00	0.00	780.60	8420.00	795.07	0.00	795.51	10.35	5.35	1572.51	2616.72
105.000	1.00	789.50	793.90	780.60	4390.00	792.56	0.00	792.78	.99	3.80	1155.60	4417.56
105.000	1.00	789.50	793.90	780.60	6000.00	793.70	0.00	794.02	1.25	4.54	1320.86	5375.86
105.000	1.00	789.50	793.90	780.60	6700.00	794.11	0.00	794.50	3.29	4.99	1342.14	3691.94
105.000	1.00	789.50	793.90	780.60	8420.00	794.99	0.00	795.60	5.20	6.27	1342.14	3691.94
105.100	33.00	798.30	793.30	780.00	4390.00	792.65	0.00	792.80	.58	3.13	1402.02	5780.85
105.100	33.00	798.30	793.30	780.00	6000.00	793.79	0.00	794.04	1.99	4.06	1477.97	4252.10
105.100	33.00	798.30	793.30	780.00	6700.00	794.21	0.00	794.53	2.48	4.53	1477.97	4252.10
105.100	33.00	798.30	793.30	780.00	8420.00	795.14	0.00	795.64	3.92	5.70	1477.97	4252.10
105.200	1.00	0.00	0.00	780.00	4390.00	792.67	0.00	792.81	3.62	3.02	1454.85	2307.40
105.200	1.00	0.00	0.00	780.00	6000.00	793.85	0.00	794.06	4.66	3.67	1635.65	2778.22
105.200	1.00	0.00	0.00	780.00	6700.00	794.32	0.00	794.55	5.08	3.93	1706.76	2971.37
105.200	1.00	0.00	0.00	780.00	8420.00	795.39	0.00	795.70	6.03	4.50	1869.55	3429.55

MOORE BUSINESS FORMS, INC. 23

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
108.000	219.00	0.00	0.00	782.90	4390.00	792.77	0.00	792.89	3.06	2.77	1867.95	2508.19
108.000	219.00	0.00	0.00	782.90	6000.00	794.01	0.00	794.16	3.58	3.27	2243.37	3169.96
108.000	219.00	0.00	0.00	782.90	6700.00	794.50	0.00	794.67	3.76	3.45	2407.36	3455.85
108.000	219.00	0.00	0.00	782.90	8420.00	795.63	0.00	795.84	4.08	3.85	2839.95	4168.19
108.900	79.00	0.00	0.00	780.90	4390.00	792.81	0.00	792.91	2.89	2.61	1679.48	2583.11
108.900	79.00	0.00	0.00	780.90	6000.00	794.04	0.00	794.19	3.51	3.13	1919.59	3201.08
108.900	79.00	0.00	0.00	780.90	6700.00	794.53	0.00	794.70	3.75	3.32	2015.27	3460.13
108.900	79.00	0.00	0.00	780.90	8420.00	795.66	0.00	795.88	4.26	3.77	2234.53	4079.82
109.000	1.00	796.50	794.00	780.90	4390.00	792.80	0.00	792.92	.50	2.69	1629.76	6225.45
109.000	1.00	796.50	794.00	780.90	6000.00	794.03	0.00	794.20	1.42	3.28	1826.78	5040.52
109.000	1.00	796.50	794.00	780.90	6700.00	794.51	0.00	794.72	1.77	3.67	1826.78	5040.52
109.000	1.00	796.50	794.00	780.90	8420.00	795.60	0.00	795.93	2.79	4.61	1826.78	5040.52
109.100	30.50	796.50	794.00	780.00	4390.00	792.80	0.00	792.92	.55	2.77	1583.57	5908.12
109.100	30.50	796.50	794.00	780.00	6000.00	794.03	0.00	794.21	1.54	3.36	1783.39	4829.52
109.100	30.50	796.50	794.00	780.00	6700.00	794.51	0.00	794.73	1.92	3.76	1783.39	4829.52
109.100	30.50	796.50	794.00	780.00	8420.00	795.60	0.00	795.95	3.04	4.72	1783.39	4829.52
109.200	1.00	0.00	0.00	780.00	4390.00	792.81	0.00	792.92	3.16	2.69	1634.47	2468.14
109.200	1.00	0.00	0.00	780.00	6000.00	794.05	0.00	794.21	3.79	3.20	1877.31	3083.36
109.200	1.00	0.00	0.00	780.00	6700.00	794.56	0.00	794.74	4.01	3.39	1976.07	3347.18
109.200	1.00	0.00	0.00	780.00	8420.00	795.76	0.00	795.99	4.44	3.81	2208.14	3996.33
112.000	1050.00	0.00	0.00	779.40	4390.00	793.12	0.00	793.14	1.13	1.86	6803.34	4135.53
112.000	1050.00	0.00	0.00	779.40	6000.00	794.43	0.00	794.45	1.07	1.96	8871.65	5803.46
112.000	1050.00	0.00	0.00	779.40	6700.00	794.96	0.00	794.99	1.04	1.99	9809.49	6584.81
112.000	1050.00	0.00	0.00	779.40	8420.00	796.22	0.00	796.24	.95	2.03	12134.25	8648.14
113.000	1010.00	0.00	0.00	782.60	4390.00	793.22	0.00	793.24	.85	1.44	6531.44	4768.38
113.000	1010.00	0.00	0.00	782.60	6000.00	794.52	0.00	794.54	.80	1.53	8615.29	6717.17
113.000	1010.00	0.00	0.00	782.60	6700.00	795.05	0.00	795.07	.78	1.56	9472.21	7603.49
113.000	1010.00	0.00	0.00	782.60	8420.00	796.30	0.00	796.32	.73	1.63	11494.20	9875.58
114.000	1175.00	0.00	0.00	781.30	4390.00	793.31	0.00	793.33	.73	1.53	8282.41	5140.15
114.000	1175.00	0.00	0.00	781.30	6000.00	794.61	0.00	794.63	.69	1.61	10836.25	7208.15
114.000	1175.00	0.00	0.00	781.30	6700.00	795.14	0.00	795.16	.67	1.64	11893.73	8155.13
114.000	1175.00	0.00	0.00	781.30	8420.00	796.38	0.00	796.40	.63	1.69	14389.29	10592.93
115.000	2020.00	0.00	0.00	780.00	4390.00	793.41	0.00	793.42	.36	1.11	13697.59	7328.33
115.000	2020.00	0.00	0.00	780.00	6000.00	794.70	0.00	794.71	.32	1.13	17932.61	10592.14
115.000	2020.00	0.00	0.00	780.00	6700.00	795.23	0.00	795.24	.31	1.13	19676.37	12084.71
115.000	2020.00	0.00	0.00	780.00	8420.00	796.47	0.00	796.47	.28	1.15	23799.29	15930.72

MOORE BUSINESS FORMS, INC 23

KALAMAZOO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
81.000	4500.00	777.46	0.00	0.00	0.00	147.57	1.00
81.000	6070.00	778.16	.70	0.00	0.00	152.96	1.00
81.000	6750.00	778.51	.35	0.00	0.00	155.65	1.00
81.000	8420.00	779.00	.49	0.00	0.00	159.42	1.00
81.100	4500.00	778.02	0.00	.56	0.00	156.87	31.00
81.100	6070.00	778.88	.87	.72	0.00	162.87	31.00
81.100	6750.00	779.26	.38	.75	0.00	165.49	31.00
81.100	8420.00	780.01	.74	1.01	0.00	170.60	31.00
81.200	4500.00	778.06	0.00	.05	0.00	157.19	1.00
81.200	6070.00	778.95	.89	.06	0.00	163.32	1.00
81.200	6750.00	779.33	.39	.07	0.00	165.99	1.00
81.200	8420.00	780.10	.77	.09	0.00	171.28	1.00
83.000	4500.00	781.59	0.00	3.53	0.00	1093.52	3375.00
83.000	6070.00	782.59	1.00	3.64	0.00	1361.58	3375.00
83.000	6750.00	782.98	.39	3.65	0.00	1484.32	3375.00
83.000	8420.00	783.85	.87	3.75	0.00	1582.28	3375.00
84.800	4500.00	783.30	0.00	1.71	0.00	272.31	4500.00
84.800	6070.00	784.35	1.05	1.76	1.05	1030.63	4500.00
84.800	6750.00	784.74	.39	1.76	1.44	1083.74	4500.00
84.800	8420.00	785.58	.84	1.73	2.28	1096.43	4500.00
84.900	4500.00	783.98	0.00	.68	0.00	176.00	2400.00
84.900	6070.00	785.17	1.19	.81	1.19	176.00	2400.00
84.900	6750.00	785.60	.44	.86	1.63	176.00	2400.00
84.900	8420.00	786.54	.94	.96	2.57	176.00	2400.00
85.000	4500.00	783.97	0.00	-.00	0.00	176.00	1.00
85.000	6070.00	785.16	1.19	-.00	1.19	176.00	1.00
85.000	6750.00	785.60	.44	-.00	1.62	176.00	1.00
85.000	8420.00	786.54	.94	-.01	2.56	176.00	1.00
85.100	4500.00	783.98	0.00	.01	0.00	176.00	20.00
85.100	6070.00	785.17	1.19	.01	1.19	176.00	20.00
85.100	6750.00	785.61	.44	.01	1.63	176.00	20.00
85.100	8420.00	786.55	.94	.01	2.57	176.00	20.00
85.200	4500.00	783.99	0.00	.01	0.00	176.00	1.00
85.200	6070.00	785.18	1.19	.01	1.19	176.00	1.00
85.200	6750.00	785.62	.44	.01	1.63	176.00	1.00
85.200	8420.00	786.56	.94	.01	2.58	176.00	1.00

MOORE BUSINESS FORMS, INC 23

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
87.800	4500.00	784.27	0.00	.28	0.00	761.85	875.00
87.800	6070.00	785.53	1.26	.35	1.26	826.42	875.00
87.800	6750.00	786.00	.47	.39	1.73	850.64	875.00
87.800	8420.00	787.04	1.03	.48	2.77	903.62	875.00
87.900	4500.00	785.27	0.00	.99	0.00	208.20	1500.00
87.900	6070.00	786.42	1.15	.89	1.15	210.00	1500.00
87.900	6750.00	786.86	.44	.86	1.60	210.00	1500.00
87.900	8420.00	787.85	.99	.81	2.58	210.00	1500.00
88.000	4500.00	785.26	0.00	-.01	0.00	208.21	1.00
88.000	6070.00	786.41	1.15	-.01	1.15	210.00	1.00
88.000	6750.00	786.85	.44	-.01	1.59	210.00	1.00
88.000	8420.00	787.83	.98	-.01	2.58	210.00	1.00
88.100	4500.00	785.35	0.00	.09	0.00	210.00	29.00
88.100	6070.00	786.51	1.16	.10	1.16	210.00	29.00
88.100	6750.00	786.96	.45	.10	1.61	210.00	29.00
88.100	8420.00	787.95	.99	.11	2.60	210.00	29.00
88.200	4500.00	785.36	0.00	.01	0.00	210.00	1.00
88.200	6070.00	786.53	1.16	.02	1.16	210.00	1.00
88.200	6750.00	786.98	.45	.02	1.61	210.00	1.00
88.200	8420.00	787.98	1.00	.03	2.61	210.00	1.00
88.300	4500.00	785.48	0.00	.11	0.00	550.73	800.00
88.300	6070.00	786.66	1.18	.13	1.18	890.70	800.00
88.300	6750.00	787.12	.46	.14	1.65	1023.24	800.00
88.300	8420.00	788.20	1.08	.23	2.73	1334.28	800.00
90.000	4500.00	788.28	0.00	2.80	0.00	1616.19	6700.00
90.000	6070.00	789.37	1.10	2.71	1.10	2083.44	6700.00
90.000	6750.00	789.78	.41	2.66	1.50	2256.37	6700.00
90.000	8420.00	790.64	.86	2.43	2.36	2459.90	6700.00
91.000	4500.00	789.87	0.00	1.60	0.00	2389.84	7500.00
91.000	6070.00	790.87	.99	1.49	.99	2515.03	7500.00
91.000	6750.00	791.24	.37	1.46	1.37	2533.35	7500.00
91.000	8420.00	792.02	.78	1.38	2.15	2571.77	7500.00
99.000	4430.00	791.31	0.00	1.43	0.00	866.48	7150.00
99.000	6030.00	792.29	.98	1.42	.98	881.40	7150.00
99.000	6720.00	792.66	.37	1.42	1.35	887.12	7150.00
99.000	8420.00	793.47	.81	1.45	2.16	902.37	7150.00
100.000	4430.00	791.43	0.00	.12	0.00	670.78	575.00
100.000	6030.00	792.42	1.00	.13	1.00	679.61	575.00
100.000	6720.00	792.80	.38	.14	1.37	694.85	575.00
100.000	8420.00	793.62	.82	.15	2.19	728.70	575.00

MOORE BUSINESS FORMS, INC 23

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
101.000	4430.00	791.78	0.00	.36	0.00	432.05	1345.00
101.000	6030.00	792.84	1.06	.42	1.06	456.28	1345.00
101.000	6720.00	793.24	.40	.44	1.46	471.52	1345.00
101.000	8420.00	794.12	.88	.50	2.33	666.60	1345.00
102.000	4430.00	792.01	0.00	.23	0.00	875.21	865.00
102.000	6030.00	793.13	1.11	.29	1.11	1168.38	865.00
102.000	6720.00	793.55	.42	.31	1.54	1296.08	865.00
102.000	8420.00	794.48	.93	.36	2.46	1375.05	865.00
103.000	4390.00	792.26	0.00	.25	0.00	558.57	1020.00
103.000	6000.00	793.39	1.13	.26	1.13	704.46	1020.00
103.000	6700.00	793.82	.43	.27	1.56	793.74	1020.00
103.000	8420.00	794.75	.93	.27	2.49	951.48	1020.00
104.000	4390.00	792.53	0.00	.27	0.00	427.80	995.00
104.000	6000.00	793.69	1.16	.29	1.16	436.68	995.00
104.000	6700.00	794.12	.44	.30	1.59	440.02	995.00
104.000	8420.00	795.07	.95	.32	2.55	447.30	995.00
104.900	4390.00	792.56	0.00	.03	0.00	152.00	139.00
104.900	6000.00	793.71	1.15	.02	1.15	152.00	139.00
104.900	6700.00	794.14	.43	.01	1.57	152.00	139.00
104.900	8420.00	795.07	.93	-.01	2.51	152.00	139.00
105.000	4390.00	792.56	0.00	-.01	0.00	152.00	1.00
105.000	6000.00	793.70	1.14	-.01	1.14	152.00	1.00
105.000	6700.00	794.11	.42	-.02	1.56	152.00	1.00
105.000	8420.00	794.99	.87	-.08	2.43	152.00	1.00
105.100	4390.00	792.65	0.00	.10	0.00	152.00	33.00
105.100	6000.00	793.79	1.14	.09	1.14	152.00	33.00
105.100	6700.00	794.21	.43	.10	1.56	152.00	33.00
105.100	8420.00	795.14	.93	.15	2.49	152.00	33.00
105.200	4390.00	792.67	0.00	.01	0.00	152.00	1.00
105.200	6000.00	793.85	1.18	.06	1.18	152.00	1.00
105.200	6700.00	794.32	.47	.10	1.65	152.00	1.00
105.200	8420.00	795.39	1.07	.25	2.72	152.00	1.00
108.000	4390.00	792.77	0.00	.11	0.00	293.10	219.00
108.000	6000.00	794.01	1.23	.16	1.23	316.95	219.00
108.000	6700.00	794.50	.49	.18	1.72	351.34	219.00
108.000	8420.00	795.63	1.13	.24	2.85	404.10	219.00
108.900	4390.00	792.81	0.00	.03	0.00	194.00	79.00
108.900	6000.00	794.04	1.23	.03	1.23	194.00	79.00
108.900	6700.00	794.53	.49	.03	1.72	194.00	79.00
108.900	8420.00	795.66	1.13	.03	2.85	194.00	79.00

MOORE BUSINESS FORMS, INC 23

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
109.000	4390.00	792.80	0.00	-.00	0.00	194.00	1.00
109.000	6000.00	794.03	1.23	-.01	1.23	194.00	1.00
109.000	6700.00	794.51	.48	-.02	1.71	194.00	1.00
109.000	8420.00	795.60	1.09	-.05	2.80	194.00	1.00
109.100	4390.00	792.80	0.00	-.00	0.00	194.00	30.50
109.100	6000.00	794.03	1.23	.00	1.23	194.00	30.50
109.100	6700.00	794.51	.48	.00	1.71	194.00	30.50
109.100	8420.00	795.60	1.09	.00	2.80	194.00	30.50
109.200	4390.00	792.81	0.00	.01	0.00	194.00	1.00
109.200	6000.00	794.05	1.24	.02	1.24	194.00	1.00
109.200	6700.00	794.56	.51	.05	1.75	194.00	1.00
109.200	8420.00	795.76	1.20	.16	2.95	194.00	1.00
112.000	4390.00	793.12	0.00	.30	0.00	1482.99	1050.00
112.000	6000.00	794.43	1.31	.37	1.31	1713.92	1050.00
112.000	6700.00	794.96	.54	.40	1.84	1789.43	1050.00
112.000	8420.00	796.22	1.25	.46	3.10	1876.54	1050.00
113.000	4390.00	793.22	0.00	.10	0.00	1591.01	1010.00
113.000	6000.00	794.52	1.30	.09	1.30	1608.28	1010.00
113.000	6700.00	795.05	.53	.09	1.83	1615.32	1010.00
113.000	8420.00	796.30	1.25	.08	3.08	1631.83	1010.00
114.000	4390.00	793.31	0.00	.10	0.00	1941.54	1175.00
114.000	6000.00	794.61	1.30	.09	1.30	1994.10	1175.00
114.000	6700.00	795.14	.53	.09	1.83	2003.01	1175.00
114.000	8420.00	796.38	1.24	.09	3.07	2023.89	1175.00
115.000	4390.00	793.41	0.00	.10	0.00	3258.80	2020.00
115.000	6000.00	794.70	1.29	.09	1.29	3301.35	2020.00
115.000	6700.00	795.23	.53	.09	1.82	3318.71	2020.00
115.000	8420.00	796.47	1.23	.08	3.05	3359.39	2020.00

MOORE BUSINESS FORMS, INC 23

SUMMARY OF ERRORS

MOORE BUSINESS FORMS, INC 23

FLOOD INSURANCE ZONE DATA FOR KALAMAZOO RIVER

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND 10	2	0.2
81.000	0.	-1.05	-.35	.49
81.100	31.	-1.25	-.38	.74
81.200	32.	-1.27	-.39	.77
83.000	3407.	-1.39	-.39	.87
84.800	7907.	-1.44	-.39	.84
84.900	10307.	-1.63	-.44	.94
85.000	10308.	-1.62	-.44	.94
85.100	10328.	-1.63	-.44	.94
85.200	10329.	-1.63	-.44	.94
87.800	11204.	-1.73	-.47	1.03
87.900	12704.	-1.60	-.44	.99
88.000	12705.	-1.59	-.44	.98
88.100	12734.	-1.61	-.45	.99
88.200	12735.	-1.61	-.45	1.00
88.300	13535.	-1.65	-.46	1.08
90.000	20235.	-1.50	-.41	.86
91.000	27735.	-1.37	-.37	.78
99.000	34885.	-1.35	-.37	.81
100.000	35460.	-1.37	-.38	.82
101.000	36805.	-1.46	-.40	.88
102.000	37670.	-1.54	-.42	.93
103.000	38690.	-1.56	-.43	.93
104.000	39685.	-1.59	-.44	.95
104.900	39824.	-1.57	-.43	.93
105.000	39825.	-1.56	-.42	.87
105.100	39858.	-1.56	-.43	.93
105.200	39859.	-1.65	-.47	1.07
108.000	40078.	-1.72	-.49	1.13
108.900	40157.	-1.72	-.49	1.13
109.000	40158.	-1.71	-.48	1.09
109.100	40189.	-1.71	-.48	1.09
109.200	40190.	-1.75	-.51	1.20
112.000	41240.	-1.84	-.54	1.25
113.000	42250.	-1.83	-.53	1.25
114.000	43425.	-1.83	-.53	1.24
115.000	45445.	-1.82	-.53	1.23

MOORE BUSINESS FORMS, INC. 23

WEIGHTED AVG FOR REACH -1.51 -.42 .92

FHF FOR THE REACH = 015 WITH 100.0 PERCENT OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 3

MOORE BUSINESS FORMS, INC 23

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03.04
  MODIFICATION -  50,51,52,53,54
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0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MOORE BUSINESS FORMS, INC 23

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGES OF GALESBURG AND AUGUSTA ~~CHARLESTON AND ROSS TOWNSHIPS~~

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: 100 yr run

00BREAK00

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*****************************************************          ****************************************
*  WATER SURFACE PROFILES                           *          *  U.S. ARMY CORPS OF ENGINEERS        *
*  VERSION OF NOVEMBER 1976                         *          *  THE HYDROLOGIC ENGINEERING CENTER   *
*  UPDATED APRIL 1980                               *          *  609 SECOND STREET, SUITE D          *
*                                                   *          *  DAVIS, CALIFORNIA 95616             *
*  RUN DATE  80/09/17. TIME  14.51.50.              *          *  (916) 440-2105 (FTS) 448-2105       *
*****************************************************          ****************************************
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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
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*GENERAL MESSAGE

*HEC-2 MESSAGE

** HEC-2 MESSAGE **

MAY 13 -- THE STANDARD VERSION OF HEC-2 HAS BEEN UPDATE TO INCLUDE MODIFICATION 54 AND ERROR CORRECTION 04. DOCUMENTATION DESCRIBING THESE CHANGE WILL BE FURNISHED TO PROGRAM USERS IN JUNE. PLEASE CALL AL MONTALVO OR RICHARD HAYES AT (FTS) 448-2105 IF YOU HAVE QUESTIONS REGARDING THESE CHANGES.

**** SUMMARY OF MODIFICATION 54 ****

1. HEC-2 OUTPUT HAS BEEN MADE MORE READABLE BY THE ADDITION OF A PAGING ROUTINE TO CONTROL PRINTING AND PAGING. THE ROUTINE ALSO PROVIDES A PAGE NUMBER AND DATE AT THE TOP OF EACH PAGE OF OUTPUT. THIS ENHANCEMENT WAS REQUESTED BY THE FORT WORTH DISTRICT.

2. THE PROGRAM WILL NOW AUTOMATICALLY CALCULATE FLOOD HAZARD FACTORS FOR STREAMS WHICH REQUIRE MULTIPLE FIA ZONES.

MOORE BUSINESS FORMS, INC. 23

3. THE CHANNEL IMPROVEMENT (CHIMP) ROUTINE HAS BEEN ENHANCED TO PROVIDE THE CAPABILITY TO MODEL PILOT CHANNELS, TO FILL THE OLD CHANNEL AREA PRIOR TO EXCAVATION, AND TO CHANGE THE CHANNEL REACH LENGTH.

MOORE BUSINESS FORMS, INC. 23

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**********************************************************

C
T1      VILLAGE OF GALESBURG AND AUGUSTA
T2       100 YEAR FLOOD
T3      KALAMAZOO RIVER AT GALESBURG

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       4.        0.        0.  0.000000      0.00      0.0       0.   778.510     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    110.000   200.000    38.000     1.000    53.000    21.000    22.000    54.000     4.000    39.000
NC      .100      .100      .014      .300      .500     0.000     0.000     0.000     0.000     0.000
QT     5.000 4500.000 6070.000 6750.000 8420.000 6750.000     0.000     0.000     0.000     0.000
ET     0.000     0.000     0.000     0.000     0.000     1.410     0.000     0.000     0.000     0.000

DOWNSTREAM FACE OF 35TH STREET BRIDGE  (A)
DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

X1    81.000    50.000  2000.000  2178.000     1.000     1.000     1.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
BT    14.000  1808.000   783.700     0.000  2000.000   785.700     0.000  2000.000   785.700   782.400
BT  2058.000   786.400   783.100  2058.100   786.400   775.000  2060.000   786.400   774.700  2060.100
BT   786.400   783.100  2118.000   787.200   783.900  2118.100   787.200   771.600  2120.000   787.200
BT   771.800  2120.100   787.200   783.900  2178.000   787.900   784.600  2178.000   787.900     0.000
BT  2279.000   788.200     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   789.200   370.000   787.800   502.000   786.800   604.000   784.800   786.000   784.200   889.000
GR   784.000   986.000   783.800  1088.000   783.400  1188.000   783.500  1290.000   783.500  1392.000
GR   783.500  1494.000   783.600  1596.000   783.600  1704.000   783.700  1808.000   784.100  1902.000
GR   785.700  2000.000   780.300  2000.000   774.500  2023.000   774.600  2039.000   775.600  2054.000
GR   775.000  2058.000   775.000  2058.100   774.700  2060.000   774.700  2060.100   772.200  2077.000
GR   770.900  2109.000   771.600  2118.000   771.600  2118.100   771.800  2120.000   771.800  2120.100
GR   772.300  2126.000   772.000  2145.000   776.700  2156.000   782.600  2178.000   787.900  2178.000
GR   788.200  2279.000   789.600  2379.000   791.100  2481.000   791.900  2581.000   793.100  2685.000
GR   793.700  2789.000   794.000  2885.000   794.500  2993.000   794.600  3095.000   794.700  3195.000
GR   795.100  3295.000   795.200  3395.000   795.300  3491.000   795.500  3575.000   795.800  3691.000
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MOORE BUSINESS FORMS, INC. 23

X1	81.100	50.000	2000.000	2178.000	31.000	31.000	31.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1808.000	783.700	0.000	2000.000	785.700	0.000	2000.000	785.700	782.400
BT	2058.000	786.400	783.100	2058.100	786.400	773.200	2060.000	786.400	773.000	2060.100
BT	786.400	783.100	2118.000	787.200	783.900	2118.100	787.200	771.400	2120.000	787.200
BT	771.400	2120.100	787.200	783.900	2178.000	787.900	784.600	2178.000	787.900	0.000
BT	2279.000	788.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	789.200	370.000	787.800	502.000	786.800	604.000	784.800	786.000	784.200	889.000
GR	784.000	986.000	783.800	1088.000	783.400	1188.000	783.500	1290.000	783.500	1392.000
GR	783.500	1494.000	783.600	1596.000	783.600	1704.000	783.700	1808.000	784.100	1902.000
GR	785.700	2000.000	780.300	2000.000	774.700	2023.000	774.300	2039.000	773.700	2052.000
GR	773.200	2058.000	773.200	2058.100	773.000	2060.000	773.000	2060.100	771.500	2076.000
GR	770.700	2088.000	771.400	2118.000	771.400	2118.100	771.400	2120.000	771.400	2120.100
GR	770.300	2130.000	771.100	2146.000	776.500	2162.000	782.200	2178.000	787.900	2178.000
GR	788.200	2279.000	789.600	2379.000	791.100	2481.000	791.900	2581.000	793.100	2685.000
GR	793.700	2789.000	794.000	2885.000	794.500	2993.000	794.600	3095.000	794.700	3195.000
GR	795.100	3295.000	795.200	3393.000	795.300	3491.000	795.500	3575.000	795.800	3691.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	81.200	0.000	0.000	178.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	785.700	787.900	0.000

SURVEYED VALLEY SECTION (B)

X1	83.000	44.000	3082.000	3269.000	3350.000	3100.000	3375.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	793.600	1718.000	792.500	1788.000	796.000	1896.000	795.200	2000.000	793.200	2132.000
GR	792.500	2228.000	792.600	2324.000	792.600	2420.000	791.700	2514.000	791.100	2634.000
GR	790.400	2728.000	790.200	2822.000	790.300	2908.000	789.800	2972.000	787.500	3066.000
GR	780.800	3082.000	778.400	3093.000	775.100	3118.000	773.500	3143.000	772.000	3168.000
GR	773.700	3193.000	774.400	3224.000	777.900	3266.000	779.800	3269.000	779.400	3316.000
GR	778.300	3316.000	775.200	3338.000	776.800	3354.000	779.600	3362.000	779.900	3480.000
GR	779.200	3574.000	780.200	3708.000	778.800	3806.000	778.900	3900.000	781.600	3988.000
GR	781.700	4074.000	783.600	4218.000	782.000	4326.000	780.800	4422.000	780.400	4498.000
GR	782.800	4592.000	783.000	4654.000	789.300	4676.000	790.100	4774.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1170.000	3594.000	0.000	0.000

SURVEYED VALLEY SECTION (C)

CHARLESTON TOWNSHIP DOWNSTREAM STUDY LIMIT (SEC A)

X1	84.800	39.000	2000.000	2195.000	4525.000	4463.000	4500.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	790.600	864.000	789.000	1160.000	788.100	1170.000	784.600	1200.000	783.600	1400.000
GR	783.800	1600.000	783.400	1800.000	783.500	2000.000	780.800	2011.000	774.500	2034.000
GR	773.700	2051.000	773.900	2086.000	772.400	2124.000	772.900	2142.000	774.900	2176.000
GR	775.700	2186.000	781.200	2195.000	781.000	2224.000	781.300	2260.000	787.100	2298.000

MOORE BUSINESS FORMS, INC. 23

GR	787.800	2402.000	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000
GR	790.400	2828.000	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000
GR	789.800	3312.000	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	84.900	43.000	2000.000	2176.000	2400.000	2400.000	2400.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	788.150	788.250	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	786.300	864.000	783.700	1160.000	788.100	1170.000	787.000	1300.000	786.800	1402.000
GR	786.700	1502.000	786.700	1603.000	787.000	1702.000	787.200	1800.000	787.200	1898.000
GR	788.800	2000.000	777.800	2000.000	774.500	2034.000	773.700	2051.000	773.900	2086.000
GR	773.900	2086.100	773.800	2090.000	773.800	2090.100	772.700	2124.000	772.900	2142.000
GR	774.900	2176.000	788.900	2176.000	787.100	2260.000	787.100	2298.000	787.800	2402.000
GR	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000	790.400	2828.000
GR	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000	789.800	3312.000
GR	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF CONDEMNED BRIDGE (D)

CHARLESTON SEC B

X1	85.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1898.000	787.200	0.000	2000.000	788.800	0.000	2000.000	788.800	787.500
BT	2086.000	788.800	787.500	2086.100	788.800	773.900	2090.000	788.800	773.800	2090.100
BT	788.800	787.500	2176.000	788.900	787.600	2176.000	788.900	0.000	2260.000	787.100
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	85.100	44.000	2000.000	2176.000	20.000	20.000	20.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1898.000	787.200	0.000	2000.000	788.800	0.000	2000.000	788.800	787.500
BT	2086.000	788.800	787.500	2086.100	788.800	773.900	2090.000	788.800	773.800	2090.100
BT	788.800	787.500	2176.000	788.900	787.600	2176.000	788.900	0.000	2260.000	787.100
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	792.500	396.000	791.800	496.000	791.400	610.000	792.000	684.000	790.400	780.000
GR	786.300	864.000	783.700	1160.000	788.100	1170.000	787.000	1300.000	786.900	1402.000
GR	786.900	1502.000	786.900	1603.000	787.000	1702.000	787.200	1800.000	787.200	1898.000
GR	788.800	2000.000	777.900	2000.000	775.200	2016.000	774.700	2034.000	773.200	2051.000
GR	773.800	2086.000	773.800	2086.100	772.900	2090.000	772.900	2090.100	772.700	2124.000
GR	772.800	2142.000	775.700	2176.000	788.900	2176.000	787.100	2260.000	787.100	2298.000
GR	787.800	2402.000	789.000	2454.000	789.000	2558.000	788.600	2656.000	789.300	2732.000
GR	790.400	2828.000	789.800	2912.000	788.800	3016.000	789.600	3116.000	790.300	3220.000
GR	789.800	3312.000	791.000	3402.000	790.900	3502.000	791.300	3594.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1170.000	3594.000	0.000	0.000

MOORE BUSINESS FORMS, INC. 23

X1	85.200	0.000	0.000	176.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	788.800	787.500	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1800.000	2788.000	1835.000	2700.000

SURVEYED VALLEY SECTION (E)

CHARLESTON SEC C

X1	87.800	38.000	2000.000	2190.000	870.000	880.000	875.000	0.000	0.000	0.000
GR	799.000	600.000	792.800	800.000	789.800	1000.000	786.800	1200.000	785.500	1400.000
GR	783.400	1600.000	788.100	1800.000	783.200	2000.000	781.800	2000.000	781.600	2002.000
GR	780.900	2017.000	779.400	2029.000	778.200	2057.000	778.100	2060.000	777.700	2074.000
GR	776.100	2089.000	773.300	2104.000	773.600	2119.000	775.000	2134.000	776.500	2149.000
GR	776.300	2164.000	780.500	2184.000	783.400	2190.000	782.100	2289.000	781.500	2425.000
GR	782.000	2554.000	782.400	2654.000	783.100	2706.000	791.000	2788.000	786.400	2890.000
GR	786.700	2976.000	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000
GR	787.700	3456.000	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	1.410	478.000	2496.000	0.000	0.000

X1	87.900	52.000	2000.000	2210.000	1480.000	1520.000	1500.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	790.150	790.150	0.000
GR	802.300	478.000	799.400	596.000	797.800	672.000	795.400	771.000	793.200	870.000
GR	791.400	972.000	790.200	1072.000	789.500	1176.000	788.800	1278.000	789.000	1380.000
GR	789.000	1482.000	788.900	1582.000	789.600	1698.000	790.200	1800.000	790.900	1904.000
GR	791.600	2000.000	783.300	2000.000	783.400	2002.000	782.500	2017.000	781.000	2029.000
GR	779.800	2057.500	779.800	2057.600	779.700	2060.500	779.700	2060.600	779.300	2074.000
GR	777.700	2089.000	775.300	2104.000	775.600	2119.000	777.000	2134.000	778.500	2149.000
GR	778.300	2152.500	778.300	2152.600	778.200	2155.500	778.200	2155.600	777.900	2164.000
GR	782.100	2184.000	785.500	2210.000	791.600	2210.000	791.300	2310.000	790.900	2394.000
GR	789.000	2496.000	788.200	2596.000	785.600	2788.000	786.400	2890.000	786.700	2976.000
GR	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000	787.700	3456.000
GR	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF MICHIGAN STREET BRIDGE (F)

CHARLESTON SEC D

X1	88.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1904.000	790.900	0.000	2000.000	791.600	0.000	2000.000	791.600	788.700
BT	2057.500	791.600	788.700	2057.600	791.600	779.800	2060.500	791.600	779.700	2060.600
BT	791.600	788.700	2152.500	791.600	788.600	2152.600	791.600	778.300	2155.500	791.600
BT	778.200	2155.600	791.600	788.600	2210.000	791.600	788.600	2210.000	791.600	0.000
BT	2310.000	791.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC. 23

X1	88.100	52.000	2000.000	2210.000	29.000	29.000	29.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	1904.000	790.900	0.000	2000.000	791.600	0.000	2000.000	791.600	788.100
BT	2057.500	791.600	788.100	2057.600	791.600	776.900	2060.500	791.600	776.900	2060.600
BT	791.600	788.100	2152.500	791.600	788.100	2152.600	791.600	778.000	2155.500	791.600
BT	778.000	2155.600	791.600	788.100	2210.000	791.600	788.100	2210.000	791.600	0.000
BT	2310.000	791.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	802.300	478.000	799.400	596.000	797.800	672.000	795.400	771.000	793.200	870.000
GR	791.400	972.000	790.200	1072.000	789.500	1176.000	788.800	1278.000	789.000	1380.000
GR	789.000	1482.000	788.900	1582.000	789.600	1698.000	790.200	1800.000	790.900	1904.000
GR	791.600	2000.000	782.800	2000.000	781.200	2016.000	780.100	2036.000	776.900	2056.000
GR	776.900	2057.500	776.900	2057.600	776.900	2060.500	776.900	2060.600	777.000	2076.000
GR	775.400	2098.000	775.200	2113.000	779.900	2131.000	778.000	2148.000	778.000	2152.500
GR	778.000	2152.600	778.000	2155.500	778.000	2155.600	777.900	2171.000	780.800	2191.000
GR	781.400	2204.000	784.300	2210.000	791.600	2210.000	791.300	2310.000	790.900	2394.000
GR	787.000	2496.000	788.200	2596.000	785.600	2788.000	786.400	2890.000	786.700	2976.000
GR	786.600	3090.000	785.900	3188.000	788.400	3252.000	787.400	3350.000	787.700	3456.000
GR	788.300	3556.000	790.900	3642.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	88.200	0.000	0.000	210.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	791.600	791.600	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (G)

UPSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

CHARLESTON APPROXIMATE STUDY DOWNSTREAM LIMIT (SEC E)

X1	88.300	13.000	2000.000	2180.000	800.000	800.000	800.000	0.000	0.000	0.000
GR	800.000	1000.000	790.000	1200.000	783.800	2000.000	781.400	2016.000	780.300	2036.000
GR	777.100	2056.000	777.200	2076.000	778.200	2152.000	781.000	2176.000	784.500	2180.000
GR	790.000	3050.000	790.000	3600.000	797.000	5000.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

FABRICATED VALLEY SECTION

X1	90.000	14.000	2000.000	2172.000	6700.000	6700.000	6700.000	0.000	0.000	0.000
GR	800.000	200.000	790.000	300.000	785.000	2000.000	783.900	2000.000	782.000	2026.000
GR	777.000	2050.000	776.900	2080.000	777.100	2102.000	777.500	2126.000	780.600	2150.000
GR	784.000	2164.000	784.400	2172.000	790.000	2650.000	800.000	4250.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1300.000	4200.000	0.000	0.000

FABRICATED VALLEY SECTION

X1	91.000	15.000	2000.000	2172.000	7500.000	7500.000	7500.000	0.000	0.000	0.000
GR	800.000	1300.000	790.000	1700.000	787.100	2000.000	783.700	2026.000	778.600	2050.000
GR	779.000	2126.000	782.200	2150.000	785.700	2164.000	786.000	2172.000	787.000	2500.000
GR	790.000	4172.000	793.000	4200.000	790.000	4275.000	790.000	4500.000	800.000	4600.000
QT	5.000	4430.000	6030.000	6720.000	8420.000	6720.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1716.000	2710.000	1805.000	2700.000

CHARLESTON APPROXIMATE STUDY UPSTREAM LIMIT (SEC F)

DOWNSTREAM LIMIT OF AUGUSTA DETAILED STUDY

SURVEYED VALLEY SECTION (A)

X1	99.000	40.000	2010.000	2172.000	7150.000	7150.000	7150.000	0.000	0.000	0.000
GR	811.100	1004.000	808.300	1044.000	805.300	1096.000	801.300	1190.000	798.400	1288.000
GR	794.000	1382.000	795.800	1496.000	796.000	1625.000	796.700	1708.000	796.900	1716.000
GR	793.300	1806.000	788.100	1848.000	788.900	1928.000	788.800	2000.000	787.100	2010.000
GR	785.200	2026.000	780.200	2050.000	780.100	2080.000	780.300	2102.000	780.600	2126.000
GR	783.700	2150.000	787.200	2164.000	787.500	2172.000	785.800	2262.000	789.400	2288.000
GR	789.400	2380.000	788.300	2466.000	787.400	2558.000	787.600	2662.000	794.300	2710.000
GR	793.000	2740.000	789.400	2758.000	787.200	2900.000	787.200	2982.000	787.200	3060.000
GR	787.400	3144.000	789.200	3316.000	789.200	3508.000	791.500	3608.000	791.900	3700.000
ET	0.000	7.100	7.100	7.100	7.100	1.410	1898.000	2704.000	0.000	0.000

SURVEYED VALLEY SECTION (B)

CHARLESTON SEC G

X1	100.000	42.000	2003.000	2162.000	560.000	590.000	575.000	0.000	0.000	0.000
GR	805.200	698.000	805.400	796.000	804.300	852.000	800.900	936.000	797.400	1020.000
GR	795.200	1102.000	801.400	1278.000	801.800	1363.000	797.500	1450.000	790.200	1608.000
GR	794.600	1760.000	795.100	1898.000	792.400	1982.000	786.900	2000.000	786.300	2003.000
GR	780.600	2046.000	781.300	2084.000	782.100	2112.000	782.800	2140.000	785.200	2162.000
GR	786.900	2165.000	789.800	2200.000	788.000	2298.000	789.300	2372.000	789.500	2492.000
GR	789.500	2582.000	788.100	2646.000	792.100	2658.000	795.200	2688.000	795.500	2704.000
GR	793.800	2720.000	789.200	2756.000	791.000	2890.000	797.300	2986.000	802.300	3066.000
GR	800.400	3160.000	800.400	3160.000	800.200	3250.000	799.600	3342.000	799.700	3434.000
GR	801.200	3528.000	800.600	3678.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1606.000	2346.000	0.000	0.000

SURVEYED VALLEY SECTION (C)

CHARLESTON SEC H

MOORE BUSINESS FORMS, INC 23

X1	101.000	44.000	2006.000	2156.000	1360.000	1330.000	1345.000	0.000	0.000	0.000
GR	799.500	498.000	799.200	604.000	797.900	694.000	797.400	750.000	798.900	836.000
GR	800.700	922.000	800.400	952.000	798.300	1010.000	796.800	1102.000	796.600	1162.000
GR	793.300	1276.000	793.300	1364.000	793.800	1446.000	793.900	1524.000	794.600	1606.000
GR	793.800	1686.000	793.500	1712.000	789.500	1790.000	786.400	1858.000	788.700	1930.000
GR	787.400	2000.000	785.400	2006.000	781.200	2024.000	781.100	2064.000	781.300	2104.000
GR	781.700	2128.000	785.400	2156.000	793.100	2182.000	794.000	2224.000	794.000	2320.000
GR	795.700	2334.000	796.000	2346.000	793.100	2388.000	794.500	2478.000	798.100	2568.000
GR	799.600	2654.000	799.900	2754.000	800.700	2874.000	800.800	2980.000	800.200	3068.000
GR	801.000	3234.000	800.600	3334.000	806.800	3418.000	808.700	3474.000	0.000	0.000

SURVEYED VALLEY SECTION (D)

CHARLESTON SEC I

X1	102.000	45.000	2008.000	2176.000	820.000	1015.000	865.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	797.800	448.000	799.200	562.000	799.300	658.000	797.800	796.000	794.100	944.000
GR	793.300	1034.000	793.200	1126.000	792.300	1212.000	793.000	1294.000	792.700	1406.000
GR	789.500	1494.000	788.900	1566.000	790.800	1648.000	790.100	1744.000	788.700	1804.000
GR	787.600	1900.000	791.600	2000.000	785.600	2008.000	782.400	2048.000	782.600	2070.000
GR	782.500	2100.000	782.600	2116.000	783.800	2140.000	785.400	2176.000	787.600	2179.000
GR	788.100	2256.000	785.800	2276.000	785.800	2290.000	795.800	2306.000	797.000	2334.000
GR	797.200	2350.000	796.800	2386.000	799.800	2488.000	801.200	2564.000	801.600	2662.000
GR	801.700	2764.000	802.300	2890.000	801.900	2996.000	801.800	3094.000	801.000	3222.000
GR	801.900	3320.000	802.600	3422.000	803.600	3576.000	805.000	3640.000	806.800	3740.000
QT	5.000	4390.000	6000.000	6700.000	8420.000	6700.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (E)

CHARLESTON TOWNSHIP UPSTREAM STUDY LIMIT (SEC J)

ROSS TOWNSHIP DOWNSHIP STUDY LIMIT (SEC A)

X1	103.000	47.000	2005.000	2166.000	1020.000	1150.000	1020.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	806.100	468.000	807.800	516.000	806.500	564.000	800.500	604.000	799.000	716.000
GR	798.500	808.000	799.200	902.000	800.700	1002.000	800.600	1124.000	796.800	1218.000
GR	795.600	1312.000	794.800	1406.000	794.800	1466.000	794.200	1558.000	793.700	1650.000
GR	793.300	1736.000	792.300	1858.000	787.800	1886.000	787.000	1924.000	788.200	2000.000
GR	787.500	2004.000	784.700	2005.000	784.400	2030.000	783.400	2074.000	782.600	2100.000
GR	782.200	2136.000	786.300	2166.000	788.400	2172.000	788.900	2282.000	788.500	2378.000
GR	790.200	2410.000	796.300	2430.000	798.000	2440.000	798.400	2456.000	796.600	2502.000
GR	796.800	2604.000	797.200	2710.000	797.000	2710.000	797.000	2810.000	796.200	2936.000
GR	796.200	3037.000	795.900	3118.000	796.000	3220.000	796.200	3318.000	796.600	3420.000
GR	796.900	3518.000	797.800	3682.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	900.000	2313.000	1825.000	2270.000

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC 23

SURVEYED VALLEY SECTION (F)

ROSS SEC (B)

X1	104.000	45.000	2014.000	2144.000	1060.000	920.000	995.000	0.000	0.000	0.000
GR	808.000	900.000	807.300	980.000	806.700	1030.000	806.000	1122.000	804.500	1250.000
GR	804.800	1340.000	805.800	1430.000	806.300	1452.000	798.000	1550.000	802.500	1610.000
GR	797.600	1700.000	799.700	1800.000	790.400	1848.000	789.300	2000.000	788.700	2012.000
GR	786.200	2014.000	782.700	2038.000	783.000	2068.000	781.700	2098.000	783.400	2126.000
GR	786.400	2144.000	788.300	2148.000	789.900	2178.000	788.200	2254.000	797.000	2276.000
GR	798.300	2292.000	798.300	2313.000	796.400	2328.000	787.600	2356.000	788.000	2428.000
GR	794.900	2452.000	798.300	2544.000	796.700	2648.000	796.200	2808.000	796.500	2864.000
GR	794.700	2964.000	794.700	3048.000	794.500	3144.000	796.000	3250.000	796.000	3274.000
GR	789.400	3306.000	789.500	3396.000	790.200	3496.000	790.600	3580.000	791.200	3668.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000

X1	104.900	49.000	2000.000	2152.000	189.000	89.000	139.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.000	342.000	802.600	494.000	800.600	590.000	798.400	676.000	798.400	778.000
GR	798.200	876.000	800.100	972.000	799.600	1080.000	802.400	1192.000	801.300	1252.000
GR	798.300	1324.000	801.200	1456.000	799.100	1582.000	799.100	1656.000	798.700	1800.000
GR	798.620	1900.000	798.650	1936.000	798.700	2000.000	790.400	2000.000	786.600	2012.000
GR	783.500	2024.000	785.200	2042.000	785.800	2060.000	788.500	2072.000	788.500	2072.100
GR	786.300	2079.000	786.300	2079.100	782.100	2089.000	780.600	2104.000	781.300	2119.000
GR	786.600	2144.000	789.600	2152.000	799.900	2152.000	799.700	2166.000	798.000	2262.000
GR	797.500	2360.000	797.500	2456.000	798.200	2552.000	800.600	2610.000	801.600	2664.000
GR	802.800	2756.000	800.000	2822.000	798.200	2920.000	797.800	2974.000	798.200	3094.000
GR	806.100	3172.000	807.800	3230.000	808.300	3358.000	806.900	3450.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	342.000	3450.000	0.000	0.000

DOWNSTREAM FACE OF RR BRIDGE (G)

ROSS SEC (C)

X1	105.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1936.000	789.500	0.000	2000.000	799.900	0.000	2000.000	799.900	793.900
BT	2072.000	799.900	793.900	2072.100	799.900	788.500	2079.000	799.900	786.300	2079.100
BT	799.900	793.800	2152.000	799.900	793.800	2152.000	799.900	0.000	2166.000	789.900
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	7.100	342.000	3474.000	0.000	0.000

X1	105.100	41.000	2000.000	2152.000	33.000	33.000	33.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	10.000	1900.000	798.600	0.000	2000.000	799.400	0.000	2000.000	799.400	793.100
BT	2072.000	799.400	793.100	2072.100	799.400	785.300	2079.000	799.400	785.200	2079.100
BT	799.400	793.200	2152.000	799.400	793.300	2152.000	799.400	0.000	2324.000	798.300

BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.000	342.000	802.600	494.000	800.600	590.000	798.400	676.000	798.400	778.000
GR	798.200	876.000	800.100	972.000	799.600	1080.000	802.400	1192.000	801.300	1252.000
GR	798.300	1324.000	799.500	1462.000	799.300	1590.000	799.000	1688.000	798.700	1792.000
GR	798.600	1900.000	799.400	2000.000	788.900	2000.000	785.800	2010.000	783.800	2024.000
GR	783.800	2024.000	782.600	2056.000	785.300	2072.000	785.300	2072.100	785.200	2079.000
GR	785.200	2079.100	780.000	2090.000	780.400	2104.000	780.800	2118.000	781.100	2130.000
GR	783.400	2142.000	785.600	2150.000	786.100	2152.000	799.400	2152.000	798.300	2324.000
GR	798.300	2548.000	798.000	2768.000	798.100	2896.000	797.900	3016.000	797.900	3230.000
GR	797.700	3474.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000
X1	105.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1897.000	2386.000	1905.000	2290.000

SURVEYED VALLEY SECTION (H)

ROSS SEC (D)

X1	108.000	39.000	2022.000	2194.000	199.000	239.000	219.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	789.000	2000.000	786.500	2022.000	785.800	2040.000	783.100	2070.000	783.000	2100.000
GR	782.900	2124.000	783.800	2162.000	785.700	2194.000	788.700	2195.000	788.800	2220.000
GR	794.000	2244.000	794.900	2294.000	799.700	2386.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000
X1	108.900	49.000	2083.000	2277.000	89.000	74.000	79.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	796.500	2000.000	797.900	2083.000	791.300	2083.000	786.800	2099.000	785.100	2123.000
GR	784.400	2143.000	783.900	2148.000	783.900	2148.100	783.700	2150.500	783.700	2150.600
GR	782.700	2163.000	782.300	2183.000	781.900	2203.000	781.400	2212.000	781.400	2212.100
GR	781.300	2214.500	781.300	2214.600	780.900	2223.000	781.300	2243.000	786.700	2262.000
GR	791.100	2277.000	797.700	2277.000	797.000	2384.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
NC	0.000	0.000	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC. 23

DOWNSTREAM FACE OF M-96 BRIDGE (I)

ROSS SEC (E)

X1	109.000	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	2000.000	796.500	0.000	2083.000	797.900	0.000	2083.000	797.900	794.000
BT	2148.000	797.900	793.900	2148.100	797.900	783.900	2150.500	797.900	783.700	2150.600
BT	797.900	793.900	2212.000	797.800	793.800	2212.100	797.800	781.400	2214.500	797.800
BT	781.300	2214.600	797.800	793.800	2277.000	797.700	793.700	2277.000	797.700	0.000
BT	2384.000	797.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	109.100	49.000	2097.000	2291.000	30.500	30.500	30.500	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	14.000	2000.000	796.500	0.000	2097.000	797.900	0.000	2097.000	797.900	794.000
BT	2162.000	797.800	793.900	2162.100	797.800	783.100	2164.500	797.800	783.100	2164.600
BT	797.800	793.900	2226.000	797.700	793.800	2226.100	797.700	781.400	2228.500	797.700
BT	781.700	2228.600	797.700	793.800	2291.000	797.600	793.800	2291.000	797.600	0.000
BT	2384.000	797.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	803.200	307.000	803.900	335.000	803.600	383.000	801.600	479.000	800.800	581.000
GR	798.200	667.000	799.400	771.000	800.500	877.000	799.600	977.000	799.100	1005.000
GR	794.900	1047.000	792.000	1131.000	788.300	1233.000	795.300	1323.000	795.800	1423.000
GR	792.800	1523.000	794.600	1623.000	795.300	1701.000	795.800	1799.000	796.100	1897.000
GR	796.500	2000.000	797.900	2097.000	791.000	2097.000	786.800	2116.000	785.500	2137.000
GR	783.000	2157.000	783.100	2162.000	783.100	2162.100	783.100	2164.500	783.100	2164.600
GR	783.200	2177.000	781.700	2197.000	780.000	2217.000	781.400	2226.000	781.400	2226.100
GR	781.700	2228.500	781.700	2228.600	782.900	2237.000	784.100	2257.000	787.100	2277.000
GR	790.900	2291.000	797.600	2291.000	797.000	2384.000	796.900	2482.000	796.700	2588.000
GR	796.400	2692.000	796.200	2794.000	796.000	2897.000	796.200	2954.000	0.000	0.000
NC	0.000	0.000	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	109.200	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	1600.000	3656.000	0.000	0.000

SURVEYED VALLEY SECTION (J)

ROSS SEC (F)

X1	112.000	47.000	2010.000	2110.000	950.000	1170.000	1050.000	0.000	0.000	0.000
GR	806.700	392.000	806.000	498.000	807.200	594.000	806.500	688.000	804.500	778.000
GR	803.700	874.000	803.000	974.000	801.900	1072.000	795.300	1158.000	799.500	1200.000
GR	800.000	1294.000	798.500	1384.000	796.800	1476.000	795.800	1566.000	798.900	1600.000
GR	798.800	1620.000	796.400	1634.000	796.900	1724.000	790.600	1760.000	794.400	1790.000
GR	794.800	1834.000	792.100	1860.000	793.800	1926.000	793.900	2000.000	786.700	2010.000
GR	781.200	2030.000	779.400	2050.000	782.800	2076.000	786.600	2110.000	788.900	2114.000
GR	788.000	2246.000	788.500	2372.000	788.300	2482.000	787.900	2576.000	788.000	2672.000
GR	788.900	2772.000	788.200	2872.000	789.200	2972.000	788.700	3110.000	794.900	3124.000
GR	795.200	3188.000	789.300	3205.000	788.700	3331.000	789.900	3421.000	794.100	3491.000
GR	794.200	3559.000	798.500	3656.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

SURVEYED VALLEY SECTION (K)

ROSS SEC (G)

X1	113.000	39.000	2014.000	2260.000	1070.000	960.000	1010.000	0.000	0.000	0.000
GR	807.700	492.000	807.800	592.000	807.600	678.000	807.800	772.000	807.000	906.000
GR	807.800	1002.000	807.300	1032.000	807.400	1100.000	806.500	1204.000	803.300	1296.000
GR	804.600	1394.000	805.400	1488.000	805.300	1548.000	799.800	1576.000	805.600	1622.000
GR	804.800	1686.000	801.400	1710.000	798.600	1732.000	800.500	1760.000	800.800	1772.000
GR	798.500	1794.000	799.600	1810.000	799.100	1822.000	790.500	1850.000	788.400	1910.000
GR	789.400	2000.000	788.300	2014.000	784.800	2052.000	784.400	2084.000	783.800	2110.000
GR	783.200	2136.000	782.600	2166.000	783.200	2194.000	786.600	2222.000	784.800	2244.000
GR	788.300	2260.000	790.000	2264.000	790.000	3400.000	800.000	3500.000	0.000	0.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	9.100	1732.000	3800.000	1740.000	3760.000

SURVEYED VALLEY SECTION (L)

ROSS SEC (H)

X1	114.000	47.000	2004.000	2130.000	1200.000	1165.000	1175.000	0.000	0.000	0.000
GR	808.800	878.000	805.200	1014.000	804.400	1110.000	806.600	1206.000	800.900	1284.000
GR	793.300	1380.000	794.800	1436.000	790.100	1452.000	790.000	1466.000	793.200	1528.000
GR	794.700	1620.000	791.600	1634.000	793.400	1650.000	792.100	1674.000	797.200	1720.000
GR	797.400	1732.000	794.600	1750.000	792.500	1814.000	791.700	1908.000	788.700	2000.000
GR	786.000	2004.000	781.900	2018.000	781.300	2040.000	782.900	2098.000	783.300	2116.000
GR	786.000	2130.000	788.200	2134.000	788.500	2196.000	788.500	2290.000	789.600	2398.000
GR	789.500	2422.000	786.200	2428.000	785.400	2446.000	781.900	2458.000	783.300	2476.000
GR	786.100	2500.000	788.500	2516.000	787.800	2598.000	788.500	2695.000	790.600	2790.000
GR	790.200	2900.000	790.100	3016.000	788.900	3172.000	790.200	3392.000	790.300	3594.000
GR	790.400	3700.000	800.000	3800.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION (M)

UPSTREAM LIMIT OF AUGUSTA DETAILED STUDY

UPSTREAM LIMIT OF ROSS TOWNSHIP DETAILED STUDY (SEC I)

X1	115.000	40.000	2018.000	2146.000	2190.000	1380.000	2020.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	1.000	793.200	450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	799.000	300.000	788.400	520.000	790.600	616.000	791.500	718.000	791.500	718.000
GR	791.700	804.000	791.700	880.000	790.700	922.000	789.000	988.000	789.000	1092.000
GR	789.700	1194.000	789.100	1296.000	789.600	1498.000	788.800	1602.000	788.900	1702.000
GR	789.400	1806.000	789.600	1904.000	790.400	2000.000	786.400	2018.000	782.000	2052.000
GR	780.000	2082.000	780.700	2110.000	782.500	2130.000	786.300	2146.000	791.000	2148.000
GR	790.800	2326.000	789.900	2430.000	788.500	2572.000	788.200	2672.000	788.400	2772.000
GR	788.400	2862.000	788.300	2964.000	788.400	3090.000	789.100	3194.000	789.000	3290.000
GR	789.300	3382.000	789.200	3474.000	789.000	3570.000	789.000	3672.000	800.000	3750.000

MOORE BUSINESS FORMS, INC 23

EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOORE BUSINESS FORMS, INC 23

MOORE BUSINESS FORMS, INC. 23

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

*PROF 1

CCHV= .300 CEHV= .500

*SECNO 81.000

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 785.70 ELREA= 787.90

DOWNSTREAM FACE OF 35TH STREET BRIDGE (A)

DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

81.00	7.61	778.51	0.00	778.51	779.78	1.27	0.00	0.00	785.70
6750.	0.	6750.	0.	0.	745.	0.	0.	0.	787.90
0.00	0.00	9.06	0.00	.100	.014	.100	0.000	770.90	2007.10
.001054	1.	1.	1.	0	0	0	-20.44	155.65	2162.75

*SECNO 81.100

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 785.70 ELREA= 787.90

81.10	8.96	779.26	0.00	0.00	779.97	.71	.02	.17	785.70
6750.	0.	6750.	0.	0.	998.	0.	1.	0.	787.90
.00	0.00	6.76	0.00	.100	.014	.100	.014	770.30	2004.26
.000450	31.	31.	31.	3	0	0	-27.52	165.49	2169.75

*SECNO 81.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 785.70 ELREA= 787.90

81.20	9.03	779.33	0.00	0.00	779.99	.66	.00	.02	785.70
6750.	0.	6750.	0.	0.	1038.	0.	1.	0.	787.90
.00	0.00	6.50	0.00	.100	.040	.100	.014	770.30	2003.97
.002708	1.	1.	1.	2	0	0	0.00	165.99	2169.95

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

*SECNO 83.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

SURVEYED VALLEY SECTION (B)

83.00	10.98	782.98	0.00	0.00	783.09	.10	2.93	.17	780.80
6750.	2.	4587.	2161.	6.	1496.	3241.	214.	60.	779.80
.40	.31	3.07	.67	.100	.040	.100	.040	772.00	3076.78
.000430	3350.	3375.	3100.	3	0	0	0.00	1484.32	4649.26

CCHV= .100 CEHV= .300
*SECNO 84.800

3470 ENCROACHMENT STATIONS= 1170.0 3594.0 TYPE= 1 TARGET= 2424.000

SURVEYED VALLEY SECTION (C)

CHARLESTON TOWNSHIP DOWNSTREAM STUDY LIMIT (SEC A)

84.80	12.34	784.74	0.00	0.00	784.90	.16	1.79	.02	783.50
6750.	247.	6328.	174.	822.	1933.	274.	614.	192.	781.20
.81	.30	3.27	.64	.100	.040	.100	.040	772.40	1198.80
.000372	4525.	4500.	4463.	4	0	0	0.00	1083.74	2282.54

CCHV= .300 CEHV= .500
*SECNO 84.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 788.15 ELREA= 788.25

84.90	12.90	785.60	0.00	0.00	785.78	.17	.87	.01	788.80
6750.	0.	6750.	0.	0.	2025.	0.	754.	227.	788.90
1.01	0.00	3.33	0.00	.100	.040	.100	.040	772.70	2000.00
.000354	2400.	2400.	2400.	2	0	0	0.00	176.00	2176.00

*SECNO 85.000

MOORE BUSINESS FORMS, INC 23

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

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 787.10 MAX ELLC= 787.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 788.90

DOWNSTREAM FACE OF CONDEMNED BRIDGE (D)

CHARLESTON SEC B

85.00	12.90	785.60	0.00	0.00	785.78	.18	.00	.00	788.80
6750.	0.	6750.	0.	0.	1979.	0.	754.	227.	788.90
1.01	0.00	3.41	0.00	.100	.014	.100	.040	772.70	2000.00
.000060	1.	1.	1.	0	0	0	-46.85	176.00	2176.00

*SECNO 85.100

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 787.10 MAX ELLC= 787.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 788.90

85.10	12.91	785.61	0.00	0.00	785.78	.17	.00	.00	788.80
6750.	0.	6750.	0.	0.	2013.	0.	755.	227.	788.90
1.01	0.00	3.35	0.00	.100	.014	.100	.040	772.70	2000.00
.000058	20.	20.	20.	0	0	0	-46.85	176.00	2176.00

*SECNO 85.200

3470 ENCROACHMENT STATIONS= 1170.0 3594.0 TYPE= 1 TARGET= 2424.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 787.50

85.20	12.92	785.62	0.00	0.00	785.79	.17	.00	.00	788.80
6750.	0.	6750.	0.	0.	2062.	0.	755.	227.	788.90
1.01	0.00	3.27	0.00	.100	.040	.100	.040	772.70	2000.00
.000333	1.	1.	1.	1	0	0	0.00	176.00	2176.00

*SECNO 87.800

MOORE BUSINESS FORMS, INC. 23

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

3470 ENCROACHMENT STATIONS= 1800.0 2788.0 TYPE= 1 TARGET= 988.000
SURVEYED VALLEY SECTION (E)

CHARLESTON SEC C

87.80	12.70	786.00	0.00	0.00	786.13	.12	.33	.01	783.20
6750.	61.	5166.	1522.	161.	1633.	2037.	814.	237.	783.40
1.10	.38	3.16	.75	.100	.040	.100	.040	773.30	1885.51
.000421	870.	875.	880.	2	0	0	0.00	850.64	2736.15

*SECNO 87.900

3470 ENCROACHMENT STATIONS= 478.0 2496.0 TYPE= 1 TARGET= 2018.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 790.15 ELREA= 790.15

87.90	11.56	786.86	0.00	0.00	787.16	.30	.95	.09	791.60
6750.	0.	6750.	0.	0.	1526.	0.	907.	256.	791.60
1.20	0.00	4.42	0.00	.100	.040	.100	.040	775.30	2000.00
.001047	1480.	1500.	1520.	2	0	0	0.00	210.00	2210.00

*SECNO 88.000

3370 NORMAL BRIDGE.NRD= 14 MIN ELTRD= 790.90 MAX ELLC= 788.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 791.60 ELREA= 791.60

DOWNSTREAM FACE OF MICHIGAN STREET BRIDGE (F)

CHARLESTON SEC D

88.00	11.55	786.85	0.00	0.00	787.17	.32	.00	.01	791.60
6750.	0.	6750.	0.	0.	1478.	0.	907.	256.	791.60
1.20	0.00	4.57	0.00	.100	.014	.100	.040	775.30	2000.00
.000170	1.	1.	1.	1	0	0	-46.84	210.00	2210.00

*SECNO 88.100

MOORE BUSINESS FORMS, INC 23

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

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 790.90 MAX ELLC= 788.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 791.60 ELREA= 791.60

88.10	11.76	786.96	0.00	0.00	787.20	.25	.00	.02	791.60
6750.	0.	6750.	0.	0.	1694.	0.	908.	256.	791.60
1.20	0.00	3.98	0.00	.100	.014	.100	.040	775.20	2000.00
.000114	29.	29.	29.	2	0	0	-56.83	210.00	2210.00

*SECNO 88.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 791.60 ELREA= 791.60

88.20	11.78	786.98	0.00	0.00	787.21	.23	.00	.01	791.60
6750.	0.	6750.	0.	0.	1756.	0.	908.	256.	791.60
1.20	0.00	3.84	0.00	.100	.014	.100	.040	775.20	2000.00
.000082	1.	1.	1.	2	0	0	0.00	210.00	2210.00

*SECNO 88.300

SURVEYED VALLEY SECTION (G)

UPSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

CHARLESTON APPROXIMATE STUDY DOWNSTREAM LIMIT (SEC E)

88.30	10.02	787.12	0.00	0.00	787.36	.24	.15	.00	783.80
6750.	406.	6080.	265.	712.	1480.	544.	949.	267.	784.50
1.26	.57	4.11	.49	.100	.040	.100	.040	777.10	1571.42
.000748	800.	800.	800.	2	0	0	0.00	1023.24	2594.67

CCHV= .100 CEHV= .300

*SECNO 90.000

FABRICATED VALLEY SECTION

90.00	12.88	789.78	0.00	0.00	789.85	.07	2.48	.02	785.00
6750.	1531.	4692.	527.	3884.	1797.	1235.	1691.	519.	784.40
2.22	.39	2.61	.43	.100	.040	.100	.040	776.90	374.84
.000220	6700.	6700.	6700.	2	0	0	0.00	2256.37	2631.21

MOORE BUSINESS FORMS, INC. 23

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

*SECNO 91.000

3470 ENCROACHMENT STATIONS= 1300.0 4200.0 TYPE= 1 TARGET= 2900.000

FABRICATED VALLEY SECTION

91.00	12.64	791.24	0.00	0.00	791.29	.05	1.43	.00	787.10
6750.	304.	3880.	2566.	839.	1741.	6150.	3038.	932.	786.00
3.65	.36	2.23	.42	.100	.040	.100	.040	778.60	1650.25
.000166	7500.	7500.	7500.	3	0	0	0.00	2533.35	4183.61

*SECNO 99.000

3280 CROSS SECTION 99.00 EXTENDED .76 FEET

3470 ENCROACHMENT STATIONS= 1716.0 2710.0 TYPE= 1 TARGET= 994.000

CHARLESTON APPROXIMATE STUDY UPSTREAM LIMIT (SEC F)

DOWNSTREAM LIMIT OF AUGUSTA DETAILED STUDY

SURVEYED VALLEY SECTION (A)

99.00	12.56	792.66	0.00	0.00	792.75	.09	1.45	.01	787.10
6720.	428.	4713.	1579.	739.	1682.	2372.	4148.	1213.	787.50
4.57	.58	2.80	.67	.100	.040	.100	.040	780.10	1811.15
.000254	7150.	7150.	7150.	2	0	0	0.00	887.12	2698.27

*SECNO 100.000

3470 ENCROACHMENT STATIONS= 1898.0 2704.0 TYPE= 1 TARGET= 806.000

SURVEYED VALLEY SECTION (B)

CHARLESTON SEC G

100.00	12.20	792.80	0.00	0.00	792.94	.14	.17	.01	786.30
6720.	50.	5419.	1250.	77.	1645.	1857.	4204.	1223.	785.20
4.63	.65	3.29	.67	.100	.040	.100	.040	780.60	1969.83
.000350	560.	575.	590.	1	0	0	0.00	694.85	2664.69

*SECNO 101.000

MOORE BUSINESS FORMS, INC 23

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

3470 ENCROACHMENT STATIONS= 1606.0 2346.0 TYPE= 1 TARGET= 740.000

SURVEYED VALLEY SECTION (C)

CHARLESTON SEC H

101.00	12.14	793.24	0.00	0.00	793.39	.15	.45	.00	785.40
6720.	1015.	5638.	67.	1310.	1697.	104.	4307.	1241.	785.40
4.76	.77	3.32	.64	.100	.040	.100	.040	781.10	1717.05
.000317	1360.	1345.	1330.	2	0	0	0.00	471.52	2188.57

*SECNO 102.000

SURVEYED VALLEY SECTION (D)

CHARLESTON SEC I

102.00	11.15	793.55	0.00	0.00	793.64	.08	.24	.01	785.60
6720.	1441.	4698.	581.	2580.	1701.	748.	4387.	1258.	785.40
4.87	.56	2.76	.78	.100	.040	.100	.040	782.40	1006.31
.000253	820.	865.	1015.	1	0	0	0.00	1296.08	2302.39

*SECNO 103.000

SURVEYED VALLEY SECTION (E)

CHARLESTON TOWNSHIP UPSTREAM STUDY LIMIT (SEC J)

ROSS TOWNSHIP DOWNSHIP STUDY LIMIT (SEC A)

103.00	11.62	793.82	0.00	0.00	793.93	.11	.28	.01	784.70
6700.	753.	4992.	955.	1007.	1648.	1263.	4495.	1283.	786.30
4.99	.75	3.03	.76	.100	.040	.100	.040	782.20	1628.13
.000300	1020.	1020.	1150.	2	0	0	0.00	793.74	2421.87

*SECNO 104.000
3280 CROSS SECTION 104.00 EXTENDED 2.92 FEET

3470 ENCROACHMENT STATIONS= 900.0 2313.0 TYPE= 1 TARGET= 1413.000

SURVEYED VALLEY SECTION (F)

MOORE BUSINESS FORMS, INC 23

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

ROSS SEC (B)

104.00	12.42	794.12	0.00	0.00	794.32	.20	.36	.03	786.20
6700.	631.	5510.	559.	760.	1413.	607.	4571.	1297.	786.40
5.07	.83	3.90	.92	.100	.040	.100	.040	781.70	1828.79
.000460	1060.	995.	920.	2	0	0	0.00	440.02	2268.81

CCHV= .300 CEHV= .500
#SECNO 104.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 798.70 ELREA= 799.90

104.90	13.54	794.14	0.00	0.00	794.48	.34	.09	.07	798.70
6700.	0.	6700.	0.	0.	1431.	0.	4578.	1298.	799.90
5.08	0.00	4.68	0.00	.100	.040	.100	.040	780.60	2000.00
.000885	189.	139.	89.	2	0	0	0.00	152.00	2152.00

#SECNO 105.000

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 789.50 MAX ELLC= 793.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 798.70 ELREA= 799.90

DOWNSTREAM FACE OF RR BRIDGE (G)

ROSS SEC (C)

105.00	13.51	794.11	0.00	0.00	794.50	.39	.00	.02	798.70
6700.	0.	6700.	0.	0.	1342.	0.	4578.	1298.	799.90
5.08	0.00	4.99	0.00	.100	.014	.100	.040	780.60	2000.00
.000329	1.	1.	1.	2	0	0	-85.30	152.00	2152.00

#SECNO 105.100

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 798.30 MAX ELLC= 793.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 799.40 ELREA= 799.40

MOORE BUSINESS FORMS, INC. 23

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
105.10	14.21	794.21	0.00	0.00	794.53	.32	.01	.02	799.40
6700.	0.	6700.	0.	0.	1478.	0.	4579.	1299.	799.40
5.08	0.00	4.53	0.00	.100	.014	.100	.040	780.00	2000.00
.000248	33.	33.	33.	2	0	0	-212.95	152.00	2152.00

*SECNO 105.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 799.40 ELREA= 799.40

105.20	14.32	794.32	0.00	0.00	794.55	.24	.00	.02	799.40
6700.	0.	6700.	0.	0.	1707.	0.	4579.	1299.	799.40
5.08	0.00	3.93	0.00	.100	.040	.100	.040	780.00	2000.00
.000508	1.	1.	1.	2	0	0	0.00	152.00	2152.00

*SECNO 108.000

3470 ENCROACHMENT STATIONS= 1897.0 2386.0 TYPE= 1 TARGET= 489.000

SURVEYED VALLEY SECTION (H)

ROSS SEC (D)

108.00	11.60	794.50	0.00	0.00	794.67	.17	.10	.02	786.50
6700.	276.	6242.	182.	368.	1808.	232.	4590.	1300.	785.70
5.10	.75	3.45	.78	.100	.040	.100	.040	782.90	1920.26
.000376	199.	219.	239.	2	0	0	0.00	351.34	2271.60

*SECNO 108.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.70

108.90	13.63	794.53	0.00	0.00	794.70	.17	.03	.00	797.90
6700.	0.	6700.	0.	0.	2015.	0.	4594.	1300.	797.70
5.10	0.00	3.32	0.00	.100	.040	.100	.040	780.90	2083.00
.000375	89.	79.	74.	0	0	0	0.00	194.00	2277.00

*SECNO 109.000

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 796.50 MAX ELLC= 794.00

MOORE BUSINESS FORMS, INC. 23

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.70

DOWNSTREAM FACE OF M-96 BRIDGE (I)

ROSS SEC (E)

109.00	13.61	794.51	0.00	0.00	794.72	.21	.00	.02	797.90
6700.	0.	6700.	0.	0.	1827.	0.	4594.	1300.	797.70
5.10	0.00	3.67	0.00	.100	.014	.100	.040	780.90	2083.00
.000177	1.	1.	1.	1	0	0	-185.97	194.00	2277.00

*SECNO 109.100

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 796.50 MAX ELLC= 794.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.60

109.10	14.51	794.51	0.00	0.00	794.73	.22	.01	.01	797.90
6700.	0.	6700.	0.	0.	1783.	0.	4595.	1300.	797.60
5.11	0.00	3.76	0.00	.100	.014	.100	.040	780.00	2097.00
.000192	31.	31.	31.	0	0	0	-183.91	194.00	2291.00

*SECNO 109.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.60

109.20	14.56	794.56	0.00	0.00	794.74	.18	.00	.01	797.90
6700.	0.	6700.	0.	0.	1976.	0.	4595.	1300.	797.60
5.11	0.00	3.39	0.00	.100	.040	.100	.040	780.00	2097.00
.000401	1.	1.	1.	2	0	0	0.00	194.00	2291.00

*SECNO 112.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 1600.0 3656.0 TYPE= 1 TARGET= 2056.000

MOORE BUSINESS FORMS, INC. 23

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

SURVEYED VALLEY SECTION (J)

ROSS SEC (F)

112.00	15.56	794.96	0.00	0.00	794.99	.02	.20	.05	786.70
6700.	105.	2433.	4162.	445.	1223.	8142.	4748.	1326.	786.60
5.40	.24	1.99	.51	.100	.040	.100	.040	779.40	1735.08
.000104	950.	1050.	1170.	2	0	0	0.00	1789.43	3576.17

*SECNO 113.000

SURVEYED VALLEY SECTION (K)

ROSS SEC (G)

113.00	12.45	795.05	0.00	0.00	795.07	.02	.09	.00	788.30
6700.	428.	4020.	2252.	1010.	2573.	5889.	4964.	1364.	788.30
5.65	.42	1.56	.38	.100	.040	.100	.040	782.60	1835.18
.000078	1070.	1010.	960.	2	0	0	0.00	1615.32	3450.51

CCHV= .100 CEHV= .300
*SECNO 114.000

3470 ENCROACHMENT STATIONS= 1732.0 3800.0 TYPE= 1 TARGET= 2068.000
SURVEYED VALLEY SECTION (L)

ROSS SEC (H)

114.00	13.84	795.14	0.00	0.00	795.16	.02	.08	.00	786.00
6700.	265.	2579.	3855.	877.	1576.	9441.	5251.	1413.	786.00
6.02	.30	1.64	.41	.100	.040	.100	.040	781.30	1746.46
.000067	1200.	1175.	1165.	1	0	0	0.00	2003.01	3749.48

*SECNO 115.000

SURVEYED VALLEY SECTION (M)

UPSTREAM LIMIT OF AUGUSTA DETAILED STUDY

UPSTREAM LIMIT OF ROSS TOWNSHIP DETAILED STUDY (SEC I)

115.00	15.23	795.23	0.00	0.00	795.24	.01	.08	.00	786.40
6700.	2201.	1887.	2612.	8560.	1665.	9452.	5863.	1516.	786.30
6.96	.26	1.13	.28	.100	.040	.100	.040	780.00	397.48
.000031	2190.	2020.	1380.	2	0	0	0.00	3318.71	3716.18

MOORE BUSINESS FORMS, INC 23

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  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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T1      VILLAGE OF GALESBURG AND AUGUSTA
T2      ENCROACHMENT RUN
T3      KALAMAZOO RIVER AT GALESBURG AND AUGUSTA

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       -10.       6.        0.        0.  0.000000      0.00      0.0       0.   778.610     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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MOORE BUSINESS FORMS, INC 23

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

*PROF 2

CCHV= .300 CEHV= .500

*SECNO 81.000

2800 NAT Q1= 2079.40 WSEL= 778.51 ENC Q1= 2140.84 WSEL= 778.61 RATIO= -.0295

NAT Q1= 2141. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 778.61

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3470 ENCROACHMENT STATIONS= 2000.0 2178.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 785.70 ELREA= 787.90

DOWNSTREAM FACE OF 35TH STREET BRIDGE (A)

DOWNSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

81.00	7.71	778.61	0.00	778.51	779.83	1.22	0.00	0.00	785.70
6750.	0.	6750.	0.	0.	760.	0.	0.	0.	787.90
0.00	0.00	8.88	0.00	.100	.014	.100	0.000	770.90	2006.70
.000994	1.	1.	1.	0	0	0	-20.84	156.42	2163.12

*SECNO 81.100

3700. BRIDGE STENCL= 2000.00 STENCR= 2178.00

2800 NAT Q1= 3181.94 WSEL= 779.26 ENC Q1= 3256.95 WSEL= 779.36 RATIO= -.0236

NAT Q1= 3257. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 779.36

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 783.70 MAX ELLC= 784.60

3470 ENCROACHMENT STATIONS= 2000.0 2178.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 785.70 ELREA= 787.90

81.10	9.01	779.31	0.00	779.26	780.01	.70	.02	.16	785.70
6750.	0.	6750.	0.	0.	1006.	0.	1.	0.	787.90
.00	0.00	6.71	0.00	.100	.014	.100	.014	770.30	2004.06
.000440	31.	31.	31.	3	0	0	-27.72	165.83	2169.89

MOORE BUSINESS FORMS, INC. 23

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

*SECNO 81.200
2800 NAT Q1= 1297.09 WSEL= 779.33 ENC Q1= 1328.08 WSEL= 779.43 RATIO= -.0239
NAT Q1= 1328. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 779.43

3470 ENCROACHMENT STATIONS= 2000.0 2178.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 785.70 ELREA= 787.90

81.20	9.08	779.38	0.00	779.33	780.03	.65	.00	.02	785.70
6750.	0.	6750.	0.	0.	1045.	0.	1.	0.	787.90
.00	0.00	6.46	0.00	.100	.040	.100	.014	770.30	2003.78
.002649	1.	1.	1.	2	0	0	0.00	166.30	2170.08

*SECNO 83.000
2800 NAT Q1= 3255.80 WSEL= 782.98 ENC Q1= 3255.80 WSEL= 783.08 RATIO= 0.0000
NAT Q1= 3359. RATIOS LOB,CH,ROB= .0003 .6725 .3272 WSEL= 783.08

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 3082.0 4371.5 TYPE= 4 TARGET= .031
SURVEYED VALLEY SECTION (B)

83.00	11.05	783.05	0.00	782.98	783.16	.11	2.97	.16	780.80
6750.	0.	4683.	2067.	0.	1509.	2901.	203.	50.	779.80
.39	0.00	3.10	.71	.100	.040	.100	.040	772.00	3082.00
.000442	3350.	3375.	3100.	3	0	0	0.00	1211.42	4371.54

CCHV= .100 CEHV= .300
*SECNO 84.800
2800 NAT Q1= 3500.61 WSEL= 784.74 ENC Q1= 3500.61 WSEL= 784.84 RATIO= 0.0000
NAT Q1= 3581. RATIOS LOB,CH,ROB= .0416 .9319 .0265 WSEL= 784.84

3470 ENCROACHMENT STATIONS= 1512.6 2237.3 TYPE= 4 TARGET= .022
SURVEYED VALLEY SECTION (C)

CHARLESTON TOWNSHIP DOWNSTREAM STUDY LIMIT (SEC A)

MOORE BUSINESS FORMS, INC. 23

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
84.80	12.44	784.84	0.00	784.74	785.00	.16	1.82	.02	783.50
6750.	210.	6436.	105.	621.	1952.	159.	571.	150.	781.20
.79	.34	3.30	.66	.100	.040	.100	.040	772.40	1512.57
.000372	4525.	4500.	4463.	1	0	0	0.00	724.69	2237.26

CCHV= .300 CEHV= .500

*SECNO 84.900

2800 NAT Q1= 3585.16 WSEL= 785.60 ENC Q1= 3634.77 WSEL= 785.70 RATIO= -.0138

NAT Q1= 3635. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 785.70

3470 ENCROACHMENT STATIONS= 2000.0 2176.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.15 ELREA= 788.25

84.90	12.99	785.69	0.00	785.60	785.86	.17	.86	.00	788.80
6750.	0.	6750.	0.	0.	2042.	0.	702.	175.	788.90
.99	0.00	3.31	0.00	.100	.040	.100	.040	772.70	2000.00
.000346	2400.	2400.	2400.	0	0	0	0.00	176.00	2176.00

*SECNO 85.000

3700. BRIDGE STENCL= 2000.00 STENCR= 2176.00

2800 NAT Q1= 8745.33 WSEL= 785.60 ENC Q1= 9057.76 WSEL= 785.70 RATIO= -.0357

NAT Q1= 9058. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 785.70

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 787.10 MAX ELLC= 787.60

3470 ENCROACHMENT STATIONS= 2000.0 2176.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.00 2034.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 788.90

DOWNSTREAM FACE OF CONDEMNED BRIDGE (D)

CHARLESTON SEC B

85.00	12.99	785.69	0.00	785.60	785.87	.18	.00	.00	788.80
6750.	0.	6750.	0.	0.	1994.	0.	702.	175.	788.90
.99	0.00	3.39	0.00	.100	.014	.100	.040	772.70	2000.00
.000056	1.	1.	1.	0	0	0	-47.21	176.00	2176.00

MOORE BUSINESS FORMS, INC 23

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

*SECNO 85.100
3700. BRIDGE STENCL= 2000.00 STENCR= 2176.00
2800 NAT Q1= 8842.94 WSEL= 785.61 ENC Q1= 9159.76 WSEL= 785.71 RATIO= -.0358
NAT Q1= 9160. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 785.71

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 787.10 MAX ELLC= 787.60

3470 ENCROACHMENT STATIONS= 2000.0 2176.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.00 2016.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 788.90

85.10	13.00	785.70	0.00	785.61	785.87	.17	.00	.00	788.80
6750.	0.	6750.	0.	0.	2028.	0.	703.	175.	788.90
.99	0.00	3.33	0.00	.100	.014	.100	.040	772.70	2000.00
.000055	20.	20.	20.	0	0	0	-47.20	176.00	2176.00

*SECNO 85.200
2800 NAT Q1= 3700.87 WSEL= 785.62 ENC Q1= 3753.83 WSEL= 785.72 RATIO= -.0143
NAT Q1= 3754. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 785.72

3470 ENCROACHMENT STATIONS= 2000.0 2176.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 788.80 ELREA= 787.50

85.20	13.01	785.71	0.00	785.62	785.87	.16	.00	.00	788.80
6750.	0.	6750.	0.	0.	2077.	0.	703.	175.	788.90
.99	0.00	3.25	0.00	.100	.040	.100	.040	772.70	2000.00
.000325	1.	1.	1.	1	0	0	0.00	176.00	2176.00

*SECNO 87.800

3470 ENCROACHMENT STATIONS= 1835.0 2700.0 TYPE= 1 TARGET= 865.000
SURVEYED VALLEY SECTION (E)

CHARLESTON SEC C

87.80	12.78	786.08	0.00	786.00	786.20	.12	.32	.01	783.20
6750.	65.	5168.	1517.	170.	1648.	2015.	763.	185.	783.40
1.08	.38	3.14	.75	.100	.040	.100	.040	773.30	1882.31
.000408	870.	875.	880.	2	0	0	0.00	817.69	2700.00

MOORE BUSINESS FORMS, INC 23

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

*SECNO 87.900
2800 NAT Q1= 2085.98 WSEL= 786.86 ENC Q1= 2132.82 WSEL= 786.96 RATIO= -.0225
NAT Q1= 2133. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 786.96

3470 ENCROACHMENT STATIONS= 2000.0 2210.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 790.15 ELREA= 790.15

87.90	11.61	786.91	0.00	786.86	787.21	.30	.92	.09	791.60
6750.	0.	6750.	0.	0.	1537.	0.	855.	203.	791.60
1.18	0.00	4.39	0.00	.100	.040	.100	.040	775.30	2000.00
.001022	1480.	1500.	1520.	2	0	0	0.00	210.00	2210.00

*SECNO 88.000
3700. BRIDGE STENCL= 2000.00 STENCR= 2210.00
2800 NAT Q1= 5176.07 WSEL= 786.85 ENC Q1= 5331.01 WSEL= 786.95 RATIO= -.0299
NAT Q1= 5331. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 786.95

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 790.90 MAX ELLC= 788.70

3470 ENCROACHMENT STATIONS= 2000.0 2210.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.00 2002.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 791.60 ELREA= 791.60

DOWNSTREAM FACE OF MICHIGAN STREET BRIDGE (F)

CHARLESTON SEC D

88.00	11.60	786.90	0.00	786.85	787.22	.32	.00	.01	791.60
6750.	0.	6750.	0.	0.	1490.	0.	856.	203.	791.60
1.18	0.00	4.53	0.00	.100	.014	.100	.040	775.30	2000.00
.000163	1.	1.	1.	0	0	0	-47.20	210.00	2210.00

*SECNO 88.100
3700. BRIDGE STENCL= 2000.00 STENCR= 2210.00
2800 NAT Q1= 6310.02 WSEL= 786.96 ENC Q1= 6495.13 WSEL= 787.06 RATIO= -.0293
NAT Q1= 6495. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 787.06

MOORE BUSINESS FORMS, INC. 23

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

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRO= 790.90 MAX ELLC= 788.10

3470 ENCROACHMENT STATIONS= 2000.0 2210.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2000.00 2016.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 791.60 ELREA= 791.60

88.10	11.81	787.01	0.00	786.96	787.25	.24	.00	.02	791.60
6750.	0.	6750.	0.	0.	1705.	0.	857.	203.	791.60
1.18	0.00	3.96	0.00	.100	.014	.100	.040	775.20	2000.00
.000110	29.	29.	29.	2	0	0	-57.14	210.00	2210.00

*SECNO 88.200
2800 NAT Q1= 7469.43 WSEL= 786.98 ENC Q1= 7614.27 WSEL= 787.08 RATIO= -.0194
NAT Q1= 7614. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 787.08

3470 ENCROACHMENT STATIONS= 2000.0 2210.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 791.60 ELREA= 791.60

88.20	11.83	787.03	0.00	786.98	787.25	.23	.00	.01	791.60
6750.	0.	6750.	0.	0.	1767.	0.	857.	203.	791.60
1.18	0.00	3.82	0.00	.100	.014	.100	.040	775.20	2000.00
.000080	1.	1.	1.	2	0	0	0.00	210.00	2210.00

*SECNO 88.300
2800 NAT Q1= 2468.17 WSEL= 787.12 ENC Q1= 2468.17 WSEL= 787.22 RATIO= 0.0000
NAT Q1= 2536. RATIOS LOB,CH,ROB= .0633 .8945 .0422 WSEL= 787.22

3470 ENCROACHMENT STATIONS= 1844.2 2304.7 TYPE= 4 TARGET= .027

SURVEYED VALLEY SECTION (G)

UPSTREAM LIMIT OF GALESBURG LIMITED DETAIL STUDY

CHARLESTON APPROXIMATE STUDY DOWNSTREAM LIMIT (SEC E)

88.30	10.06	787.16	0.00	787.12	787.41	.25	.15	.01	783.80
6750.	345.	6206.	199.	430.	1487.	283.	893.	209.	784.50
1.24	.80	4.17	.70	.100	.040	.100	.040	777.10	1844.16
.000766	800.	800.	800.	2	0	0	0.00	460.57	2304.73

MOORE BUSINESS FORMS, INC 23

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

CCHV= .100 CEHV= .300

*SECNO 90.000

2800 NAT Q1= 4548.50 WSEL= 789.78 ENC Q1= 4548.50 WSEL= 789.88 RATIO= 0.0000

NAT Q1= 4676. RATIOS LOB,CH,ROB= .2332 .6870 .0798 WSEL= 789.88

3470 ENCROACHMENT STATIONS= 1231.1 2350.3 TYPE= 4 TARGET= .027

FABRICATED VALLEY SECTION

90.00	12.96	789.86	0.00	789.78	789.94	.08	2.51	.02	785.00
6750.	1521.	4766.	463.	2866.	1810.	787.	1482.	330.	784.40
2.16	.53	2.63	.59	.100	.040	.100	.040	776.90	1231.12
.000222	6700.	6700.	6700.	2	0	0	0.00	1119.14	2350.27

*SECNO 91.000

2800 NAT Q1= 5234.56 WSEL= 791.24 ENC Q1= 5234.56 WSEL= 791.34 RATIO= .0000

NAT Q1= 5457. RATIOS LOB,CH,ROB= .0459 .5602 .3938 WSEL= 791.34

3470 ENCROACHMENT STATIONS= 1892.6 3885.9 TYPE= 4 TARGET= .041

FABRICATED VALLEY SECTION

91.00	12.73	791.33	0.00	791.24	791.38	.05	1.44	.00	787.10
6750.	180.	3951.	2618.	399.	1756.	5870.	2644.	598.	786.00
3.55	.45	2.25	.45	.100	.040	.100	.040	778.60	1892.62
.000167	7500.	7500.	7500.	2	0	0	0.00	1993.27	3885.89

*SECNO 99.000

3280 CROSS SECTION 99.00 EXTENDED .84 FEET

3470 ENCROACHMENT STATIONS= 1805.0 2700.0 TYPE= 1 TARGET= 895.000

CHARLESTON APPROXIMATE STUDY UPSTREAM LIMIT (SEC F)

DOWNSTREAM LIMIT OF AUGUSTA DETAILED STUDY

SURVEYED VALLEY SECTION (A)

99.00	12.64	792.74	0.00	792.66	792.83	.09	1.44	.01	787.10
6720.	434.	4691.	1594.	753.	1694.	2411.	3701.	835.	787.50
4.48	.58	2.77	.66	.100	.040	.100	.040	780.10	1810.55
.000246	7150.	7150.	7150.	1	0	0	0.00	888.24	2698.80

MOORE BUSINESS FORMS, INC. 23

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

*SECNO 100.000
2800 NAT Q1= 3590.68 WSEL= 792.80 ENC Q1= 3590.68 WSEL= 792.90 RATIO= 0.0000
NAT Q1= 3838. RATIOS LOB,CH,ROB= .0170 .7676 .2154 WSEL= 792.90

3470 ENCROACHMENT STATIONS= 2003.0 2623.1 TYPE= 4 TARGET= .065
SURVEYED VALLEY SECTION (B)

CHARLESTON SEC G

100.00	12.28	792.88	0.00	792.80	793.02	.14	.17	.02	786.30
6720.	0.	5492.	1228.	0.	1659.	1760.	3756.	845.	785.20
4.54	0.00	3.31	.70	.100	.040	.100	.040	780.60	2003.00
.000369	560.	575.	590.	2	0	0	0.00	620.09	2623.09

*SECNO 101.000
2800 NAT Q1= 3775.94 WSEL= 793.24 ENC Q1= 3775.94 WSEL= 793.34 RATIO= 0.0000
NAT Q1= 3843. RATIOS LOB,CH,ROB= .1533 .8365 .0103 WSEL= 793.34

3470 ENCROACHMENT STATIONS= 1786.4 2157.8 TYPE= 4 TARGET= .018
SURVEYED VALLEY SECTION (C)

CHARLESTON SEC H

101.00	12.23	793.33	0.00	793.24	793.48	.15	.46	.00	785.40
6720.	993.	5722.	5.	1207.	1711.	14.	3854.	860.	785.40
4.66	.82	3.34	.34	.100	.040	.100	.040	781.10	1786.40
.000318	1360.	1345.	1330.	0	0	0	0.00	371.39	2157.79

*SECNO 102.000
2800 NAT Q1= 4227.54 WSEL= 793.55 ENC Q1= 4227.54 WSEL= 793.65 RATIO= 0.0000
NAT Q1= 4336. RATIOS LOB,CH,ROB= .2198 .6935 .0867 WSEL= 793.65

3470 ENCROACHMENT STATIONS= 1451.9 2285.0 TYPE= 4 TARGET= .025
SURVEYED VALLEY SECTION (D)

CHARLESTON SEC I

102.00	11.24	793.64	0.00	793.55	793.73	.09	.24	.01	785.60
6720.	1427.	4781.	512.	2306.	1717.	672.	3929.	872.	785.40
4.77	.62	2.78	.76	.100	.040	.100	.040	782.40	1451.88
.000253	820.	865.	1015.	2	0	0	0.00	833.12	2284.99

MOORE BUSINESS FORMS, INC. 23

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

*SECNO 103.000
2800 NAT Q1= 3867.31 WSEL= 793.82 ENC Q1= 3867.31 WSEL= 793.92 RATIO= 0.0000
NAT Q1= 3949. RATIOS LOB,CH,ROB= .1142 .7417 .1442 WSEL= 793.92

3470 ENCROACHMENT STATIONS= 1873.4 2390.9 TYPE= 4 TARGET= .021
SURVEYED VALLEY SECTION (E)

CHARLESTON TOWNSHIP UPSTREAM STUDY LIMIT (SEC J)

ROSS TOWNSHIP DOWNSHIP STUDY LIMIT (SEC A)

103.00	11.71	793.91	0.00	793.82	794.02	.11	.28	.01	784.70
6700.	710.	5075.	915.	824.	1664.	1186.	4030.	888.	786.30
4.89	.86	3.05	.77	.100	.040	.100	.040	782.20	1873.44
.000300	1020.	1020.	1150.	1	0	0	0.00	517.50	2390.95

*SECNO 104.000
3280 CROSS SECTION 104.00 EXTENDED 3.01 FEET

3470 ENCROACHMENT STATIONS= 1825.0 2270.0 TYPE= 1 TARGET= 445.000
SURVEYED VALLEY SECTION (F)

ROSS SEC (B)

104.00	12.51	794.21	0.00	794.12	794.41	.19	.36	.02	786.20
6700.	643.	5491.	567.	777.	1426.	619.	4104.	899.	786.40
4.97	.83	3.85	.92	.100	.040	.100	.040	781.70	1828.31
.000444	1060.	995.	920.	2	0	0	0.00	440.72	2269.04

CCHV= .300 CEHV= .500
*SECNO 104.900
2800 NAT Q1= 2252.77 WSEL= 794.14 ENC Q1= 2290.94 WSEL= 794.24 RATIO= -.0169
NAT Q1= 2291. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.24

3470 ENCROACHMENT STATIONS= 2000.0 2152.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 798.70 ELREA= 799.90

104.90	13.63	794.23	0.00	794.14	794.56	.33	.08	.07	798.70
6700.	0.	6700.	0.	0.	1445.	0.	4111.	900.	799.90
4.98	0.00	4.64	0.00	.100	.040	.100	.040	780.60	2000.00
.000858	189.	139.	89.	2	0	0	0.00	152.00	2152.00

MOORE BUSINESS FORMS, INC 23

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

*SECNO 105.000

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 789.50 MAX ELLC= 793.90

3470 ENCROACHMENT STATIONS= 342.0 3450.0 TYPE= 1 TARGET= 3108.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 798.70 ELREA= 799.90

DOWNSTREAM FACE OF RR BRIDGE (G)

ROSS SEC (C)

105.00	13.60	794.20	0.00	794.11	794.59	.39	.00	.03	798.70
6700.	0.	6700.	0.	0.	1342.	0.	4111.	900.	799.90
4.98	0.00	4.99	0.00	.100	.014	.100	.040	780.60	2000.00
.000329	1.	1.	1.	2	0	0	-98.51	152.00	2152.00

*SECNO 105.100

3370 NORMAL BRIDGE,NRD= 10 MIN ELTRD= 798.30 MAX ELLC= 793.30

3470 ENCROACHMENT STATIONS= 342.0 3474.0 TYPE= 1 TARGET= 3132.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 799.40 ELREA= 799.40

105.10	14.30	794.30	0.00	794.21	794.62	.32	.01	.02	799.40
6700.	0.	6700.	0.	0.	1478.	0.	4112.	900.	799.40
4.98	0.00	4.53	0.00	.100	.014	.100	.040	780.00	2000.00
.000248	33.	33.	33.	2	0	0	-226.17	152.00	2152.00

*SECNO 105.200

2800 NAT QI= 2971.37 WSEL= 794.32 ENC QI= 3013.20 WSEL= 794.42 RATIO= -.0141
NAT QI= 3013. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.42

3470 ENCROACHMENT STATIONS= 2000.0 2152.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 799.40 ELREA= 799.40

105.20	14.41	794.41	0.00	794.32	794.64	.24	.00	.03	799.40
6700.	0.	6700.	0.	0.	1721.	0.	4112.	900.	799.40
4.98	0.00	3.89	0.00	.100	.040	.100	.040	780.00	2000.00
.000496	1.	1.	1.	2	0	0	0.00	152.00	2152.00

MOORE BUSINESS FORMS, INC. 23

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

*SECNO 108.000

3470 ENCROACHMENT STATIONS= 1905.0 2290.0 TYPE= 1 TARGET= 385.000

SURVEYED VALLEY SECTION (H)

ROSS SEC (D)

108.00	11.69	794.59	0.00	794.50	794.76	.17	.09	.02	786.50
6700.	280.	6235.	185.	377.	1823.	239.	4122.	902.	785.70
5.00	.74	3.42	.77	.100	.040	.100	.040	782.90	1918.97
.000365	199.	219.	239.	2	0	0	0.00	357.56	2276.53

*SECNO 108.900

2800 NAT Q1= 3460.13 WSEL= 794.53 ENC Q1= 3511.37 WSEL= 794.63 RATIO= -.0148

NAT Q1= 3511. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.63

3470 ENCROACHMENT STATIONS= 2083.0 2277.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.70

108.90	13.72	794.62	0.00	794.53	794.78	.17	.03	.00	797.90
6700.	0.	6700.	0.	0.	2031.	0.	4126.	902.	797.70
5.01	0.00	3.30	0.00	.100	.040	.100	.040	780.90	2083.00
.000366	89.	79.	74.	0	0	0	0.00	194.00	2277.00

*SECNO 109.000

3700. BRIDGE STENCL= 2083.00 STENCR= 2277.00

2800 NAT Q1= 5040.52 WSEL= 794.51 ENC Q1= 5237.28 WSEL= 794.61 RATIO= -.0390

NAT Q1= 5237. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.61

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 796.50 MAX ELLC= 794.00

3470 ENCROACHMENT STATIONS= 2083.0 2277.0 TYPE= 4 TARGET= 0.000

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2083.00 2099.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.70

DOWNSTREAM FACE OF M-96 BRIDGE (I)

MOORE BUSINESS FORMS, INC. 23

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
		ROSS SEC (E)							
109.00	13.70	794.60	0.00	794.51	794.80	.21	.00	.02	797.90
6700.	0.	6700.	0.	0.	1837.	0.	4126.	902.	797.70
5.01	0.00	3.65	0.00	.100	.014	.100	.040	780.90	2083.00
.000164	1.	1.	1.	1	0	0	-192.91	194.00	2277.00

*SECNO 109.100
3700. BRIDGE STENCL= 2083.00 STENCR= 2277.00
2800 NAT Q1= 4829.52 WSEL= 794.51 ENC Q1= 5505.28 WSEL= 794.61 RATIO= -.1399
NAT Q1= 5505. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.61

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 796.50 MAX ELLC= 794.00

3470 ENCROACHMENT STATIONS= 2097.0 2291.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.60

109.10	14.60	794.60	0.00	794.51	794.81	.21	.00	.00	797.90
6700.	0.	6700.	0.	0.	1829.	0.	4128.	902.	797.60
5.01	0.00	3.66	0.00	.100	.014	.100	.040	780.00	2097.00
.000148	31.	31.	31.	0	0	0	-154.08	194.00	2291.00

*SECNO 109.200
2800 NAT Q1= 3347.18 WSEL= 794.56 ENC Q1= 3399.89 WSEL= 794.66 RATIO= -.0157
NAT Q1= 3400. RATIOS LOB,CH,ROB= 0.0000 1.0000 0.0000 WSEL= 794.66

3470 ENCROACHMENT STATIONS= 2097.0 2291.0 TYPE= 4 TARGET= 0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 797.90 ELREA= 797.60

109.20	14.64	794.64	0.00	794.56	794.82	.18	.00	.01	797.90
6700.	0.	6700.	0.	0.	1992.	0.	4128.	902.	797.60
5.01	0.00	3.36	0.00	.100	.040	.100	.040	780.00	2097.00
.000391	1.	1.	1.	2	0	0	0.00	194.00	2291.00

*SECNO 112.000
2800 NAT Q1= 6584.81 WSEL= 794.96 ENC Q1= 6584.81 WSEL= 795.06 RATIO= 0.0000
NAT Q1= 6738. RATIOS LOB,CH,ROB= .0167 .3597 .6236 WSEL= 795.06

MOORE BUSINESS FORMS, INC. 23

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

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 1911.6 3421.0 TYPE= 4 TARGET= .023
SURVEYED VALLEY SECTION (J)

ROSS SEC (F)

112.00	15.64	795.04	0.00	794.96	795.06	.03	.20	.04	786.70
6700.	36.	2471.	4193.	156.	1230.	7968.	4275.	924.	786.60
5.29	.23	2.01	.53	.100	.040	.100	.040	779.40	1911.64
.000105	950.	1050.	1170.	2	0	0	0.00	1473.87	3421.03

*SECNO 113.000
2800 NAT Q1= 7603.49 WSEL= 795.05 ENC Q1= 7603.49 WSEL= 795.15 RATIO= 0.0000
NAT Q1= 7776. RATIOS LOB,CH,ROB= .0642 .5961 .3397 WSEL= 795.15

3470 ENCROACHMENT STATIONS= 1879.5 3381.9 TYPE= 4 TARGET= .022
SURVEYED VALLEY SECTION (K)

ROSS SEC (G)

113.00	12.53	795.13	0.00	795.05	795.15	.02	.09	.00	788.30
6700.	364.	4090.	2246.	837.	2592.	5755.	4483.	957.	788.30
5.54	.43	1.58	.39	.100	.040	.100	.040	782.60	1879.51
.000078	1070.	1010.	960.	0	0	0	0.00	1502.43	3381.95

CCHV= .100 CEHV= .300
*SECNO 114.000

3470 ENCROACHMENT STATIONS= 1740.0 3760.0 TYPE= 1 TARGET= 2020.000
SURVEYED VALLEY SECTION (L)

ROSS SEC (H)

114.00	13.92	795.22	0.00	795.14	795.24	.02	.08	.00	786.00
6700.	270.	2561.	3869.	896.	1585.	9565.	4768.	1004.	786.00
5.91	.30	1.62	.40	.100	.040	.100	.040	781.30	1745.97
.000065	1200.	1175.	1165.	1	0	0	0.00	2004.30	3750.27

MOORE BUSINESS FORMS, INC 23

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

*SECNO 115.000
2800 NAT Q1= 12084.71 WSEL= 795.23 ENC Q1= 12084.71 WSEL= 795.33 RATIO= 0.0000
NAT Q1= 12378. RATIOS LOB,CH,ROB= .3305 .2786 .3910 WSEL= 795.33

3470 ENCROACHMENT STATIONS= 519.1 3644.8 TYPE= 4 TARGET= .024
SURVEYED VALLEY SECTION (M)

UPSTREAM LIMIT OF AUGUSTA DETAILED STUDY

UPSTREAM LIMIT OF ROSS TOWNSHIP DETAILED STUDY (SEC I)

115.00	15.31	795.31	0.00	795.23	795.31	.01	.08	.00	786.40
6700.	2187.	1915.	2598.	8316.	1674.	9258.	5373.	1104.	786.30
6.84	.26	1.14	.28	.100	.040	.100	.040	780.00	519.05
.000031	2190.	2020.	1380.	0	0	0	0.00	3125.78	3644.84

MOORE BUSINESS FORMS, INC. 23

****
HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
ERROR CORR - 01,02,03,04
MODIFICATION - 50,51,52,53,54
****

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

KALAMAZOO RIVER AT GALES

SUMMARY PRINTOUT

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	81.000	778.51	2007.10	2000.00	2178.00	2162.75	155.65	1.00
	81.000	778.61	2006.70	2000.00	2178.00	2163.12	156.42	1.00
	81.100	779.26	2004.26	2000.00	2178.00	2169.75	165.49	31.00
	81.100	779.31	2004.06	2000.00	2178.00	2169.89	165.83	31.00
	81.200	779.33	2003.97	2000.00	2178.00	2169.95	165.99	1.00
	81.200	779.38	2003.78	2000.00	2178.00	2170.08	166.30	1.00
	83.000	782.98	3076.78	3082.00	3269.00	4649.26	1484.32	3375.00
	83.000	783.05	3082.00	3082.00	3269.00	4371.54	1211.42	3375.00
	84.800	784.74	1198.80	2000.00	2195.00	2282.54	1083.74	4500.00
	84.800	784.84	1512.57	2000.00	2195.00	2237.26	724.69	4500.00
	84.900	785.60	2000.00	2000.00	2176.00	2176.00	176.00	2400.00
	84.900	785.69	2000.00	2000.00	2176.00	2176.00	176.00	2400.00
	85.000	785.60	2000.00	2000.00	2176.00	2176.00	176.00	1.00
*	85.000	785.69	2000.00	2000.00	2176.00	2176.00	176.00	1.00
	85.100	785.61	2000.00	2000.00	2176.00	2176.00	176.00	20.00
*	85.100	785.70	2000.00	2000.00	2176.00	2176.00	176.00	20.00
	85.200	785.62	2000.00	2000.00	2176.00	2176.00	176.00	1.00
	85.200	785.71	2000.00	2000.00	2176.00	2176.00	176.00	1.00
	87.800	786.00	1885.51	2000.00	2190.00	2736.15	850.64	875.00
	87.800	786.08	1882.31	2000.00	2190.00	2700.00	817.69	875.00
	87.900	786.86	2000.00	2000.00	2210.00	2210.00	210.00	1500.00
	87.900	786.91	2000.00	2000.00	2210.00	2210.00	210.00	1500.00

MOORE BUSINESS FORMS, INC 23

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	88.000	786.85	2000.00	2000.00	2210.00	2210.00	210.00	1.00
*	88.000	786.90	2000.00	2000.00	2210.00	2210.00	210.00	1.00
	88.100	786.96	2000.00	2000.00	2210.00	2210.00	210.00	29.00
*	88.100	787.01	2000.00	2000.00	2210.00	2210.00	210.00	29.00
	88.200	786.98	2000.00	2000.00	2210.00	2210.00	210.00	1.00
	88.200	787.03	2000.00	2000.00	2210.00	2210.00	210.00	1.00
	88.300	787.12	1571.42	2000.00	2180.00	2594.67	1023.24	800.00
	88.300	787.16	1844.16	2000.00	2180.00	2304.73	460.57	800.00
	90.000	789.78	374.84	2000.00	2172.00	2631.21	2256.37	6700.00
	90.000	789.86	1231.12	2000.00	2172.00	2350.27	1119.14	6700.00
	91.000	791.24	1650.25	2000.00	2172.00	4183.61	2533.35	7500.00
	91.000	791.33	1892.62	2000.00	2172.00	3885.89	1993.27	7500.00
	99.000	792.66	1811.15	2010.00	2172.00	2698.27	887.12	7150.00
	99.000	792.74	1810.55	2010.00	2172.00	2698.80	888.24	7150.00
	100.000	792.80	1969.83	2003.00	2162.00	2664.69	694.85	575.00
	100.000	792.88	2003.00	2003.00	2162.00	2623.09	620.09	575.00
	101.000	793.24	1717.05	2006.00	2156.00	2188.57	471.52	1345.00
	101.000	793.33	1786.40	2006.00	2156.00	2157.79	371.39	1345.00
	102.000	793.55	1006.31	2008.00	2176.00	2302.39	1296.08	865.00
	102.000	793.64	1451.88	2008.00	2176.00	2284.99	833.12	865.00
	103.000	793.82	1628.13	2005.00	2166.00	2421.87	793.74	1020.00
	103.000	793.91	1873.44	2005.00	2166.00	2390.95	517.50	1020.00
	104.000	794.12	1828.79	2014.00	2144.00	2268.81	440.02	995.00
	104.000	794.21	1828.31	2014.00	2144.00	2269.04	440.72	995.00
	104.900	794.14	2000.00	2000.00	2152.00	2152.00	152.00	139.00
	104.900	794.23	2000.00	2000.00	2152.00	2152.00	152.00	139.00
	105.000	794.11	2000.00	2000.00	2152.00	2152.00	152.00	1.00
	105.000	794.20	2000.00	2000.00	2152.00	2152.00	152.00	1.00
	105.100	794.21	2000.00	2000.00	2152.00	2152.00	152.00	33.00
	105.100	794.30	2000.00	2000.00	2152.00	2152.00	152.00	33.00
	105.200	794.32	2000.00	2000.00	2152.00	2152.00	152.00	1.00
	105.200	794.41	2000.00	2000.00	2152.00	2152.00	152.00	1.00
	108.000	794.50	1920.26	2022.00	2194.00	2271.60	351.34	219.00
	108.000	794.59	1918.97	2022.00	2194.00	2276.53	357.56	219.00

MOORE BUSINESS FORMS, INC 23

	SECNO	CWSEL	SSTA	STCHL	STCHR	ENDST	TOPWID	XLCH
	108.900	794.53	2083.00	2083.00	2277.00	2277.00	194.00	79.00
	108.900	794.62	2083.00	2083.00	2277.00	2277.00	194.00	79.00
	109.000	794.51	2083.00	2083.00	2277.00	2277.00	194.00	1.00
*	109.000	794.60	2083.00	2083.00	2277.00	2277.00	194.00	1.00
	109.100	794.51	2097.00	2097.00	2291.00	2291.00	194.00	30.50
	109.100	794.60	2097.00	2097.00	2291.00	2291.00	194.00	30.50
	109.200	794.56	2097.00	2097.00	2291.00	2291.00	194.00	1.00
	109.200	794.64	2097.00	2097.00	2291.00	2291.00	194.00	1.00
	112.000	794.96	1735.08	2010.00	2110.00	3576.17	1789.43	1050.00
	112.000	795.04	1911.64	2010.00	2110.00	3421.03	1473.87	1050.00
	113.000	795.05	1835.18	2014.00	2260.00	3450.51	1615.32	1010.00
	113.000	795.13	1879.51	2014.00	2260.00	3381.95	1502.43	1010.00
	114.000	795.14	1746.46	2004.00	2130.00	3749.48	2003.01	1175.00
	114.000	795.22	1745.97	2004.00	2130.00	3750.27	2004.30	1175.00
	115.000	795.23	397.48	2018.00	2146.00	3716.18	3318.71	2020.00
	115.000	795.31	519.05	2018.00	2146.00	3644.84	3125.78	2020.00

MOORE BUSINESS FORMS, INC 23

KALAMAZOO RIVER AT GALES

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	81.000	778.51	0.00	779.78	155.65	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
	81.000	778.61	.10	779.83	156.42	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
	81.100	779.26	0.00	779.97	165.49	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
	81.100	779.31	.05	780.01	165.83	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
	81.200	779.33	0.00	779.99	165.99	0.00	6750.00	0.00	0.00	0.00	2000.00	2178.00	0.00
	81.200	779.38	.05	780.03	166.30	0.00	6750.00	0.00	0.00	2000.00	2000.00	2178.00	2178.00
	83.000	782.98	0.00	783.09	1484.32	1.76	4586.86	2161.37	0.00	0.00	3082.00	3269.00	0.00
	83.000	783.05	.07	783.16	1211.42	0.00	4683.15	2066.85	.03	3082.00	3082.00	3269.00	4371.54
	84.800	784.74	0.00	784.90	1083.74	247.42	6328.33	174.25	2424.00	1170.00	2000.00	2195.00	3594.00
	84.800	784.84	.10	785.00	724.69	209.67	6435.81	104.52	.02	1512.57	2000.00	2195.00	2237.27
	84.900	785.60	0.00	785.78	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
	84.900	785.69	.09	785.86	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
*	85.000	785.60	0.00	785.78	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
*	85.000	785.69	.09	785.87	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
*	85.100	785.61	0.00	785.78	176.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2176.00	0.00
*	85.100	785.70	.09	785.87	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
	85.200	785.62	0.00	785.79	176.00	0.00	6750.00	0.00	2424.00	1170.00	2000.00	2176.00	3594.00
	85.200	785.71	.09	785.87	176.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2176.00	2176.00
	87.800	786.00	0.00	786.13	850.64	61.31	5166.48	1522.21	988.00	1800.00	2000.00	2190.00	2788.00
	87.800	786.08	.08	786.20	817.69	65.01	5167.72	1517.27	865.00	1835.00	2000.00	2190.00	2700.00
	87.900	786.86	0.00	787.16	210.00	0.00	6750.00	0.00	2018.00	478.00	2000.00	2210.00	2496.00
	87.900	786.91	.05	787.21	210.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2210.00	2210.00
*	88.000	786.85	0.00	787.17	210.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2210.00	0.00
*	88.000	786.90	.05	787.22	210.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2210.00	2210.00
*	88.100	786.96	0.00	787.20	210.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2210.00	0.00
*	88.100	787.01	.05	787.25	210.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2210.00	2210.00
	88.200	786.98	0.00	787.21	210.00	0.00	6750.00	0.00	0.00	0.00	2000.00	2210.00	0.00
	88.200	787.03	.05	787.25	210.00	0.00	6750.00	0.00	0.00	2000.00	2000.00	2210.00	2210.00
	88.300	787.12	0.00	787.36	1023.24	405.64	6079.81	264.55	0.00	0.00	2000.00	2180.00	0.00
	88.300	787.16	.04	787.41	460.57	344.86	6206.09	199.05	.03	1844.16	2000.00	2180.00	2304.73
	90.000	789.78	0.00	789.85	2256.37	1531.10	4692.04	526.86	0.00	0.00	2000.00	2172.00	0.00
	90.000	789.86	.08	789.94	1119.14	1520.98	4766.39	462.63	.03	1231.12	2000.00	2172.00	2350.27

MOORE BUSINESS FORMS, INC. 23

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	91.000	791.24	0.00	791.29	2533.35	304.09	3880.35	2565.56	2900.00	1300.00	2000.00	2172.00	4200.00
	91.000	791.33	.09	791.38	1993.27	180.46	3951.43	2618.11	.04	1892.62	2000.00	2172.00	3885.89
	99.000	792.66	0.00	792.75	887.12	428.01	4712.69	1579.30	994.00	1716.00	2010.00	2172.00	2710.00
	99.000	792.74	.08	792.83	888.24	434.38	4691.26	1594.37	895.00	1805.00	2010.00	2172.00	2700.00
	100.000	792.80	0.00	792.94	694.85	50.15	5419.41	1250.44	806.00	1898.00	2003.00	2162.00	2704.00
	100.000	792.88	.08	793.02	620.09	0.00	5492.41	1227.59	.06	2003.00	2003.00	2162.00	2623.09
	101.000	793.24	0.00	793.39	471.52	1014.59	5638.26	67.16	740.00	1606.00	2006.00	2156.00	2346.00
	101.000	793.33	.09	793.48	371.39	993.44	5721.83	4.73	.02	1786.40	2006.00	2156.00	2157.79
	102.000	793.55	0.00	793.64	1296.08	1441.05	4698.13	580.82	0.00	0.00	2008.00	2176.00	0.00
	102.000	793.64	.09	793.73	833.12	1426.76	4781.12	512.12	.02	1451.88	2008.00	2176.00	2285.00
	103.000	793.82	0.00	793.93	793.74	753.11	4992.35	954.54	0.00	0.00	2005.00	2166.00	0.00
	103.000	793.91	.09	794.02	517.50	710.10	5074.74	915.15	.02	1873.44	2005.00	2166.00	2390.95
	104.000	794.12	0.00	794.32	440.02	630.94	5509.58	559.47	1413.00	900.00	2014.00	2144.00	2313.00
	104.000	794.21	.09	794.41	440.72	642.52	5490.80	566.68	445.00	1825.00	2014.00	2144.00	2270.00
	104.900	794.14	0.00	794.48	152.00	0.00	6700.00	0.00	0.00	0.00	2000.00	2152.00	0.00
	104.900	794.23	.09	794.56	152.00	0.00	6700.00	0.00	0.00	2000.00	2000.00	2152.00	2152.00
	105.000	794.11	0.00	794.50	152.00	0.00	6700.00	0.00	0.00	0.00	2000.00	2152.00	0.00
	105.000	794.20	.09	794.59	152.00	0.00	6700.00	0.00	3108.00	342.00	2000.00	2152.00	3450.00
	105.100	794.21	0.00	794.53	152.00	0.00	6700.00	0.00	0.00	0.00	2000.00	2152.00	0.00
	105.100	794.30	.09	794.62	152.00	0.00	6700.00	0.00	3132.00	342.00	2000.00	2152.00	3474.00
	105.200	794.32	0.00	794.55	152.00	0.00	6700.00	0.00	0.00	0.00	2000.00	2152.00	0.00
	105.200	794.41	.09	794.64	152.00	0.00	6700.00	0.00	0.00	2000.00	2000.00	2152.00	2152.00
	108.000	794.50	0.00	794.67	351.34	275.73	6242.22	182.05	489.00	1897.00	2022.00	2194.00	2386.00
	108.000	794.59	.09	794.76	357.56	280.17	6234.52	185.31	385.00	1905.00	2022.00	2194.00	2290.00
	108.900	794.53	0.00	794.70	194.00	0.00	6700.00	0.00	0.00	0.00	2083.00	2277.00	0.00
	108.900	794.62	.09	794.78	194.00	0.00	6700.00	0.00	0.00	2083.00	2083.00	2277.00	2277.00
	109.000	794.51	0.00	794.72	194.00	0.00	6700.00	0.00	0.00	0.00	2083.00	2277.00	0.00
*	109.000	794.60	.09	794.80	194.00	0.00	6700.00	0.00	0.00	2083.00	2083.00	2277.00	2277.00
	109.100	794.51	0.00	794.73	194.00	0.00	6700.00	0.00	0.00	0.00	2097.00	2291.00	0.00
	109.100	794.60	.09	794.81	194.00	0.00	6700.00	0.00	0.00	2097.00	2097.00	2291.00	2291.00
	109.200	794.56	0.00	794.74	194.00	0.00	6700.00	0.00	0.00	0.00	2097.00	2291.00	0.00
	109.200	794.64	.08	794.82	194.00	0.00	6700.00	0.00	0.00	2097.00	2097.00	2291.00	2291.00
	112.000	794.96	0.00	794.99	1789.43	105.35	2432.86	4161.80	2056.00	1600.00	2010.00	2110.00	3656.00
	112.000	795.04	.07	795.06	1473.87	36.26	2471.18	4192.56	.02	1911.64	2010.00	2110.00	3421.03

MOORE BUSINESS FORMS, INC 23

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
113.000	795.05	0.00	795.07	1615.32	427.77	4019.99	2252.24	0.00	0.00	2014.00	2260.00	0.00
113.000	795.13	.08	795.15	1502.43	363.75	4090.17	2246.08	.02	1879.51	2014.00	2260.00	3381.95
114.000	795.14	0.00	795.16	2003.01	265.41	2579.25	3855.34	2068.00	1732.00	2004.00	2130.00	3800.00
114.000	795.22	.08	795.24	2004.30	269.62	2561.13	3869.25	2020.00	1740.00	2004.00	2130.00	3760.00
115.000	795.23	0.00	795.24	3318.71	2200.64	1887.39	2611.97	0.00	0.00	2018.00	2146.00	0.00
115.000	795.31	.07	795.31	3125.78	2186.73	1914.97	2598.30	.02	519.05	2018.00	2146.00	3644.84

MOORE BUSINESS FORMS, INC 23

SUMMARY OF ERRORS

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CAUTION  SECNO=   85.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
CAUTION  SECNO=   85.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
CAUTION  SECNO=   88.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
CAUTION  SECNO=   88.100  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
CAUTION  SECNO=  109.000  PROFILE= 2  BRIDGE DECK DEFINITION ERROR
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MOORE BUSINESS FORMS, INC. 23

FLOODWAY DATA, KALAMAZOO RIVER AT GALES
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
81.000	156.	760.	8.9	778.6	778.5	.1
81.100	166.	1006.	6.7	779.3	779.3	0.0
81.200	166.	1045.	6.5	779.3	779.3	0.0
83.000	1290.	4410.	1.5	783.1	783.0	.1
84.800	725.	2732.	2.5	784.8	784.7	.1
84.900	176.	2042.	3.3	785.7	785.6	.1
85.000	176.	1994.	3.4	785.7	785.6	.1
85.100	176.	2028.	3.3	785.7	785.6	.1
85.200	176.	2077.	3.2	785.7	785.6	.1
87.800	818.	3833.	1.8	786.1	786.0	.1
87.900	210.	1537.	4.4	787.0	786.9	.1
88.000	210.	1490.	4.5	787.0	786.9	.1
88.100	210.	1705.	4.0	787.1	787.0	.1
88.200	210.	1767.	3.8	787.1	787.0	.1
88.300	461.	2200.	3.1	787.1	787.1	0.0
90.000	1119.	5463.	1.2	789.9	789.8	.1
91.000	1993.	8026.	.8	791.3	791.2	.1
99.000	888.	4858.	1.4	792.8	792.7	.1
100.000	620.	3419.	2.0	792.9	792.8	.1
101.000	371.	2932.	2.3	793.3	793.2	.1
102.000	833.	4696.	1.4	793.7	793.6	.1
103.000	518.	3675.	1.8	793.9	793.8	.1
104.000	441.	2821.	2.4	794.2	794.1	.1
104.900	152.	1445.	4.6	794.2	794.1	.1
105.000	152.	1342.	5.0	794.2	794.1	.1
105.100	152.	1478.	4.5	794.3	794.2	.1
105.200	152.	1721.	3.9	794.4	794.3	.1
108.000	358.	2439.	2.7	794.6	794.5	.1
108.900	194.	2031.	3.3	794.6	794.5	.1
109.000	194.	1837.	3.6	794.6	794.5	.1
109.100	194.	1829.	3.7	794.6	794.5	.1
109.200	194.	1992.	3.4	794.7	794.6	.1
112.000	1509.	9353.	.7	795.1	795.0	.1
113.000	1502.	9184.	.7	795.2	795.1	.1
114.000	2004.	12047.	.6	795.2	795.1	.1
115.000	3126.	19249.	.3	795.3	795.2	.1

MOORE BUSINESS FORMS, INC. 23

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APRI 1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
**********************************************************
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0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MOORE BUSINESS FORMS, INC. 23

00BREAK00

1) COUNTY: KALAMAZOO

2) STUDY NAME: VILLAGES OF GALESBURG AND AUGUSTA ~~CHARLESTON AND ROSS TOWNSHIPS~~

3) WATERCOURSE: KALAMAZOO RIVER

4) DOCUMENT TYPE: REPORT

00BREAK00

HYDRAULIC ANALYSIS REPORT

KALAMAZOO RIVER
AT

GALESBURG
CHARLESTON TOWNSHIP
AUGUSTA
ROSS TOWNSHIP

KALAMAZOO COUNTY

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 East Washington Avenue
Jackson, Michigan 49201

March, 1980

INTRODUCTION

The Kalamazoo River Flood Insurance Study was broken up by community into five segments including Kalamazoo City and Township, Comstock Township, City of Galesburg, and the Village of Augusta. These communities were assigned to Wade, Trim & Associates, Inc. and Commonwealth Associates Inc. without regard to study location and hydraulic continuity. In order to interpret the hydraulic data logically and accurately, the entire Kalamazoo River study should be reviewed at the same time. Commonwealth and Wade Trim coordinated their studies and submittals to make this possible.

This report will describe the hydraulic calculations performed in analyzing the Kalamazoo River from the Morrow Lake Dam to the upstream limits of Ross Township. Included in this portion of the study are the city of Galesburg, Charleston Township, village of Augusta, and Ross Township. Within the study area several different methods of analysis were utilized. Approximate methods of analysis were used to study those areas having low development potential or a minimal flood hazard. The areas studied by detailed or limited detailed methods were substantially developed and/or susceptible to flooding. The method of study for each particular area was as follows:

1. Morrow Lake Dam to the downstream limits of the city of Galesburg (part of WTA contract) - detailed study.

2. Within the corporate limits of Galesburg and extending east into the first one-half mile of Charleston Township adjoining Galesburg - limited detail study.

3. The remainder of Charleston Township up to the downstream corporate limit of the village of Augusta (including the Kalamazoo River tributary Gull Creek) - approximate study.

4. Within the corporate limits of the village of Augusta - detailed study (Augusta Creek, a tributary of the Kalamazoo River, was also studied in detail but is included in a separate report).

5. Remainder of Ross Township - approximate study.

Structure data and stream cross sections were taken by Commonwealth survey crews in January, 1979. The flood discharge values were obtained from the hydrology report for the Kalamazoo River at Augusta, Galesburg, and Charleston. The report was prepared by

Commonwealth Associates in May, 1979 and revised in July, 1979 before being approved by the DNR on August 1, 1979. Contour information was obtained from the U.S.G.S. topographic maps for Galesburg, Michigan and Augusta, Michigan. For the detailed study within the village of Augusta, an aerial topographic survey map with a 4-foot contour interval prepared by Gove Engineers was used.

The above data was analyzed by Commonwealth Associates Inc., Jackson, Michigan under the supervision of Project Manager, R. F. Nilsen, P.E.

METHOD OF ANALYSIS

The water surface profile was computed and plotted at various cross sections using the HEC-2 computer program. The cross sections were taken at representative locations along the river reach where changes occurred in slope or cross-sectional area and at hydraulic structures. Where an abrupt change occurred in the channel, several cross sections were taken to accurately describe the transition. Hydraulic structures were analyzed using the Normal Bridge routine option of the HEC-2 program.

VARIABLES AND COEFFICIENTS

Manning's coefficient of roughness "n" depends on several factors such as: 1) type and amount of vegetation, 2) channel configuration and stage, 3) material through which the channel is constructed, and 4) channel meandering. Without an in-depth study of these factors, an "n" value can only be estimated. The method used in estimating the roughness coefficient for this study is described in the preface, Supplement B of the "Guide for Selecting Roughness Coefficient "n" Values for Channels," United States Department of Agriculture - Soil Conservation Service, December, 1963. The values obtained were compared with photographs taken at the time of the field survey to confirm that the calculated coefficients were reasonable.

Manning's Roughness Coefficient

Natural channel	0.04
Bridge channel	0.014
Overbanks	0.10
Lake overbanks	0.11

The loss coefficients (contraction and expansion) were obtained from the "Application of the HEC-2 Bridge Routines," Corps of Engineers, Training Document No. 6, June, 1974.

Coefficients for Natural Channel

Contraction	0.1
Expansion	0.3

Coefficients for Bridges and Constriction

Contraction	0.3
Expansion	0.5

HIGH-WATER MARKS

No high-water marks were available for this portion of the study. C of E's 308 shows 1907 flood which is less than 1947

STARTING CONDITIONS

The Morrow Lake Dam control structure consists of four, 24-foot x 14-foot high tainter gates with 4-foot high flap gates located on top of the tainter gates. The tainter gates are not used to regulate the dam reservoir water surface. Instead, the flap gates are adjusted during storms to maintain the normal lake elevation at 776.0. During a major storm, the flap gates are fully opened to Elevation 772.5 and the water surface elevation is allowed to rise. David Long, operator of the dam, provided Wade, Trim & Associates with a rating table indicating the flows associated with specific feet of water above the fully opened flap gates. This data was used to develop a rating curve for the Morrow Lake Dam (see Appendix A). The starting water surface elevations for the various flood flows were taken from this rating curve.

SPECIAL PROBLEMS AND CONSIDERATIONS

No special problems were encountered during the hydraulic analysis but several factors were considered while performing the study. Uppermost on the list for special consideration was the coordination of the study with the downstream analysis being performed by Wade, Trim & Associates. Although the Morrow Lake Dam prevented the starting water surfaces from being dependent on the downstream study, river data could still be compared. Over the reach of the Morrow Lake Dam through the Ross Township study there were no high-water marks, gaging stations, or any other means of determining if the computed water elevations were realistic.

In essence, this based the entire hydraulic analysis on an "estimated" Manning's "n" factor. However, the Wade & Trim study immediately downstream of the Morrow Lake Dam had to comply with the recorded data at the Comstock gaging station. Since the Kalamazoo River remains much the same on either side of the dam, it would be reasonable to assume the "n" factor needed to match the gaging station elevations at Comstock would be very close to the "n" factors for the upstream Kalamazoo River as well. Wade & Trim's "n" value of .030 compared favorably to a value of .040 used by Commonwealth.

As described earlier in this report, several different methods of analysis were required over the reach of this study. However, the detailed study required at the village of Augusta necessitated calculating a starting water surface for the 10, 50, 100 and 500-year floods. In order to compute the necessary elevations at Augusta, all four profiles were run the entire reach from the Morrow Lake Dam. This resulted in extra data for the approximate and limited detail studies on the computer printout. Only the required data was placed on the maps, however.

REFERENCES

1. Guide for Selecting Roughness Coefficient "n" Values for Channels, United States Department of Agriculture, Soil Conservation Service, December, 1963.

2. Design of Small Dams, Bureau of Reclamation, 1973.

3. Applied Hydraulics in Engineering, Morris and Wiggert, Second Edition, 1972.

APPENDIX A

Starting water surface elevation calculations.

APPENDIX B

Calculations for "n," bridge factors and dam hydraulics along with bridge sketches.

APPENDIX C

Water surface profiles indicating 10, 50, 100 and 500-year floods.

APPENDIX D

Cross section reference and plots

APPENDIX E

The final HEC-2 printouts for the multiprofile run, 100-year natural and encroachment run. Also, a map indicating the 100-year flood plain, floodway, and location of the cross sections.

APPENDIX A

(STARTING WATER SURFACE ELEVATION)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 1 OF
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

GALESBURG FLOWS: DA=1035 – city of Galesburg.

10 year	4500 cfs	
50 yr	6070 ✓	ok Hope
100 yr	6750 ✓	
500 yr	8420 ✓	

Calculate head required at dam for specified flows

Wier Equation $Q = CLH^{3/2}$ H includes Velocity head

C = 3.6 (From Wade, Trim & Assoc.)
L = 96'

10 yr –

$4500 = (3.6)(96) H^{3/2}$

$H = 5.53'$

50 yr –

$6070 = (3.6)(96) H^{3/2}$

$H = 6.76'$

100 yr –

$6750 = (3.6)(96) H^{3/2}$

$H = 7.25'$

500 yr –

$8420 = (3.6)(96) H^{3/2}$ $H = 8.40'$

The Velocity acrossed Lake Morrow will be very small (negligible). The starting water surface can be set equal to the total head (H).

STARTING WATER SURFACE ELEVATIONS

10 yr 772.5 + 5.53 = 778.03 ck with Rating Curve

50 yr 772.5 + 6.76 = 779.26

100 yr 772.5 + 7.25 = 779.75

500 yr 772.50 + 8.40 = 780.90

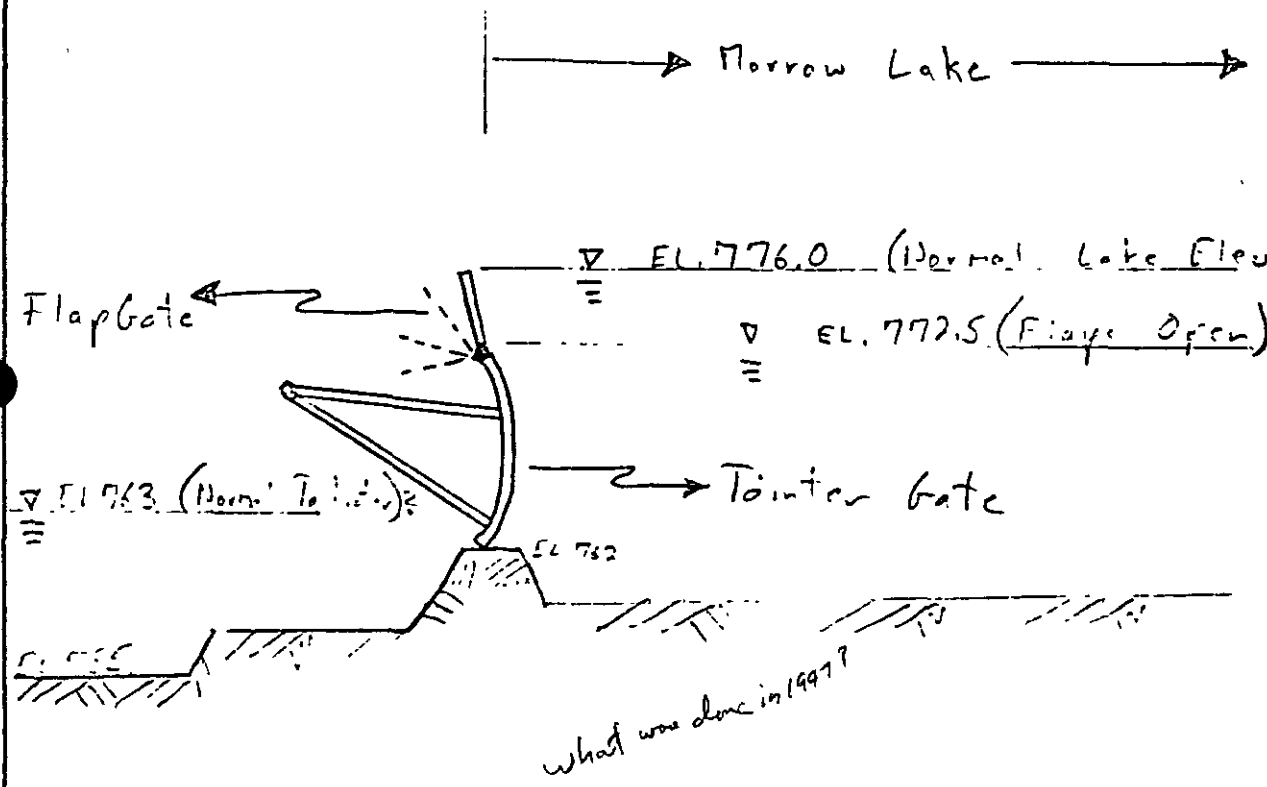
Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

REFERENCE

Morrow Lake Rating Curve

The Morrow Lake Dam control structure consists of 4 — 24' x 14' High Tainter gates with approximately 4' high flap gates placed on top of the tainter gates.



what was done in 1997?

The flap gates are normally adjusted during storms in such a way that the normal lake elevation remains at Elevation 776.0. During a major storm, the Tainter gates remain closed while the flap gates are fully open.

Therefore, 10, 50, 100 + 500 yr storms will occur with the flap gates open to elevation 772.5 and the tainter gates will be closed.

Exhibit # 1

FORM 25-0
(313) 291-5400

Wade, Trim & Associates, Inc.
Civil Engineers • Land Surveyors
WORK SHEET

25185 GODDARD ROAD
TAYLOR, MICHIGAN 48180

REFERENCE

(cont'd) Morrow Lake

The following rating table was obtained from David Long who is the Spillway engineer/operator. "C" values were calculated using the weir flow equation. This rating table applies to the flop gates:

Feet of Water over Gates	Flow (cfs)	"C" Value $C = \frac{Q}{L H^{3/2}}$
.1	16	5.27
.15	28	5.02
.2	40	4.66
.25	52	4.33
.3	64	4.06
.4	88	3.62
.5	120	3.54
.75	220	3.53
1.0	328	3.42
1.25	468	3.49
1.5	608	3.45
1.75	772	3.47
2.0	944	3.48
2.25	1136	3.51
2.5	1336	3.52
2.75	1548	3.54
3.0	1768	3.54
3.25	2000	3.56
3.5	2248	3.58
3.75	2508	3.6
4.0	2776	3.6

Flowrates for the Comstock Flood Insurance Study range from 4500 to 8420; therefore, a "C" value of 3.6 will be used in all cases.

Exhibit #1

REFERENCE

Morrow Lake Rating Curve

Note: Tailwater Submergence of the flap gates appears highly unlikely; however, this must be verified.

$C = 3.6$ $L = 96'$

Head on Flap Gate (ft.)	Elevation	$Q = CLH^{3/2}$
4.5	777.0	3299
5.0	777.5	3864
5.5	778.0	4458
6.0	778.5	5079
6.5	779.0	5727
7.0	779.5	6400
7.5	780.0	7099
8.0	780.5	7820
* 8.5	781.0	8565

*The embankment of the dam is overtopped at elevation 781.0

The Morrow Lake Rating Curve is presented as exhibit 1. The plans for the Dam are presented as exhibit 2.

Exhibit 1

K·E 10 X 10 TO ½ INCH 7 X 10 INCHES
KEUFFEL & ESSER CO MADE IN U.S.A.

46 1320

Consumers Power Flowage right to elev 783

COMSTOCK F.E.S.

Rating Curve for Morrow Lake Dam

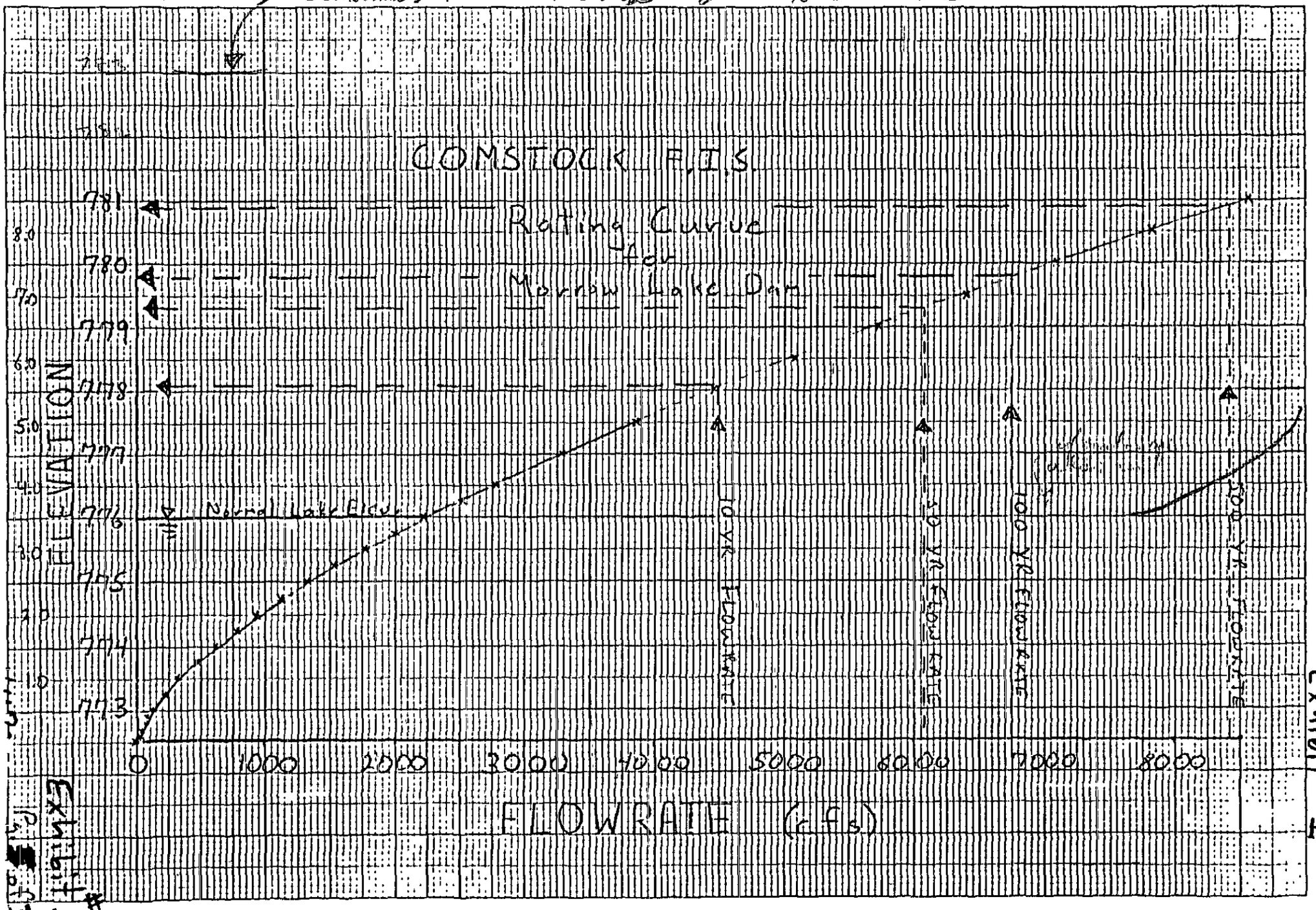


Exhibit #1

Exhibit #1

APPENDIX B

(CALCULATIONS AND BRIDGE SKETCHES)

Gilbert/Commonwealth
209 E Washington Avenue, Jackson, MI 49201

CALCULATION SHEET REV.

CLIENT/OWNER	FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE) / CHECKED BY/DATE (SIGNATURE)	SUBJECT: Estimating "n" value For Channel
	SHEET 1 OF 2 / BOOK NO.

From "Guide For Selecting Roughness Coefficient "n" Values for channels" U.S.D.A., Soil Conservation Service, December 1963, Supplement B

① Basic "n" for channel channel in earth	0.02
② Surface irregularity moderate	.005
③ Variation in shape & size of cross sections changes in shape occasional	.0
④ Obstructions negligible - minor	.005
⑤ Vegetation low growth	.005
Subtotal (n_s)	.035
⑥ Meandering of channel Appreciable (.15 n_s)	= .005
Total	= .040

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE / JOB NO.

CALC. BY/DATE (SIGNATURE) / CHECKED BY/DATE (SIGNATURE)	SUBJECT	SHEET / BOOK NO.	OF
	Estimating "n" value for Overbanks	2	2

①	Basic "n" For overbank overbank in earth	0.02
②	Surface irregularity moderate	0.01
③	Variation in shape & size of cross sections occasional	0.005
④	Obstructions appreciable	0.03
⑤	Vegetation high	0.025
	Subtotal (n_s)	0.090
⑥	Meandering of channel appreciable (.15 n_s) =	0.013
	Total =	0.103

use 0.10

General Fieldnote Form S-1

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-15-79

INSTRUMENTS: NA 2

TEMP (DRY BULB)

WET BULB

RH %

BAR.

PROJECT: HUD

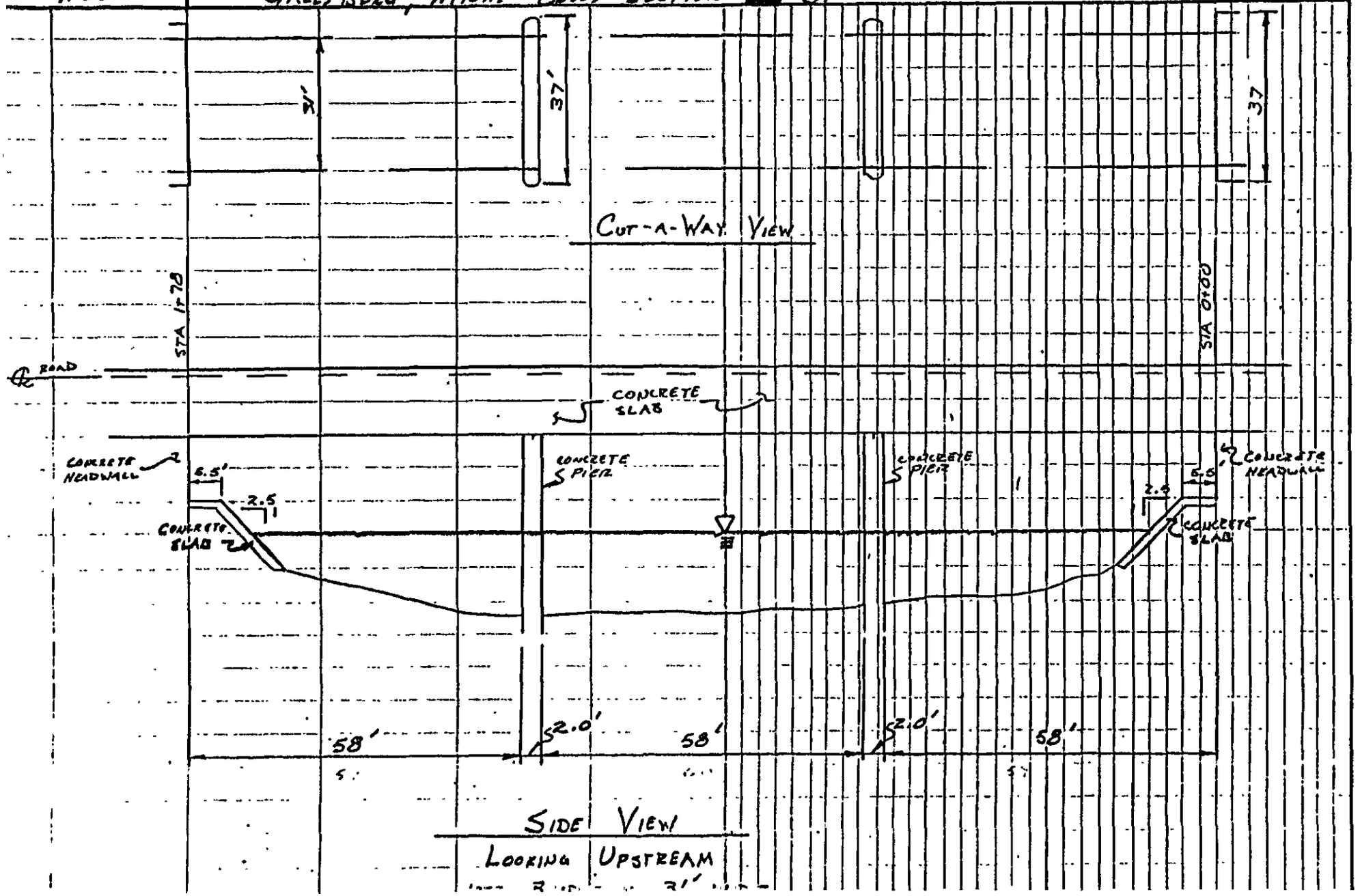
LOCATION: GALESBURG, MICH. CROSS SECTION # 81

CHECKED BY

DATE

ACTIVITY CROSS SECTION # 81 BOOK 21-04 PAGE 13

SIDE VIEW - LOOKING UPSTREAM STA. DOWNSTREAM = FACE



Picture

General Fieldnote Form S[illegible]7A

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HERR

DATE: 1-22-79

INSTRUMENTS: NA 2

TEMP (DRY BULB) 27

WET BULB

RH %

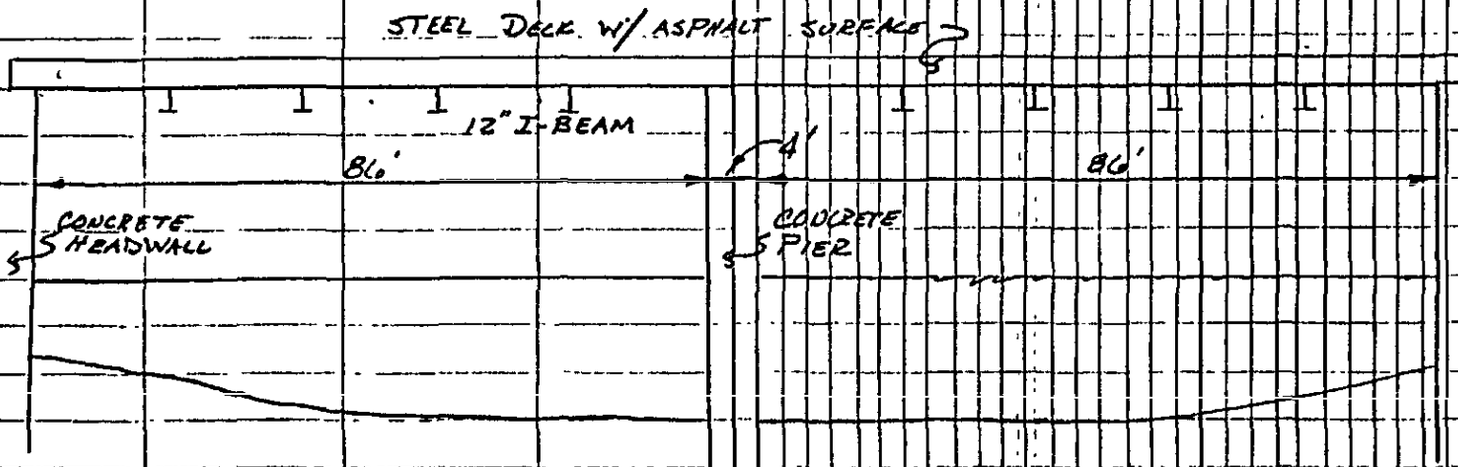
BAR.

PROJECT: HUD

LOCATION: GALESBURG, MICH. CROSS SECTION [redacted] 85

CHECKED BY

DATE



SIDE VIEW LOOKING UPSTREAM

BRIDGE WIDTH - 20'

ACTIVITY CROSS SECTION # 85 JOB [illegible] PAGE [illegible]

STA. 11' DOWN STREAM

General Fieldnote Form S-[illegible]A

COMMONWEALTH ASSOCIATES INC.

CREW: Fouty, Bearinger, Herz

DATE: 1-22-79 | INSTRUMENTS: NA 2 | TEMP (DRY BULB) 27 | WET BULB | RH % | BAR.

PROJECT: HUD | LOCATION: Galesburg, Mich. Cross Section 88 | CHECKED BY | DATE

ACTIVITY Cross Section 88 BOOK 21-06 PAGE 34

STA. 2+10

ROAD AXIS

CONC. BEAM

CONC. HEADWALL

57.5'

3' CONC. PIER

89'

3' CONC. PIER

57.5'

CONC. HEADWALL

3' CONC. PIER

0.5' TYP.

SIDE VIEW - LOOKING UPSTREAM

NOTE - BRIDGE IS 29' WIDE

WIDTH OF HEADWALL - 37'

STA.

COMMONWEALTH ASSOCIATES INC.

CREW: FOUTY, BEARINGER, HGER

DATE: 12-20-78

INSTRUMENTS:

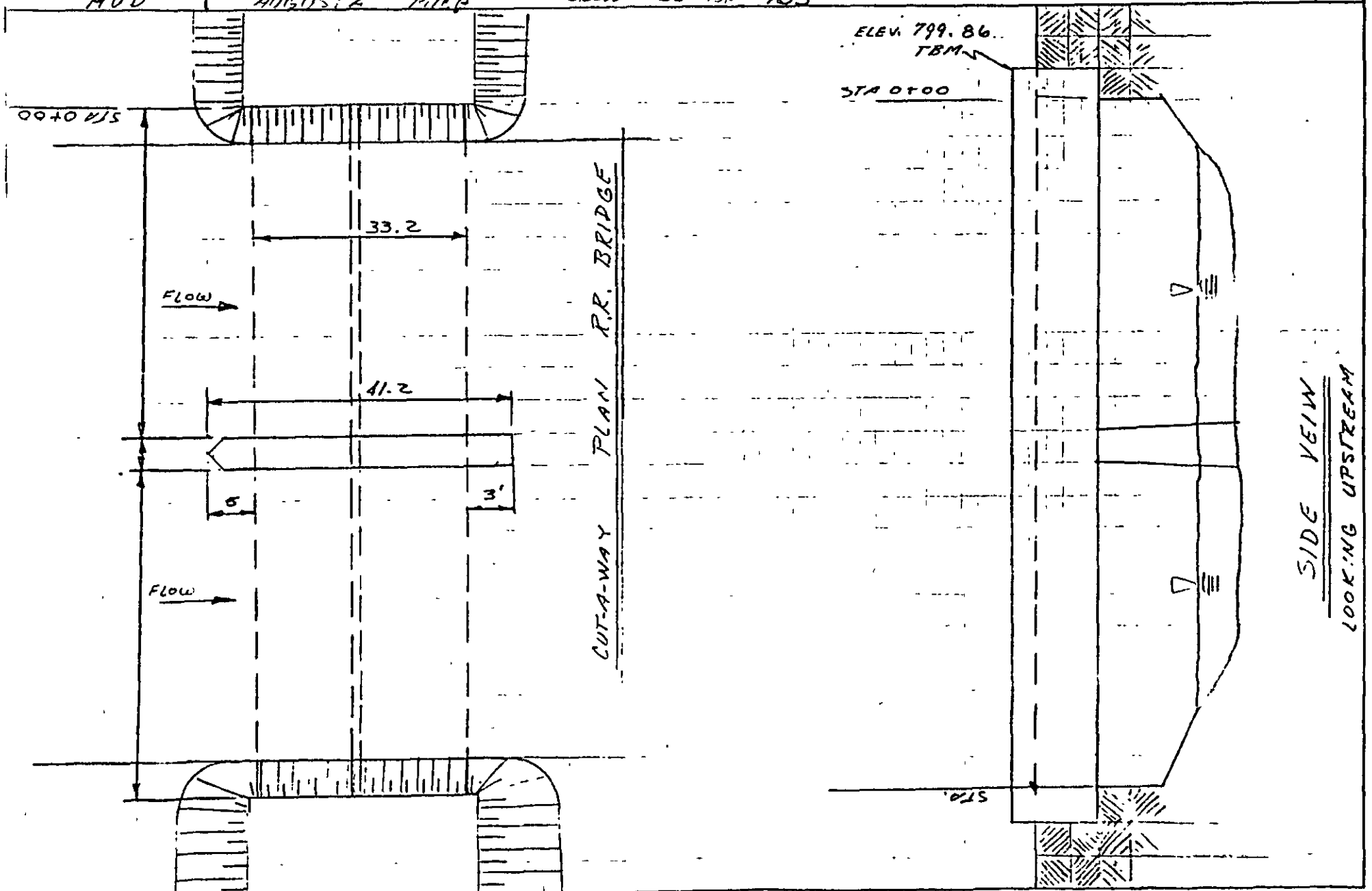
TEMP (DRY BULB) 30 | WET BULB | RH % | BAR.

PROJECT: HUD

LOCATION: AUGUSTA MICH Cross Section 105

CHECKED BY DATE

ACTIVITY R.R. BRIDGE OVER KALAMAZOO RIVER SEC 105 STA. BOOK 2.1-01 PAGE 46



General Field Data Form S-127A

COMMONWEALTH ASSOCIATES INC.

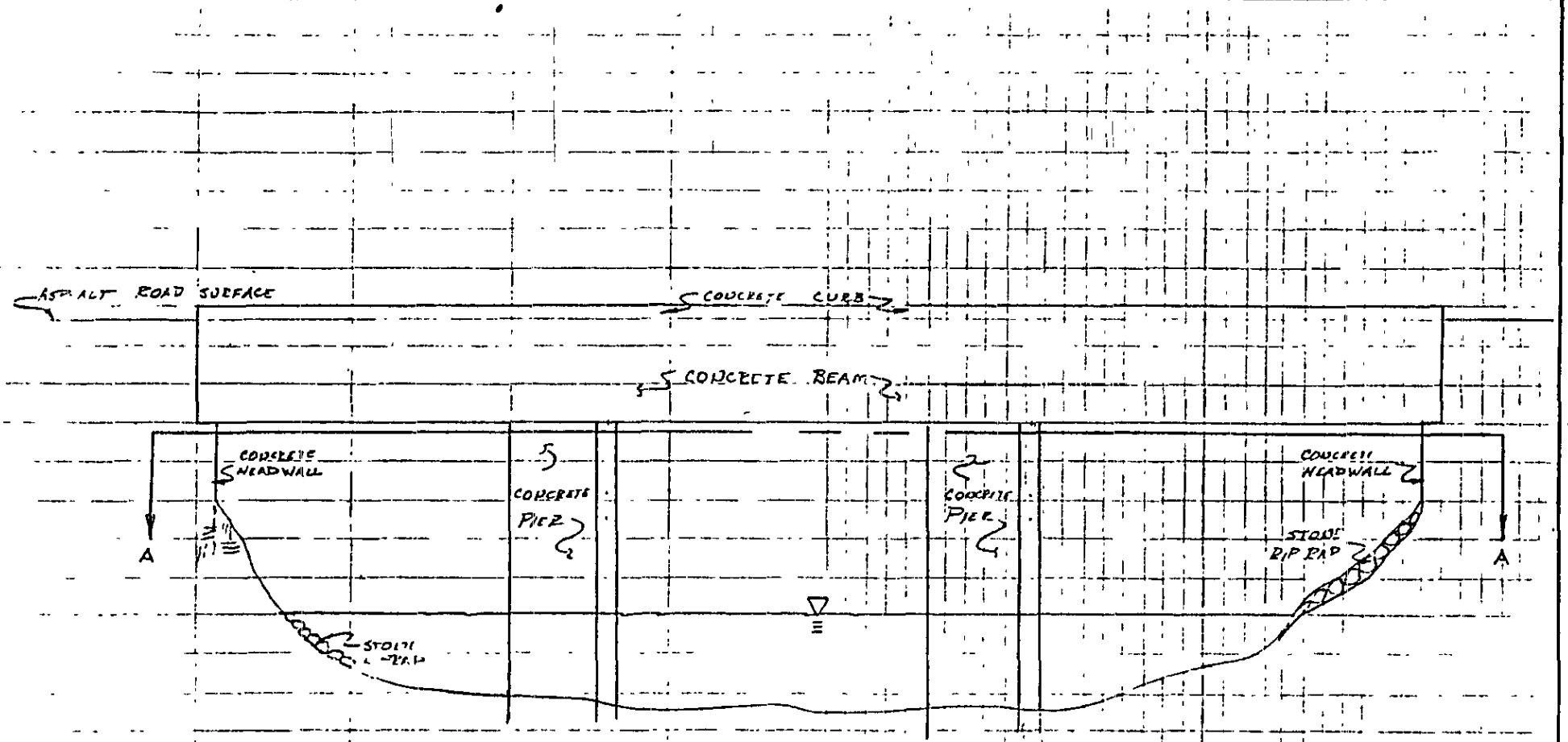
CREW: FOUTY, BEARINGER, HEER

DATE: 12-26-78 | INSTRUMENTS: NAZ | TEMP (DRY BULB): 24 | WET BULB: | RH: % | BAR.

PROJECT: HUD | LOCATION: AUGUSTA, MICH CROSS SECTION 109 | CHECKED BY / DATE

ACTIVITY Cross Section 109 BOOK 2-1-01 PAGE 67

STA.



SIDE VIEW

LOOKING UPSTREAM

General Field Note Form S-127A

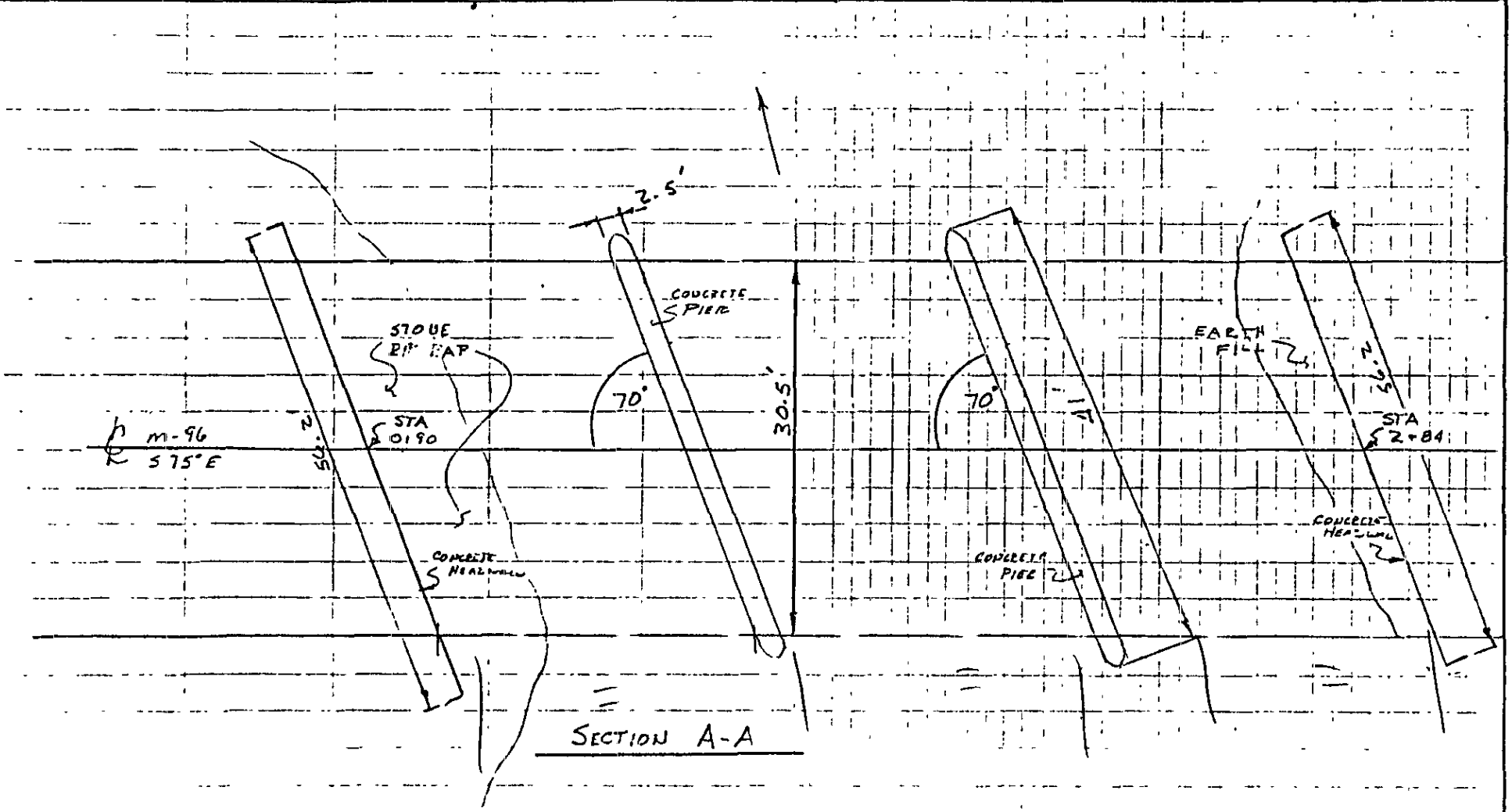
OMMONWEALTH ASSOCIATES INC. | CREW: FOUTY, BEARINGER, HERR.

12-26-78 | INSTRUMENTS: NA 2 | TEMP (DRY BULB) 24 | WET BULB | RH % | BAR.

CT: HUD | LOCATION: AUGUSTA, MICH. CROSS SECTION 109, [redacted], [redacted] | CHECKED BY | DATE

ACTIVITY Cross Section 109, [redacted] BOOK 21-01 PAGE [redacted]

STA.



SECTION A-A

APPENDIX C

(PROFILES)

APPENDIX D

(CROSS SECTION PLOTS)

CROSS SECTION REFERENCE FOR GALESBURG

(LIMITED DETAIL STUDY)

Cross Section ID on Profile	Sec. No. in HEC-2	Description
A	81.0	Downstream face of 35th St. Bridge (Downstream limit of Galesburg Study)
B	83.0	Surveyed Valley Section
C	84.8	Surveyed Valley Section
D	85.0	Downstream face of condemned bridge
E	87.8	Surveyed Valley Section
F	88.0	Downstream face of Michigan Street Bridge
G	88.3	Surveyed Valley Section (Upstream limit of Galesburg Study)

CROSS SECTION REFERENCE FOR
THE KALAMAZOO RIVER AT AUGUSTA

(DETAILED STUDY)

Cross Section ID on Profile	Sec. No. in Hec-2	Description
A	99.0	Surveyed Valley Section (Downstream limit of study)
B	100.0	Surveyed Valley Section
C	101.0	Surveyed Valley Section
D	102.0	Surveyed Valley Section
E	103.0	Surveyed Valley Section
F	104.0	Surveyed Valley Section
G	105.0	Downstream face of Railroad Bridge
H	108.0	Surveyed Valley Section
I	109.0	Downstream face of M-96 Bridge
J	112.0	Surveyed Valley Section
K	113.0	Surveyed Valley Section
L	114.0	Surveyed Valley Section
M	115.0	Surveyed Valley Section (Upstream limit of Augusta Study)

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET

796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00

100 YEAR

120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00 360.00 380.00

DISTANCE IN FEET *10[1]

SECTION NO. 126.900

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET

796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00

100 YEAR

120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00 360.00 380.00

DISTANCE IN FEET ×10

SECTION NO. 127.000

ELEVATION IN FEET
796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00

100 YEAR

120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00 360.00 380.00

DISTANCE IN FEET *10[1]

SECTION NO. 127.100

FLOOD INSURANCE STUDY
AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY
AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET
806.00
808.00
810.00
812.00
814.00
804.00
802.00
800.00
798.00
796.00

100 YEAR

1990.00 2000.00 2010.00 2020.00 2030.00 2040.00 2050.00 2060.00 2070.00 2080.00 2090.00 2100.00 2110.00 2120.00

DISTANCE IN FEET

SECTION NO. 127.300

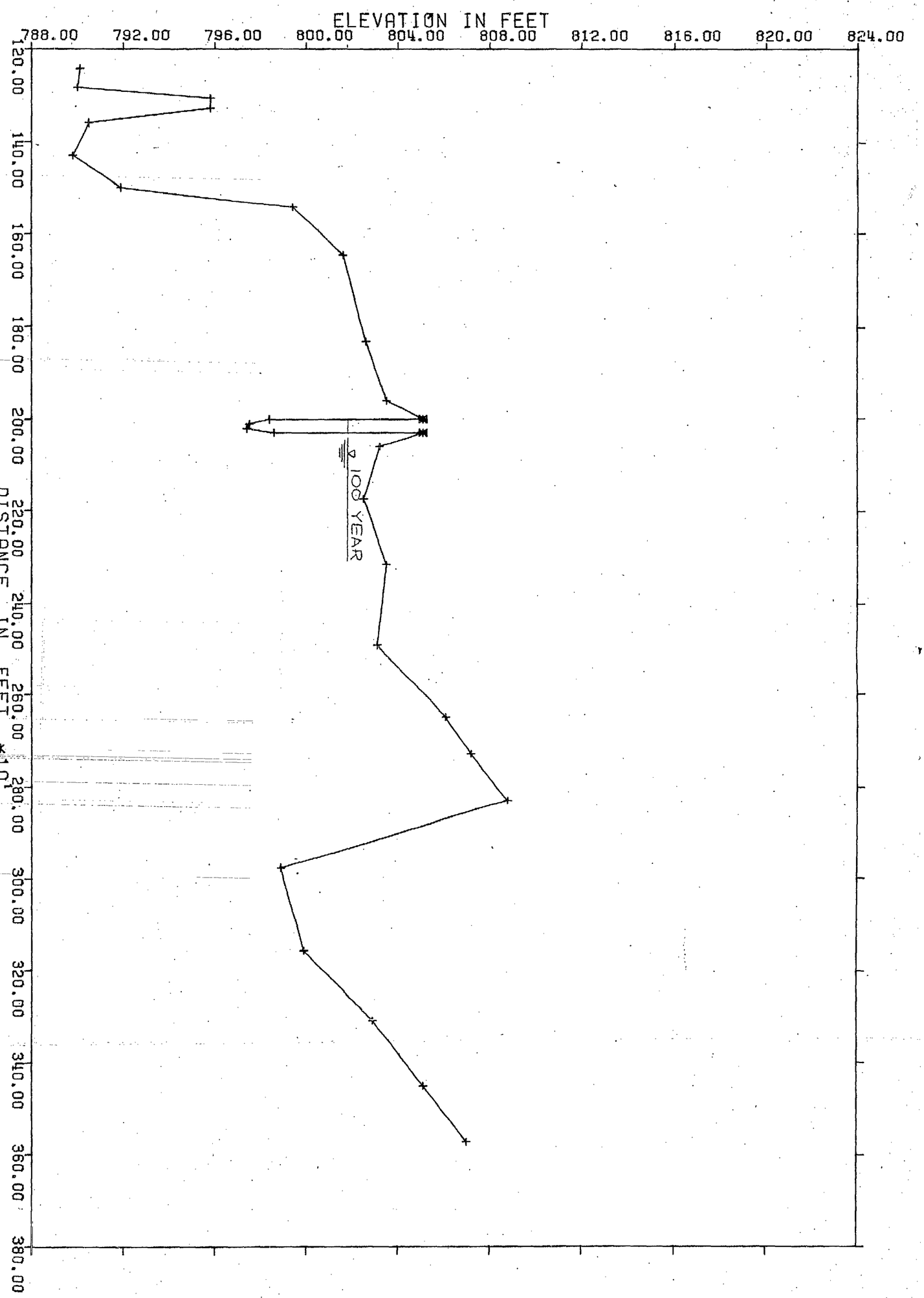
AUGUSTA CREEK AT AUGUSTA
FLOOD INSURANCE STUDY

ELEVATION IN FEET
814.00
812.00
810.00
808.00
806.00
804.00
802.00
800.00
798.00
796.00

100 YEAR

1990.00 2000.00 2010.00 2020.00 2030.00 2040.00 2050.00 2060.00 2070.00 2080.00 2090.00 2100.00 2110.00 2120.00
DISTANCE IN FEET

SECTION NO. 129.800



SECTION NO. 129.900

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

788.00
792.00
796.00
800.00
804.00
808.00
812.00
816.00
820.00
824.00

100 YEAR

120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00 360.00 380.00

DISTANCE IN FEET ×10¹

SECTION NO. 130.000

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET

788.00
792.00
796.00
800.00
804.00
808.00
812.00
816.00
820.00
824.00

100 YEAR

120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00 360.00 380.00

DISTANCE IN FEET *10¹

SECTION NO. 130.100

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

SECTION NO. 130.300

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00
816.00
818.00

100 YEAR

1750.00 1800.00 1850.00 1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00

DISTANCE IN FEET

SECTION NO. 142.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

100 YEAR

ELEVATION IN FEET

799.00
800.00
801.00
802.00
803.00
804.00
805.00
806.00
807.00
808.00

1990.00
2000.00
2010.00
2020.00
2030.00
2040.00
2050.00
2060.00
2070.00
2080.00
2090.00
2100.00
2110.00
2120.00

DISTANCE IN FEET

SECTION NO. 132.800

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

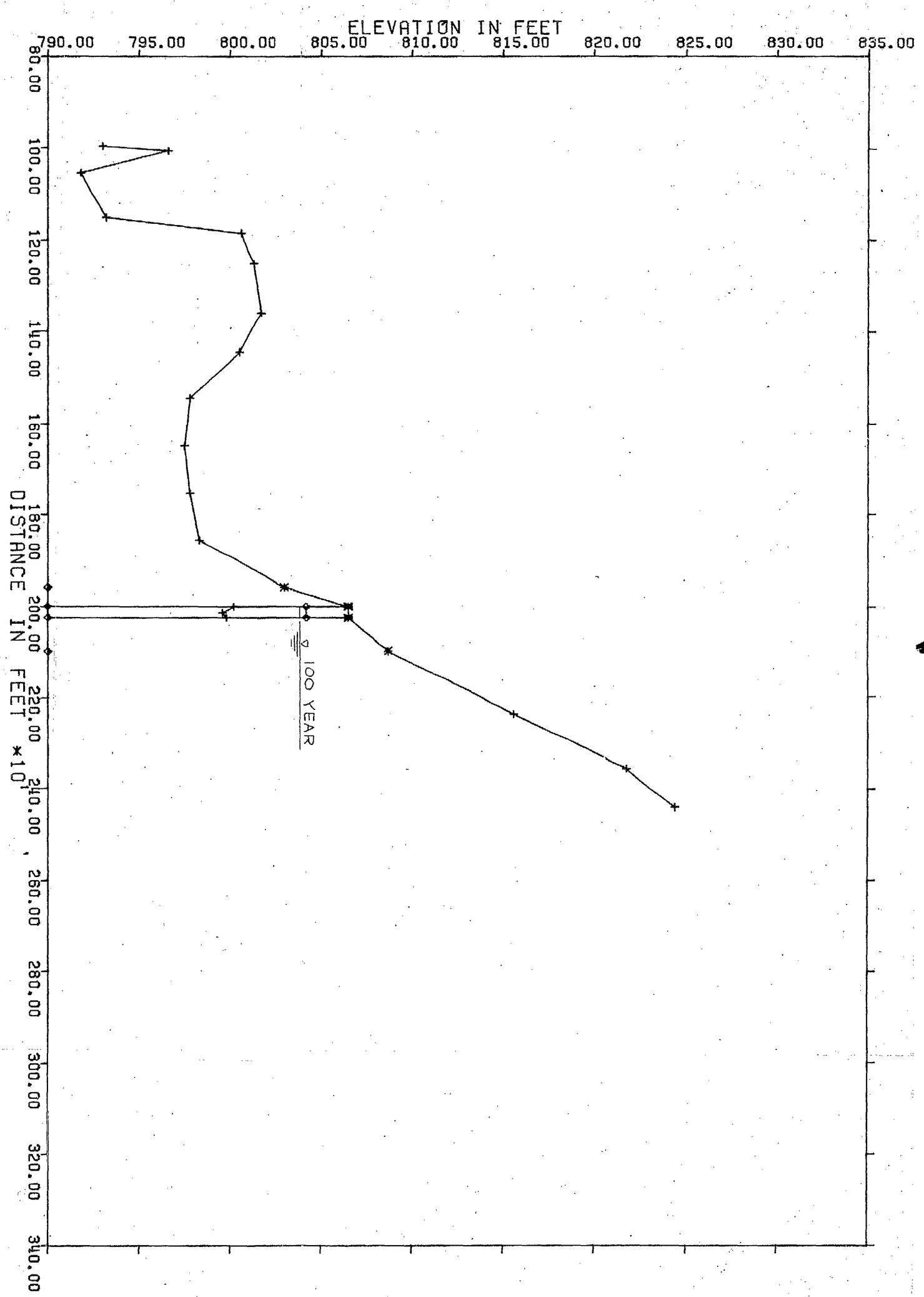
ELEVATION IN FEET
790.00
795.00
800.00
805.00
810.00
815.00
820.00
825.00
830.00
835.00

100 YEAR

80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

DISTANCE IN FEET *10[1]

SECTION NO. 132.900



SECTION NO. 133.000

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

ELEVATION IN FEET

790.00 795.00 800.00 805.00 810.00 815.00 820.00 825.00 830.00 835.00

100 YEAR

80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

DISTANCE IN FEET *10¹

SECTION NO. 133.100

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00
816.00

100 YEAR

1990.00 2000.00 2010.00 2020.00 2030.00 2040.00 2050.00 2060.00 2070.00 2080.00 2090.00 2100.00 2110.00 2120.00

DISTANCE IN FEET

SECTION NO. 133.300

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

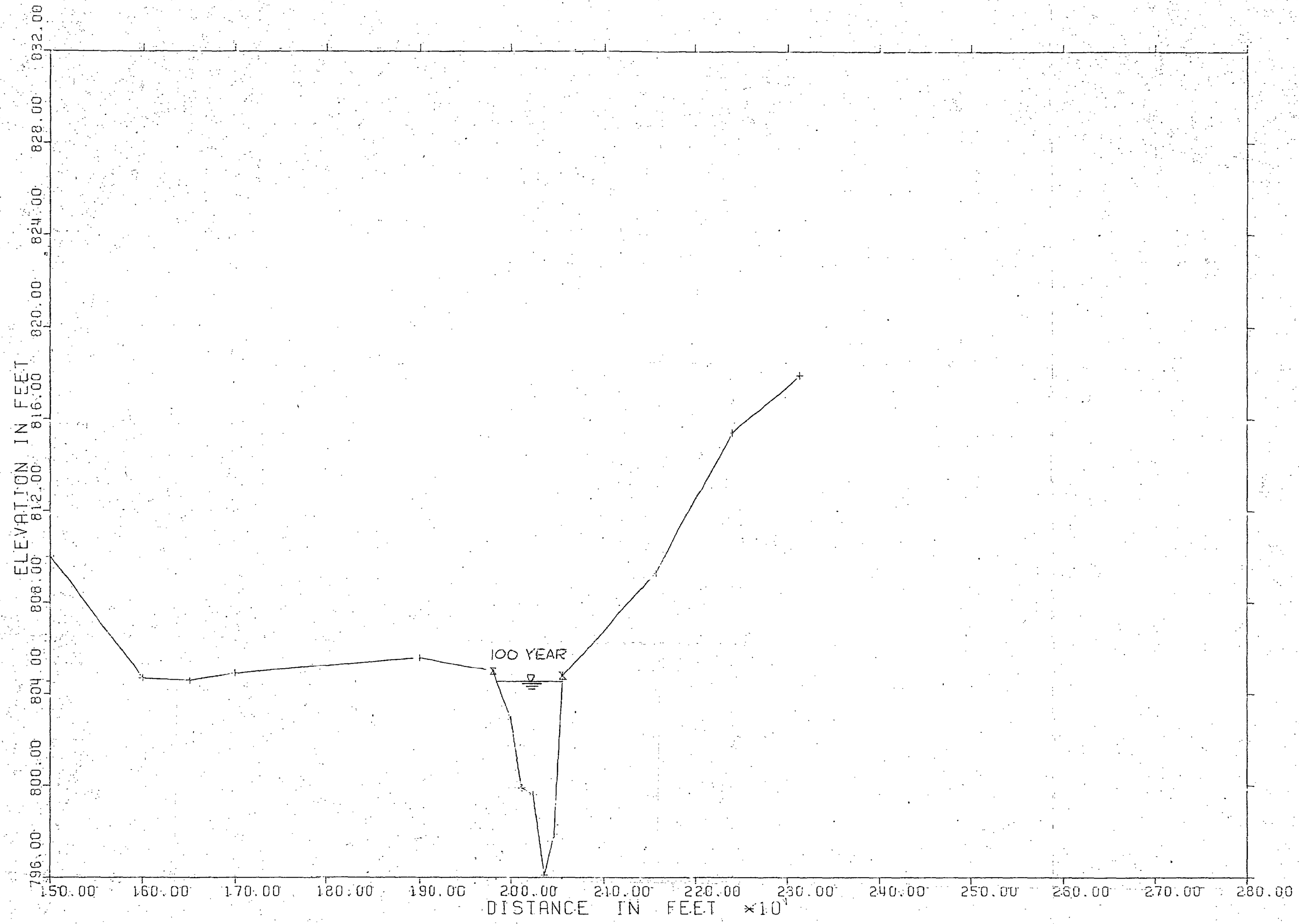
792.00
796.00
800.00
804.00
808.00
812.00
816.00
820.00
824.00
828.00

100 YEAR

20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00

DISTANCE IN FEET *10

SECTION NO. 135.000



FLOOD INSURANCE STUDY

AUGUSTA CREEK AT AUGUSTA

SECTION NO. 136.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

796.00
798.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00

100 YEAR

1750.00 1800.00 1850.00 1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00

DISTANCE IN FEET

SECTION NO. 137.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

796.00
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00
816.00

100 YEAR

1850.00 1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00 2450.00 2500.00

DISTANCE IN FEET

SECTION NO. 139.000

AUGUSTA CREEK AT AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET

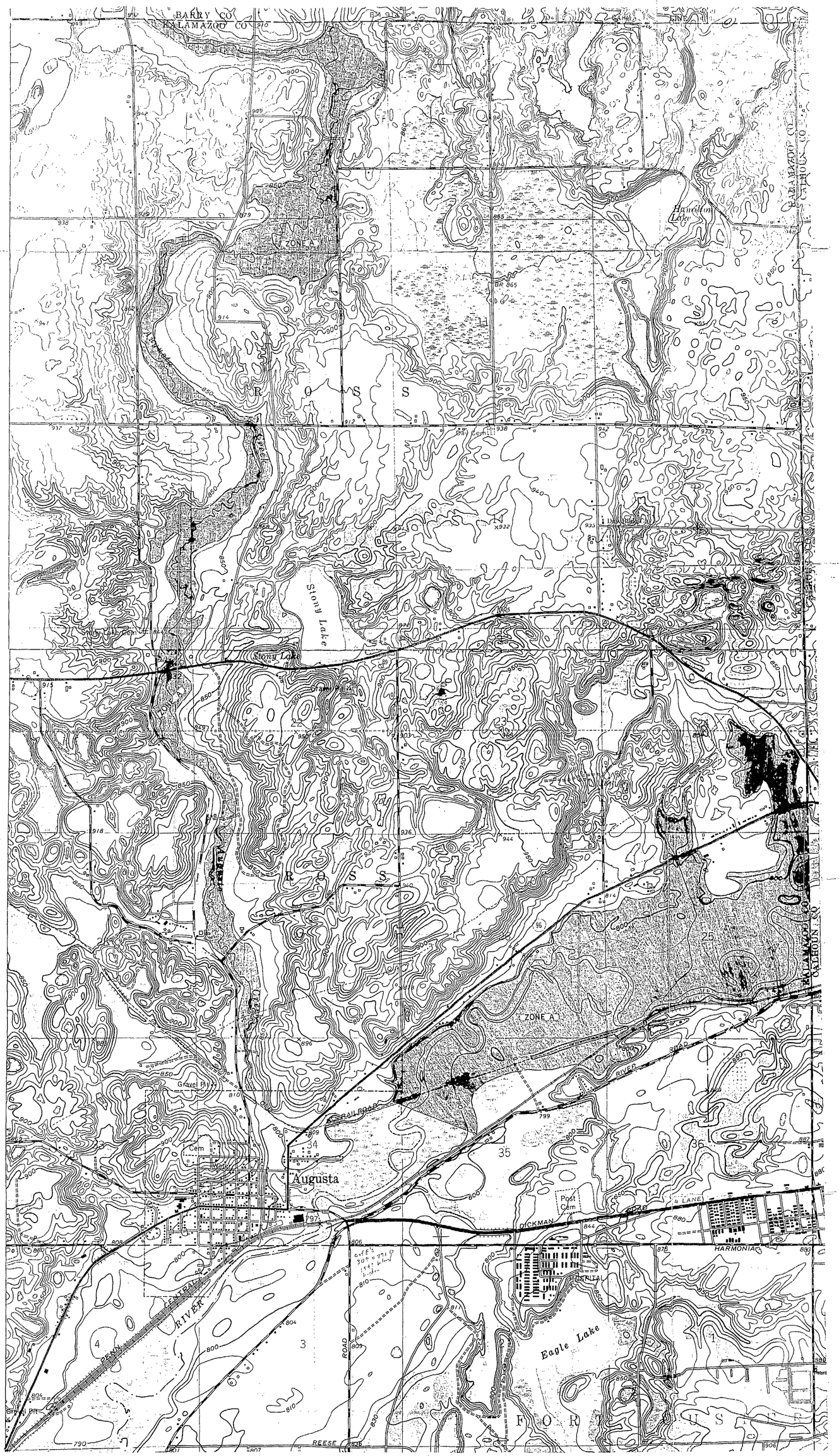
800.00
802.00
804.00
806.00
808.00
810.00
812.00
814.00
816.00
818.00

100 YEAR

1850.00 1900.00 1950.00 2000.00 2050.00 2100.00 2150.00 2200.00 2250.00 2300.00 2350.00 2400.00 2450.00 2500.00

DISTANCE IN FEET

SECTION NO. 141.000



for KALAMAZOO RIVER
w/in Village of Augusta
see Village of Augusta, Augusta Creek.

Cyf's 308=806.3

KEY TO SYMBOLS
FLOOD BOUNDARY AND FLOODWAY DATA

500 Yr Flood Boundary
100 Yr Flood Boundary
FLOODWAY FRINGE
FLOODWAY
500 Yr Flood Boundary
Approximate 100 Yr Flood Boundary
Cross Section Line

FLOOD BOUNDARY AND FLOODWAY MAP
MAP INDEX

ROSS TOWNSHIP

SEP 2 6 1980
WATER MANAGEMENT

REACH 1
ZONE A3

Note: Consumers Power Company has retained flowage rights to Elevation 783.0. Therefore, human intervention at Morrow Dam can cause higher flood levels than those indicated on the profiles.

35TH STREET BRIDGE

ELEVATION (M.S.L.)

785
780
775
770
765

17 18 19 20 21 22 23

STREAM DISTANCE (THOUSANDS OF FEET) FROM DAM

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

KALAMAZOO RIVER

FLOOD PROFILE

CITY OF GALESBURG +

Charleston Twp

CHARLESTON
TWP

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

Augusta
Galesburg
Howlandsburg Cem
Pond Lake
Eagle Lake
Gravel Pit
Water
Charleston Cem
Shatter Cem
Lawler Cem
North Cem
Barley Cem
Wood Lake
Burnham Lake
Portage Lake
Potter Lake
Whitford Lake
Lawler Lake
Mill Road
Territorial Road
Reese Road
Dickman Road
4 Lane
Harmoniac
Kalamazoo River
Kalamazoo Co
Battle Creek Co
New York Central
Penn Central
Climax and Scotts
Fort Custer Military Reservation
ZONE A
ZONE A3
CHARLESTON
CHARLES TON

KEY TO SYMBOLS
FLOOD BOUNDARY AND FLOODWAY DATA

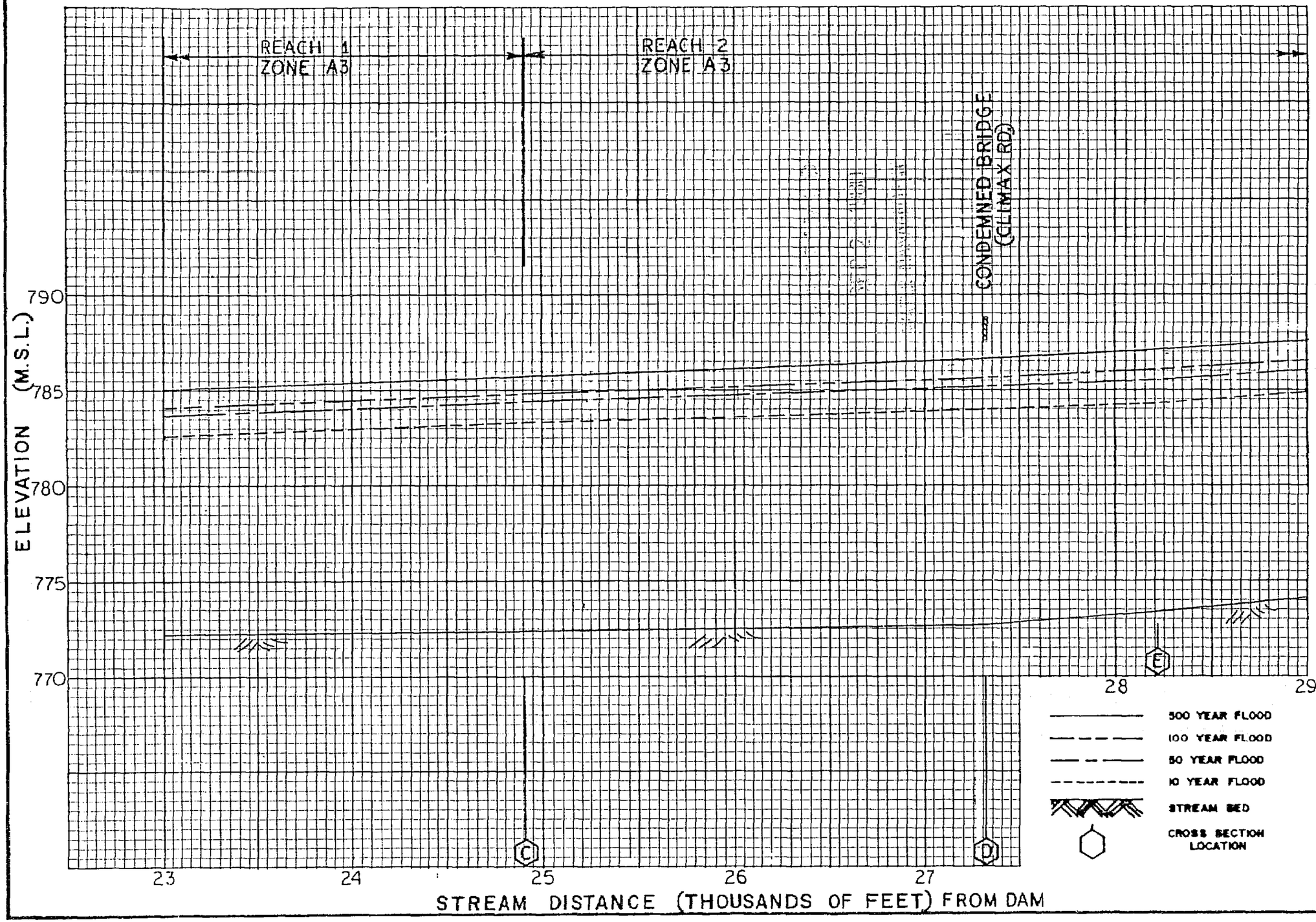
500 Yr Flood Boundary
100 Yr Flood Boundary
FLOODWAY FRINGE
FLOODWAY
500 Yr Flood Boundary
Approximate 100 Yr Flood Boundary
Cross Section Line

FLOOD BOUNDARY AND FLOODWAY MAP
MAP INDEX
CITY OF GALESBURG
CHARLESTON TWP.

FLOOD PROFILE

KALAMAZOO RIVER

CITY OF GALESBURG + Charleston Twp



REACH 2
ZONE A3

MICHIGAN STREET BRIDGE

ELEVATION (M.S.L.)

790
785
780
775
770

F
G

29
30
31

STREAM DISTANCE (THOUSANDS OF FEET) FROM DAM

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

SEP 2 6 19

WATER MANAGEMENT

KALAMAZOO RIVER

FLOOD PROFILE

CITY OF GALESBURG +

Charleston Twp

REACH 1
ZONE A3

R.R. BRIDGE

800
795
790
785
780
775

ELEVATION (M.S.L.)

A B C D E F G

51 52 53 54 55 56 57

STREAM DISTANCE (THOUSANDS OF FEET) FROM DAM

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

KALAMAZOO RIVER

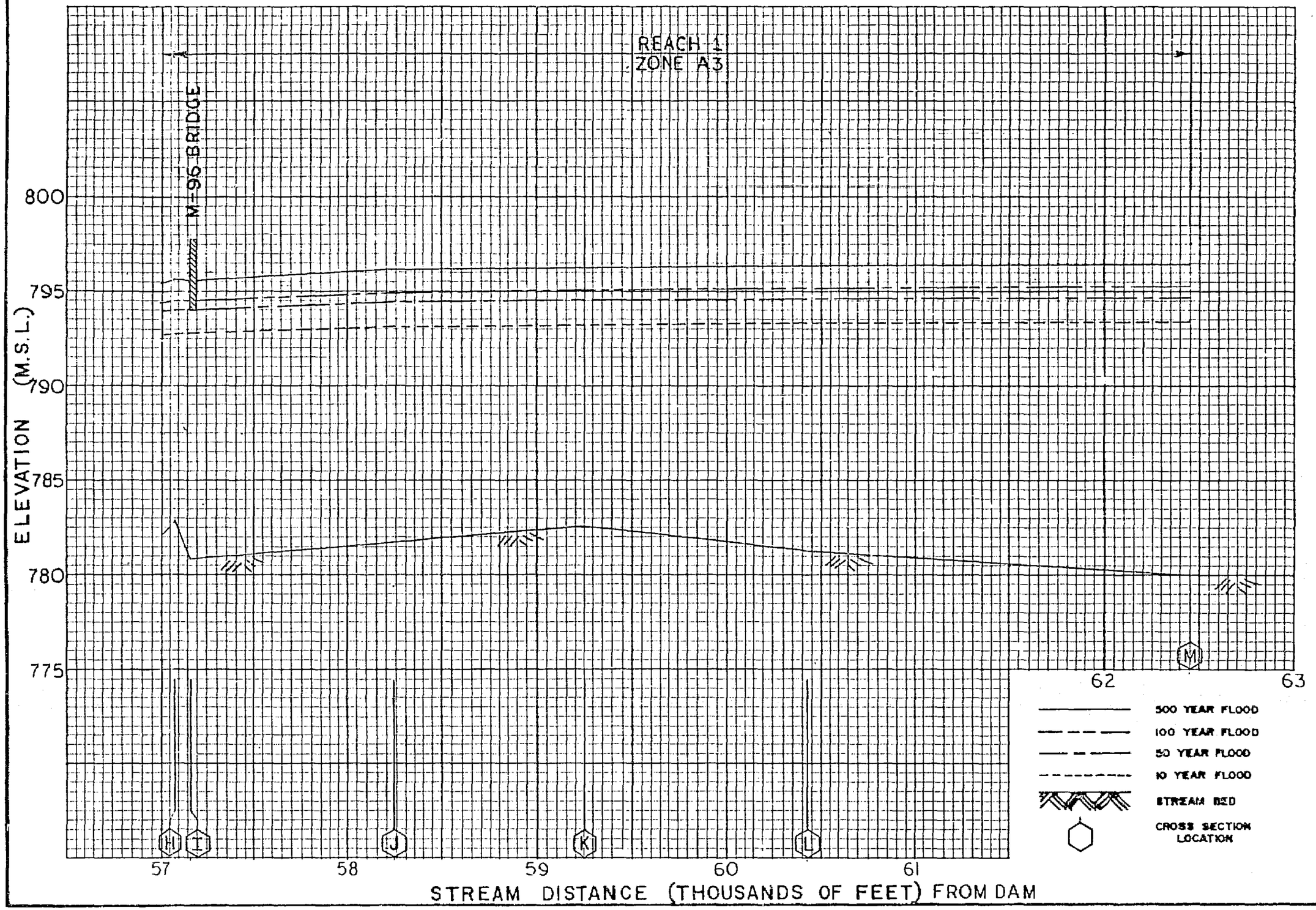
FLOOD PROFILE

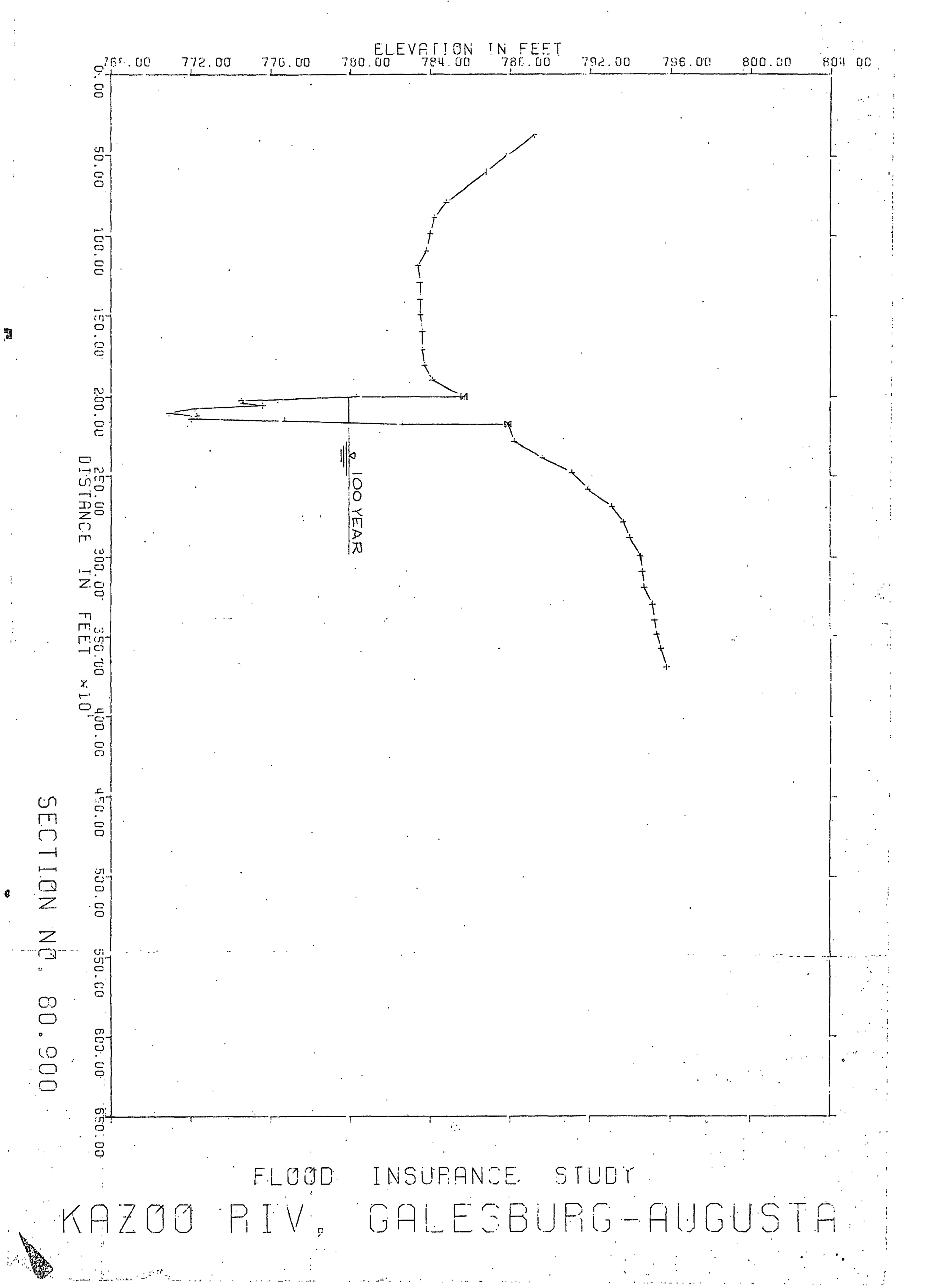
AUGUSTA & ROSS TWP.

FLOOD PROFILE

KALAMAZOO RIVER

AUGUSTA & ROSS TWP.





FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

KAZOO RIV., GALESBURG-AUGUSTA

ELEVATION IN FEET

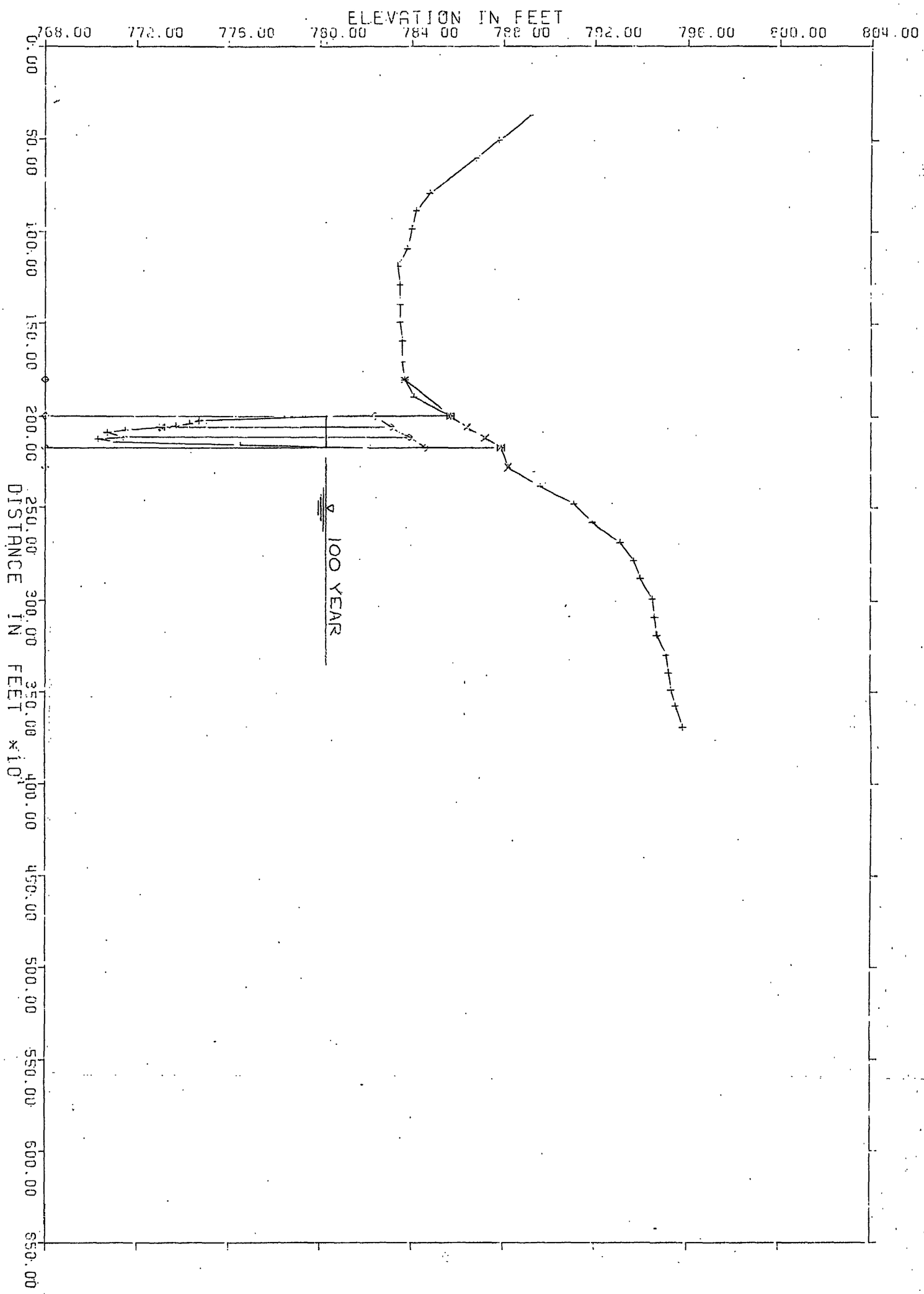
768.00 772.00 776.00 780.00 784.00 788.00 792.00 796.00 800.00 804.00

100 YEAR

0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00

DISTANCE IN FEET $\times 10^{1}$

SECTION NO. 81.000



SECTION NO 81.100

FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

KAZOO RIV., GALESBURG-AUGUSTA

ELEVATION IN FEET

772.00 776.00 780.00 784.00 788.00 792.00 796.00 800.00 804.00 808.00

100 YEAR

150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00 700.00 750.00 800.00

DISTANCE IN FEET $\times 10^1$

SECTION NO. 83.000

KAZOO RIV., GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

ELEVATION IN FEET
808.00
804.00
800.00
796.00
792.00
788.00
784.00
780.00
776.00
772.00

100 YEAR

0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00

DISTANCE IN FEET ×10

SECTION NO. 84.800

KAZOO RIV., GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

100 YEAR

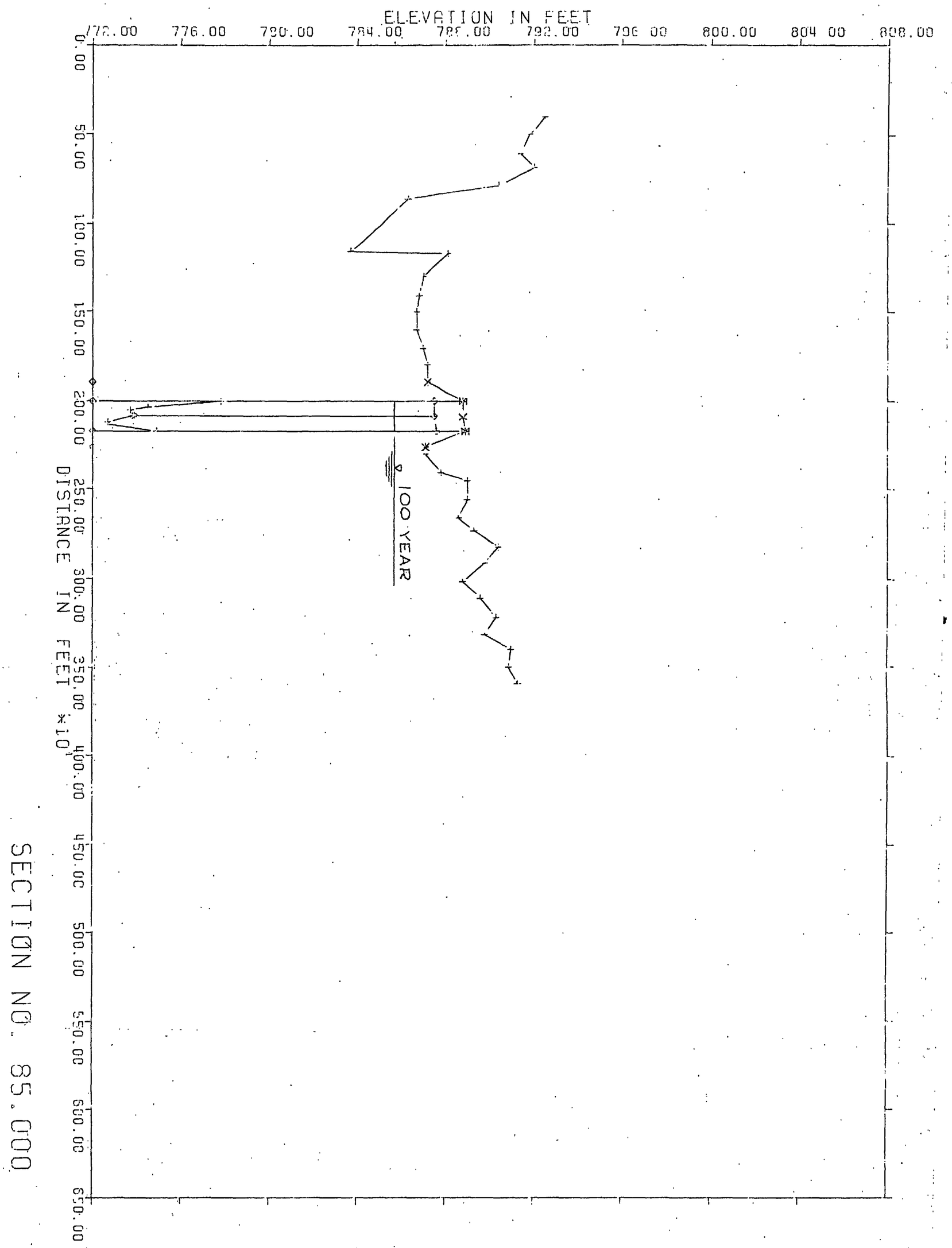
ELEVATION IN FEET

772.00 776.00 780.00 784.00 788.00 792.00 796.00 800.00 804.00 808.00

0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00

DISTANCE IN FEET x10

SECTION NO. 84.900



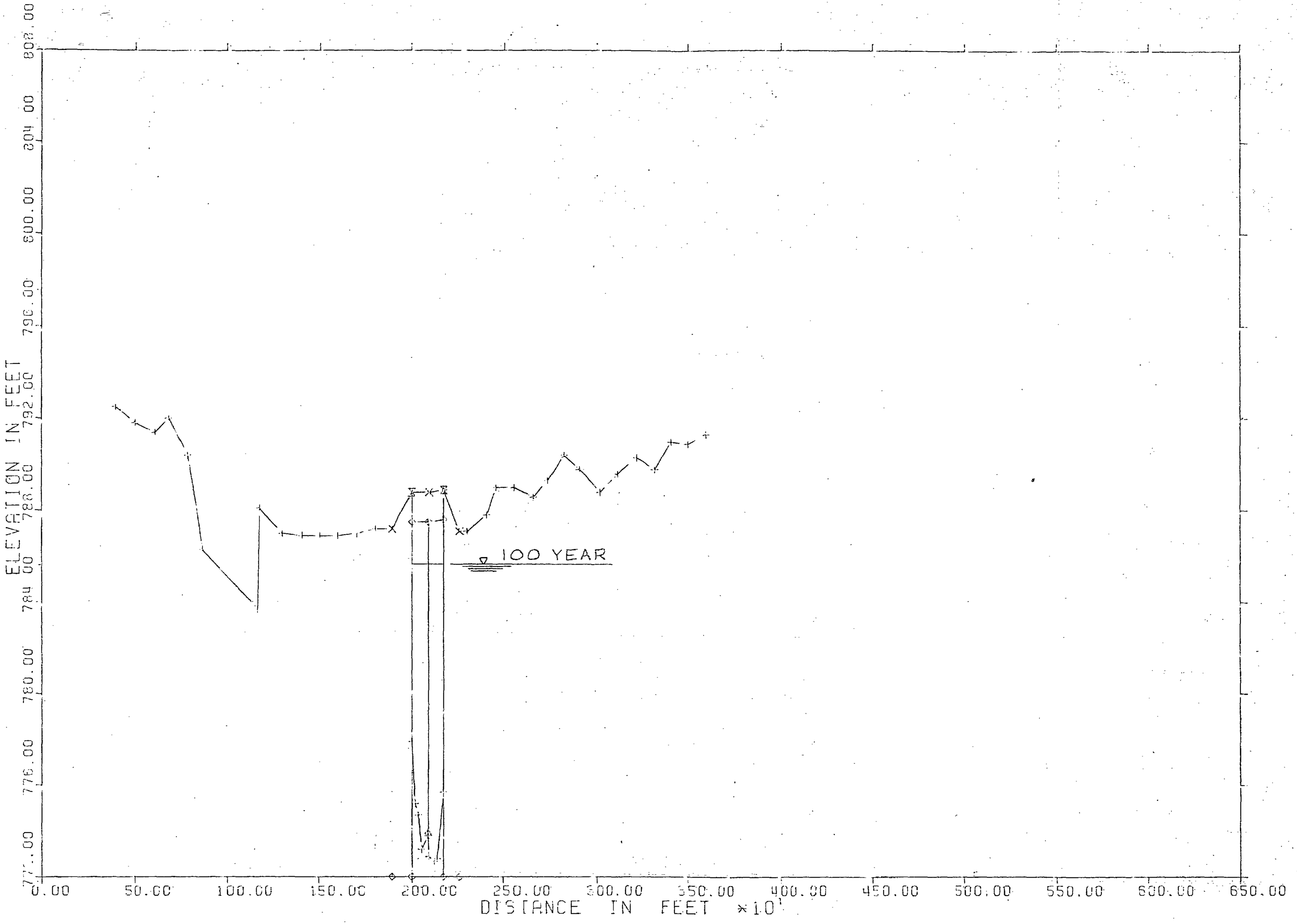
SECTION NO. 85.000

FLOOD INSURANCE STUDY

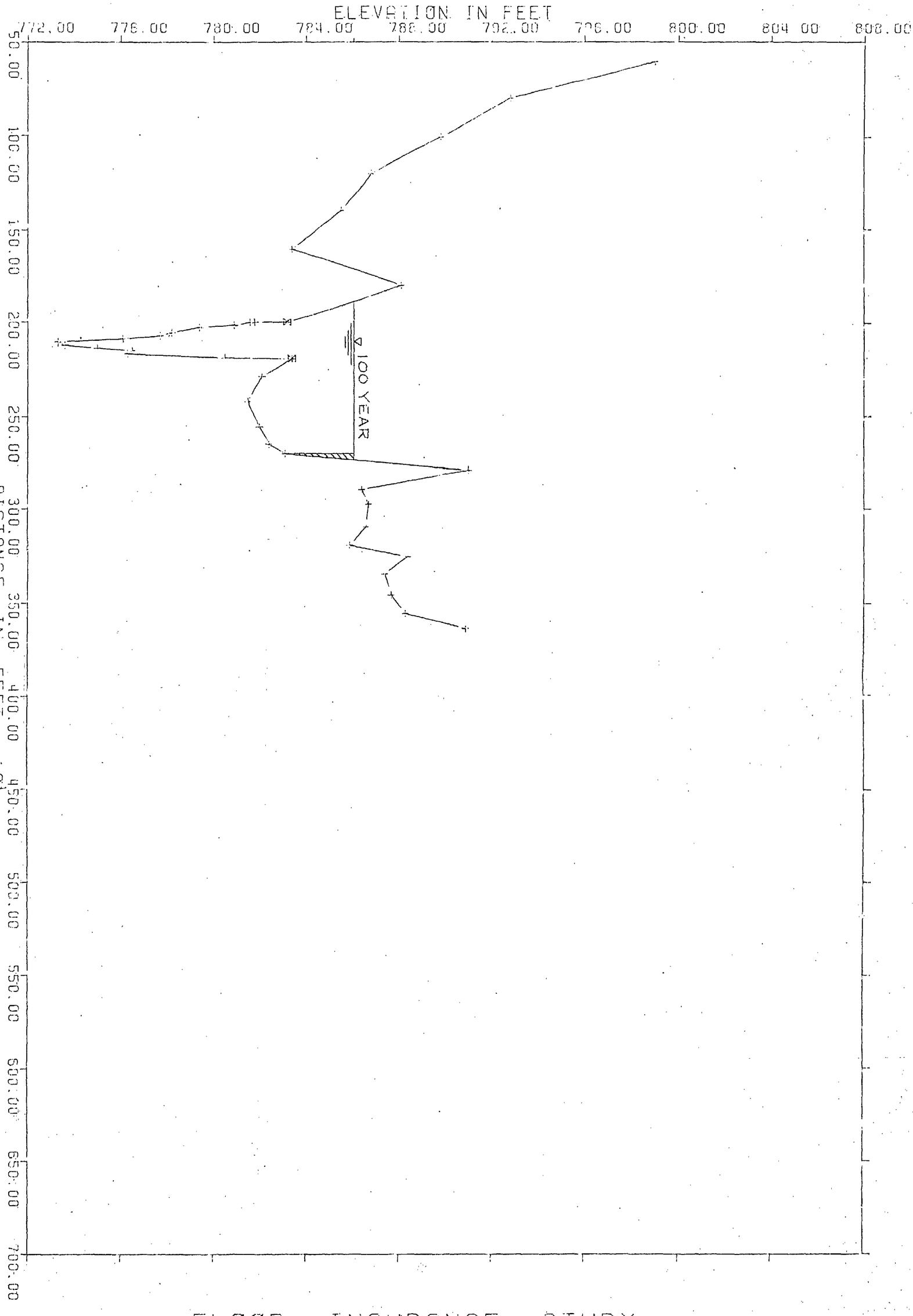
KAZOO RIV, GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

KAZOO RIV., GALESBURG-AUGUSTA



SECTION NO. 85.100



SECTION NO. 87.800

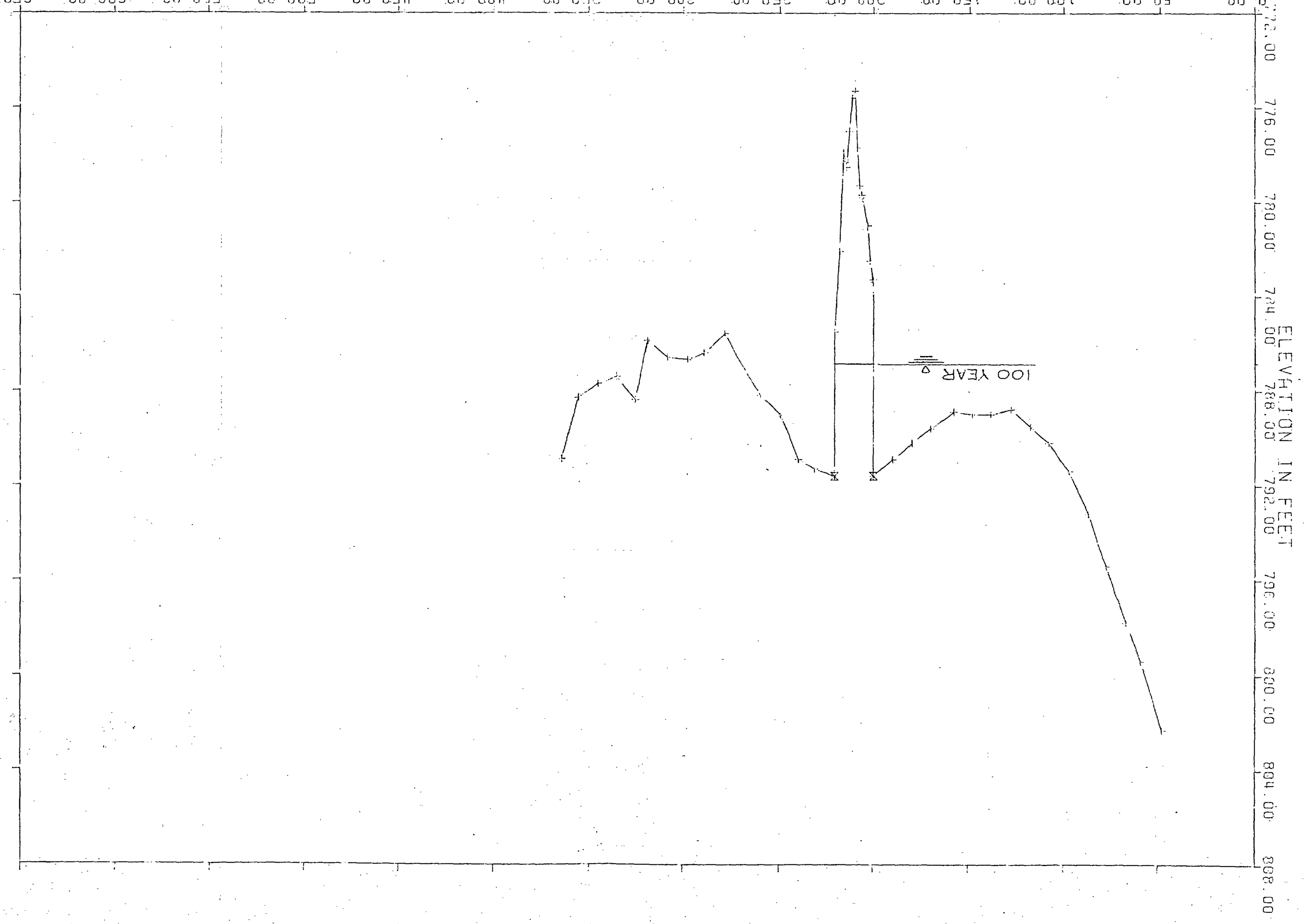
FLOOD INSURANCE STUDY

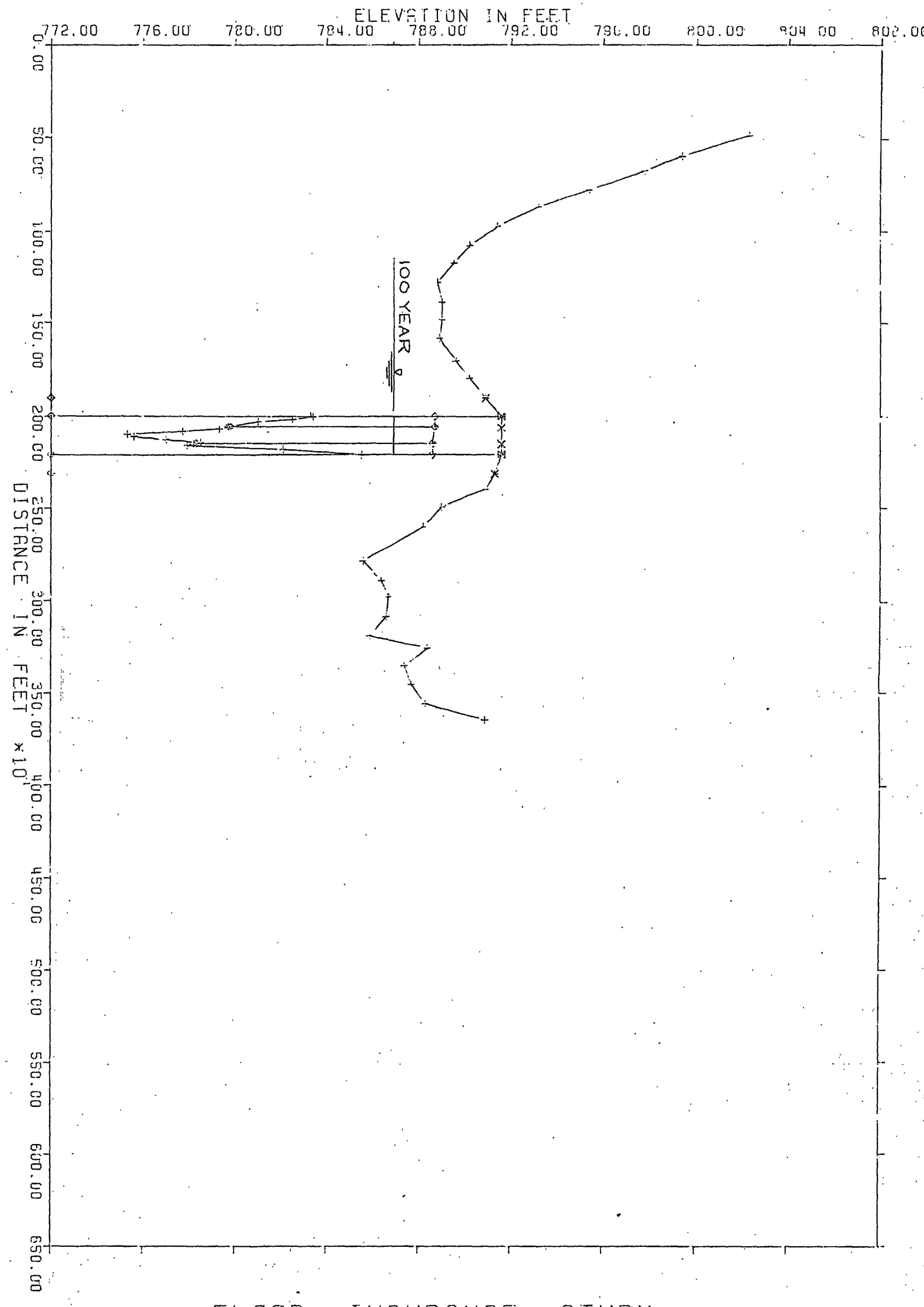
KAZOO RIV., GALESBURG-AUGUSTA

KALAMAZOO RIV., GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

SECTION NO. 87,900

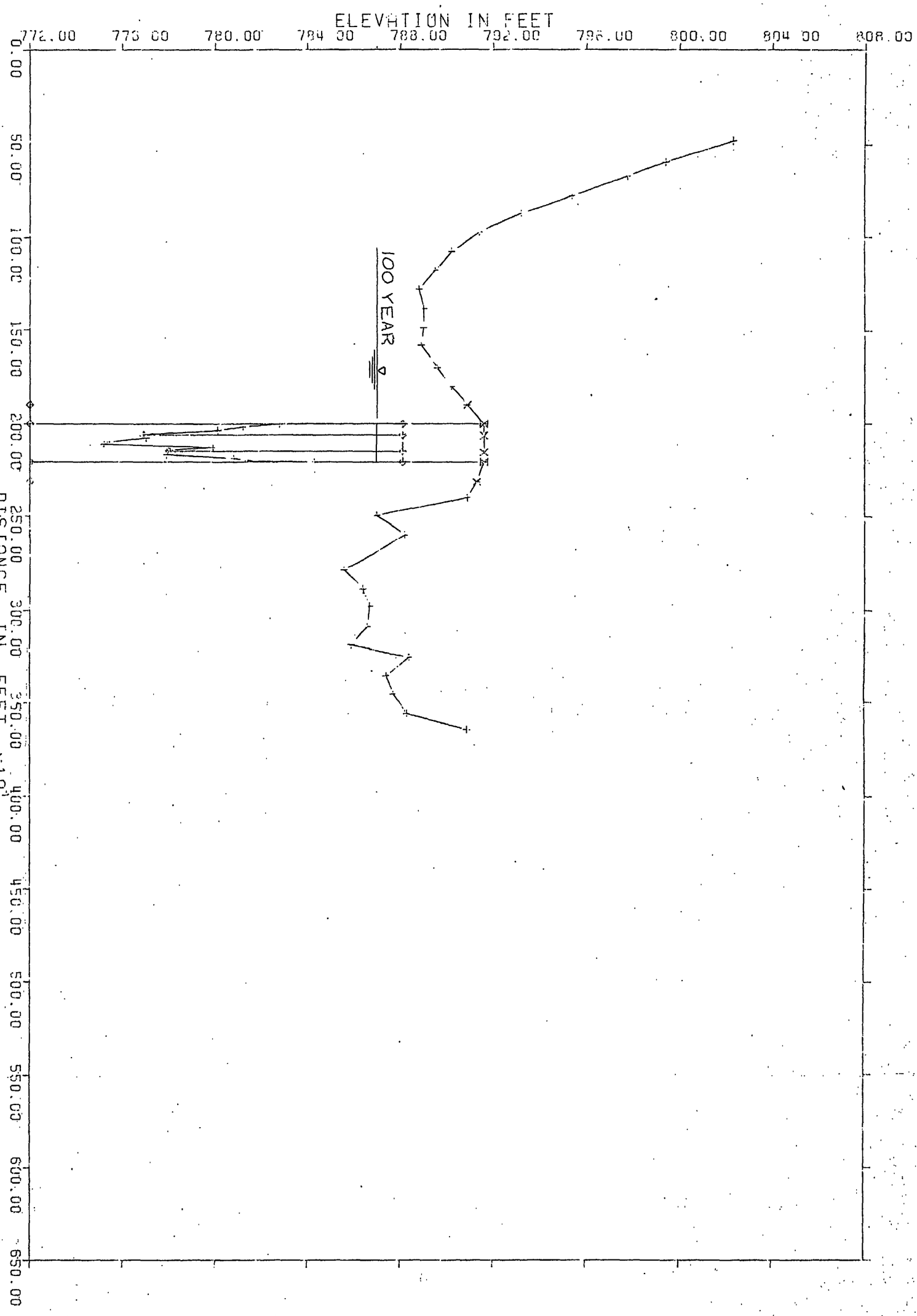




SECTION NO. 88.000

FLOOD INSURANCE STUDY

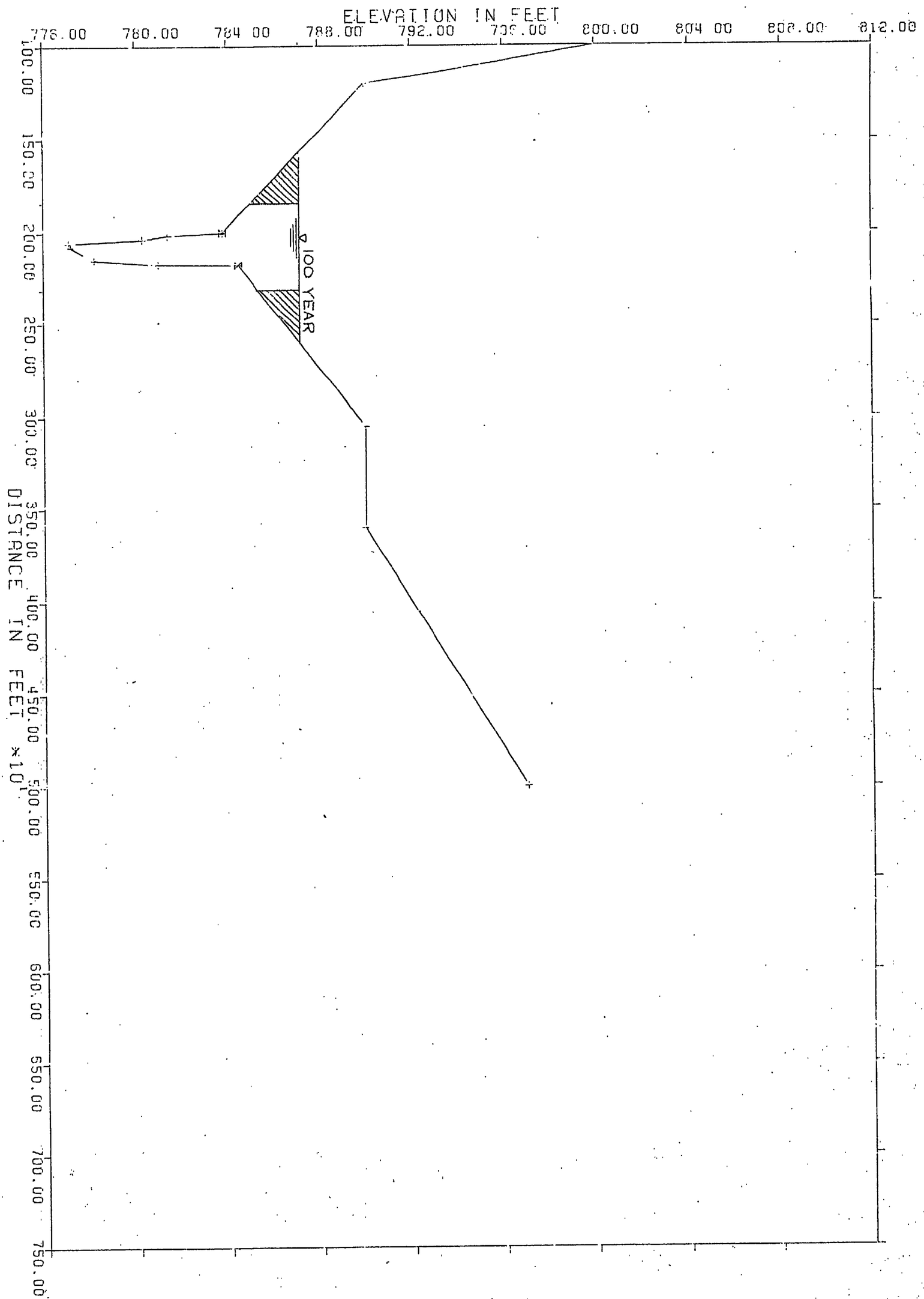
KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 88.100

FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 88.300

FLOOD INSURANCE STUDY

KAZOO RIV., GALESBURG-AUGUSTA

KALAMAZOO RIV., GALESBURG-AUGUSTA

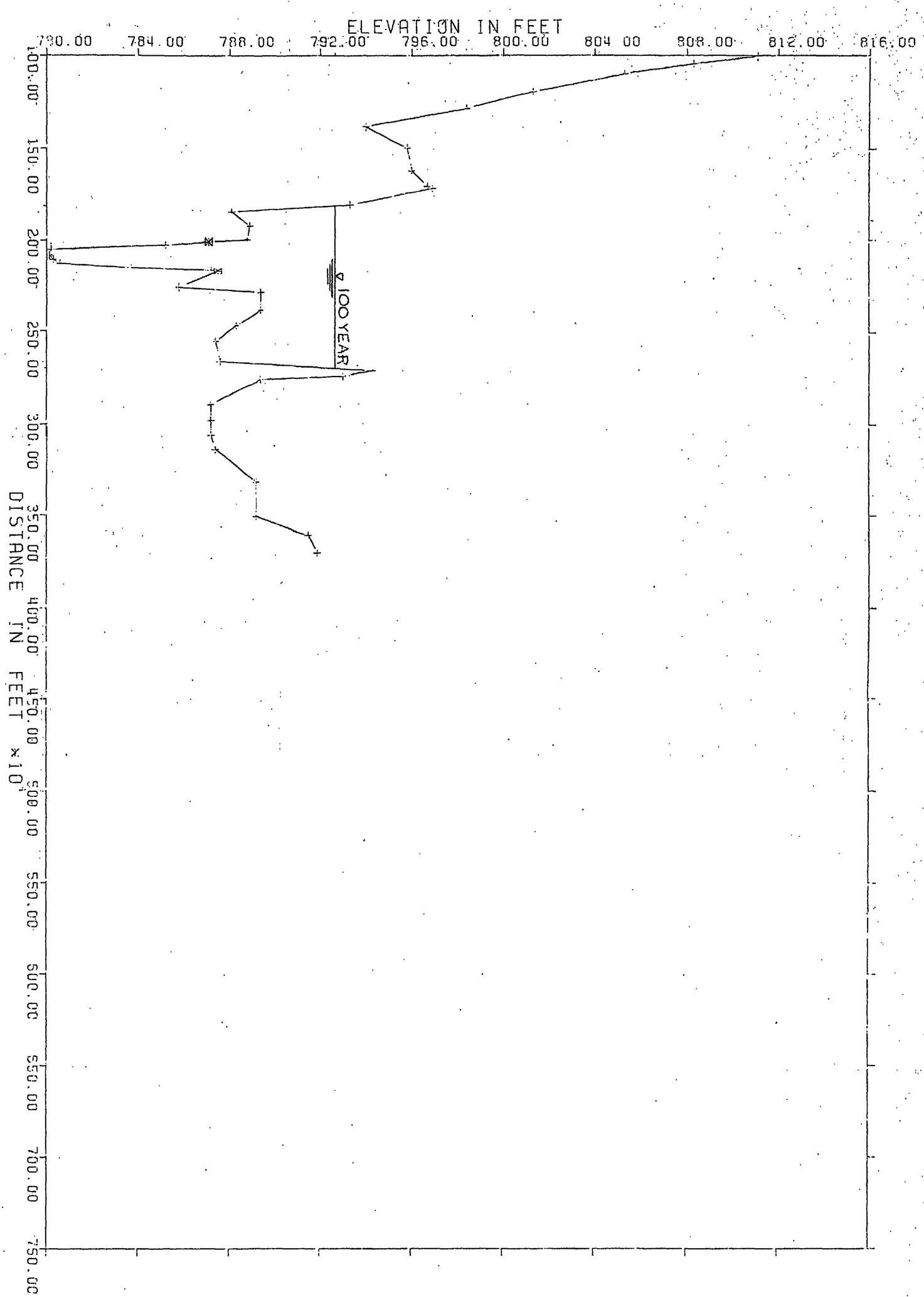
FLOOD INSURANCE STUDY

SECTION NO. 90.000

SECTION NO. 91.000

FLOOD INSURANCE STUDY

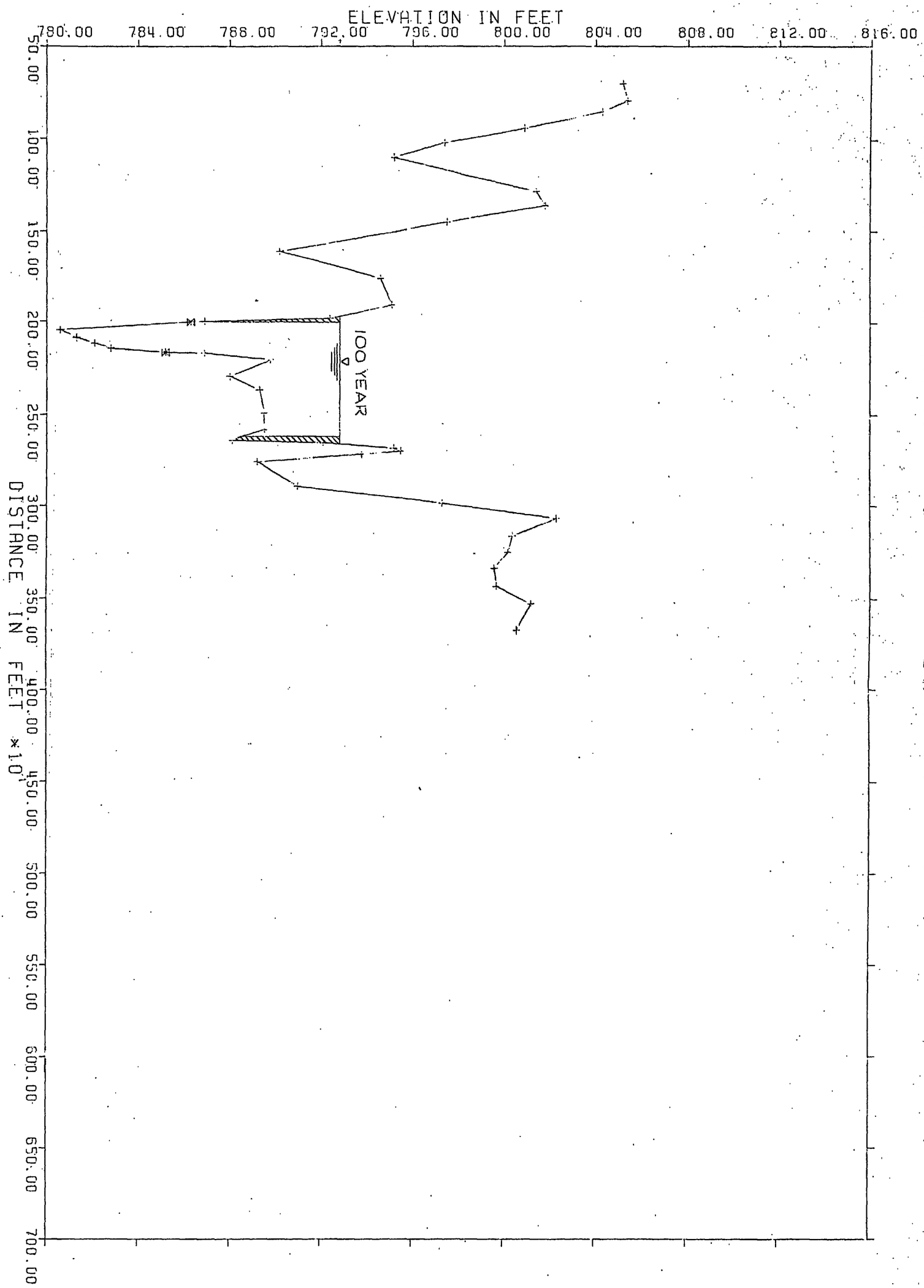
KAZOO RIV. GALESBURG-AUGUSTA



SECTION NO. 99.000

FLOOD INSURANCE STUDY

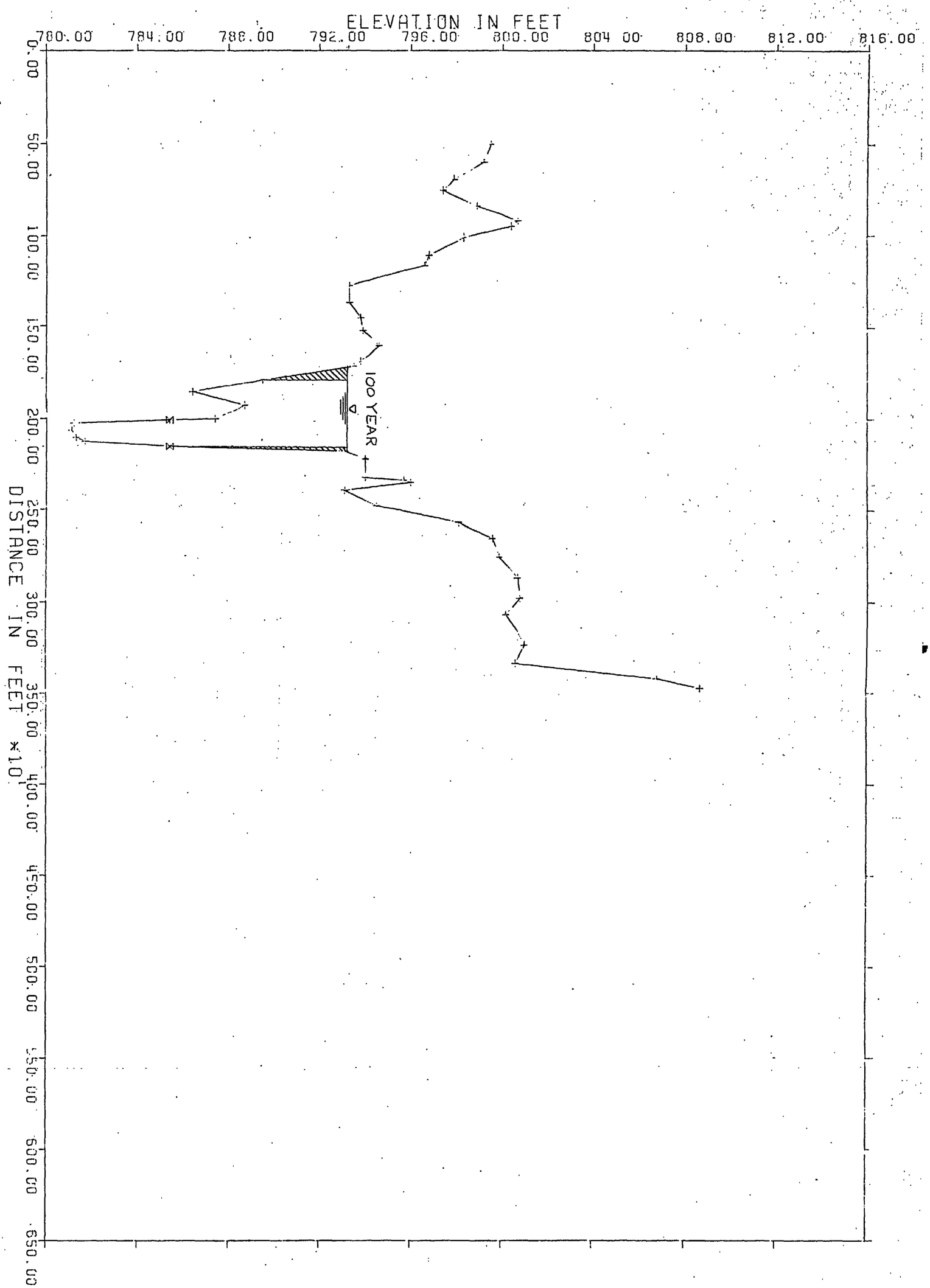
KAZOO RIV., GALESBURG-AUGUSTA



SECTION NO. 100.000

FLOOD INSURANCE STUDY

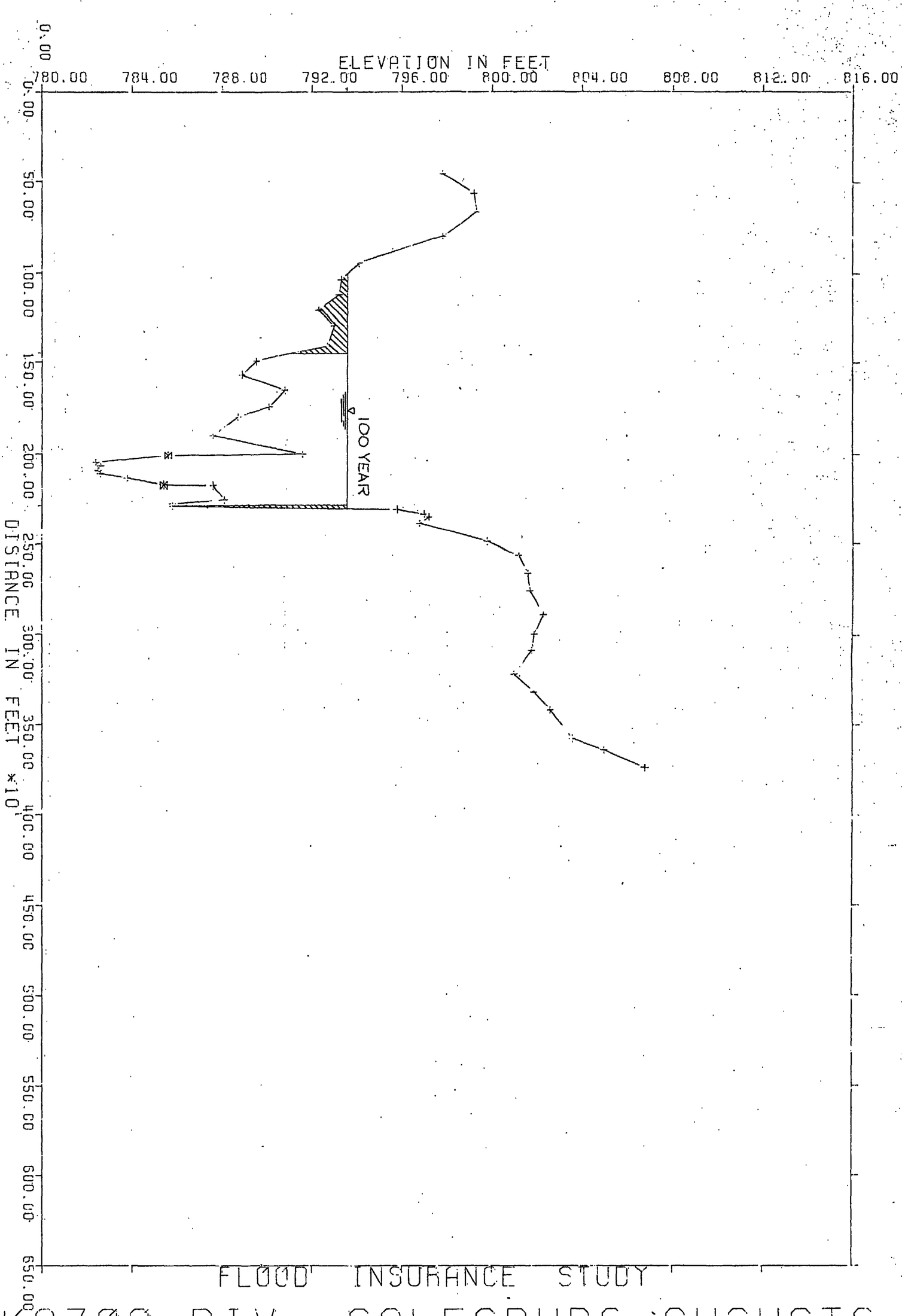
KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 101.000

FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 102.000

FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA

FLOOD INSURANCE STUDY

KALAMAZOO RIV., GALESBURG-AUGUSTA

ELEVATION IN FEET

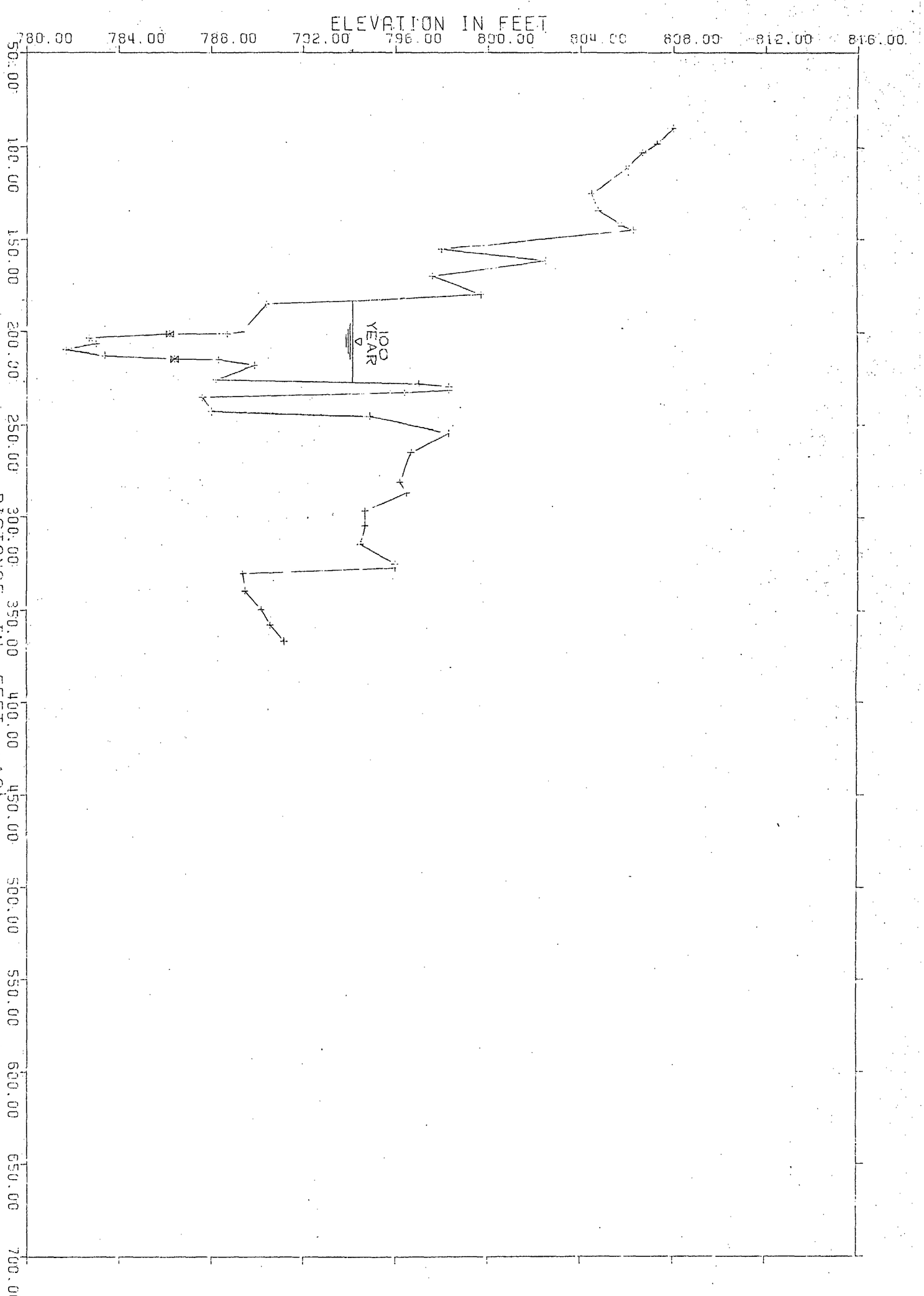
780.00
784.00
788.00
792.00
796.00
800.00
804.00
808.00
812.00
816.00

100 YEAR

0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 550.00 600.00 650.00

DISTANCE IN FEET *10

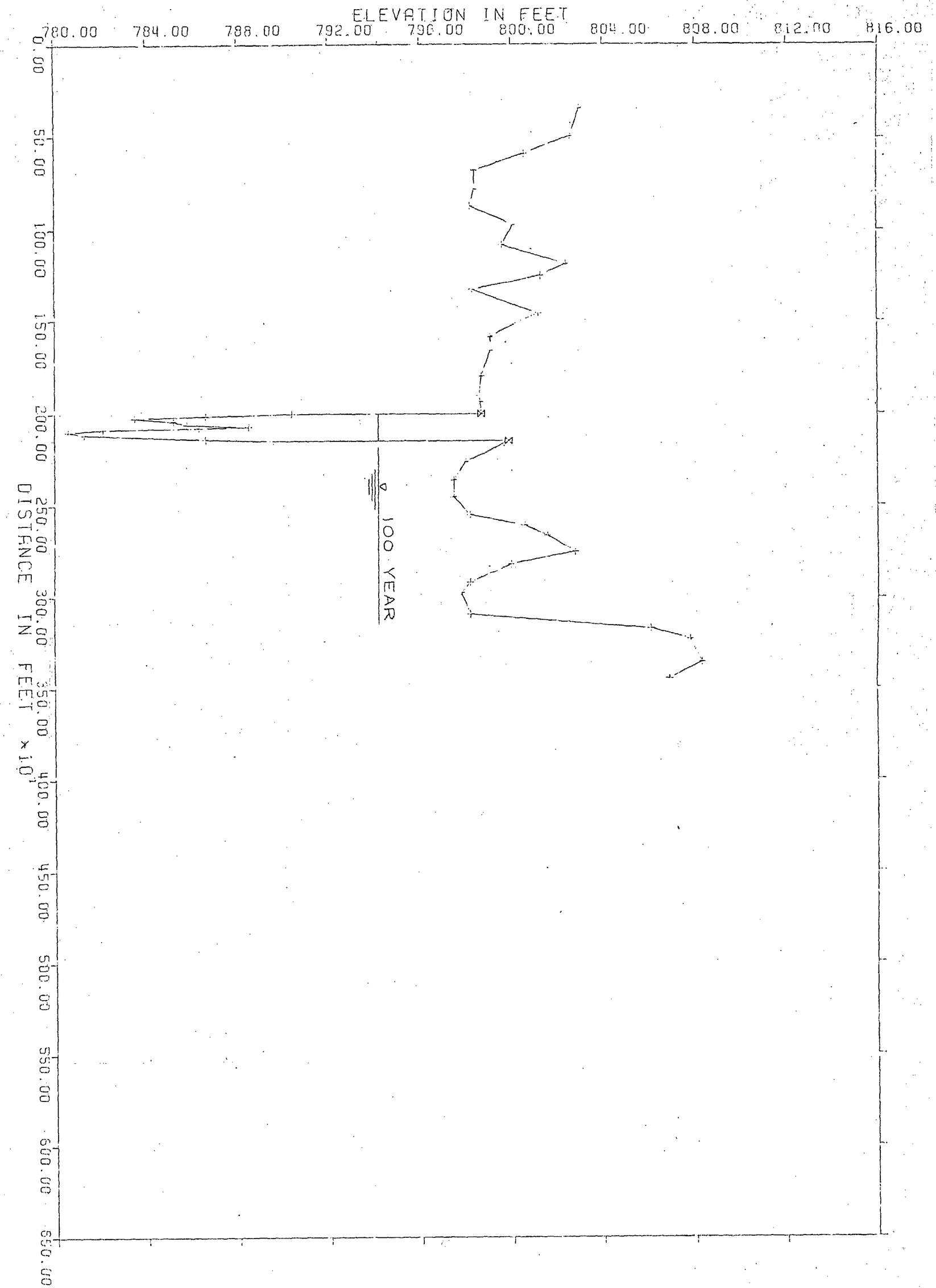
SECTION NO. 103.000



SECTION NO. 10H.000

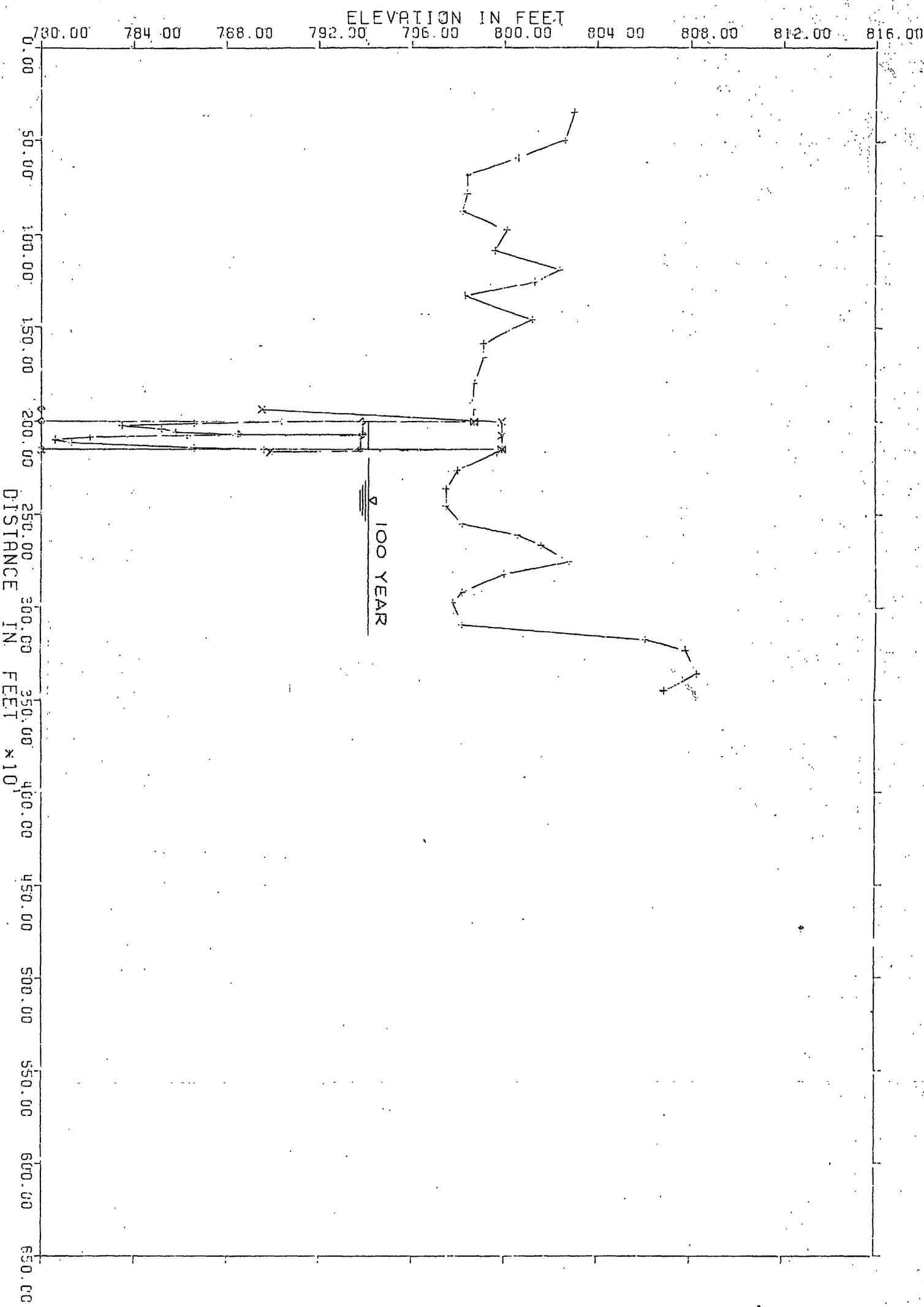
FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA



FLOOD INSURANCE STUDY

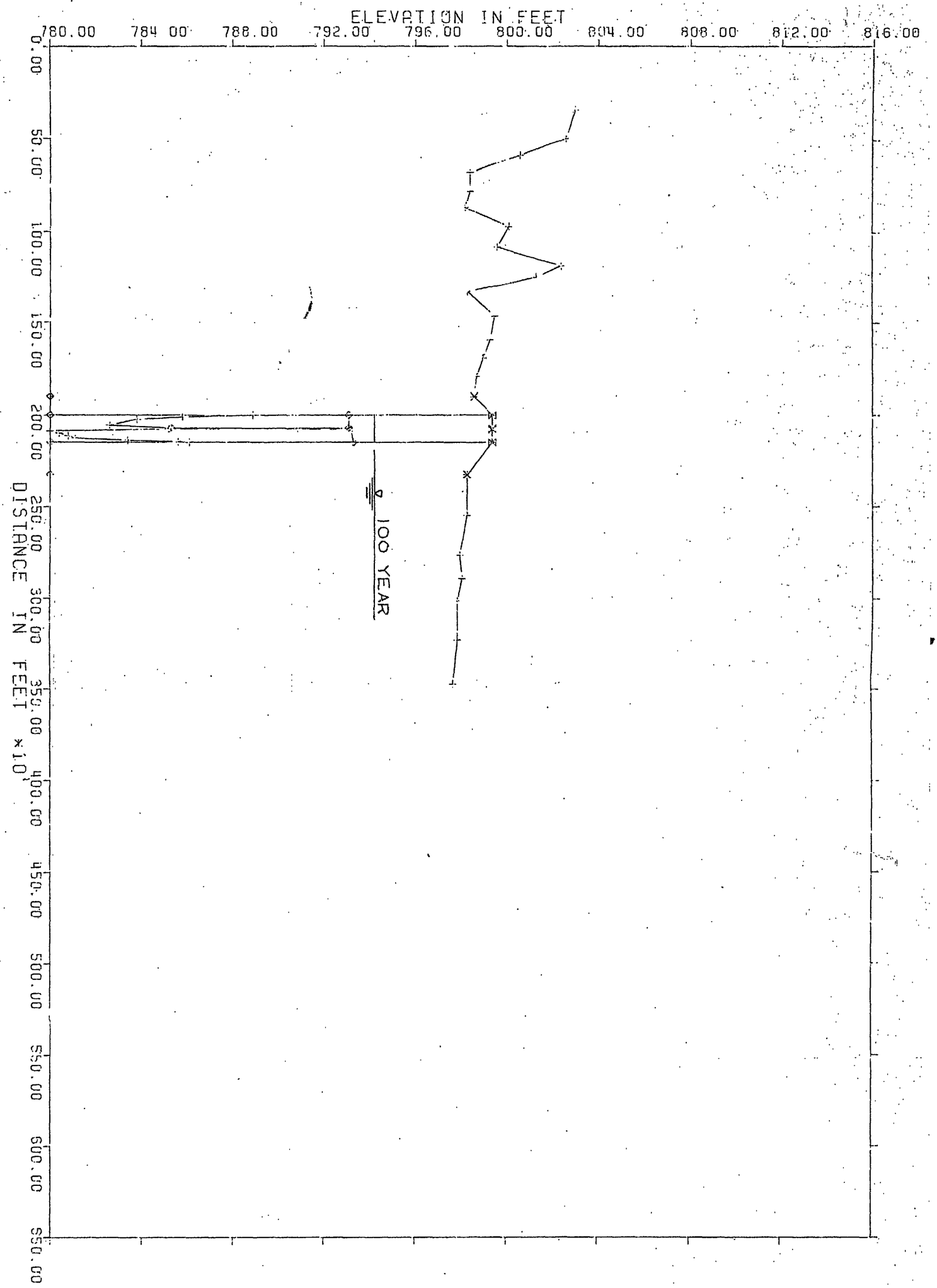
KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 105.000

FLOOD INSURANCE STUDY

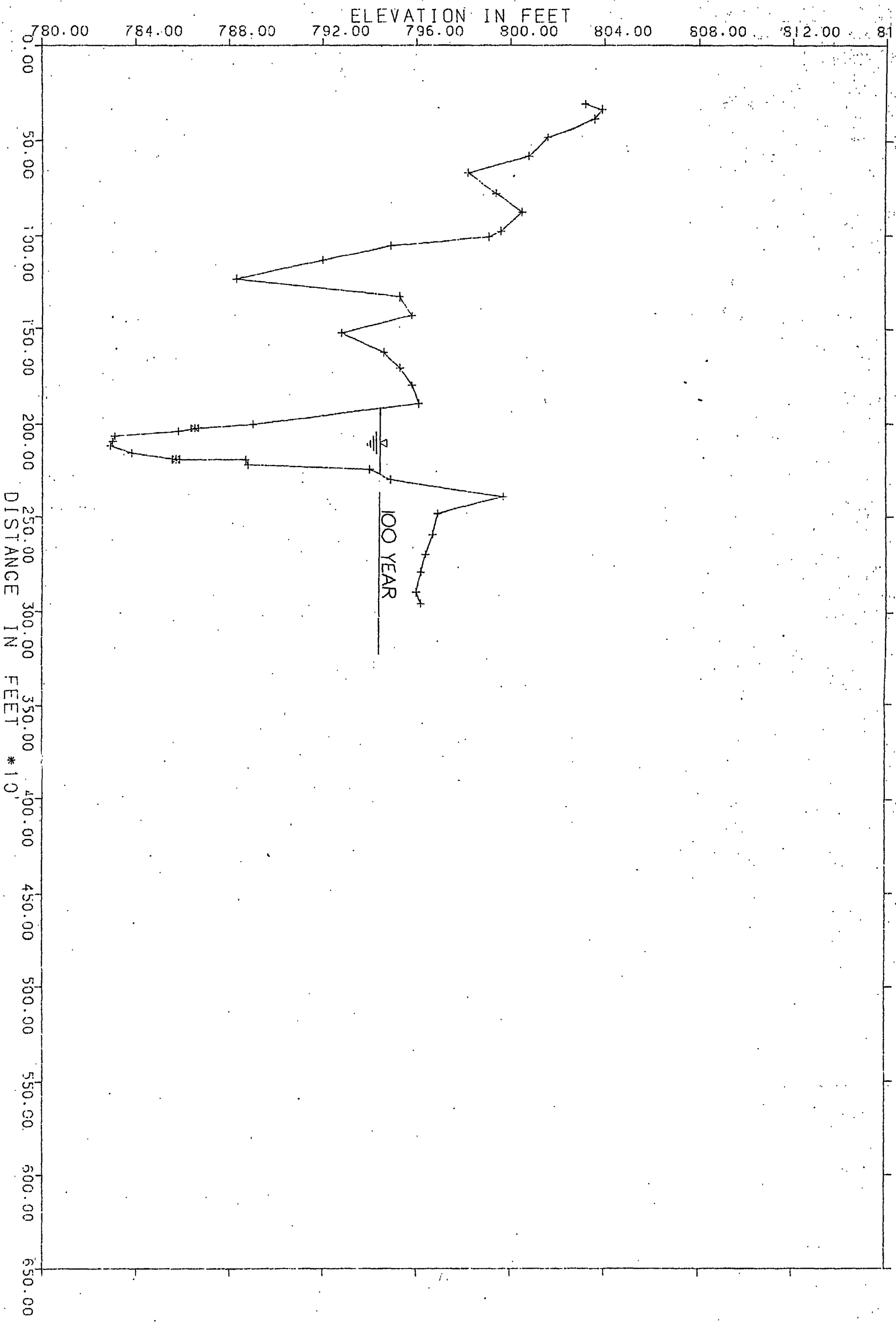
KAZOO RIV. GALESBURG-AUGUSTA



SECTION NO. 105.100

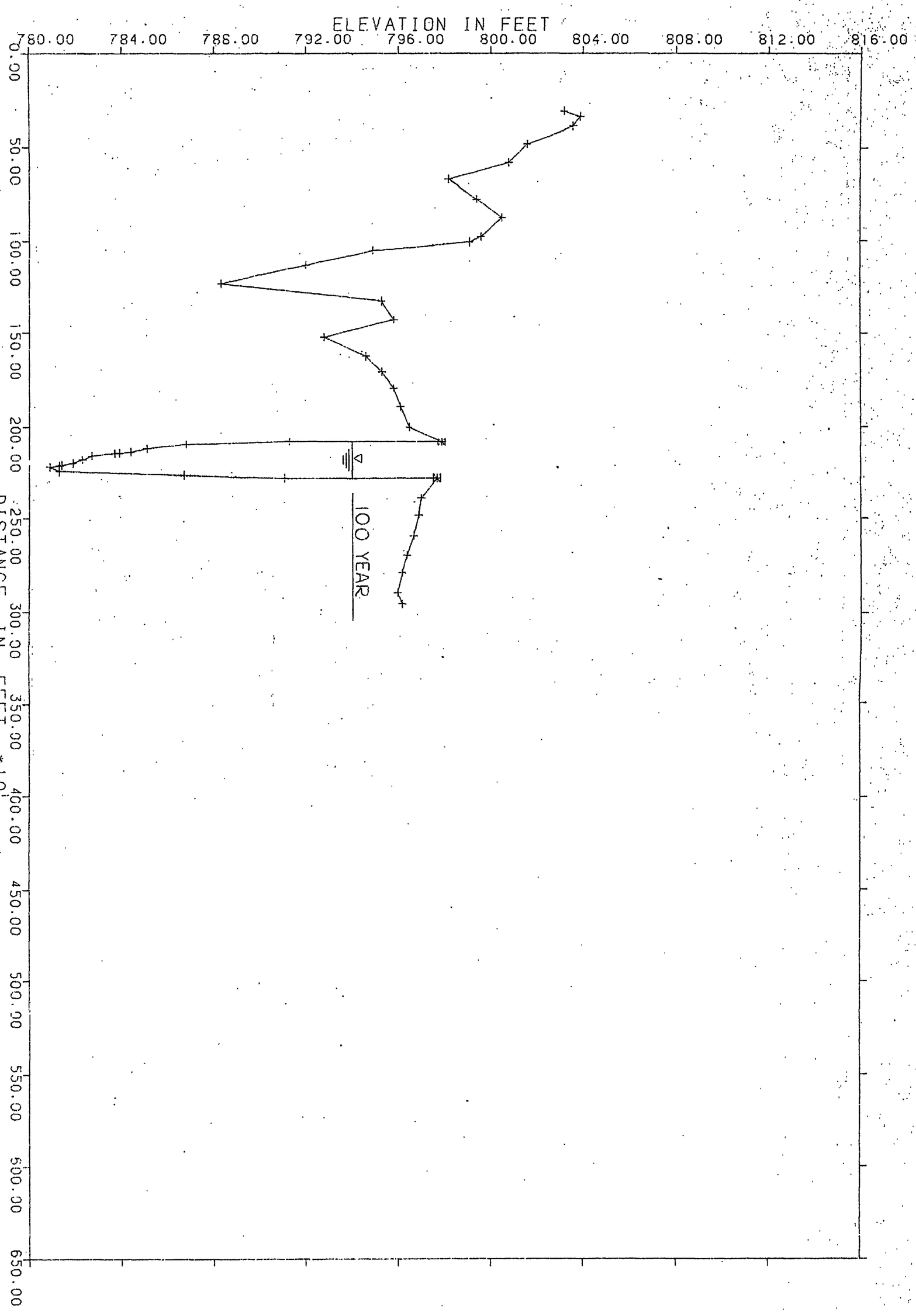
FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA



FLOOD INSURANCE STUDY

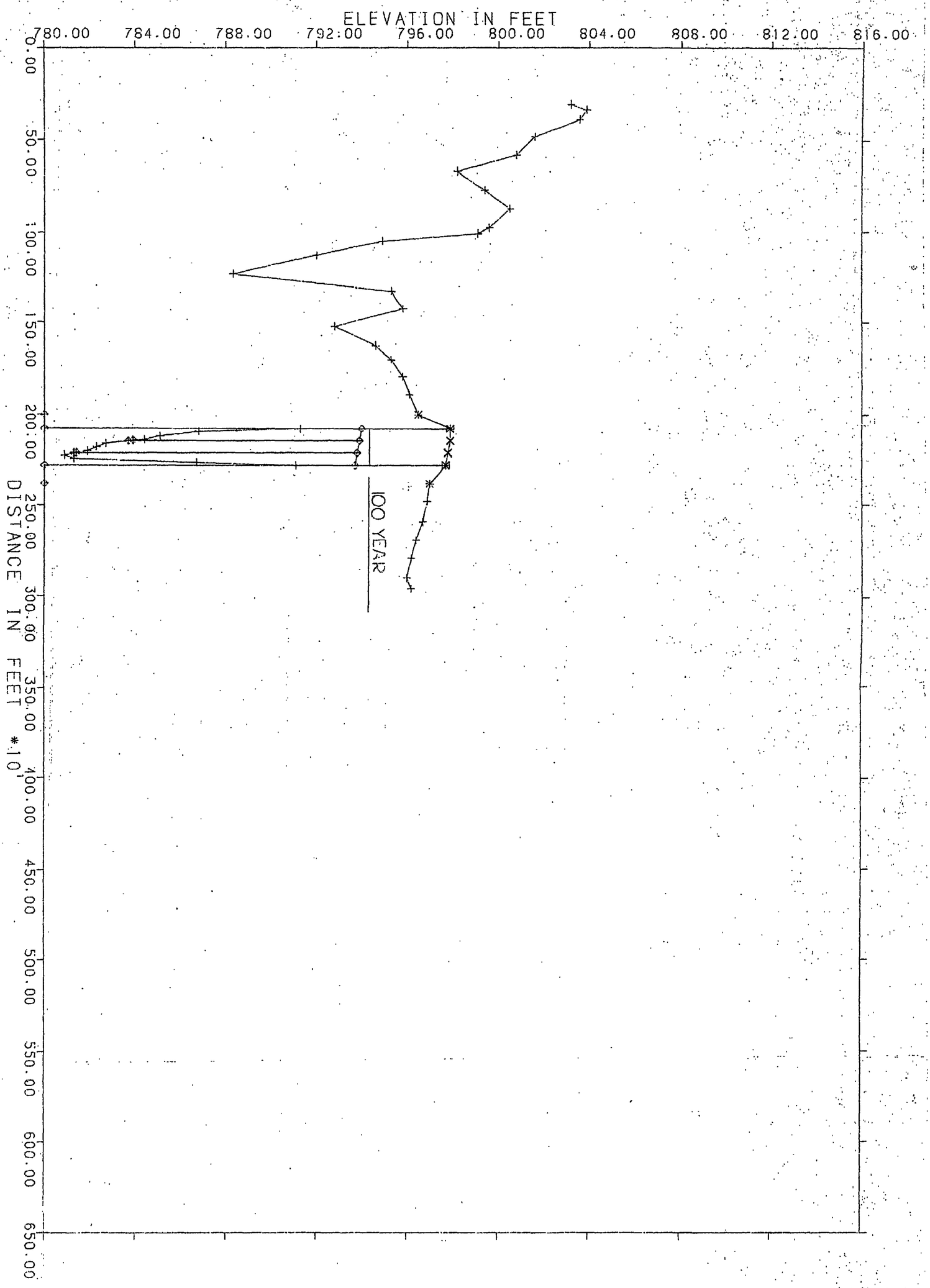
KAZOO RIV. GALESBURG-AUGUSTA



SECTION NO. 108.900

FLOOD INSURANCE STUDY

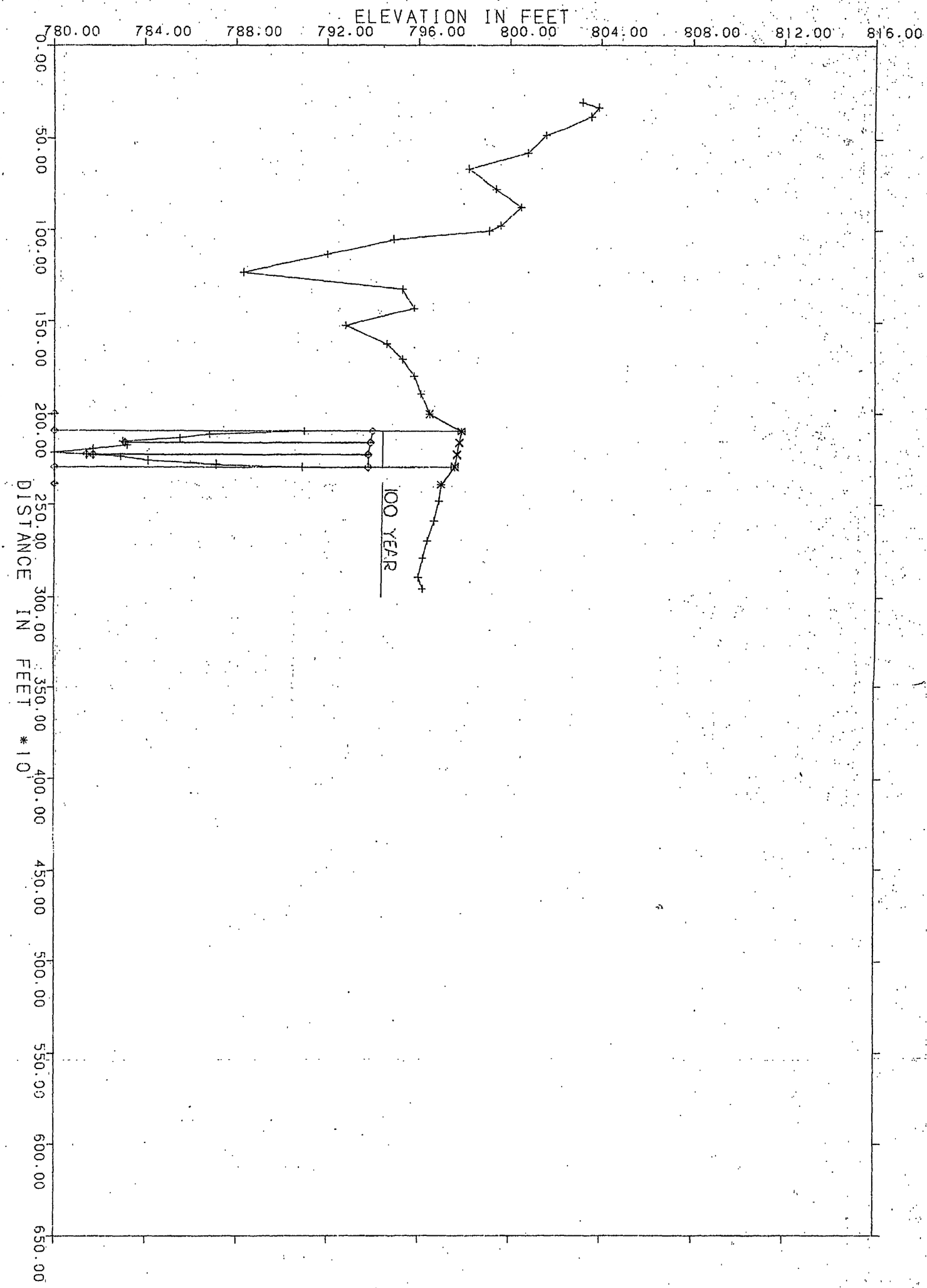
KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 109.000

FLOOD INSURANCE STUDY

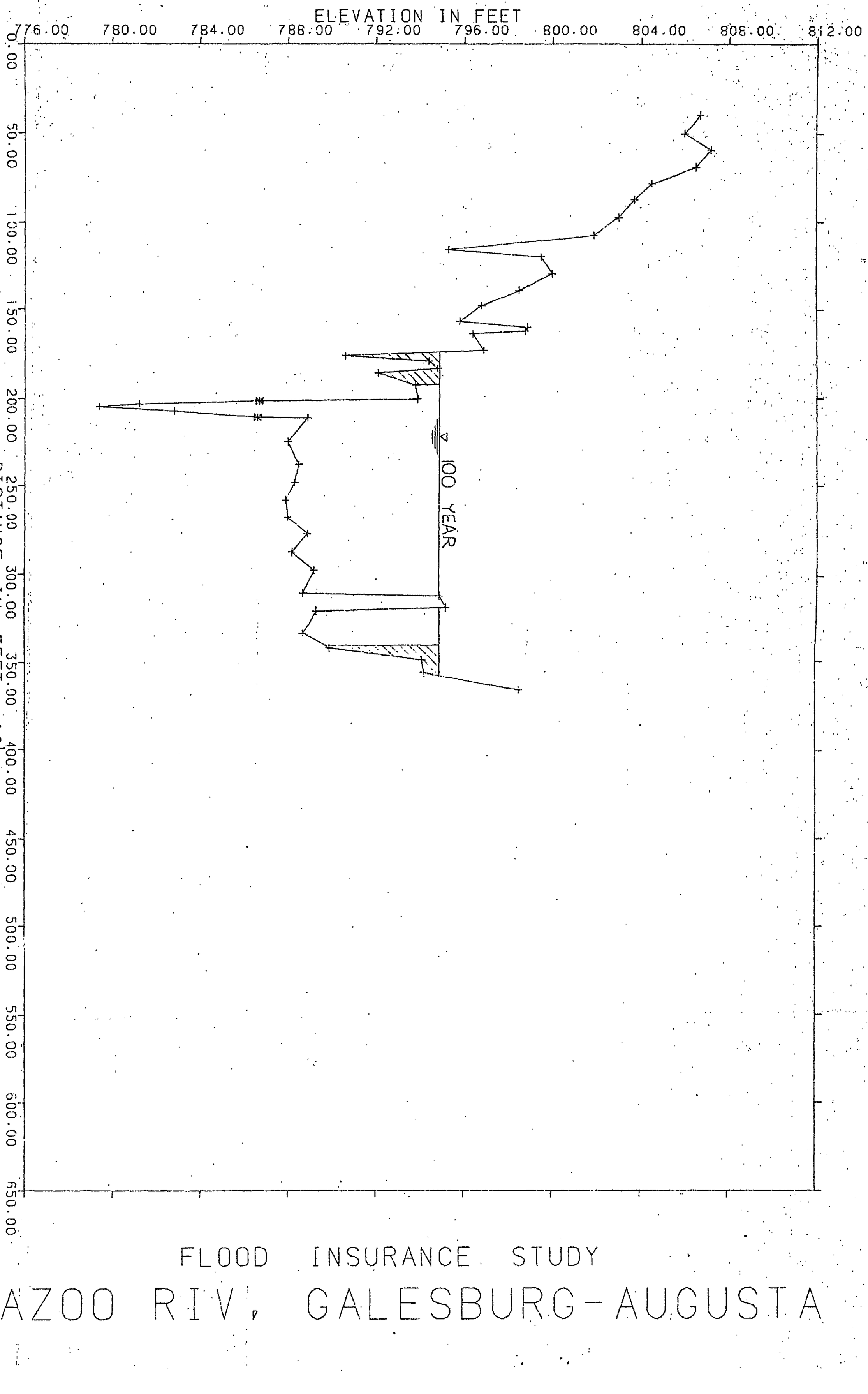
KAZOO RIV. GALESBURG-AUGUSTA



SECTION NO. 109.100

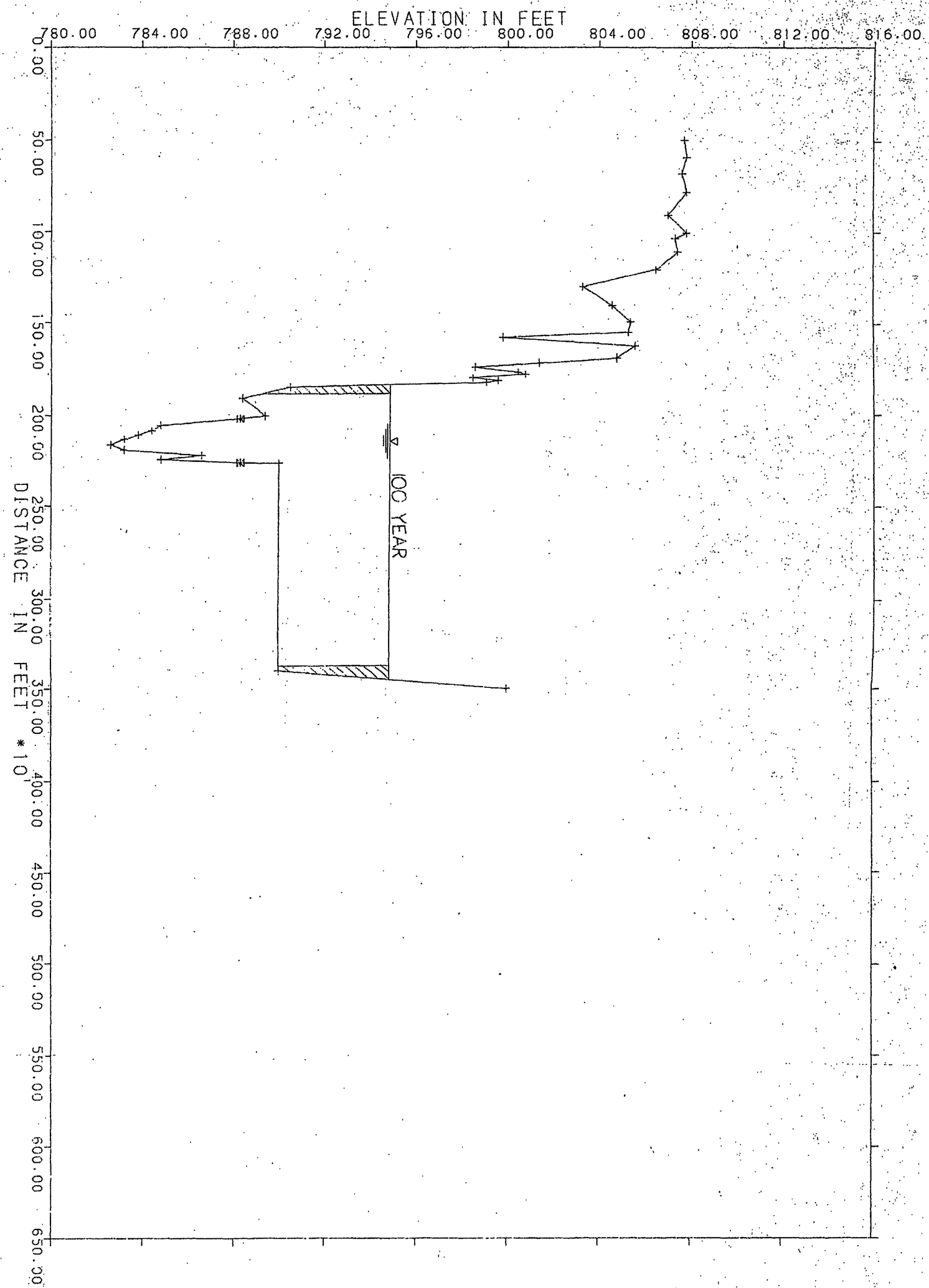
FLOOD INSURANCE STUDY

KAZOO RIV. GALESBURG-AUGUSTA



FLOOD INSURANCE STUDY

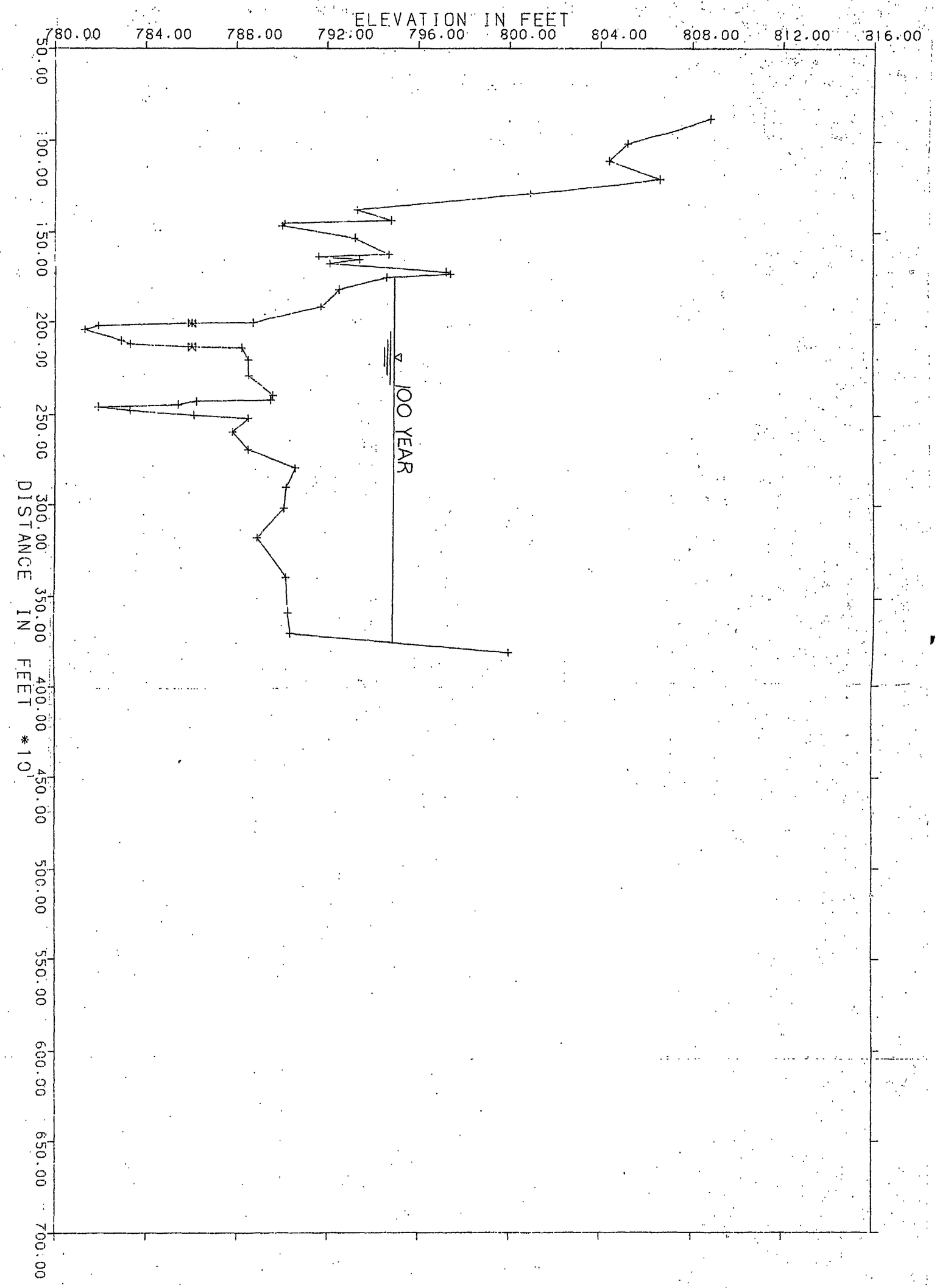
KAZOO RIV, GALESBURG-AUGUSTA



SECTION NO. 113.000

FLOOD INSURANCE STUDY

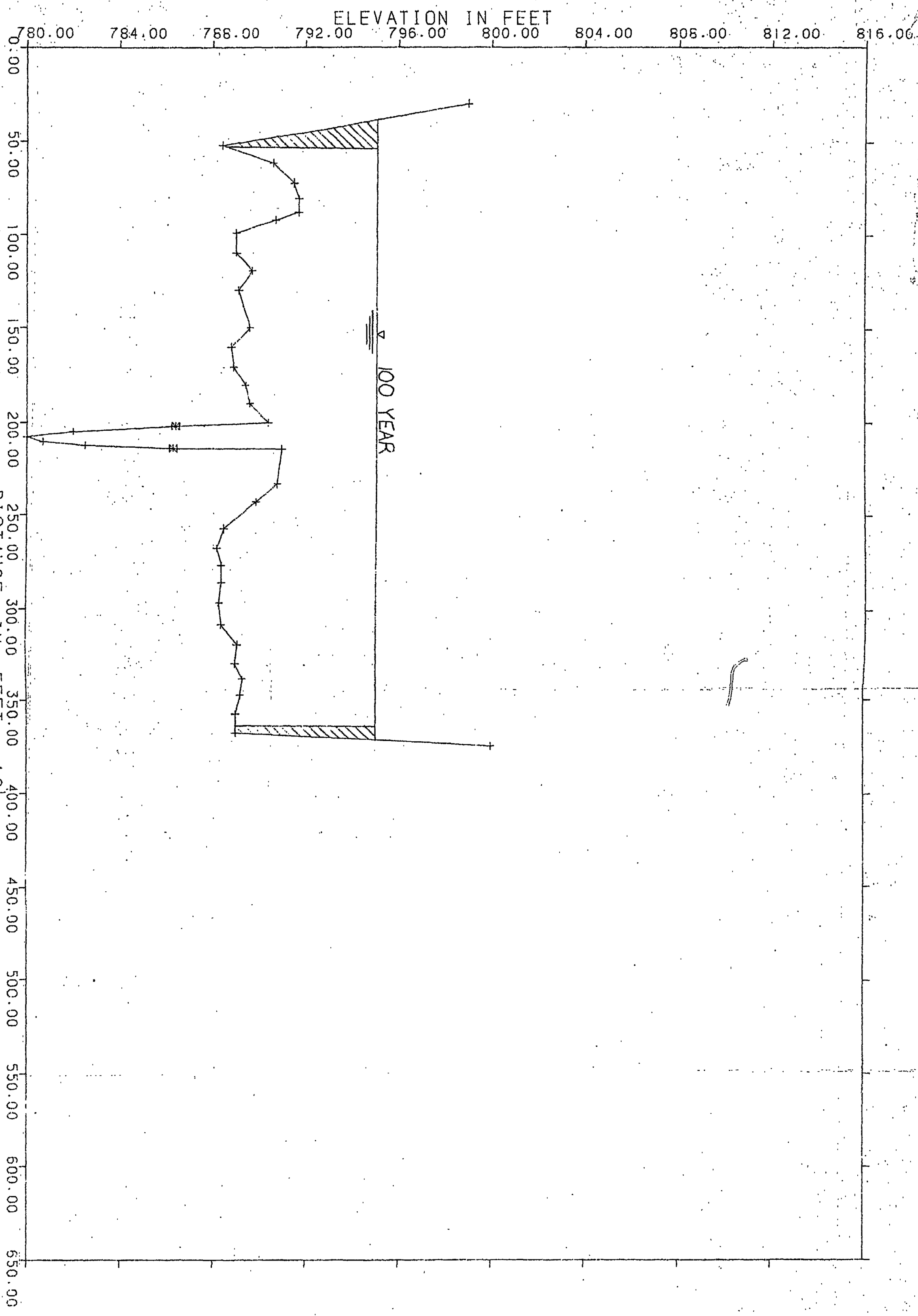
KAZOO RIV., GALESBURG-AUGUSTA



SECTION NO. 114.000

FLOOD INSURANCE STUDY

KAZOO RIV, GALESBURG-AUGUSTA



FLOOD INSURANCE STUDY

KAZOO RIV. GALESBURG-AUGUSTA

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading,PA/Jackson,MI

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE
	JOB NO.
CALC. BY/DATE M. Lodewyk / REVIEW BY/DATE	SUBJECT HAND CALCULATIONS THRU MORROW LAKE
	SHEET OF / BOOK NO.

$V = Q/A$ $n = .040$

Bottom at Dam ≈ 757.0 $S_f = \frac{n^2 V^2}{2.22 R^{4/3}}$

Slope Bottom ≈ .0008

Station	Z	Y	A	V	$V^2/2g$	H	R	$R^{4/3}$	S_f	$\bar{S}_F$	ΔX	h_f	h_e	H
						779.75*								
0+00 (Dam)														
1+00 (Rail Road)	779.75	22.67	30604	.20	.001	779.76	16.99	43.68	.00000066		100	.00007		779.75
30+00 (71.0) 3300	779.75	20.35	50366	.13	.0002	779.75	15.24	37.85	.0000003	.0000005	2900	.001		779.75
105+00 (72.0) (1500)	779.77	14.35	16145	.42	.003	779.77	10.76	23.76	.0000053	.0000028	7500	.02		779.77
121+00 (80.0) (625)	779.79	13.11	6136	1.10	.02	779.81	9.80	20.96	.000042	.000023	1600	.04		779.81
135+00 (80.1) (1500)	779.85	12.05	13556	.50	.004	779.85	9.03	18.82	.0000096	.000026	1400	.04		779.85
155+00 (80.2) (700)	779.90	10.5	5775	1.17	.02	779.92	8.25	16.67	.000059	.000034	2000	.07		779.92
171+00 (80.9)	780.10	9.42	1677	4.02	.25	780.35	8.51	17.40	.00067	.00036	1600	.58		780.50

* calculated from weir equation, velocity head included